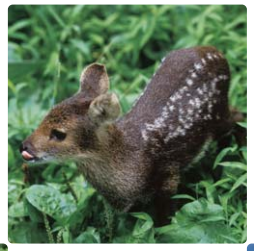

MINISTRY OF ENVIRONMENT
REPUBLIC OF KOREA

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ECOREA

Environmental Review **2011**, Korea






MINISTRY OF ENVIRONMENT
REPUBLIC OF KOREA

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

Under the national vision of "Low Carbon, Green Growth," Korea has set an ambitious GHG reduction target of 30% below BAU level by 2020.

Since the industrial revolution, people have pursued a lifestyle of convenience and abundance based on mass production and mass consumption. As a result, the world is faced with environmental challenges that range from air and water pollution to excessive generation of waste and chemical substances. Moreover, we are witnessing global climate change and extreme weather patterns caused by greenhouse gases emitted and accumulated from industrial activities. Loss of biodiversity is a new threat to the very survival of mankind.

Having gone through a process of full-scale industrialization and urbanization that began only in the 1960s, Korea has faced all the environmental challenges that industrialized countries experienced, in a compressed period of time. In order to cope with such challenges, the Korean Government launched the Environment Agency in 1980 and began to implement environmental policies. In 1990, this Agency was upgraded to become the Ministry of Environment.

Since that time, the scope of environmental policy has expanded from traditional concerns such as air pollution, water pollution and waste management, to environmental health, climate change, biodiversity and other global environmental problems.

From the ashes of the Korean War in the 1950s, Korea has constructed and developed its economy, industry, education, science and technology to a level where it is now a donor of official development assistance (ODA). Environmental policies have also evolved and developed according to the needs of the time.

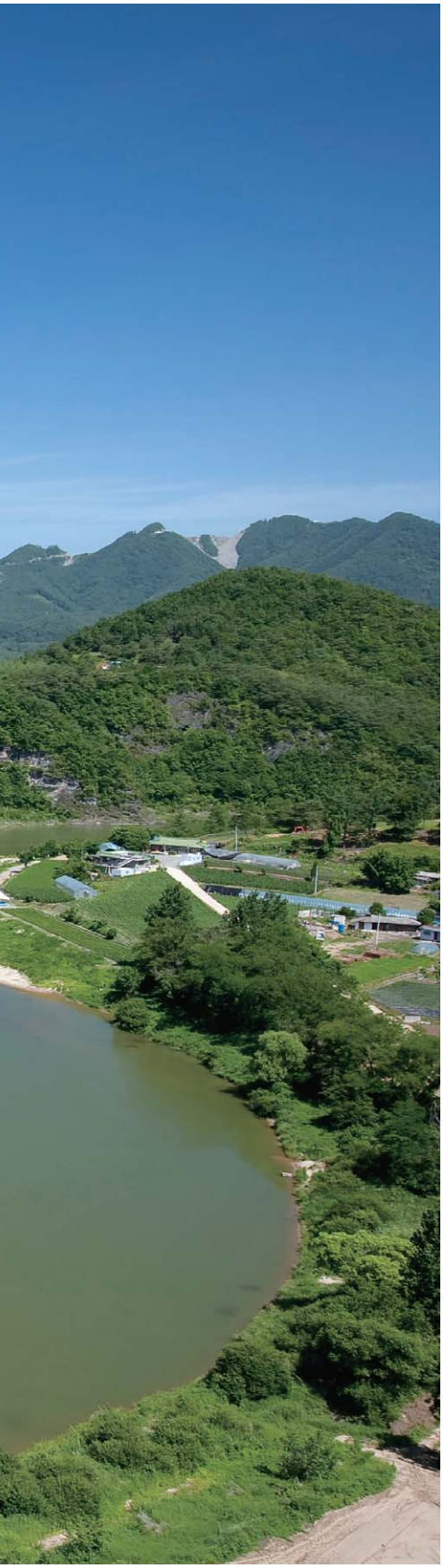
Currently, Korea is making efforts to cope with climate change, the most pressing issue facing the world. Under the national vision of "Low Carbon, Green Growth," Korea has set an ambitious GHG reduction target of 30% below BAU level by 2020. Korea plays an important role in bridging developed and developing countries by actively participating in the negotiations of the United Nations Framework Convention on Climate Change, in which, for example, the NAMA registry was finally adopted at the Cancun Conference. Korea has also established the Global Green Growth Institute (GGGI) in order to promote Green Growth across the world.

The publication of ECOREA has the purpose of sharing information about the state of the environment in Korea and its environmental policy. The first chapter provides an overview of Korea. The current status and recent trends in environmental quality are then portrayed in the second chapter. In chapter three specific environmental concerns and the measures taken to deal with them are explained. Chapter four explains current policies such as the Green Card system, the Four Major Rivers Restoration Project, the Green City Pilot Project in Gangneung and the eco-friendly food culture. In chapter five, subsidiary organizations and affiliated agencies under the Ministry of Environment are introduced.

I sincerely hope that the publication of ECOREA contributes not only to a better understanding of the status of Korea's environment and related policies amongst global partners, but also to environmental cooperation between Korea and the international community.

November 2011
Yoo, Young Sook
Minister of Environment

유 영숙



01 Overview of Korea

General

Country Name: Republic of Korea
Capital City: Seoul (10.4 million) (2010)
National Flag: Taegeukgi
National Flower: Mugunghwa (Rose of Sharon)
Currency: won ($ 1 = 1,156,3 KRW) (2010)
Language: Korean (Writing system: Hangeul)

Geography

Location: Strategically located at the Center of Northeast Asia. Korea lies between China, the Russian Far East and Japan
Territory: 223,343km^2 (South Korea: 100,210km^2)
Major Cities: Seoul (10.4 million), Busan (3.6 million), Incheon (2.7 million), Daegu (2.5 million), Daejeon (1.5 million), Gwangju (1.4 million), Ulsan (1.1 million) (2010)
Climate: Temperate with four distinct seasons

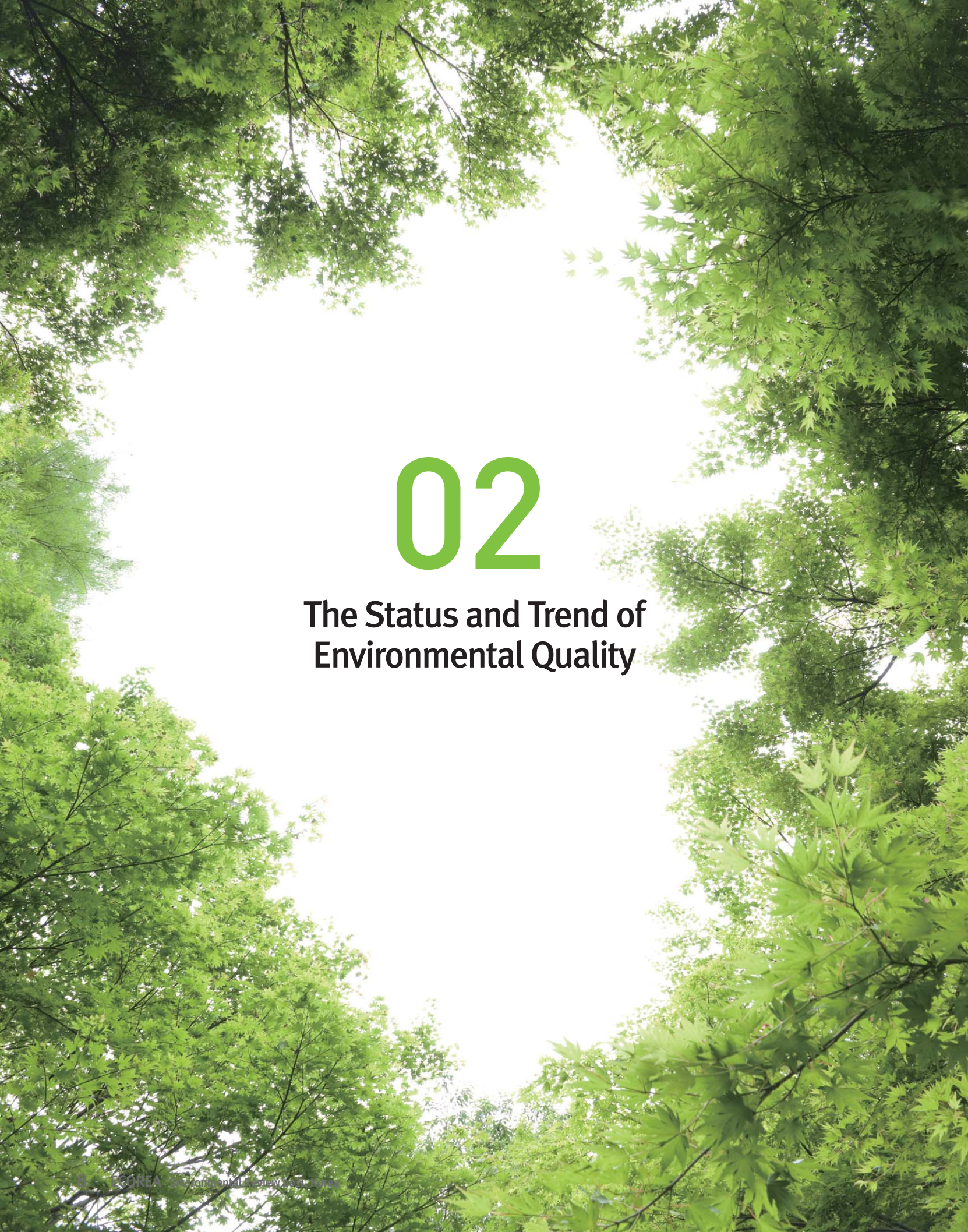
People

Population: 48.87 million (2010) *Foreign residents: 1.2 million
Population Growth Rate: 0.26% (2010)
Life Expectancy: Male, 77 years; female, 83.8 years (2009)
Religion: A 2005 census showed one half of the population actively practices religion. Among them, 10,726,463 Buddhist, 8,616,438 Protestants and 5,146,147 Catholics comprise the three dominant religions.

Economy

Gross Domestic Product: $ 1,014 billion (2010)
Per Capita GNI: $ 20,759 (2010)
GDP Growth Rate: 6.2% (2010)
Exports: $ 441.5 billion (2010)
Imports: $ 400.6 billion (2010)
Major Industrial Products: Semiconductors, automobiles, ships, consumer electronics, mobile telecommunication equipments, steel and chemicals

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



02

The Status and Trend of Environmental Quality

Currently, around 100,000 species exist in Korea, and total 36,921 species have been identified through a variety of survey reports and other documents, including 20,998 species of fauna, 9,817 species of flora, 4,085 species of fungus · lichen, 1,374 species of protist and 647 species of prokaryote.

2-1. Nature

□ Flora and Fauna

Currently, around 100,000 species exist in Korea, and total 36,921 species have been identified through a variety of survey reports and other documents, including 20,998 species of fauna, 9,817 species of flora, 4,085 species of fungus · lichen, 1,374 species of protist and 647 species of prokaryote.

As for natural vegetation, the deciduous broadleaf forest, which represents the major vegetation type of the natural forests in Korea, is primarily distributed over the central region; non-deciduous broadleaf forest is distributed over the southern region and the eastern and western coastal regions; carnipus laxiflora forest is usually occurred over the valleys and/or the slopes of mountains where granite gneiss is exposed; and non-deciduous forest of warm-temperate zone is distributed over the southernmost region and the islands off the southern coast.

36,921 species in total (20,998 Animals, 5,230 Plants, 10,693 Others)

Broad Classification		Narrow Classification		Species (No.)		Broad Classification	Narrow Classification	Species (No.)
Animals 20,998	Vertebrates 1,841	Mammals		125		Fungi/ Lichens 4,085	Fungi	3,383
							Lichens	702
		Birds		515		Plants 5,230	Monocoty ledons	1,053
							Dicotyledons	2,910
		Reptiles/Amphibians		52			Gymnosperms	53
							Pteridophytes	280
		Fish		1,149			Bryophytes	934
	Invertebrates 19,157	Echinoderms	167	Mollusks	1,267	Algae 4,587	Diatoms	1,606
		Chaetognathas	41	Annelids	366		Flagellates	602
		Sponges	291	Tardigradans	35		Stonewort	33
		Cnidaria	126	Nematoda	90		Green Algae	1,384
		Platyhelminthes	124	Gastrotrichans	-		Brown Algae	179
		Rotiferans	157	Nematomorpha	-		Red Algae	546
							Blue Algae	237
		Acanthocephala	1	Nemartinea	-	Protozoan 1,374	Myxozoa	1,374
		Entoprocta	1	Echiurans	2		Apicomplexas	
		Bryozoans	142	Kinorhyncha	-		Sarcodina	
		Brachiopodans	9	Phoronida	-		Ciliate	
		Sipunculidans	9	Urochordatans	89		Other protozoan	-
		Arthropoda	Arachnids/Acarids		2856	Bacteria 647	Bacteria	647
			Insects		13,384			
			Others		-			

□ Protection of Wild Animals and Plants

The government revised the Natural Environment Conservation Act in 1997 and legally designates and protects 221 endangered species of wild animals and plants, and it established legal grounds for protection of wildlife by strengthening fines and penalties. For instance, 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.

In the past, before revision of the Act, wildlife was categorized into "endangered wild animals and plants" and "protected wild animals and plants," but the Wild Animals and Plants Protection Act specified 221 species into two categories: Endangered Species Category I and Endangered Species Category II.

Endangered Species of Wild Flora and Fauna (221 species)

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	65	8	57

* 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 parvipes, Cervus nippon hortulorum, Naemorhedus caudatus
Birds (13)	Egretta europhotes, Ciconia boyciana, Platalea leucorodia, Platalea minor, Cygnus olor, Haliaeetus albicilla, Hallaeetus 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, Cypripedium 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 ptilorhychus, 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, Gallicrex cinerea, 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 cristat, 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 tenuicorpa, Gobiobotia macrocephala, Gobiobotia brevibarba, Microphysogobio koreensis, Pungitius sinensis, Cottus poecilopus, Cottus hangiongensis, Pungitius kaibarae
Insects (15)	Nannophya pygmaea, Challia fletcheri, Lethocerus deyrollei, Cicindela hybrida nitida, Cicindela anchoralis punctatissima, Damaster mirabilissimus mirabilissimus, Gymnopleurus mopsus, Copris tripartitus, Osmoderma opicum, Chrysochroa fulgidissima, Psacothea 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 suensoni, Dendrophyllia cribrosa, 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, Cicuta 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)

□ Designation of Protected Areas

Korea is protecting and managing areas especially worthy of protection due to its excellent ecosystem and abundant biodiversity, by designating them as Ecological and Scenery Conservation Areas and others. As of late 2010, the protected areas are as follows: 38 Ecological and Scenery Conservation Areas (398.14km^2), 29 Wetland Preserving Regions (332.69 km^2) and 170 Specific Islands (10.545km^2) including Dokdo.

Status of National Ecolgical and Scenery Conservation Areas

Name	Location	Area(㎢)	Features	Date of Designation
	12 Areas designated by the Ministry of Environment (277.228 ㎢)			
Nakdonggang Estuary	Gangseo-gu, Saha-gu, Busan	34.20	Migrant birds' Estuary habitat	1989.3.10
Jirisan	Gurye-gun, Jeonnam	20.20	Virgin forest (Korean fir, etc.)	1989.12.29
Daeamsan	Injeeup, Gangwon	1.06	High moor	1989.12.29
Uponeup	Changnyeong-gun, Gyeongnam	8.54	Primitive natural marsh	1997.7.26
Moojechineup	Ulju-gun, Ulsan	0.184	Habitat of rare wild animals	1998.12.31
Seomjingang Otter Habitat	Gurye-gun, Jeonnam	1.83	Habitat of endangered otter	2001.12.1
Gosanbong Habitat of myotis formosus chofukusei	Hampyeong-gun, Jeonnam	8.78	Habitat of endangered myotis formosus chofukusei	2002.5.1
Donggang Valley	Yeongwol-gun, Jeongseong-gun, Pyeongchang-gun, Gangwon	64.97	Superb topography and scenery/ habitat of rare wild animals	2002.8.9
Wangpicheon Valley	The whole area of Geunnam-myeon/ Seo-myeon, Uljin-gun, Gyeongbuk	102.838	Superb topography and scenery/habitat of rare wild animals	2005.10.14 2006.12.8
Sohwang Sand Dune	The whole area of Doksan-ri/ Sohwang-ri, Ungcheon-eup, Boryeong-si, Chungnam	0.121	Costal sand dune/habitat of rare wild animals	2005.10.28
Hasidong/Anin Sand Dune	The whole area of Hasidong-ri, Gangdong-myeon, Gangneung-si, Gangwon-do	0.234	Superb topography and scenery of sand dune	2008.12.17
Unmunsan	The whole ares of Unmun-myeon, Cheongdo-gun, Gyeongbuk	26.395	Scenery/habitat of endangered species such as otters, flying squirrels and martens	2010.9.9
	4 Areas designated by the Ministry of Land, Transport and Maritime Affairs(70.373 ㎢)			
Sinduri Sand Dune	Taean-gun, Chungnam	0.639	Diverse vegetation and peculiar topography	2002.10.9
Mundo Island and its waters	Seogwipo-si, Jeju	13.684	The only one coral community/diverse seaweed community exist	2002.11.5
Oryukdo Island and its waters	Nam-gu, Busan	0.35	Uninhabited island with fantastic rocks and stones	2003.12.31
Daeijakdo Island and its waters	Ongjin-gun, Incheon	55.7	Superb scenery/main habitat of marine organisms and benthos	2003.12.31

Wetland Protected Areas(Inland wetlands) Designated by MOE (17 sites, 114.316㎢)

Name	Location	Area (㎢)	Features	Date of Designation (Ramsar)
Nakdonggang estuary	Sinpyeong-dong, Janglim-dong and Dadae-dong, Saha-gu & Myeongji-dong, Gangseo-gu, Busan Metropolitan City	37.718	Migratory birds arrival site	'99.8.9
Yongneup of Daeamsan	Seohwa- myeon, Inche-gun, Kangwon Province	1.36	The only high moor in the country composed of bogs and deciduous forest	'99.8.9 ('98.3.2)
Uponeup	Daeji-myeon, Yooeh-myeon, ibang-myean, Daehap myeon, Changryeong-gun, Gyeongnam Province	8.54	Primitive natural wetland	'99.8.9 ('98.3.2)
Moojechineup	Joil-ri, Sandong-myeon, Uljoo-gun, Ulsan Metropolitan City	0.184	Mountainous wetland with endangered species	'99.8.9 ('97.12.20)
Mulyeongari-oreum	Namwon-eup, Seogwi-po City, Jeju Province	0.309	a parasitic volcanic crater	'00.12. 5 ('06.10.18)
Hwaumneup	Yongyeon-ri, Hwabuk- myeon, Yangsan -city, Gyeongnam Province	0.124	Mountainous wetland	'02.2.1
Du-ung Wetland	Shindo-ri, Wondong-myeon, Taean-gun, Choongnam Province	0.067	Back marsh of Shinduri Dune with rare wildlifes	'02.11.1 ('07.12.20)
Shinbulsan Mountainous Wetland	92-2, Won-dong myeon, Yangsan-city, Gyeongnam Province	0.308	Mountainous wetland with rare wildlife	'04.2.20
Damyang Wetland	Daejeon-myeon, Soobuk-myeon, Hwanggum-myeon, Damyang-gun, Cheonnam Province, and Yonggang-dong, Buk-gu, Gwangju Metropolitan City	0.981	Riverine wetland with endangered and protected wildlife	'04.7.8
Jangdo Island High Moor	109-1~3, Bee-ri, Heuk san-myeon, Shinan-gun, Cheonnam Province	0.090	Mountainous wetland in an island	'04.8.31 ('05.3.30)
Han River Estuary	South of Kimpo bridge to Kanghwa-gun, Gyeonggi Province	60.668	26 endangered species	'06.4.17
Sandeulneup of Jaeyaksan	1 Gucheon-ri, Dan jang myeon, Milyang -city, Gyeongnam Province	0.58	Thick-layered peats. Endangered species (e.g. Leopard cat)	'06.12.28
1100 Altitude wetland	Gwang ryeong-ri, Joongmun-dong, Jeju-city & Seogwipo-city, Jeju Province	0.126	Mountainous wetland with endangered species and rare wildlifes	'09.10.1 ('09.10.12)
Muljangori-oreum	Bonggae-dong, Jeju-city, Jeju Province	0.610	volcanic wetland with unique geology and rare wildlifes	'09.10.1 ('08.10.13)
Dongbaekdongsan	Sunheul-ri, Jocheon-eup, Jeju Province	0.590	Gotjawal forest with high biodiversity, abundant groundwater supply	'10.11.12
Gochang Ungok Wetland	Ungok-ri, Asan-myeon, Gochang-gun, Cheonbuk Province	1.797	Rich in biodiveristy, Endangered Species (e.g. Otter)	2011.3.14 ('11,04.07)
Gonggumjee	Gonggum-myeon, Sangju-city, Gyeongbuk Province	0.264	Endangered species(i.e. Common buzzard, Northern Harrier, Eagle Owl)	2011.6.29

Wetland Protected Areas (Costal Wetlands) - Designated by Ministry of Land, Transport, and Marine Affairs (9 sites, 212.04㎢)

Name	Location	Area (㎢)	Features	Date of Designation (Ramsar)
Muan Tidal Flat	Haejae-myeon, Hyunkeong-myeon, Muan-gun, Cheonnam Province	42.0	Rich in biodiversity, Geological value	01.12.28 ('08.1.14)
Jindo Tidal Flat	Gogun-myeon, Gunnae-myeon, Jindo-gun, Cheonnam Province	1.44	Beautiful scenic view and rich in biodiversity, Migratory birds arrival site	'02.12.28
Suncheon Bay	Dosa dong, Haeryong-myeon, Byulyang -myeon, Suncheon-city, Cheonnam Province	28.0	Beautiful scenic view, Hooded crane habitat & arrival site	03.12.31 ('06.1.20)
BulgyoTidal Flat	Hodong-ri, Jangyang-ri, Yeongdong-ri, Jangam-ri, Daepo-ri, Bosung-gun, Cheonam Province	10.3	Abundant Fisheries Resources	03.12.31 ('06.1.20)
Jangbong Tidal Flat	Jangbong-ri, Woongjin-gun, Incheon Mettropolitan City	68.4	Rich in biodiversity, Rare migratory birds arrival site	03.12.31
Buan Julpo Bay	Boyan myeon, and Julpo myeon, Buan-gun, Cheonbuk Province	4.9	Rich in biodiversity, Rare migratory birds arrival site	06.12.15 ('10.2.1)
Gochang Tidal Flat	Shimone-myeon, and Buan-myeon, Gochang-gun, Cheonbuk Province	10.4	Beautiful scenic view, Abundant Fishery resources	07.12.31 ('10.2.1)
SeoCheon Tidal Flat	Jongcheon-myeon, Bian-myeon, Seocheon-gun, Choongnam Province	15.3	Beautiful scenic view, Eurasian Oystercatcher	08.2.1 ('10.2.1)
Jungdo Tidal Flat	Byeong poong do and Jung do, Jung do-myeon, Shinan- gun, Cheonnam Province	31.3		10.1.29

Wetland Protected Areas - Designated by Cities and Provinces (3 sites 6.634㎢)

Name	Location	Area (㎢)	Features	Date of Designation
Dalsung riverine wetland	Hwawoneup, Dalsung-gun, & Horim-dong, Dalsuh-gu, Daegu Metropolitan City	0.178	Migratory birds arrival site (e.g. white-naped cranes), Rich in plant biodiversity including Floating Heart	'07.5.25
Choodong wetland of Daecheong Reservoir	91 Choodong, Dong-gu, Daejeon Metropolitan City	0.346	Rare animals and birds such as Otter and Common Buzzard	'08.12.26
Songdo Tidal Flat	Songdo-dong, Yeonsu-goo, Incheon Metropolitan City	6.11	East Asia migratory birds Flyway (Black-faced Spoonbill, Common Buzzard, Far eastern curlew)	09.12.31

□ Natural Park Management

As of December 2010, Korea has a total of 79 natural parks (total area of 7,870km^2), 20 of which are national parks, 32 are provincial parks and 27 are county parks. They consist of 4,934km^2 of land and 2,935km^2 of sea.

Korea' s Natural Parks

(㎢, as of Dec. 30, 2010)

	Total	National Parks	Provincial Parks	County Parks
Number of parks	79	20	32	27
Area (㎢)	7,870.522	6,580.884	1,050.421	239.217

National Parks (20)

(Unit: ㎢, ( ) = million pyong)

Order of Desig-nation	Name	Location	Park District		Remarks
			Designation Date	Area	
Total			20 parks	6,580.884 (1,991)	
1	Jirisan	Jeonnam, Jeonbuk, Gyeongnam	67.12.29	483.022	
2	Gyeongju	Gyeongbuk	68.12.31	136.550	Cultural Heritage
3	Gyeryongsan	Chungnam, Daejeon	68.12.31	65.335	
4	Hallyeohaesang	Jeonnam, Gyeongnam	68.12.31	535.676	Marine 408.488
5	Seoraksan	Gangwon	70. 3.24	398.237	
6	Songnisan	Chungbuk, Gyeongbuk	70. 3.24	274.767	
7	Hallasan	Jeju	70. 3.24	153.332	
8	Naejangsan	Jeonnam, Jeonbuk	71.11.17	80.708	
9	Gayasan	Gyeongnam, Gyeongbuk	72.10.13	76.256	
10	Deogyusan	Jeonbuk, Gyeongnam	75. 2. 1	229.430	
11	Odaesan	Gangwon	75. 2. 1	326.424	
12	Juwangsan	Gyeongbuk	76. 3.30	105.597	
13	Taeanhaean	Chungnam	78.10.20	377.019	Marine 352.796
14	Dadoehaehaesang	Jeonnam	81.12.23	2,266.221	Marine 1,975.198
15	Bukhansan	Seoul, Gyeonggi	83. 4. 2	76.906	
16	Chiaksan	Gangwon	84.12.31	175.668	
17	Woraksan	Chungbuk, Gyeongbuk	84.12.31	287.571	
18	Sobaeksan	Chungbuk, Gyeongbuk	87.12.14	322.011	
19	Byeonsanbando	Jeonbuk	88. 6.11	153.934	Marine 17.227
20	Wolchulsan	Jeonnam	88. 6.11	56.220	

2-2. Air

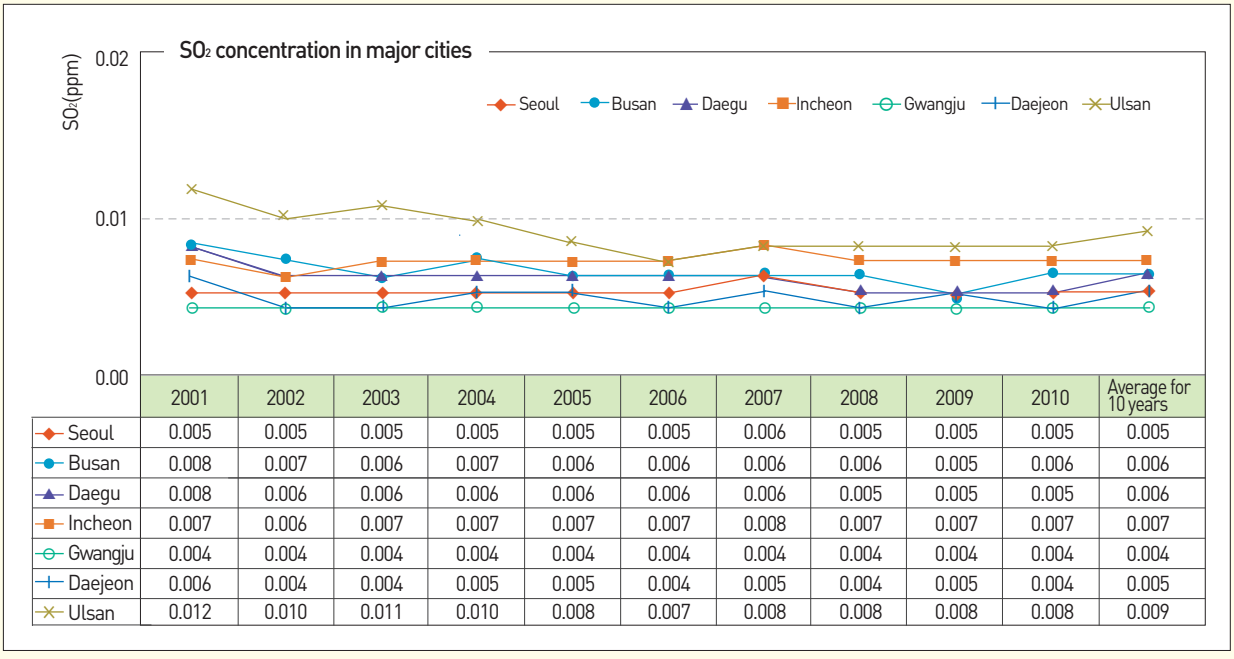
□ Air quality in major cities

The concentration level of sulfur dioxide has been constantly improving in the country's seven major cities for the past ten years mainly due to the government's continuous support for strengthening the fuel regulation system (e.g., expansion of clean fuel supplies such as low sulfur oil and LNG, stricter emission regulation).

In 2010, the concentration of nitrogen dioxide in Seoul, where the number of automobile registration and traffic is the largest, was reported to be the highest among seven major cities. Other cities have shown similar patterns over the past decade.

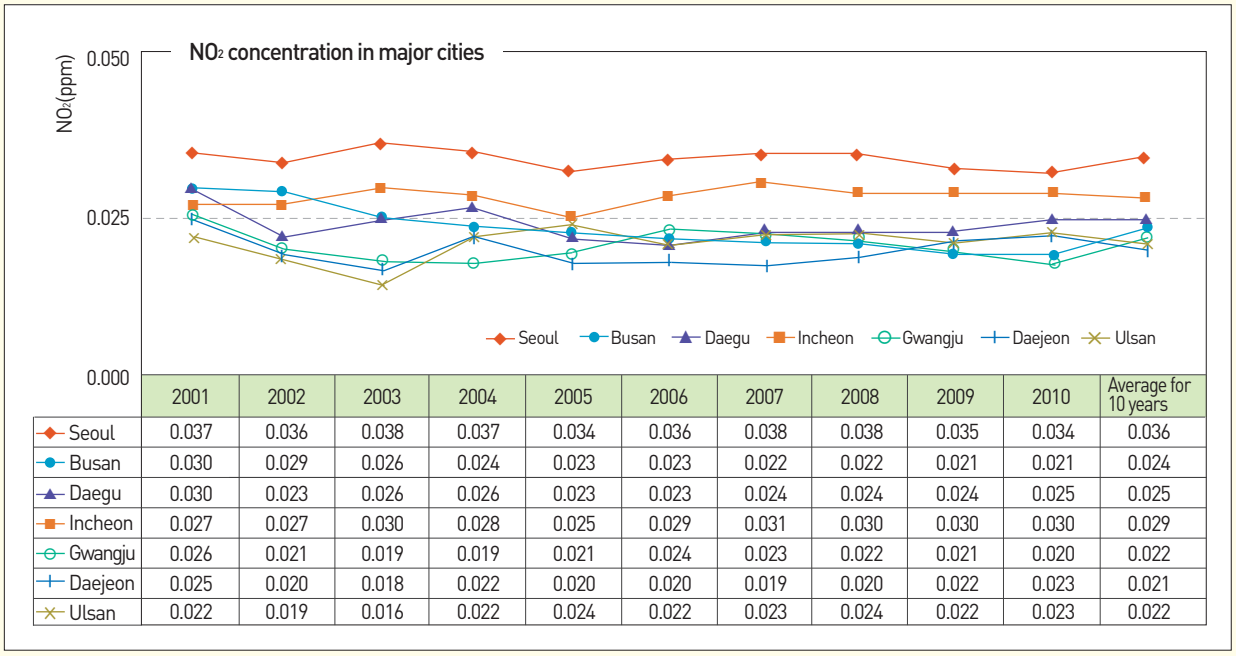
The concentration rate of particulate matter in the air has decreased since 2008. According to the air quality measurements in 2010, Incheon showed the highest rate of fine dust while Daejeon was the lowest.

It is generally known that the ozone concentration is not only affected by the amount of pollutant emitted but also greatly influenced by temperature, precipitation, degree of pollutant transportation, and atmospheric stability. Annual increases in the ozone concentration are likely to have been driven by the rise of temperature and insolation due to recent global warming.



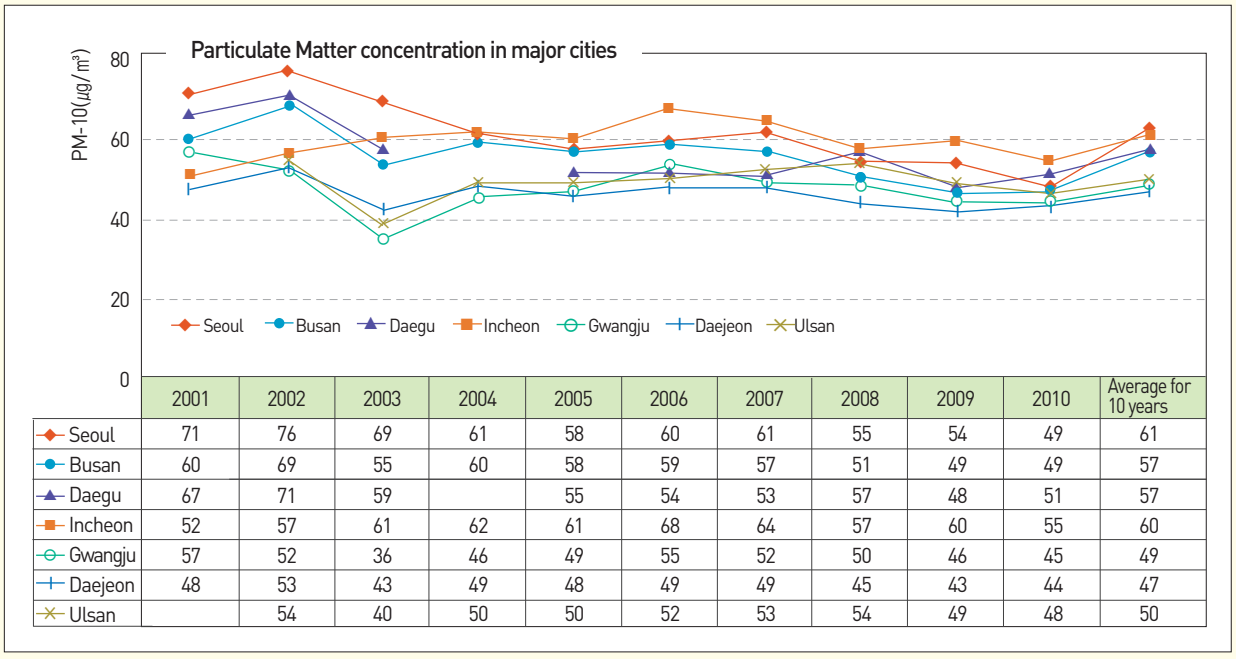
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average for 10 years
Seoul	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.005
Busan	0.008	0.007	0.006	0.007	0.006	0.006	0.006	0.006	0.005	0.006	0.006
Daegu	0.008	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.006
Incheon	0.007	0.006	0.007	0.007	0.007	0.007	0.008	0.007	0.007	0.007	0.007
Gwangju	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Daejeon	0.006	0.004	0.004	0.005	0.005	0.004	0.005	0.004	0.005	0.004	0.005
Ulsan	0.012	0.010	0.011	0.010	0.008	0.007	0.008	0.008	0.008	0.008	0.009

* SO_2 annual average air quality standard: 0.020ppm



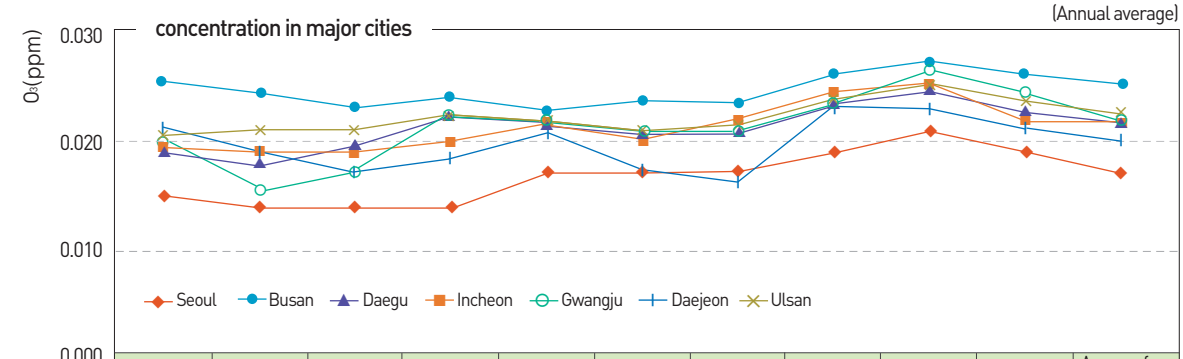
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average for 10 years
Seoul	0.037	0.036	0.038	0.037	0.034	0.036	0.038	0.038	0.035	0.034	0.036
Busan	0.030	0.029	0.026	0.024	0.023	0.023	0.022	0.022	0.021	0.021	0.024
Daegu	0.030	0.023	0.026	0.026	0.023	0.023	0.024	0.024	0.024	0.025	0.025
Incheon	0.027	0.027	0.030	0.028	0.025	0.029	0.031	0.030	0.030	0.030	0.029
Gwangju	0.026	0.021	0.019	0.019	0.021	0.024	0.023	0.022	0.021	0.020	0.022
Daejeon	0.025	0.020	0.018	0.022	0.020	0.020	0.019	0.020	0.022	0.023	0.021
Ulsan	0.022	0.019	0.016	0.022	0.024	0.022	0.023	0.024	0.022	0.023	0.022

* NO_2 annual average air quality standard: 0.03ppm



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average for 10 years
Seoul	71	76	69	61	58	60	61	55	54	49	61
Busan	60	69	55	60	58	59	57	51	49	49	57
Daegu	67	71	59		55	54	53	57	48	51	57
Incheon	52	57	61	62	61	68	64	57	60	55	60
Gwangju	57	52	36	46	49	55	52	50	46	45	49
Daejeon	48	53	43	49	48	49	49	45	43	44	47
Ulsan		54	40	50	50	52	53	54	49	48	50

* PM-10 annual average air quality standard: 50μg/m³



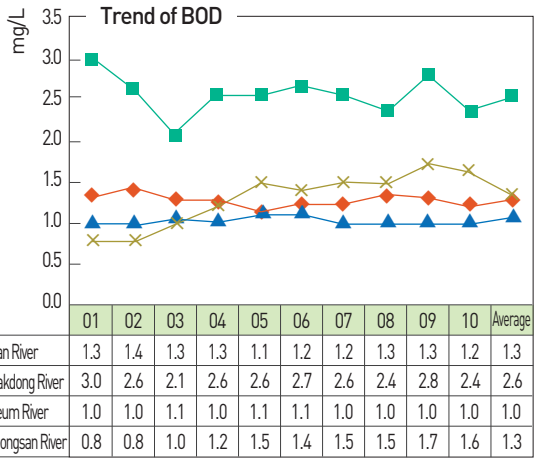
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average for 10 years
Seoul	0.015	0.014	0.014	0.014	0.017	0.018	0.018	0.019	0.021	0.019	0.017
Busan	0.025	0.024	0.023	0.024	0.023	0.024	0.024	0.026	0.027	0.026	0.025
Daegu	0.019	0.018	0.020	0.022	0.022	0.020	0.021	0.023	0.023	0.022	0.021
Incheon	0.019	0.019	0.019	0.020	0.022	0.020	0.022	0.024	0.024	0.021	0.021
Gwangju	0.019	0.016	0.018	0.022	0.022	0.021	0.022	0.023	0.026	0.024	0.021
Daejeon	0.021	0.019	0.018	0.019	0.021	0.018	0.017	0.023	0.023	0.021	0.020
Ulsan	0.020	0.021	0.021	0.022	0.022	0.021	0.021	0.023	0.024	0.023	0.022

* There is no O_3 annual air quality standard. Air quality standard for 8 hours: 0.06ppm, and for 1hour: 0.1ppm

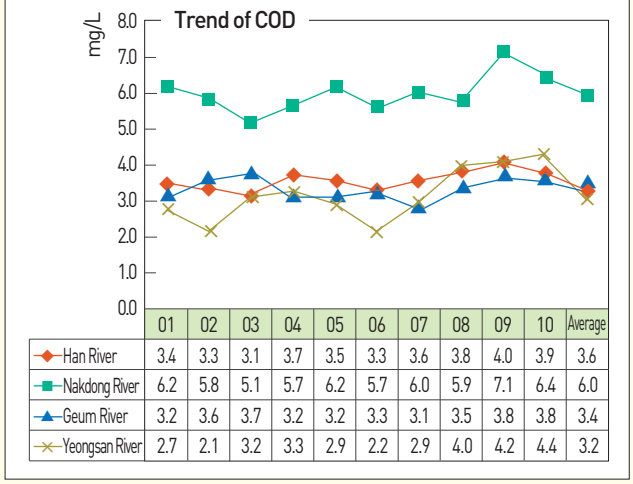
2-3. Water

□ Water Quality of the four major rivers

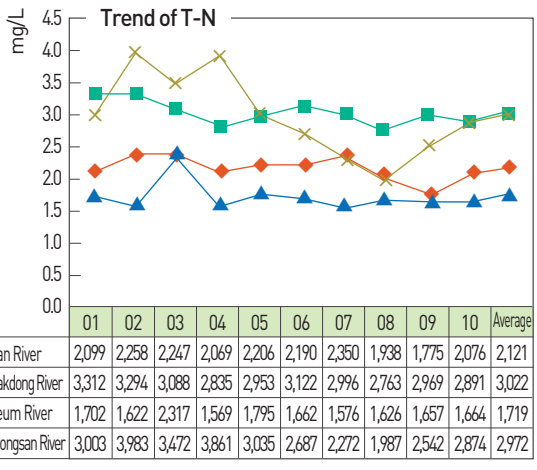
'Good (or 2nd grade) water quality' (BOD concentration less than 3mg/L) is found at Paldang (Han River), Moolgeum (Nakdong River), Daechung (Geum River), and Damyang (Yeongsan River), representative monitoring locations for each major river. In overall, trends of BOD concentration have been declined over a decade, while these of COD have been inclined. In addition, the levels of Total Nitrogen(TP) and Total Phosphorus(TP) in the four major rivers are generally unchanged or decreasing.



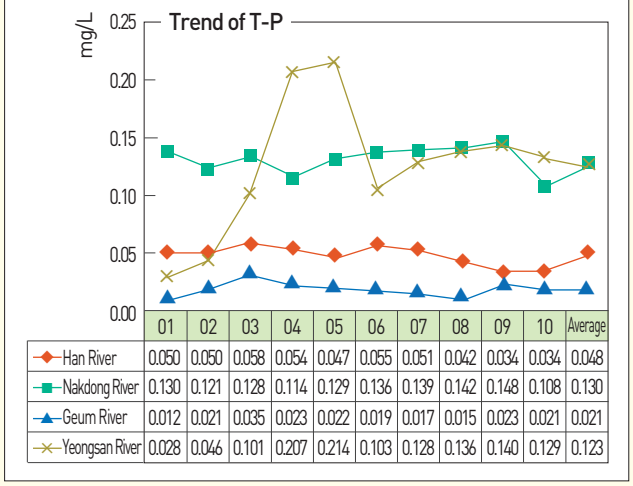
	01	02	03	04	05	06	07	08	09	10	Average
Han River	1.3	1.4	1.3	1.3	1.1	1.2	1.2	1.3	1.3	1.2	1.3
Nakdong River	3.0	2.6	2.1	2.6	2.6	2.7	2.6	2.4	2.8	2.4	2.6
Geum River	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.0	1.0	1.0	1.0
Yeongsan River	0.8	0.8	1.0	1.2	1.5	1.4	1.5	1.5	1.7	1.6	1.3



	01	02	03	04	05	06	07	08	09	10	Average
Han River	3.4	3.3	3.1	3.7	3.5	3.3	3.6	3.8	4.0	3.9	3.6
Nakdong River	6.2	5.8	5.1	5.7	6.2	5.7	6.0	5.9	7.1	6.4	6.0
Geum River	3.2	3.6	3.7	3.2	3.2	3.3	3.1	3.5	3.8	3.8	3.4
Yeongsan River	2.7	2.1	3.2	3.3	2.9	2.2	2.9	4.0	4.2	4.4	3.2



	01	02	03	04	05	06	07	08	09	10	Average
Han River	2,099	2,258	2,247	2,069	2,206	2,190	2,350	1,938	1,775	2,076	2,121
Nakdong River	3,312	3,294	3,088	2,835	2,953	3,122	2,996	2,763	2,969	2,891	3,022
Geum River	1,702	1,622	2,317	1,569	1,795	1,662	1,576	1,626	1,657	1,664	1,719
Yeongsan River	3,003	3,983	3,472	3,861	3,035	2,687	2,272	1,987	2,542	2,874	2,972



	01	02	03	04	05	06	07	08	09	10	Average
Han River	0.050	0.050	0.058	0.054	0.047	0.055	0.051	0.042	0.034	0.034	0.048
Nakdong River	0.130	0.121	0.128	0.114	0.129	0.136	0.139	0.142	0.148	0.108	0.130
Geum River	0.012	0.021	0.035	0.023	0.022	0.019	0.017	0.015	0.023	0.021	0.021
Yeongsan River	0.028	0.046	0.101	0.207	0.214	0.103	0.128	0.136	0.140	0.129	0.123

□ Current Status of Waterworks Supply

As of December 2009, 47,336,000 people (93.5% 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 31,416 m^3/day.

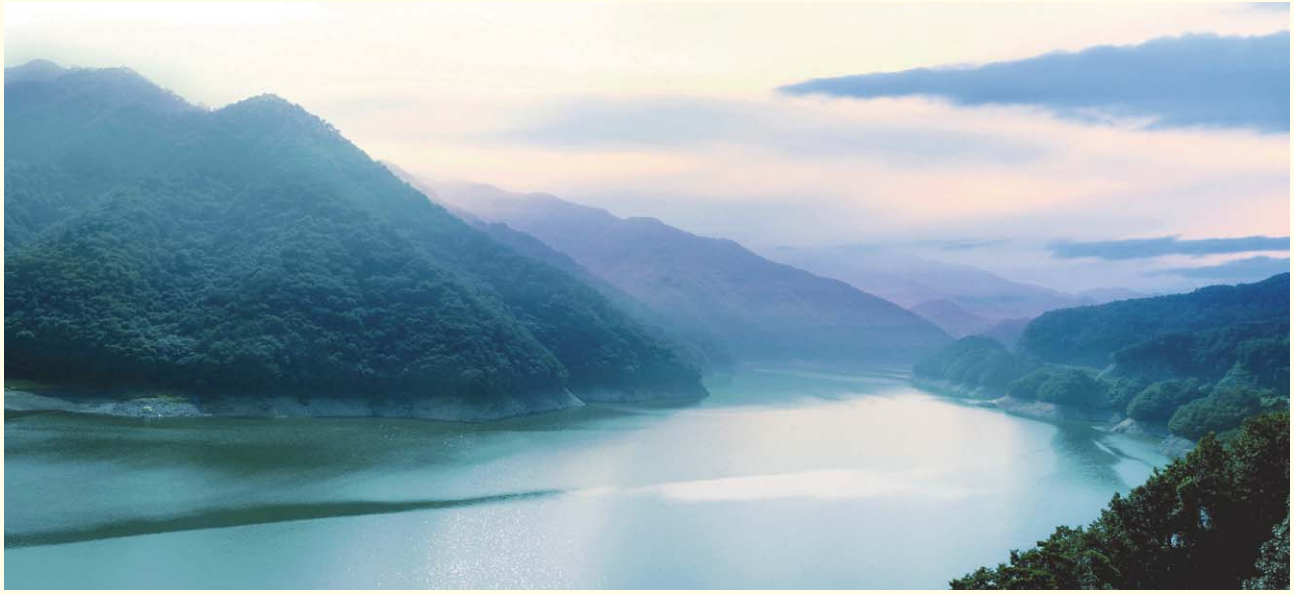
Status of Waterworks Supply by Year

Classification	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total population (1,000 persons)	48,289	48,518	48,824	49,053	49,268	49,624	50,034	50,394	50,644
Population Benefiting from Waterworks (1,000 persons)	42,402	43,021	43,633	44,187	44,671	45,270	46,057	46,733	47,336
Water Supply Rate(%)	87.8	88.7	89.4	90.1	90.7	91.3	92.1	92.7	93.5
Capacity of Facility (1,000㎥/day)	27,751	28,561	28,462	29,460	30,950	31,138	31,265	30,571	31,416
Water Supply Amount (ℓ/day · person)	374	362	358	365	363	346	340	337	332

□ Current Status of Sewerage Service and Sewer Pipelines Facilities

As of December 2009, the average of sewerage-to-population ratio (registered population divided by the population in the region with sewerage service provided through sewage service facilities (500m^3/day included) and wastewater treatment facilities) is 89.4%. The capacity of 438 sewage service facilities greater than 500m^3/day across the nation is 24,753,610m^3/day and the capacity of 2,332 sewage service facilities less than 500m^3/day is 171,428m^3/day.

The total length of sewer pipelines was 107,843km, as of the end of 2009, which is 75.4% of the total planned length of 142,967km of the master plan for sewerage maintenance. Of those, 49,386km (45.8%) consists of the combined sewer system pipelines, which simultaneously remove rain and sewage water, and 58,457km (54.2%) were separate sewer system pipelines that remove rain and sewage water separately.



Trend of Sewerage Service

Classification	'01	'02	'03	'04	'05	'06	'07	'08	'09
Total population (1,000 persons)	48,289	48,518	48,824	49,052	49,268	49,624	50,034	50,394	50,644
Population Serviced by Sewers (1,000 persons)	35,369	36,760	38,449	39,924	41,157	42,450	43,568	44,631	45,264
Facilities(No.)	184	207	242	268	294	344	357	403	438
Sewerage-to-Population Ratio (%)	73.2	75.8	78.8	81.4	83.5	85.5	87.1	88.6	89.4
Daily Capacity (1,000 tons/day)	19,230	20,233	20,954	21,617	22,568	23,273	23,946	24,568	24,925

* 1. Numbers of sewerage service facilities include facilities built completely by the end of 2009.
2. Numbers inside the parentheses are facilities with less than 500m^3/day.

Current Status of Sewer Pipelines Facilities

(Unit : ㎞)

Classification		'01	'02	'03	'04	'05	'06	'07	'08	'09
Expanded Plan		112,567	116,141	119,521	120,814	125,709	127,980	130,774	138,338	142,967
Facility Extension	Total	71,839	75,859	78,605	82,214	85,755	91,098	96,280	102,078	107,843
	Combined	44,534	45,680	46,167	47,255	48,257	48,966	49,636	49,460	49,386
	Separate	27,305	30,179	32,438	34,959	37,498	42,132	46,643	52,618	58,457
Supply Rate (%)		63.8	65.3	65.8	68.1	68.2	71.2	73.6	73.8	75.4

2-4. Soil

□ Current Status of National Average Level of Soil Contamination

The national average level of soil contamination remains similar every year. It is below the soil contamination precautionary level; however, TPH is increasing since 2006 and, on the other hand, Cd, Pb and CN are on the decreasing trend. In 2009, 6 of the 1,521 investigation sites of the soil monitoring network showed Ni exceeded the precautionary level, but none exceeded the regulatory level.

Current Status of National Average Level of Soil Contamination

(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 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
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 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 2009	0.059	2.994	0.338	0.042	3.903	0.048	73.197	8.624	193.519	0.000	0.000	0.005	0.000	0.007	20.489	0.000	0.000
A Level of concern (Ga zone)	1.5	50	6	4	100	4	300	40	400	10	-	2	4	-	500	8	4
Natural Content	0.040	0.48	0.089	0.085	3.06	0.09	54.27	17.28	-	-	-	-	-	-	-	-	-

* Source: 2009 Soil Monitoring Network and Soil Contamination Investigation

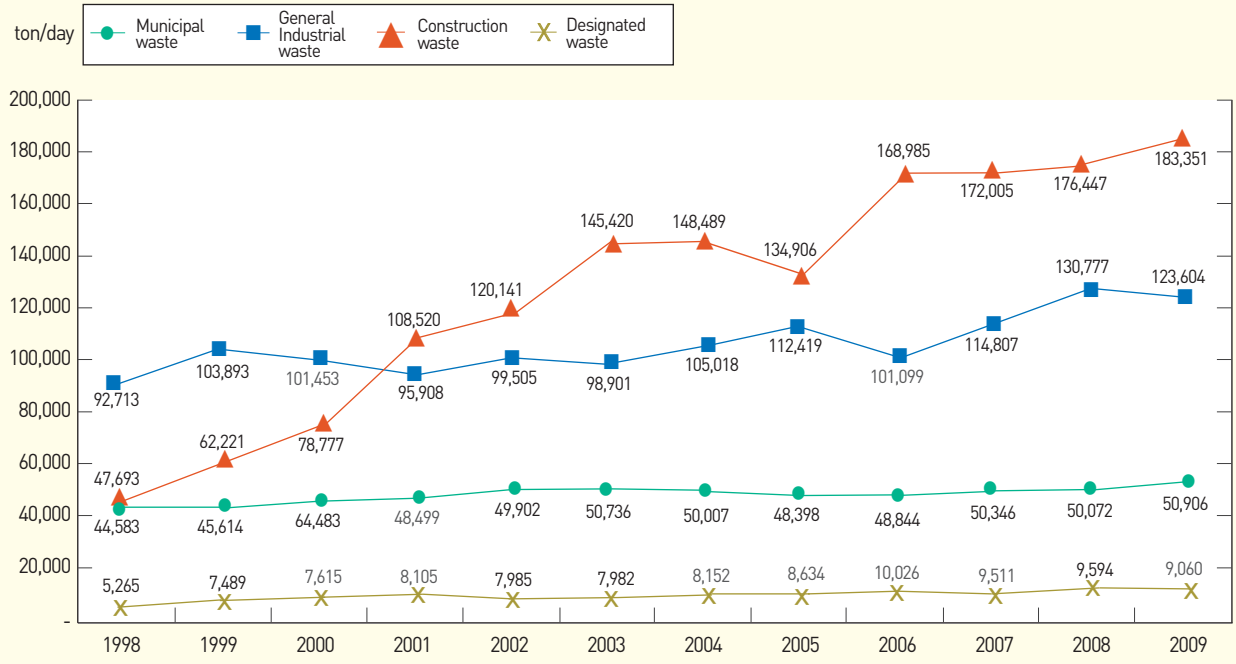
* 1. Range of pH in 2009 is from 4.0 to 9.6 (average 6.6).
2. Natural content is the result of analyzing forest soil in Korea via the "Soil Contamination Process Test Method" (National Institute of Environmental Research, Study of Assessment and Establishment of Soil Contamination Standards (1), 2004).

2-5. Waste

□ Current Status of Waste Generation

Total waste generation is gradually growing, and municipal waste generation per capita was reduced from 1.3kg/day in 1994 to 1.02kg/day in 2009. In particular, the amount of waste landfilled or incinerated has been reduced greatly due to continuous increase of recycling since the implementation of the Volume Based Waste Fee System in 1995. Industrial wastes include general industrial waste, construction waste and designated waste, and among these, the generation of construction waste is gradually growing every year.

Current Status of Municipal and Industrial Waste Generation



* Source: 2009 Status of national waste generation and treatment (Ministry of Environment)

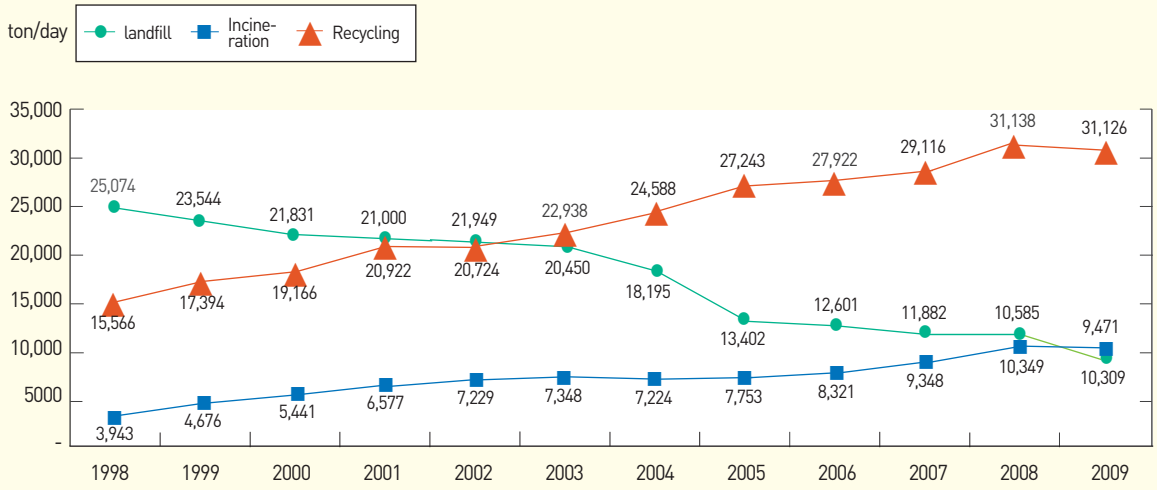
□ Current Status of Waste Treatment

There is an increase in recycling and a decrease in landfill, but incineration treatment is in the growing trend. In 1995, 72.3% of municipal waste was buried and only 23.7% was recycled, but with the implementation of Volume Based Waste Fee System and other recycling policies, in 2009, recycling rate skyrocketed to 61.1% and landfill rate plummeted to 18.6%, indicating a desirable change in the waste treatment structure.

Incineration rate of municipal waste in 2009(20.3%) did not increase by much compared to previous years(18.6% in 2007, 19.9% in 2008), but the projects that were postponed due to residents' opposition will be implemented and will lead to an increase in incineration rate.

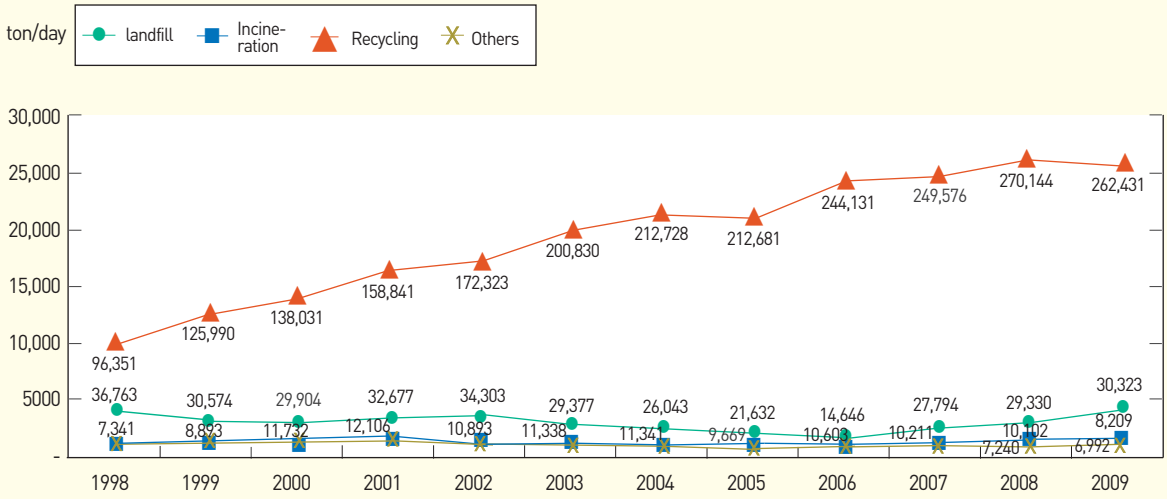
Landfill treatment of industrial waste was decreasing, as did municipal waste, but it started to increase again since 2007. Rate of recycling is continuously increasing with 85.2% in 2009.

Status of Municipal Waste Treatment



* Source : 2009 Status of national waste generation and treatment (Ministry of Environment)

Status of Industrial Waste Treatment



* Source : 2009 Status of national waste generation and treatment (Ministry of Environment)

2-6. Chemicals

□ Status of Yearly Distribution of Toxic Chemicals

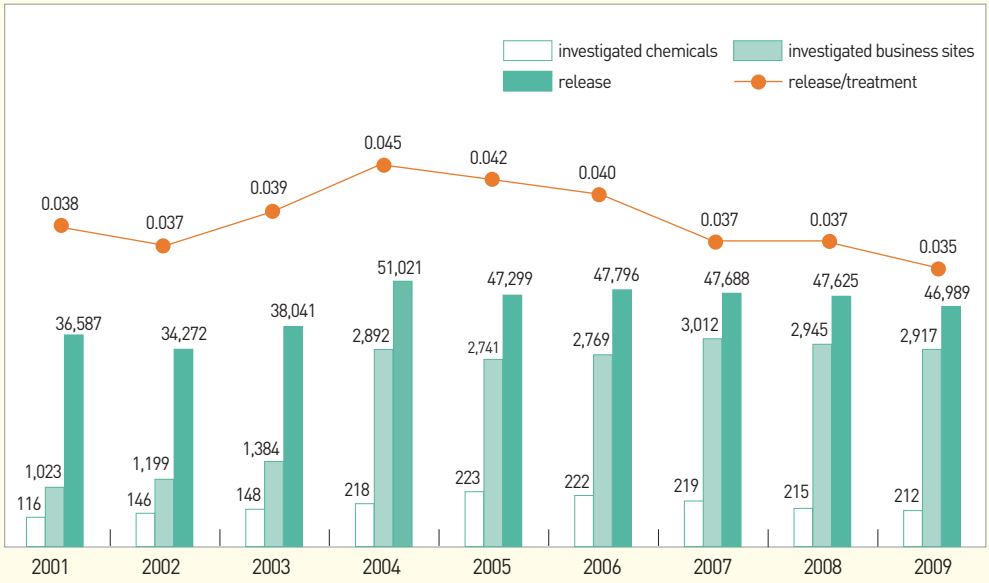
Distribution of toxic chemicals has been continuously increasing annually : 37,995,000 tons in 2010, up 84.8 % from 20,554,000tons in 2000.

Distribution of Toxic Chemicals by Year (Unit: 1,000tons)

Classification	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total (a+b)	19,985	20,554	21,159	24,446	25,833	31,058	31,788	32,294	35,064	34,250	34,447	37,995
Production (a)	16,409	16,566	17,616	20,806	21,791	26,688	26,103	27,017	29,019	29,095	29,207	30,353
Imports (b)	3,576	3,988	3,543	3,640	4,042	4,370	5,685	5,277	6,045	5,155	5,240	7,642

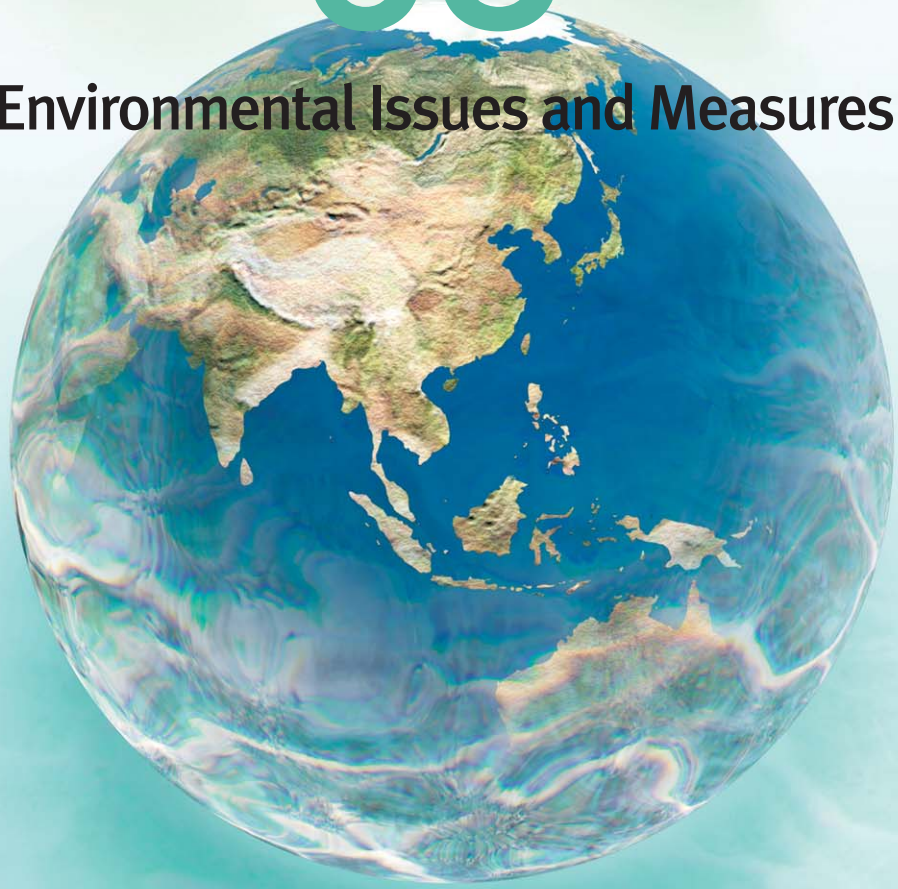
□ Status of Yearly Release of Industrial Chemicals

Release of chemicals increased from 36.587 million tons (from 1,023 business sites) in 2001 to 46.989 million tons (from 2,917 business sites) in 2009, but the release-to-treatment ratio in generally in the decreasing trend with 0.045% in 2004, 0.042% in 2005, 0.040% in 2006, 0.037% in 2007, 0.0368% in 2008 and 0.035% in 2009. This is the result of various efforts made by the Ministry of Environment and the industry, such as voluntary agreement on emission reduction, information exchange activities and application of emission reduction technology.



03

Environmental Issues and Measures



As a first step, Comprehensive Plan for Nature Conservation, which includes the strategy and detailed action plans for the next 10 years, will be established, and the foundation for the promotion of environmental health policy will be reinforced.

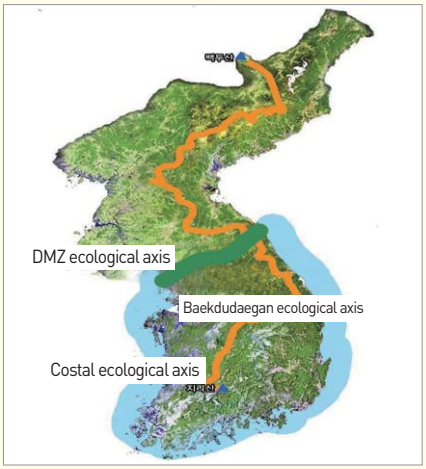
3-1. Nature Conservation and Biodiversity

□ Current status of nature conservation and biodiversity

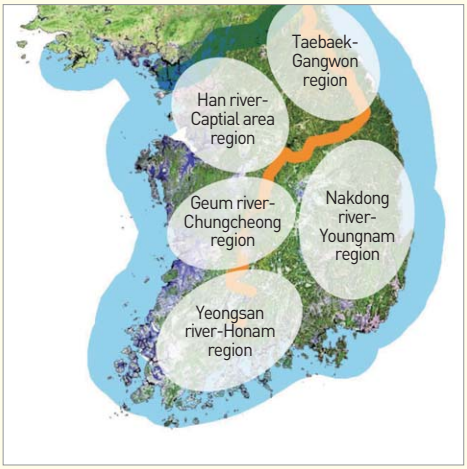
Restoration of damaged land and construction of ecological network in the Korean Peninsula

The government has established a nationwide ecological network in order to enhance damaged ecosystems caused by large-scale development projects and intensive growth strategies. Three Major Ecological Networks in the Korean Peninsula - Baekdudaegan mountain range, demilitarized zone (DMZ), and coastal and islands areas - have been established to restore damaged and disconnected habitat patches, which are exposed in a fragile condition. In particular, the conservation of ecosystems and development of eco-tourism are promoted through the establishment of management plan for ecosystem conservation and wise use in the DMZ, which represents great historical and ecological sites.

● Three Main Core Ecological Axes



● Five Main Regional Ecological Axes



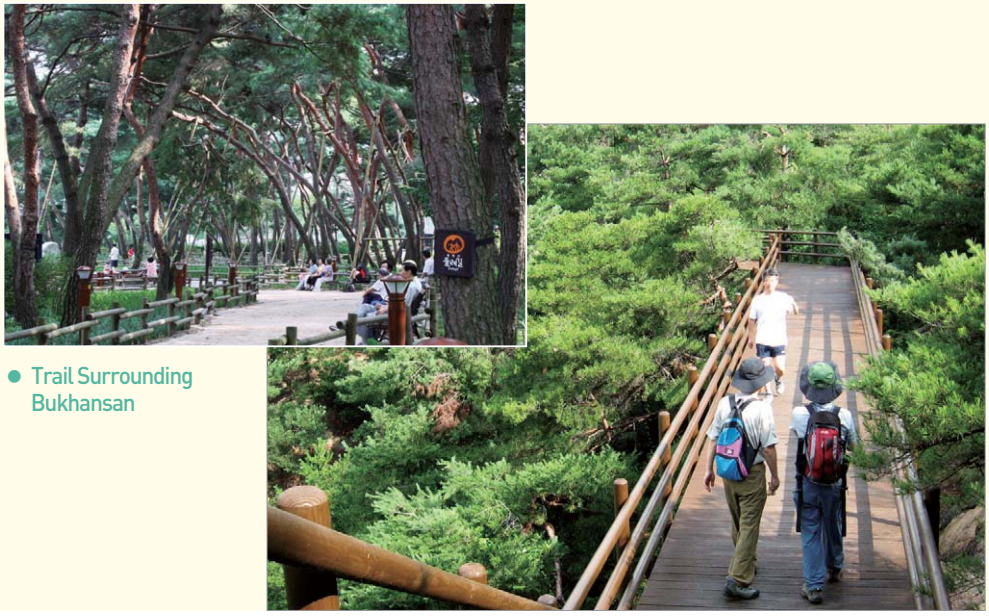
Response to the Nagoya Protocol and construction of a system for the conservation and management of biological resources

With adopting the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits in 2010, competition for acquisition and sustainable management of biological resources has intensified among countries. The government is working on legislation and regulation for biodiversity conservation, through the enactment of the Act on the Conservation and Wise Use of Biodiversity (pending in the

National Assembly as of June 2011) as well as establishing measures for supporting biological resource industry as cross-governmental issues, constructing biological resource management system, and measures for acquiring foreign biological resources. Furthermore, the government continuously plans to improve the management systems of biological resources through the expansion of research and development projects for indigenous species, protection and recovery program of endangered species (including Asiatic black bear and mountain goat), and the construction of biological resources institutions such as the National Institute of Biological Resources (2008) and Nakdong River Biological Resource Center. Recently, the government actively supports the development of expert training programs along with the education and publication of biological resources.

Baseline development for natural park management and eco-tourism

We are continuously working on the improvement of management systems for national parks and geoparks. The number of designated national parks will be increased to meet the criteria of protected area proportion, and representative national parks be selected to indicate natural ecosystems of each region. Scenic roads such as the Bukhan Mountain road (June 2010, total of 70km) and Taean Coast road (under construction since June 2011) will be further constructed to promote eco-tourism, contributing to the vitalization of regional economies. In addition, various programs such as the voucher system, eco-tourist experience program, and 'one-on-one company and eco-tourist site movement' have been developed.



● Trail Surrounding Bukhansan

Preparation for a successful hosting of the World Conservation Congress (WCC)

In November 2009, Jeju Island was selected as the venue for the 2012 World Conservation Congress by the IUCN Council. Since then, the Korean government has enacted a special law (May 2010), and is forming and operating practical support teams (September 2010) and organizers (January 2011) for the success of the meeting. The government has signed MOUs with various groups including the IUCN (March 2010) and Jeju Island (October 2010) to strengthen cooperation for the event. In addition, agenda reflecting unique aspects of Korea, such as the DMZ, are being developed, while the national-level participation and public awareness in the General Assembly are being encouraged through large-scale international festivals, such as Yeosu Expo (2010), and Visit Korea Year (2010-2012).

□ Expansion of nature conservation and biodiversity

The total area of the Korean Peninsula is approximately 223,343㎢. South Korea covers 100,210㎢ of this area, composed of approximately 3,200 islands of varying sizes. Given the typical "east-high-west-low" geographical features, the eastern part of the peninsula follows down a major ridge formed by the Baekdudaegan stretching from the north to the south followed by its mountain chains, while the southwest region consists of eroded plains. Korea is cold and dry during the winter, and humid with high temperatures in the summer. Annual average precipitation ranges between 500mm and 1,500mm.

Deciduous broadleaf forests, which are representative vegetation type in Korea, are

● Asiatic Black Bear
(1st degree endangered wild animal)

● Mountain Goat
(1st degree endangered wild animal)

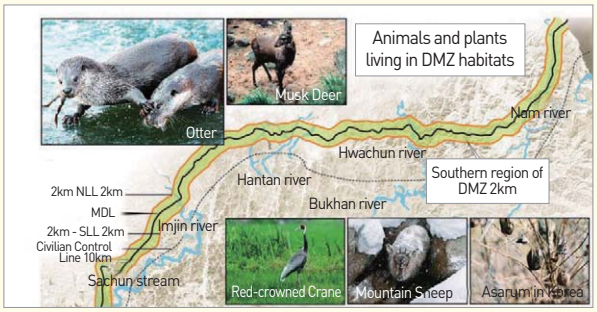
mainly distributed in the central region, while evergreen broadleaf forests have been laid in the southern as well as eastern and western coastline regions. Approximately 100,000 different species are present in Korea. Literature shows that there are 36,921 species, which is relatively smaller in number of species compared to neighboring and developed countries with similar bio-geographical conditions.

Korea' s policy for the natural environment aims to 'achieve the harmonic coexistence of human beings and nature within the biological community of the Korean Peninsula.' The government has decided to help foster healthy communities and ecosystems by revitalizing our damaged and disconnected lands, expanding protected areas, and designating the ecologically sound standard. Protecting endangered species is now important in decision-making process at the national and local levels, while strictly controlling the intentional and accidental introduction of alien invasive species. Researches on systematic management and acquisition of foreign biological resources have been conducted to implement management strategies and construct the organizations on this issue. Furthermore, it plans to improve the management policies of natural parks, including national parks. It hopes to enable citizens to enjoy and appreciate the natural resources and landscapes of high ecological standards, through the conservation and wise use of the natural park systems.

Efforts for Nature Conservation and Biodiversity Expansion in 2010

Rapid improvements in the quality of life with facility construction and economic growth in the past few decades have also been accompanied by public demands for better environments, which guarantee the harmonic coexistence of nature and man. For these reasons, the government has established the Nationwide Ecological Network System (November 2010), indicating the conservation and restoration of three major ecological networks in the Korean Peninsula (i.e. Baekdudaegan mountain ranges, demilitarized zone, coastal areas). In cooperation with these three major ecological networks, the

● Conceptual Drawing and Spatial Distribution of DMZ Region

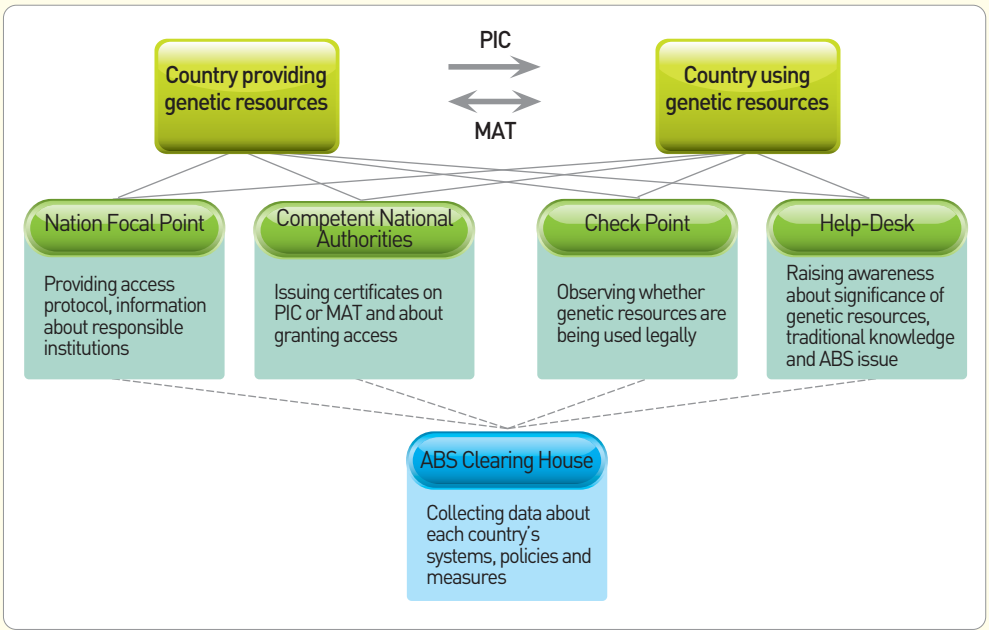


government is working on ecological network at the local levels that connects fragmented patches in mountains and rivers through various measures such as restoring damaged land and constructing wildlife corridors.

In particular, the demilitarized zone (DMZ) is of great interest in efforts for nature conservation and biodiversity conservation. Not only is it a remarkable site representing territorial division between North and South Korea, but it is also an ecologically sound area with well-preserved and biological hotspot that appears to be a sources of wild fauna and flora. Consequently, the government has established conservation plans for the vulnerable ecosystems in the DMZ (December 2010).

The conservation and sustainable use of biological resources are the foundation of all biological sciences and industries. With the advancement of biotechnology and its capacity to contribute to sustainable growth, biological resources are considered as future assets and repositories. As wild animals and plants are evaluated as important national assets, conservation efforts and sustainable managements of biological resources are increasing across the globe.

● Nagoya Protocol System



● Juwangsan National Park (Jusanji)

● Hallyeohaesang Marine National Park

● Seoraksan National Park (The Dinosaur Ridge)

To implement systematic conservation and management, the government has announced the master plan for conservation, management, and wise use of biological resources (August, 2010), and prepared the enactment of the Act on the Conservation and Wise Use of Biodiversity. The conservation of biological resources is being specialized by each regional district through the establishment of the individual organizations (i.e., Nakdong River Biological Resources Center).

The government supports the researches and conservation measures on the recovery and habitat enhancements of endangered species, such as Asiatic Black Bears (Jiri Mountain), Cobitis Choii (Geum River), and Fig Marigold. Evaluating potential harm of alien invasive species should be conducted with predicting invasive species range expansion and examining the effects of the invasive species on natural ecosystems with continuous monitoring across the country to strengthen the conservation and management of foreign biological resources.

With the adoption of the Nagoya Protocol in October, 2010, the biodiversity policy of each country has dramatically changed into effectively acquiring and systematically managing the biological resources. By forming a task force team related to the Protocol (November 2010) in cooperation with the relevant governmental agencies, the government is now developing suitable measures such as establishment of biological resource banks and cooperated works with the biologically rich countries. It has also been publicizing the significance of the Nagoya Protocol and its potential effects through help desks, and various lectures and seminars, targeting businesses and relevant public officials.

Under the national parks management policy, an ecosystem restoration project is being promoted for the areas that have been damaged by an excessive number of visitors and inappropriate usage following the abolition of entrance fees in January 1, 2007. As a part of the effort to advance national park ecosystem management, the boundaries of 20 national parks have been modified to effectively conserve healthy ecosystems and promote regional development, contributing to the vitalization of the local economy. Specifically, Jeombong mountain and Gyebang mountain (30㎢), which are ecologically important areas in terms of biodiversity, have been included as national parks. Moreover, Jeju Island was authorized as a Global Geopark (October 2010). The government is promoting the introduction of a well-organized system for designating national geoparks for the systematic management of geologically important sites.

In these days, increases in public demand for hiking, bird watching, and wildlife observations have led to increased government concerns in eco-tourism. With the support of enterprises, a voucher system for eco-tourism is being implemented for the low-income, elderly, handicapped, and multi-cultural families. Similarly, much effort is being put into the construction of the infrastructure for eco-tourism, as the government develops various programs, such as 50 selected eco-tourisms, and constructs several trail courses (i.e., trail surrounding Bukhan Mountain of 37.2km, 2010).

The World Conservation Congress, which is widely known as the Environment Olympics, will be held in Jeju Island in 2012. Governmental efforts for the success of the Congress have been strengthened by the cooperation with NGOs, academic institutions, and professional associations.

The government has promptly arranged legal frameworks and organizational foundations through the Special Act on Assistance to the World Conservation Congress (May 2010) along with the governmental supported task force team (September 2010) as well as the organization committee (January 2011). Moreover, the government has strengthened cooperation with the IUCN and Jeju Island on the Congress by signing a memorandum of understanding among them (March, October 2010).

● Jirisan National Park

● Bukhansan National Park

Plans for nature conservation and biodiversity expansion in 2011

In accordance with the Ecological Network Construction Measures (November 2010), the government has formed a 'Public-Private Cooperative Research Team' (April 2011) for the restoration of ecological networks at the regional level. This group will select 50 priority areas in urgent need of restoration within the major ecological network. The government plans to designate the DMZ as a national park and as a UNESCO Biosphere Reserve to preserve the ecosystem and develop an international tourist attraction. The designation of protected areas will be expanded through the continuous monitoring of ecologically important areas. Also, the government plans to build an organization for wetland management through the development of a second (2012~2016) nationwide master plan for wetland preservation and the establishment of the National Wetland Research Center on December, 2011.

As the significance of biological resources will be changed dramatically in accordance with the Nagoya Protocol, the government should be prepared for systematic acquisition and comprehensive management of biological resources. It requires prompt enactment of the Act on the Conservation and Wise Use of Biodiversity and the role of each government implementation on supporting biological resource industry. In addition, the government will suggest a management system for national biological resources and the arrangement of reliable measures for acquiring foreign biological resources. The efforts to increase public awareness on this issue will be driven by mass media, publications, and various seminars. Furthermore, it plans to observe 60,000 indigenous species (including the already found 37,000 species), and collect up to 15,000 specimen by 2020 through

● A ceremony for the signing of the Nagoya Protocol on Access to genetic resources & Benefit-Sharing (ABS) at U.N. headquarters in New Yokr on Sept. 2011

large-scale research and development on biological species and the acquisition of foreign biological resources. The foundations for research on biological resources will be more important by establishing resource centers of each regional district and recovery centers for endangered species. The government promotes the establishment of academic departments in universities specialized in biological resources, and develops a master plan for training workforces to identify and manage biological resources. System for releasing the endangered species into restoration sites will be improved, and release techniques will be continuously improved for the protection and recovery of endangered species.

The government will establish the second (2012~2021) master plan for natural parks and arrange the management system for national parks and provincial/county parks through the enactment of the Natural Parks Act in order to design a better management system for national parks. The government also develops one specialized program for each national park, accrediting the park as a representative brand of the region.

The government actively develops various programs of eco-tourism in sustainable ways. For example, development of 'one company and one eco-tour site matching movement' requires demands on sustainable eco-tourisms and the operation of the voucher system. Also, eco-tourist options will be diversified through the development of various programs such as well-being programs in forests. Efforts to strengthen communication with the general public include the production of web sites and different applications for eco-tourism.

In order to successfully host the World Conservation Congress, different opinions from experts will be collected and reviewed to develop suitable agenda that incorporate unique aspects of Korea such as the DMZ. Also, 'Jeju Declaration', which mainly focuses on the foundation of the 'Jeju Green Leaders Forum', will be proposed to form an evaluation system on conservation and wise use of natural resources after the Congress and finally construct a systematic tool of ensuring subsequent performances.

With international events, such as the Yeosu Expo (2012), and Visit Korea Year (2010~2012), public participation in the Congress will be increased in addition to the efforts to raise awareness on nature conservation and biodiversity through various mass media, publication, and others. Moreover, cooperative networks will be formed with relevant professionals and civic organizations to develop various programs and attract active participation. Meanwhile, the government will improve the venue for the Congress in an eco-friendly manner to meet the standards of the World Conservation Congress. It also develops eco-tourism programs and constructs sustainable infrastructure.

3-2. Climate Change

□ Major current issues in climate change

Establishment of reduction target by step/sector/business for achieving the national mid-term reduction target

Korea is among the top 10 countries ranked in terms of greenhouse gas emissions; efforts to reduce emissions are urgently needed in Korea, as emissions have increased by about 100% between 1990 and 2005. In November 2009, the Korean government publicly announced the National Greenhouse Gas Reduction Target (30% reduction below BAU level by 2020), making it necessary to establish an optimum reduction strategy specified by step/sector/business to achieve this target.

Promotion of the Greenhouse Gas-Energy Target Management System

According to the Framework Act on Low Carbon, Green Growth, a company emitting more than 125,000 tons of greenhouse gas per year or a business site emitting more than 25,000 tons per year must be specially managed or overseen. Accordingly, 471 businesses have been designated as massive emission spots subject to special management as of June 2011, and the report and verification on greenhouse gas emission of these businesses, allocation of emission amount in 2012, etc. have been carried forward for the first time.

Introduction of the Greenhouse Gas Emissions Trading Scheme

Target Management System is burdensome for both the government and businesses since it is a typical command-and-control system where the government initially sets a goal and any violation aganist it gets punished. The Emissions Trading Scheme is an improvement, as it uses market mechanisms to cost-effectively reduce the amount of emissions. Currently, a bill which aims to introduce the Greenhouse Gas Emissions Trading Scheme has been submitted to the National Assembly. If approved, it will be effective from 2015.

Preparation of Detailed Plans for Climate Change Adaptation by the Central Administrative Organization and Local Governments

In accordance with the Framework Act on Low Carbon, Green Growth, the National Climate Change Adaptation Plan was established in 2010 through the cooperation of 13 government departments/offices/agencies. In 2011, more detailed plans are to be established for the implementation of such action plans for local governments and communities.

□ Coping with Climate Change

Overview: Climate Change Policy Trends

The global mean CO_2 concentration level has increased by about 2ppm every year. In 2010, the average CO_2 concentration level in the Korean Peninsula was over 394ppm. Given the current trend, the annual mean CO_2 concentration level in 2013 is expected to reach over 400ppm for the first time in history. Consequently, the average temperatures of six major cities in the Korean Peninsula have increased by 1.7℃ over the last 100 years. In 2010, there were 122 days of intense summer heat - more than double of the average annual number of such heated days - in addition to stronger and more frequent occurrences of extreme weather (e.g., localized torrential downpours, droughts, heavy snowfalls). Meanwhile, approximately 620 million tons of greenhouse gases were emitted in Korea during 2007, placing it 9th in world rankings. By sector, conversion (power generation) was the largest source of greenhouse gas emissions with 36.8% of total emissions. Industrial activities (32.4%) were next in line, followed by transportation (19.4%), household activities and commerce (10.6%), and public use/other (0.9%). In November 2009, the government proposed a national mid-term reduction target, setting out a goal to reduce emissions by 30% based on projected Business As Usual (BAU) level by 2020.

The foundation for Korean climate change policies lies in the Framework Act on Low Carbon, Green Growth. In particular, the Ministry of Environment is largely in charge of greenhouse gas reduction policies, functioning as a general administrative organization by establishing standards and guidelines and evaluating performances. The Ministry for Food, Agriculture, Forestry and Fisheries, Ministry of Knowledge Economy, Ministry of Environment, and Ministry of Land, Transport, and Maritime Affairs are responsible for establishing targets and supervising implementations of the relevant plans in the sectors of agriculture and livestock, industries and electricity generation, waste, and buildings and transportation, respectively.

This sector-based system can be applied identically to the greenhouse gases inventory. In order to enable the proper functioning of the system, the "Greenhouse Gas Inventory & Research Center of Korea" has been established, as the National Committee on Greenhouse Gas Policy (Chairman: Vice Minister of Ministry of Environment), which includes participants such as the Ministry of Knowledge Economy and Ministry of Land, Transport, and Maritime Affairs, has been formed and put to action.

The Ministry of Environment has also been responsible for overall climate change policies, taking up on general administrative tasks. Meanwhile, 13 institutions including the Ministry of Land, Transport, and Maritime Affairs and the Ministry for Food,

Agriculture, Forestry and Fisheries have been establishing and promoting adaptation measures for each sector. In order to administrate and supervise the policies of such various departments, the "Korean Adaptation Center for Climate Change" has been established within the Korea Environment Institute (KEI), focusing on researches and activities relating to adaptation policies and the establishment of fundamental adaptation measures.

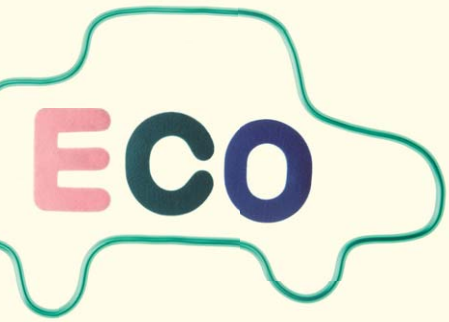
Responses to Climate Change in 2010

For major sources of greenhouse gas emission, the Greenhouse Gas-Energy Target Management System has been implemented through the Framework Act on Low Carbon, Green Growth, resulting in the designation of 471 companies as management subjects based on emission standards (companies: over 125,000 tons per year, unitary businesses: over 25,000 tons per year). Analysis of these businesses revealed that they account for more than 60% of national greenhouse gas emissions.

Apart from the target management system for major businesses, a similar system for central administrative organizations, local governments, and public institutions following the law on public institution operations is also being developed as a system showing that the public sector takes initiative in target management. A reduction target for each institution is established and examined on an annual basis; performance evaluations and, if necessary, further instructions from the Prime Minister's Office are also available.

In order to reduce transportation emissions (19.4% of total national emission), a standard for greenhouse gas-fuel efficiency will be applied for vehicles in accordance with the Framework Act on Low Carbon, Green Growth and the enforcement ordinance. The legislation of the related enactment drafts from the Public Notice of the Minister of Environment has been notified in 2010, and is in its final process as of June 2011.

At the moment, a program for basic carbon neutral environmental facilities as a means of reducing greenhouse gas emissions in the public sector - particularly those under the jurisdiction of the Ministry of Environment - is underway. Basic environmental facilities refer to sewage disposal plants, water treatment plants, and landfill sites. They turned out to be optimal for renewable energy* plant installations given the vast land areas, energy consumption within the area, and the availability of an expert environmental management workforce. Following this experience, renewable energy plants including solar and wind energy will be annually installed at these sites. This project is meant to produce a total of 565GWh of renewable energy per year and reduce 360,000 tons of greenhouse gas per year by 2020. Plans in 2010 aimed at increasing the carbon neutrality



* Reclaimed energy from waste is also construed as renewable energy based on Renewable Energy Act.

rate of basic environmental facilities by as much as 50% by 2021 through the renewable energy project, which has been implemented in Gwacheon, Jeju, and Gangneung.

Beyond the aforementioned sources, average citizens are the other main emission sources, as they emit large amounts of greenhouse gases through daily activities at home, workplace, etc. Hence a substantial part of emission reductions can be achieved through citizens' efforts to minimize greenhouse gas emissions in their daily lives. In acknowledgement of the importance of public participation, the "Me First Green Life" movement has been actively promoted since 2009 as a public campaign encouraging public efforts towards emission reductions.

The Korean Peninsula has already incurred substantial losses from climate change, which are expected to accelerate. In response, Article 48 of the Framework Act on Low Carbon, Green Growth and Article 38 of the enforcement ordinance articulate that the Minister of Environment will establish and implement climate change adaptation measures every 5 years in consultation with the heads of relevant central administrative organizations.

The Articles also describe that the heads of relevant central administrative organizations, governors and mayors are to establish and implement detailed plans for climate change adaptation on affairs under their jurisdiction. Accordingly, "National Climate Change Adaptation Measures (2011~2015)" was established in 2010.

Meanwhile, ten professional consulting teams for each sector will be formed within

the Korean Adaptation Center for Climate Change in order to promote adaptation measures extending over all of the sectors in Korea. A research team will be formed for each sector (a total of seven sectors, including health and eco-system) to analyze respectively weak points in relation to climate change. In addition to these organizational preparations, legal and systematic arrangements (e.g. the establishment of adaptation evaluation guidelines on each sector) are being made.

2011 Action Plans for Climate Change Adaptation Policies

In accordance with policies of the Greenhouse Gas-Energy Target Management System, 471 companies are required to submit official statements regarding greenhouse gas emissions and energy consumption between 2007 and 2010 by June. In September 2011, greenhouse gases emission limits will be assigned to each of these companies, taking effect from 2012. Consequently, these companies will soon have to make actual investments in order to comply by these standards.

Meanwhile, an Emissions Trading System is planned to be introduced to major emitters as a regulatory measure incorporating market mechanisms. The government bill for the system has been confirmed and submitted to the National Assembly in April 2011.

According to the bill, most companies selected based on standards of the Greenhouse Gas-Energy Target Management System will be subject to regulation under the Emissions Trading System, but exempt from the Target Management System. Prior to an official introduction of the system, the Ministry of Environment has been implementing a pilot project for the Emissions Trading System since 2009 involving public institutions and the voluntary participation of business locations. The range of participants is expected to expand from 2012 as every government department participates in the program.

In 2011, the project is being implemented for the establishment of renewable energy plants in five local governments and eight facilities as part of the program for carbon neutral basic environmental facilities. A consultation team for carbon neutrality will be formed in 2011 to systematically promote the project beginning in 2012.

As a follow-up business to the National Climate Change Adaptation Measures of 2010, detailed implementation plans are being constructed for each central administrative organization, governor and mayor. Meanwhile, we plan to assess the economic effects of climate change through a Korea Environment Institute (KEI) research project and use the findings as a foundation to support future promotions of adaptation measures.

3-3. Air Quality Management

□ Major current issues in air quality management

Implementation of regional level measures such as the air quality improvement plan in the Seoul metropolitan area

Compared to large cities in developed countries, air pollution in the Seoul metropolitan area is 1.8~3.5 times higher in PM-10 concentration and 1.7 times greater in nitrogen dioxide concentration. Beyond the Seoul metropolitan area, six large metropolitan cities such as the Gwangyang Bay area, and the Ulsan metropolitan city, where a number of factory stacks cause air pollution, have urgent ozone problems caused by fine particles and VOCs. In response, 'the Special Act on Metropolitan Air Quality Improvement.' was enacted in December 2003 and put into effect in January 2005 to improve air quality in the Seoul metropolitan area to meet standards of developed countries. Measures for reducing gas emission by source type (e.g., smoking stacks and old diesel cars) are under way as well. Response measures implemented in the regions other than the Seoul metropolitan area include the designation of particular regions for air conservation and/or regulation and the execution of emission reduction projects based on emission sources.

Strengthening management of air pollution and long-range transboundary transport

The Ministry of Environment strives to reduce harmful air constituents such as VOCs through the establishment of facility management standards for discharge sources and the early adoption of the 'vapor recovery system for gas stations'.

In response to the yellow dust phenomenon driven by desertification in China and Mongolia, the Ministry of Environment has collaborated with other relevant government institutions to start the Comprehensive Prevention Measure for Yellow Dust Damage (2008-2012) established in 2008. It is currently taking several steps such as predicting the dust and sandstorms, surveying risk, preventing damage, and working through intergovernmental cooperation in addressing the yellow dust issue through this measure. Furthermore, problems of long-range transboundary transport caused by rapid economic development in South East Asian regions have been acknowledged with support for research through multilateral cooperation among Korea, China, and Japan.

□ Measures for air quality management

The fundamental objective of Korea's clean air conservation policies is to maintain clean air in order to protect public health and provide citizens with a safe environment.

Consequently, air quality standards with target value have been set up along with the air conservation policies that consider and reflect features of specific discharge sources. Regulatory measures are now being enforced to prevent violations of such environmental standards.

System for air environment prevention policy

A. Specification of air pollutants

According to Article 2 of the 'Clean Air Conservation Act', gaseous substances or particle substances that can cause air pollution are designated as air pollutants and are under management. Currently, 61 kinds of air pollutants including carbon monoxide, ammonia, nitrogen oxide, and sulfur oxide are on the list. Among those, 35 pollutants including dioxin and benzene are designated as specified air pollutants that are likely to cause more damage to people, animals, and plants than other types of air pollutants.

B. Discharge facility management

Firstly, a licensing system is currently being operated so that the installation of air pollutant discharge facilities requires permission from or a report to the relevant government authority. Secondly, a limit on the maximum amount of emissions permitted for discharge facilities has been established; such restrictions are gradually strengthened. Currently, emission standards are based on 26 pollutants including dust and sulfur oxide; such standards will be strengthened for dust, nitrogen oxide, and sulfur oxide beginning in January 1, 2010. Facility management is further strengthened, as more stringent emission standards are applied to severely polluted areas. Moreover, managers have been providing consistent directions and inspections regarding discharging facilities to assist businesses operate discharge and prevention facilities in accordance with such emission standards.

C. Fuel policy and regulation

The locations with a substantial concern of air quality have been designated by the Minister of Environment for strict restrictions prohibiting the use of solid fuels such as coal, coke, firewood and charcoal, and other specified wastes. Seoul, 6 metropolitan cities, and 13 towns in the Gyeonggi Province have been designated as restricted regions for solid fuel usage.

In order to reduce the concentration of sulfurous acid in the Seoul metropolitan area and other major cities, the limits placed on the sulfur content in fuel oil were adjusted to reflect stricter standards (heavy oil: 4.0→1.6%, light oil: 1.0→0.4%) in 1981 along with those of sulfur content in low sulfur oil in 1996 (heavy oil: 1.0→from 1997, 0.5%; from 2010, 0.3%, light oil: 0.2→0.1%).

D. Administration of vehicle emission management

The Ministry is trying to systemically manage the air pollutants from vehicle emissions by promoting the extended use of eco-friendly cars (e.g. hybrid vehicles, electric vehicles, and natural gas vehicles), setting and gradually enforcing emission standards and allowances, and installing a Diesel Particulate Filter (DPF) in old diesel oil vehicles. Specifically, the project for supplying natural gas buses, which began in 2000 to reduce gas emissions of downtown buses, has greatly contributed not only to the improvement of air quality in Korea, but also to the development of related industries through overseas exports (size of overseas export in 2009: $170 million).

E. Zone designation and management system (zoning)

Zones that exceed or are likely to exceed environmental standards will be designated as special care zones and restriction zones with stricter emission standards and, if necessary, restricted land use and discharge facility installations.

Performance of major projects in 2010

In October 2010, the Ministry presented a modified version of the 'Comprehensive Plan for Metropolitan Air Quality Management' (2005), reflecting the current status of air pollutant emissions and policy changes. One of major aspects of the modified plan is the shift in the direction from the existing reduction policy that dealt mainly with fine particles to one that focuses more on the reduction of nitrogen oxides. In line with the current prominence of climate change as an environmental issue, the Ministry has included co-benefit projects working towards the reduction of both pollutants and greenhouse gases with the modified plan.

As a part of the total air management system in the Seoul metropolitan area, the operation of aggregate management will be expanded from existing type 1 business to both type 1 and type 2 businesses. Emission credits were allocated to each business in the two-level aggregate management system. Moreover, plans to improve regulations regarding discharge facility installations, particularly in terms of location, have been arranged as well. In addition, the Ministry has also promoted the creation of green buffer

● Automatic measuring instrument on emission gas from a chimney


Chimney


Measuring instrument attached to a chimney


Chimney TMS room (outside view)


Chimney TMS room (inside view)

zones for areas prone to odor, the elimination of dust scattering on the roads, and a low-NOx burner installation support plan for small and medium sized businesses (1,801 burners installed in 2010).

With regard to the vehicles sector, efforts to enhance air quality were made by replenishing an accumulated total of 3,276 natural gas vehicles and 8,116 hybrid vehicles, constructing the framework to enter the world's top four countries producing Green Cars. Plans to reduce gas emissions from old diesel vehicles include Diesel Particulate Filter (DPF) installations on 87,660 diesel vehicles in the Seoul metropolitan area and five metropolitan cities, support for early car scrapping, and the renovation of engines (diesel → LPG).

Moreover, the Ministry has installed idling restriction devices on 727 vehicles, including city buses, loaded trucks, and taxies in the Seoul metropolitan area, to save energy and to prevent the emission of air pollutant resulting from long-term idling of engines. For enhanced public awareness on eco-friendly driving and public transportation, the Ministry has put forth diversified efforts, including the opening up of an internet portal site for eco-friendly driving and holding a 'No vehicle day' during the G-20 Summit period.

To tighten up the management of harmful air pollutants, a pilot project has been promoted to help prepare facility management standards for HAPs discharging facilities. In addition, financial support packages have been offered to 235 work places to attract early adoptions of the 'vapor recovery system for gas stations'. With regard to yellow dust, real-time intensive observatories scanning the yellow dust and harmful substances have been expanded to three metropolitan areas. Also, research has been conducted to investigate physical/chemical changes of dusts during transportation.

Major plans for 2011

With regard to discharge facility management, we will focus on potential risks of air pollutant and renovate related legislations in order to introduce management standards

for particular air pollutants, while preparing HAPs facility management standards for the steel industry. In the long term, the Ministry plans to introduce facility management standards for businesses (e.g., the petroleum refining industry, steel industry, basic oil and inorganic chemistry industry), which account for more than 70% of the total emission.

The Ministry will also establish a framework for amending air management policies for a greater focus on risk, dividing air pollutant classification by standards of toxicity, exposure, and degree of risk. In order to properly implement the new policies, a standard method of classifying air pollutants will be prepared this year through expert group meetings, which will reform air environment prevention policies and make related notifications.

While constantly promoting the project for natural gas buses, the Ministry will also focus on a pilot run with 30 natural gas hybrid buses and enhancing the safety of natural gas containers to reduce vehicle gas emissions. In addition, the installations of Diesel Particulate Filter (DPF) on old diesel vehicle, early scrapping of cars, and engine renovations are to be implemented.

Moreover, the 'Auto-Oil Program', which comprehensively investigates the correlation between vehicles and fuel-making technology, will be promoted in order to reduce air pollutants and greenhouse gas emissions from vehicles. The Ministry of Environment, the fuel industry, and automobile industry will sign an MOU, and work on the related research tasks in each field.

With regard to transboundary pollutants transport, such as yellow dust, regional cooperation among Korea, China, and Japan will be formed, and joint countermeasures will be made through the Tripartite Environment Ministers' Meetings.

3-4. Water Environment Management

□ Maior current issues in the area of water environment management

The Four Major Rivers Restoration water quality improvement project

The Four Major Rivers Restoration Project is expected to contribute greatly to water quality improvement and the restoration of freshwater ecosystems by resolving the fundamental issue of water shortage, which becomes increasingly problematic with climate change and urbanization. Pollution loads, such as nitrogen and phosphorus, discharged from tributary streams may hinder water quality improvement as 16 reservoirs constructed in the four major rivers form areas of water retention. Thus, as described in the master plan, it is necessary to implement a new water quality improvement project that reduces large amounts of water quality pollution loads, and effectively maintains a new environment and ecosystem based on reservoirs-likely water environment.

Strengthening nonpoint pollution source management

It is projected that an amount of nonpoint source pollution will surpass that of point pollution with great achievements in continued environmental investment in point pollutant source management. In 2020, the percentage of nonpoint source pollution within the total amount of water pollution will be 68%~75%. Thus, core measures on water quality management measures should be focused to mitigate nonpoint source pollution.

Developing enhanced water environment management system

Previous water environment management system needs to be modified response to changes in economic and social environment (e.g., the shift to a super-aged society, growth in the rate of urbanization, and rises in income levels). As demands for improvements in the living environment and environmental qualities rise, there will be more demand not just for a cleaner water environment, but also for the active use of it. Thus, it is time to develop and establish an eco-friendly water culture in which 'water and human beings' coexist in harmony.

□ Water environment management policy

In setting the basic policy direction for water environment management systems, the Ministry of Environment will reestablish its water quality target by focusing on the 16 reservoirs in terms of changes following the Four Major Rivers Restoration Project, improve the index for water quality from Biological Oxygen Demand (BOD) to Chemical

Oxygen Demand (COD) and Total Organic Carbon (TOC) used by many developed countries, and rearrange or supplement the original locations for measurement networks and ubiquitous networks for water quality monitoring to places more sensitive to changes in water quality on the 16 reservoirs. Moreover, a water quality forecasting system will be introduced, enabling projections of changes in water quality through the utilization of real time information on water flow and weather and consequently the implementation of preventive policy measures that inform relevant institutions and the public.

In addition to the efforts for water quality improvement, we will conserve aquatic biodiversity to have animals and plants thrive in their natural habitats. Thus, we will continue to expand the projects for restoring ecological waterways and covered streams in urban areas to recover the ecological well-being of polluted and damaged streams.

Furthermore, the number of water pollutants strictly managed will gradually increase from 25 to 35, which meets the standards of many developed countries, to strengthen protection from toxic substances. Water pollutants including Anthracene and 2,4-Dichlorophenol will be specifically designated and monitored more frequently as water pollution indicator because these can directly and/or indirectly affect human health and ecosystem. We will also evaluate risk in relation to toxicity within the public waters of new chemical products, which expands with the addition of 400 new types each year. The system for the management of eco-toxicity will be strengthened to keep such risks below a certain level.

Efforts for water environment management in 2010

As a part of the Four Major Rivers Restoration Project, a total of 3.9 trillion Korean Won will be invested in the environmental sector to restore the well-being of the freshwater ecosystem and improve the water quality of the four major rivers. The investment includes construction of 1,281 of wastewater treatment processes and plants: 233 of T-P treatment facilities, 676 sewage disposal plants, 39 wastewater treatment facilities, and 21 livestock excretions management plants. Substitutive habitation will be constructed as well. At the moment, 33 natural fish ways with gentle water flows are being created to enable freshwater organisms affected by the constructions to live in inflowing branches and watersides nearby.

Moreover, we have established the Water Pollution Response Center to prevent water pollution accidents such as water turbidity caused by constructions. In 2010, the number of personnel at the center increased to 143, and the 24 hour-surveillance system is being operated through the utilization of 57 automatic measurement networks for water quality, 8 moveable measurement instruments, and 588 remote supervisory system pollutants.

The indiscriminate collecting of aggregate materials and artificial channel

straightening and creation of concrete banks for the protection of natural banks, have led to the standardized and artificial appearances of our rivers. In recognition of such problems, the Comprehensive Plan for the Restoration of Ecological Waterways (August 2010) has been arranged to restore the ecological health of such artificial-looking waterways. So far, 104 regional streams in need of urgent attention have first been ecologically restored for the recovery of freshwater organisms in small rivers and streamlets.

Density/concentration regulations that fail to account for the permitted pollution load for rivers but rather focus on effluent quality standards, cannot control increases in pollution loads that accompany the expansion of waste water under effluent quality standards, posing limits to efforts for water quality improvements. In recognition of such problems, the Total Maximum Daily Load (TMDL) was adopted in the 'Comprehensive Water Quality Management Plan for the three Major Rivers, including the Nakdong River, Geum River, and Yeongsan River,' and supported by the special act on the four major rivers. This regulation, TMDL was first introduced as a part of the 'Special Comprehensive Measures for Water Quality Management of Han River Water Source including Pal-dang Lake', which was established in 1998. Unlike the water systems of the Nakdong River, Geum River, and Yeongsan and Seomjin Rivers, the water system of the Han River was relatively independently managed by local government standards and regulations. In 2009, opinions regarding obligations of the maximum load system have been collected during briefing sessions targeted at representatives of affected residents. Following this process, the Revised Act on the Han River System on the introduction of an obligatory maximum load management system has been proclaimed in May 2010, and will be enforced from June 2013.

The management of industrial waste water needs to shift away from the traditional organic management field to individual toxic substances management, which can also

account for small amounts of harmful substances. It needs to be further developed, particularly through scientific advancements such as the inclusion of real time surveillance of waste water emissions.

Accordingly, the Enforcement Decree of the Water Quality and Ecosystem Conservation Act has been enacted in 2010 to strengthen the foundations for industrial water management policies. Under the regulations, acrylamide was added to the list of water pollutants under supervision, raising the number of such specified water pollutants from 24 to 25; we plan to increase the number to 35 by 2015.

The system for eco-toxicity emission management will be implemented in 2011. It will assist the evaluation of the toxicity of numerous unknown harmful substances included in emitted industrial waste water in terms of the impact on organisms and the management of emission sources according to the level of impact. Prior to the official introduction of the system, briefing sessions and forums for discussion (April 2010) were held in each regional district (capital area, central zone, Honam region, and Youngnam region) in addition to the various brochures and business manuals (June 2010) and seminars (October 2010).

Plans for water environment management in 2011

In order to achieve 86% of the ratio of high-quality water of the four major rivers (less than BOD 3mg/l, 2nd class rating) by 2012, 79.4% of the projects for the improvement of water quality and aquatic ecosystems, which include the establishment and improvement of basic environmental facilities, and the restoration of ecological waterways are to be completed by 2011. In particular, 86% of the project (191 facilities) for phosphorus treatment facilities of sewage/waste water treatment plants for the prevention of algal bloom will be completely constructed by September 2011, which is when the reservoirs

are filled with water; by the end of 2011, 92% of the project (124 facilities) will be complete. Increases in water inflow due to the establishment of reservoirs along with the implementation of water quality improvement projects have brought about many changes in the water environment - making amendments to the Master Plan for Water Environment Management of 2006 necessary. Based on midterm evaluations and operation results so far, amendments will reflect altered water environment conditions in adjusting and newly establishing inflow regions and water quality targets.

The Total Maximum Daily Load (TMDL), which began based on BOD, will also be implemented for phosphorus, which causes the generation of algal bloom. With regard to 102 work places that emit large amounts of phosphorus, a pollution load rate will be allocated to each work place, and the real time load rate will be managed through a tele-monitoring system (TMS). However, such measures will not be applied until 2013 for the Han River system. Moreover, work places subject to the use of a TMS for real time surveillance will be expanded from 1st and 2nd type work places to 3rd type as well. Basic environmental facilities will also be expanded from sewage and waste water treatment plants to livestock excretion management plants. Furthermore, articles for measurement will also include specific water pollutants including heavy metals and carcinogenic substances in addition to the original list of articles.

The water quality prediction system will predict the chlorophyll concentration (Chl-a) and water temperature between every two days and one week by utilizing three-dimensional water quality prediction modeling methods with information on real time inflow, climate, TMS data of basic environmental facilities and large work places, water pollution measurements, and national geography. If predictions suggest future exacerbations of water quality, the predictive examination period of streams or lakes and swamps will be shortened, and pollutant management in sewage and waste water management plants and large work places will become harsher. Moreover, guidance and control will be strengthened through local governments and environment monitors, and when necessary, such issues with water quality will be addressed through cooperation with departments most directly related to water inflow and quality.

We plan to open a contest for successful cases of freshwater ecosystem restoration projects, including the projects for the restoration of ecological waterways, restoration of covered streams in urban areas, and the saving of gullies of our village project. Such contests will present visible results and ease the concerns on damages to the ecosystem. Based on the results, various programs will be developed. Development focusing on areas around streams near reservoirs and ecological resources such as those of Olle Roads and Jiri Roads will be further implemented in an effort to utilize the expanded water-friendly spaces in an eco-friendly manner.

3-5. Waste Resources Management

□ Major current issues in the area of waste resources management

Spread of eco-friendly food culture and implementation of the volume based food waste fee system

Food thrown away due to wasteful food culture weighs up to 14,000 tons per day (in 2009), leading to the economic loss of 20 trillion won per year. The process of production, distribution, and cooking produces a lot of greenhouse gases and consumes a large amount of energy, and 8.85 million tons of greenhouse gases are emitted every year from food waste. Therefore, we have prioritized the reduction of food waste as a major task for low-carbon green life. The Comprehensive Plan for Food Waste Reduction was announced in February 2010 under the cooperation of relevant departments, and a pilot project was implemented and spread to local governments for implementing measures tailored for each source of emission. Through these efforts, we hope to spread the volume based food waste fee system across the entire country to settle a waste-less food culture.

Promotion of waste-to-energy measures, and upgrading Sudokwon landfill site as international tourist attraction of environment, ecosystem, and leisure

The rate of 'waste and biomass-to-energy' was 2.2% in 2010, which is a 78% accomplishment of the objective (2.81%). By 2013, 47% of combustible waste (1,820,000 tons/year), 26% of organic waste (2,040,000 tons/year) and landfill gas (92,190,000㎥/year)

● General View of Sudokwon landfill site

● Bird Eye View of Dream Park

● Residential Sports Park

will be converted to energy, and 77% of uncollected residual heat will be collected (410,000 Gcal/year). We plan to achieve the objective of renewable energy provision of 84% (by 2013) through the expansion of waste-to-energy facilities, including 48 facilities for converting combustible waste resources to refuse-derived fuel (RDF) and waste-to-biogas, and 42 facilities for the collection and usage of waste heat of incinerators and landfill gas.

In order to make Sudokwon landfill site as environmental tourist attraction, in the short term, we are focusing on promoting Dream Park in Sudokwon landfill site linked to opening of the Gyeongin Ara Waterway (by 2011). In the medium and long term, the environment and culture as tourist resources will be promoted by developing a brand identity integrated with storytelling. Various promotion methods will be used to promote Dream Park, connected with promotional materials, souvenirs and events. Also, other various programs are under way, including Dream Park eco-tourism, which utilizes low-carbon green transportation, vitalization of Dream Park cultural festivals, and experience and learning programs in Dream Park.

□ Waste Resources management

Korea has been preemptively introducing and implementing various policies and systems ranging from the policy for reducing the generation of waste from the origins to reusing, recycling, and energy recovery.

As a result, virtuous cycle of waste management system has been formed in which 61% of domestic wastes produced are recycled. In particular, the settlement of volume

● Waste disposal practice (Landfill site no.2)

● Golf Course Development
(Completed the construction of stabilization for the waste landfill site, landfill site no.1)

based waste fee system introduced in 1995, and the waste-to-energy policy, which officially began in 2008 are performances that receive attention from international organizations.

In 2011, medium and long-term plans in the area of waste resources will be established. We are now situated in the turning point when the resource recirculation system needs to be enhanced in terms of value added, in consideration of the much more developed economy and society in 5 to 10 years in the future.

The 1st Master Plan for Resource Recirculation (2011~2015), according to the Act on the Promotion of Saving and Recycling of Resources, is an integration and expansion of the previous master plan on recycling. It can be regarded as the best legal plan which includes the implementation plan in the area of resource recirculation of the government' s five years plan on Green Growth, and the medium and long-term policy related to resource recirculation, including plans for recycling various types of waste materials, and converting waste resources and biomass into energy.

In the same plan, major promotion strategies and core policy tasks will be included: development of new index for the improvement of resource recirculation in 2015, shift to a social structure of resource recirculation, realization of value-increasing type of resource recirculation (4R: reduce, reuse, recycle and recover), establishment of an integrated waste management infrastructure, fostering of resource recirculation industry and promotion of technical development, and evaluation of national recycle recirculation and arrangement of foundations for implementation.

The 3rd Comprehensive Plan for National Waste Management (2012~2021) based on the Waste Control Act will be established based on the master plan for each city and province. Thus, the focus is put on expanding the infrastructure for waste management of local governments. In particular, it helps realize economies of scale and environmentally appropriate management if waste management facilities are collectively gathered or

integrated. Therefore, emphasis will be placed on the strategy for optimizing the location by breaking away from the administrative districts of city, county, and ward, and integrate as a larger region.

The 1st Master Plan for Resource Recirculation is expected to be finalized in May, and the 3rd Comprehensive Plan for National Waste Management at the end of the year. We hope that these plans will be a new turning point for upgrading the resource recirculation policy.

Waste resources management in 2010

As the response to climate change and green growth were designated as the major direction of government administration, the Ministry has focused on the establishment of institutional foundations in the area of waste resources as an interministerial cooperation, including the arrangement of countermeasures for converting waste resources and biomass to energy, measures for recycling waste metal resources also known as 'urban mining', measures for food waste tailored for each source of generation, and volume based waste fee system.

In order to build an environmental energy town in Sudokwon landfill site, ten facilities have been constructed, including RDF(Refuse-Derived Fuel) manufacturing facilities, and 38 waste-to-energy facilities have been expanded (34 are under construction), including the design and construction of 28 facilities. Also, a total of 394,000 ton of CO_2e have been acquired as greenhouse gases emission credits (CER) for the CDM project of landfill gas from Sudokwon landfill site. Moreover, we have designated two graduate schools specializing in waste-to-energy.

As a measure to promote the recycling of waste metal resources, voluntary contracts have been signed to enable the technical development of recycling waste Braun tube glass, and approximately 700 million won of profit was made by collecting 1,060,000 used cell phones from the collection campaign. Also, the rate of recycling for four major items (television, refrigerator, air conditioner and washing machine) of waste electronic products has reached 20.4%.

Meanwhile, we are preparing the evaluation on the ten years performance of the pilot project on expanded producer responsibility (EPR), which started in 2000, and also the improvement project on the expansion of responsibility of distributors and sellers.

Moreover, in order to promote a practical reduction of food waste, customized measures were prepared for 12 sectors, including public institutions, hotels and buffets, kitchens for mass feeding, military camps, schools, and restaurants. Based on the customization, 'Guideline: 101 ways of reducing food waste' has been arranged, and the institutional foundation of organizing the guidelines for the introduction of volume based

food waste fee system has been established.

Waste resources management plan in 2011

As we have confirmed the successful reduction of food waste through the implementation of the pilot project for customized measures for each sector, we will enforce the spread of such outstanding example throughout the country. A full-fledged implementation of volume based food waste fee system will shift the direction of policy to minimizing the generation of waste. In order to realize the new policy direction, local governments will arrange policies for the restriction of food waste generation, and enact/revise relevant regulations. Among the 144 local governments that separate the discharging of food waste, 63 will be targeted to adopt the volume based food waste fee system by providing support for the installation of collection system that utilize radio frequency identification (RFID).

Moreover, we will promote an **upcycling** (enhanced value of recycling) by shifting the focus of recycling management from quantity to quality. In order to improve the transportation of waste resources, the national circulation network of waste resources will be systemized by forming networks between relevant facilities for resource recirculation of each regional district. Also, under the cooperation with local governments and social enterprises, pilot projects will be implemented in order to establish a new system for the collection of daily resources with value, including small waste electronic appliances and useless products.

Furthermore, the Ministry will foster Sudokwon landfill site as a self-sufficient 'comprehensive town of environment and energy' by full-fledged implementation of securing of foundations for waste resources management as resources recirculation through the conversion to energy from waste resources and biomass, and support for Green Growth. Also, the utilization of new and renewable energy will be expanded based on 38 facilities for the conversion of combustible and organic waste that have been constructed or are under construction.

The Ministry is examining the reform in the policy of manufacturing solid fuel from single raw materials such as domestic waste, waste synthetic resin, waste tire, and waste lumber to allowing the manufacture of solid fuel from compound materials.

In 2011, the results of previous policy will be expanded and developed, and we plan to establish a new guideline for 'policy direction of resource recirculation' for the next 5 to 10 years to come.

3-6. Environmental Health & Chemicals Management

□ Major current issues in the area of environmental health and chemicals management

Increase in concerns for health risk due to environmental pollution

The number of patients suffering from environmental diseases such as allergic rhinitis and atopic dermatitis has rapidly increased (5,570,000 patients in 2002 → 7,590,000 in 2008). Also, health effects have been found in regions of concern for environment pollution such as closed metal mines and cement factories. The results of inhabitant health examination show the impacts to health due to exposure to dust and metals. Thus, health environment centers (12 hospitals) have been designated to arrange guidelines for each disease, and projects for the management after inhabitant health examination are being promoted, including the monitoring of residents suffering from health effects, and strengthening environment management of relevant regions. In addition, environmental standards have been fixed on products and amusement facilities for children who are sensitive to environmental pollution, and the management of the products is being strengthened. Also, "Eco-friendly Health Helpers" project is under way, in which professionals actually visit the vulnerable members of the society and ordinary households to improve the home environment.

Possibility of increase in exposure to hazardous substances including chemicals and heavy metals

The amount of chemicals distribution domestically is 417 million tons (in 2006), which shows an increase of 145% compared to 4 years ago (287 million tons in 2002). Among the chemicals, the amount of class one carcinogens including benzene used is 18 million tons, which is an increase by 133%. These statistics show that the possibility of public exposure to hazardous substances is gradually increasing. In fact, the Korea National Environmental Health Surveys during 2005 and 2008 show blood concentration of mercury and cadmium of Koreans to be relatively high compared to major developed countries including the United States and Germany. Thus, we are planning of constructing the management system for the entire system from production to the emission of hazardous substances, and system for the registration and evaluation of new chemicals which will inform the public on the risk. Also, partnerships with companies will be improved to vitalize Green Chemistry in which companies voluntarily reduce the emission of chemicals. Moreover, the management of hazardous substances is strengthened for public safety, by examining the current amount of chemicals distributed, arranging

effluent quality standard for chemicals including dioxin, and preventing chemicals accidents and terrorism.

Increase in public demand for peaceful and pleasant environment

With the increase in income levels, the public' s expectation is shifting from clean environment to pleasant environment. Systematic management measures are now being required on environmentally hazardous factors, including noise, excessive lighting, electromagnetic waves, and natural radioactivity. Thus, the Second Comprehensive Plan for the Reduction of Noise has been established, and the management of noise is strengthened on various sources of noise, including construction sites, vehicles on roads, railroad machineries, and home appliances. Moreover, in the case of public use facilities, the current status of air quality is measured and presented using the automatic measurement network indoor air quality. Also, the quality of indoor air in underground subway stations is being improved. Institutional foundations are being laid by arranging relevant laws on the prevention of light pollution due to excessive artificial lighting. Also, for natural radioactive substances (radon), national map of radon distribution is being written out, and management standards are being improved.

● Support plans for removing slate-roofs of the rural area

Need for the relief from environmental damage of asbestos and introduction of safety management policy

Asbestos is a representative substance that causes environmental diseases such as malignant mesothelioma and asbestosis pulmonum. Before the absolute prohibition of the usage of asbestos in 2007, it was widely used as construction material, giving rise to negative predictions of rapidly increasing victims of asbestos-related diseases. Accordingly, we have raised relief funds (13.9 billion won annually) for the victims of asbestos, as the sixth country after France and Japan, to provide actual supports. On the asbestos currently being used, safety management will be promoted by supporting the dismantling of slate after being worn out, managing naturally exposed asbestos, and managing asbestos during the demolition of buildings.

※ In case of Britain, mortality from mesothelioma is annually increasing from 150 in 1960 to 1,600 in 2000.

□ Response to environmental health and chemicals management

Currently, public concern is rising on the increase of environmental diseases including asthma and atopic dermatitis caused by environmental pollution and exposure to chemicals. In addition, public demand for environment administration continues to grow, as can be seen from the spread of the new lifestyle focusing on the importance of health and sustainability. Thus, environmental health and chemicals management policy is being established and promoted with the objective of protecting public health and the ecosystem from hazardous environment, and forming a pleasant living space through the pre-cautionary management of hazardous substances, as an active response to the public demand.

Efforts for the management of environmental health and chemicals in 2010

As a first step, we have promoted the establishment of a preventive management system foundation with regard to environmental diseases. The 1st Korea National Environmental Health Survey (2009~2011) was carried out to measure the rate of public exposure to hazardous substances. In particular, the exposure of hazardous substances and health impacts on children, mothers, infants, and the elderly was examined to arrange environmental health guidelines for the sensitive population in order to reduce the exposure to risk factors.

Also, health impacts have been examined in vulnerable regions. With regard to the residents of Southern Gyeongsang Province in which the concentration of mercury in blood was measured to be high, the current status of exposure to mercury, and the

● 'Atopy and Green Camp'- Sharing Five-Senses

● Scene of surveying Korea National Environmental Health Survey project

● Residental briefing session about the inhabitant health examination nearby a cement plant

causes of exposure have been examined. In addition, health impacts to the residents near 10 closed metal mines, 5 large industrial complexes, 4 cement factories in Jecheon and Danyang in Northern Chungcheong Province, and the region of Tae-an oil spill accident were conducted.

Furthermore, the health protection measures for children who are sensitive to environmentally hazardous substances have been strengthened. Voluntary agreements have been signed with companies in stationery, toys, and furniture businesses to voluntarily reduce hazardous substances. The foundation for safety management has been arranged by carrying out human risk assessment on assumed endocrine disruptors including phthalate. In addition, guidelines for safe environment and rules for environmental health have been arranged to form a safe environment in playgrounds, child care centers and kindergartens. Also, 3 hospitals have been designated to run environmental health centers specializing in atopic dermatitis, and centers for prevention and management of environmental diseases for children, and they are being established in each regional district.

With regard to chemicals management, the efforts were made for chemicals emission reduction through the publication of information and voluntary agreements with companies. All the information on the amount of chemicals emission from 4,010 business sites has been open to public through the information system (http://ncis.nier.go.kr/triopen).

Also, actual reduction of chemicals emission will be supported through the "Voluntary Agreement for Reduction of Chemicals Emission (30/50 Program)" and providing consulting on the emission source management for businesses that emit large quantities of chemicals. The contract for emission reduction has been signed with 200 companies so

far, and the actual quantity of chemicals emission reduced by 80% from 20,000 tons in 2001 to 4,000 tons in 2009.

Moreover, hazardous chemicals that the people can directly encounter in their daily lives have been designated as substances to be managed with priority (242 types). Among these substances, the management guidelines have been established for the top 10 substances including heavy metals, volatile organic compounds, and assumed endocrine disruptors.

Also, National Plan for the Management of Chemicals (2011~2020) has been established in cooperation with nine departments by reflecting the current status of chemicals management for each sector, in order to fulfill the UN SAICM (Strategic Approach to International Chemicals Management).

In addition, Medium and Long-term Plan for Safe Management of Nano Substances (2010~2014) has been established, and a guidebook for the construction of an inventory of nano substances and for their safe management was arranged to enhance the safety of nano substances.

In order to improve the living environment, efforts to improve the air quality were made by removing the asbestos spray coat and replacing air purifying facilities in major subway stations of Seoul and Busan. Also, seven types of construction materials that emit pollutants have been notified, and the evaluation standards for pollutants from household items and manual for indoor air quality maintenance have been developed and disseminated to strengthen the management of indoor air quality. The places for indoor air quality management wiill be expanded to include cinemas, exhibition centers, academies, and internet cafes to improve the air quality where people can actually feel the change.

Moreover, efforts to reduce radon have been carried out. These efforts include examination of current condition of 330 public use facilities and 1,000 households, and implementation of pilot projects on public institutions (five schools and public offices), and

● Bird eye view of the Environmental Prevention&Control Center(Jinan)

● 2010 Summer Clear Breath Camp

● Subway station air quality improvement project

writing out and dissemination of "Construction Manual for Reducing Radon."

Furthermore, the foundation for noise management has been strengthened to create a peaceful living environment. By revising the Noise and Vibration Control Act, the protection of people vulnerable to noise, especially infants and the elderly, have been strengthened, and the level of regulations has been set higher.

Specifically, the 2nd Comprehensive Plan for Reducing Living Noise (2011~2015) has been established, with the objective of reducing the population exposed to noise by three million people, and thus serving as the roadmap for systematic noise management. The plan includes efforts such as strengthening the management of vehicles on roads and railroad machinery, classifying the noise of home appliances by levels, increasing the penalty and fines for construction sites, and enforcing the management of noise between floors.

Moreover, consulting on the diagnosis and improvement of noise and vibration for 25 business sites have been carried out, and contest for 'making noise-less streets' and 'quiet apartments' have been held to promote public participation.

Lastly, system for prediction of and providing support for damages from asbestos has been established. Act on Asbestos Damage Relief has been enacted and FIVA(Fonds d'indemnisation des victimes de l'amiante) has been founded to introduce a system for providing relief to health victims. Voluntary agreement for safe management of asbestos in buildings has been also signed with 16 institutions including construction firms. Moreover, comprehensive plan for slate management has been arranged as an intergovernmental effort to support the dismantlement and management of approximately 190,000 old slate buildings among the total 1,230,000 complexes of slate buildings by 2021.

Plan for environmental health and chemicals management in 2011

As a first step, Comprehensive Plan for Nature Conservation, which includes the strategy and detailed action plans for the next 10 years, will be established, and the

foundation for the promotion of environmental health policy will be reinforced.

Moreover, detailed investigations and health checkup will be carried out on the residents of regions where environmentally risk factors such as dust and mercury have been found. We plan to provide effective support through environmental health centers in different regions.

In environmental health for children, safety standards for each hazardous substance will be established based on past study results, and Environmental Health Act will be revised to make sure that producers of hazardous products for children stop and withdraw their sales to finally lead them out of the market. Also, incentives will be provided to businesses that devise self-management plans to support the efforts to voluntarily reduce hazardous substances.

With regard to chemicals management, information on not only the hazard of chemicals but also the risks will be made available for registration and evaluation. Also, a new system for the registration and evaluation of chemicals will be introduced, which will extend the range of management to chemicals that are originally used.

Furthermore, for the reduction of chemicals emission, the existing program focusing simply on the total reduction rate will be changed to a "SMART" reduction program focusing on the risk evaluation of the receptor, which will be a much more effective reduction policy.

※ *SMART : Stewardship-based Management for Area-specific Risk reduction Target*

Moving onto the living environment, the standard for indoor air quality will be raised for effectiveness of the system, and the support for diagnosing and improving indoor air quality of facilities for the vulnerable population, including small child care centers and elderly care facilities, will be expanded. Moreover, measures for reducing environmental noise will be promoted for each source of noise, including noise between floors, work places, and construction sites. Also, "national analysis of radon" will be carried out on 16 regions and approximately 10,000 households.

Act on Safe Management of Asbestos will be enacted, in addition to Asbestos Damage Relief System, to strengthen the safe management of materials with the potential of asbestos contents, and naturally generated asbestos.

We also plan to newly establish the effluent quality standard of asbestos nearby work places where dismantlement and removal of asbestos take place. Moreover, by carrying out a pilot project for slate management of 2,500 complexes of worn out slate, measures to reduce the management expenses will be devised to arrange the foundations for the actual project.

3-7. Green Growth

□ Major current issues in the area of green industry

Fostering green industry as a new growth engine

The world is facing international environmental crisis of climate change, energy crisis and water shortage problems, and we are focusing our efforts on solving these environmental problems. The Korean government declared its national vision of 'Low Carbon, Green Growth' in 2008, and is putting its utmost effort to change the current environmental crisis into an opportunity to leap forward as a 'green developed country'.

Green industry is a new growth engine in that it can resolve the current environmental crisis, and create new wealth and jobs from this. Green industry needs to be fostered as the new growth engine in order to capture the opportunity of the new environmental market to take a new leap forward in promoting economic development and creating jobs.

□ Measures in the area of green industry

In order to foster the green industry as the new growth engine, the government has set the target of achieving 13 trillion won (1% of the world market) of overseas export of environmental industry by 2016, under the vision of "leaping as a global green power." In order to achieve this target, various policies differentiated for each level of environmental industry growth is being promoted, including the support for founding and managing environmental industries by inaugurating the Korea Environmental Industry & Technology Institute (KEITI) in April 2009. In addition, support is provided for finance and investment, nurturing of professionals, and foreign export.

Moreover, the government plans to invest 3.442 trillion won into 5 years (2008~2012) of R&D in green technology for the environment by 2012, with detailed objectives of 'securing world-class environmental technology through the implementation of strategic technology development,' 'focusing on and fostering selected environmental businesses with international competence in technology,' and 'improving the index for environmental sustainability for coexistence of human beings and nature,' under the vision of "realizing a technology-lead eco-utopia of the 21st century" for the development of green technology as the source of new growth energy. Through such investment, four major strategies, including the selecting (2008~2012) and concentrating investment in strategic environmental technology development for international competition, and fifteen core tasks are being implemented.

Policy on support for overseas export of green industry

A. Exploring environmental market customized for each regional district

"Project on support to developing countries in establishing master plans for environmental improvement" is being promoted in order to explore promising foreign environmental projects. Through this project, various projects will be connected and expanded, by exploring follow-up cooperation projects, and collecting information on projects for finding developing countries.

● Algeria/Mozambique's Established Business on Environmental Management Master Plan : Interim Report

In order to localize and industrialize promising green technology, international joint research projects and pilot projects for the spread of green technology are being promoted with the collaboration of other governments and research institutions. The projects will be implemented as a matching fund, where Korea provides the core technology and relevant facilities, and the counterpart country bears the expenses for land development and public works.

Moreover, for successful overseas expansion of domestic companies, "project for supporting feasibility study of foreign environmental project" is under way for the companies with high potentials in expanding overseas after being evaluated according to potential in obtaining orders, potential in providing funds, potential in project implementation, and effect of environmental improvement in the counterpart country. Once companies are selected to receive support on the feasibility study, the government will provide all kinds of supports to successfully obtain orders. These supports include holding cooperative meetings with the counterpart country, signing a memorandum of understanding for environmental cooperation between the countries, and arranging training sessions by inviting professionals in ordering organizations.

Overseas branch offices environmental cooperation centers are also being run in order to provide support in receiving orders and collecting information for companies in foreign countries. Currently, 2 branch offices are operated in China and Vietnam, and we plan to expand into Indonesia, the Middle East, and Central and South America by the end of this year.

B. Establishment of domestic and international environmental cooperation network

In order to form a global cooperation system, promising ordering organizations and companies of foreign businesses are invited, and business consulting sessions (global green business partnership) and forums are held, focusing on the new markets. Moreover, the National Institute of Environmental Human Resources Development (NIEHRD) is running a long-term training program for environment public officials and professionals from developing countries in order to introduce the outstanding Korean environmental policies and technologies to them.

C. Fostering promising exporting companies

Currently, small and medium sized enterprises account for 97% of the domestic companies on environment. Such situation calls for a systematic support to foster exporting companies on environment.

In order to solve the problem of 'insufficient information on foreign markets,' the biggest difficulty facing domestic environmental businesses in expanding overseas, we are operating 'professional consulting centers' and 'collecting information on promising environmental markets'. The professional consulting centers resolve the difficulties in expanding overseas, including the clearing customs, contracts, tariffs, establishment of local subsidiary corporations and credit check. The project for collecting information on promising environmental markets began in 2009, and provides domestic environmental businesses with expansion strategies established by searching, investigating and analyzing promising foreign environmental markets.

Moreover, support is provided to actively pioneer new markets through arranging foreign exhibitions, holding consulting meetings and sending groups for market exploration as a joint project between the private and public sectors.

- Korea-Latin America Green Partnership Roundtable

- Korea-Latin America Green Business Forum

Achievements of major policies in 2010

Continued support is provided for strong technologies (104.3 billion won) such as demonstrating the actual scene of fostering the new green growth engine. Through such support, we are now one step closer to the successful completion of the project for developing market-oriented next generation core environmental technologies (2001~2010). In order to spread the achievements of developed technologies, investment was expanded for the project in demonstrating the actual scenes, including the real-time monitoring technology of water purifying technology, and technology for reusing sewage and rain water. Also, 'medium and long-term project for technology development' (4 business unions) is continuously promoted for the securing of new growth engine, and it is achieving outstanding performances.

Furthermore, in relation with the project for establishing a master plan for environmental improvement, projects are under way for less developed countries with rich resources and new environmental markets including Uzbekistan and Tanzania. With regard to the project on supporting the feasibility study, a total of 1.74 billion won was provided to the projects for constructing environmental infrastructure in developing countries, including projects for water supply and sewage, wastes and CDM. Such investments raised the potential for obtaining orders. International joint project for environmental technology has found 16 continued tasks and 18 new promising tasks to promote localization of businesses.

In addition, in relation with the establishment of overseas human network on environmental industries, 80 environmental professionals from Southeast Asia, and 25 professionals from 14 countries in Central and South America, and Africa were invited to take the training program. Also, the Korea-ASEAN/Korea-China green partnership programs were held 8 times, and 77 senior-level public officials and professionals were invited to spread the policies, technologies, and industries of Korean Green Growth, and to establish the foundations for cooperation in overseas expansion of domestic environmental businesses through strengthened cooperative partnership.

Major plans for 2011

The "Development of and Support for Environmental Technology Act," which was originally limited to the development of technology was revised (April 28, 2011) to "Support for Environmental Technology and Environmental Industry Act," which reflects the function of fostering green industry. Accordingly, policies on systematic support for environmental industries have been accelerated, including the establishment of medium and long-term plans for fostering the environmental industry, selecting and supporting outstanding environmental businesses, constructing environmental industry promotion

complexes, and supporting overseas expansion of the environmental industry.

First of all, in order to develop green technology, next generation eco-innovation technology development project (2011~2020) will be promoted as a follow-up of the project for developing next generation core environmental technologies. This project will lead Green Growth by improving the competitiveness of domestic green technology and industry, and improving the air quality to the level of developed countries. It plans to provide support (126 billion won) to the development of core technologies for green R&D, including global top environmental technology, technology for enhancing the environmental industry, public technology based on environmental policies, and international joint researches.

Moreover, as a measure for fostering the domestic environmental industry, preparations are being made by relevant ministries for the "plan for fostering environmental technology and industry." Also, the Korea Environmental Industry Association was incorporated in order for it to play the role of core actor for management and providing support for the environmental industry. We also plan to establish a "comprehensive technology support center for the environmental industry' in order to demonstrate developed technologies (test-bed) and to produce trial products.

As a measure to promote overseas expansion, existing projects such as establishing master plans for environment improvement of developing countries, supporting the feasibility study of environmental projects, international joint research project, and invitation training sessions will be promoted. In addition to these projects, foreign centers that are currently in China and Vietnam will be expanded to Indonesia, the Middle East, and Central and South America. Moreover, a network for overseas personnel will be established. Also, the collection of information for IP(Information Provider) of locals in foreign countries will be activated for prompt collection of information, and information provision system will be established and operated. Various policy measures will be utilized to systematically support the overseas expansion of the domestic environmental industry, in order to enhance the competitiveness of domestic environmental businesses.

Furthermore, cooperation system for the expansion to promising environmental markets, including North Africa, Central and South America and the Middle East, will be established through the international joint research project on environmental technology (5 billion won) for the establishment of a global cooperation system for green technology, and for the promotion of overseas expansion of domestic outstanding green technology. We look forward to the spread of our achievements in exports through strengthening localization of environmental businesses by taking into account the environmental regulations and conditions of the corresponding country.

3-8. International Environmental Cooperation

□ Major current issues in international environmental cooperation

Strengthening environmental cooperation with international organizations

Currently, Korea is doing its utmost to expand mutually beneficial environmental cooperation with international organizations to deal with environmental issues in an advanced manner, and to contribute to the international environmental arena corresponding to Korea's status in the world. In particular, as the country leading Green Growth, Korea cooperates closely with major international organizations including United Nations Environment Programme (UNEP), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), and Organization for Economic Cooperation and Development (OECD) with a sense of duty to globalize the Green Growth policy.

Strengthening environmental cooperation with Northeast Asian region

The Northeast Asian region, which includes Korea, China, Japan, Mongolia, and Russia, is geographically close, thus under the same environmental influence. The major environmental issues in the area are air, water and soil pollution caused by rapid economic growth. In particular, transboundary environmental issues, including acid rain, dust and sandstorms (DSS) and illegal movement of harmful wastes between countries, are of major problems. Imposing domestic regulations on pollution is not enough to solve these problems; it is important to cooperate between countries in the Northeast Asian region.

Thus, we are strengthening international environmental cooperation through various consultative bodies, including the Tripartite Environment Ministers Meeting among Korea, China and Japan, North-East Asian Subregional Program of Environmental Cooperation, Korea-Japan Joint Commission on Environmental Cooperation, Korea-China Joint Commission on Environmental Cooperation, and Korea-Russia Joint Commission on Environmental Cooperation.

Post-2012 climate change negotiation

In December 2009, Korea set and presented its voluntary target for reducing greenhouse gases '30% below BAU level by 2020' at the 15th Conference of the Parties of the United Nations Framework Convention on Climate Change in Copenhagen, Denmark. One year later, at the 16th COP of the UNFCCC in Cancun, Mexico, the NAMA(Nationally Appropriate Mitigation Action) Registry which had been proposed by Korea was adopted

as a means for mitigation action in developing countries. These efforts show the active participation of Korea in international efforts to reduce greenhouse gases.

President Lee Myung-bak had officially claimed our intention of holding the 18th UNFCCC Conference (COP18) at the 15th United Nations Climate Change Conference (UNFCCC COP15, December 2009). We plan to contribute to the international community by supporting the establishment of a climate change system based on multilateralism and mutual cooperation through the arbitration of opinions of various stakeholders, including developed and developing countries, as the chair of the conference.

International environmental convention of genetic resources

After the adoption of the Nagoya Protocol at the 10th Conference of the Parties to the Convention on Biological Diversity (CBD COP10, October 2010, Nagoya, Japan), Korea is preparing for the arrangement of response measures to the protocol. By participating in the First Meeting of the Open-ended Ad Hoc Intergovernmental Committee for the Nagoya Protocol on ABS (ICNP 1) to be held in June 2011, Korea plans to actively participate in the international discussion on the follow-up measures to the Nagoya Protocol, by discussing on the major issue of the Protocol (modalities of operation of the access and benefit-sharing clearing house, capacity building in developing countries, measures to raise awareness, measures to promote compliance, etc.).

□ International environmental cooperation

As transnational environmental problems continue to rise, including extreme weather caused by climate change, biodiversity loss, water shortage and pollution, and dust and sandstorms (DSS), the importance of regional and global cooperation between governments and international organizations is becoming more important than ever.

Korea has been increasingly strengthening global environmental cooperation. It provides financial support by sharing the expenses and voluntarily contributing to major international organizations, including United Nations Environment Programme (UNEP), United Nations Economic and Social Commissions for Asia and the Pacific (UNESCAP), and Organization for Economic Cooperation and Development (OECD). In addition, Korea actively participates in discussions on exploring response measures to global environmental problems, including climate change and biodiversity loss. We also put efforts into globalizing advanced Green Growth policies through international organizations.

Moreover, Korea strengthens bilateral and regional environmental cooperation through ministerial level meetings, signing MOUs on environmental cooperation, implementing cooperative projects, and running international environment training

● UNFCC COP 16

programs with countries mainly in Northeast and Southeast Asia.

With the agreements at the 16th United Nations Climate Change Conference in Cancun, Mexico (UNFCCC COP16, December 2010, Cancun, Mexico), Korea actively participates in follow-up meetings for the establishment of post-2012 climate regime. In particular, we seek to contribute to the international community by presenting a new vision for responding to climate change by holding the 18th United Nations Climate Change Conference (COP18) in 2012. We also participate actively in international environmental discussions on the follow-up measures to the Nagoya Protocol adopted at the 10th Conference of the Parties to the Convention on Biological Diversity (October 2010, Nagoya, Japan), on the establishment of Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), and on environmental discussions of FTA.

International environmental cooperation in 2010

- Strengthening environmental cooperation with international organizations

Korea is strengthening its environmental cooperation with international organizations focusing on globalizing of Green Growth. First of all, United Nations Environment Programme (UNEP), an organization under the United Nations for environmental issues, advocated the 'Green Economy Initiative (GEI)' in 2008, the same year Korea proclaimed

the new national vision of 'Low-Carbon, Green Growth.' UNEP also implements various activities for international revival of green economy. As a part of the efforts, UNEP addressed the 'Overview of the Republic of Korea's National Strategy for Green Growth' in April, 2010, and highly appreciated Korea as a leading example of GEI. Also, the Business for the Environment Summit (B4E) was held in Seoul, successfully cosponsored by Korea and UNEP in April, 2010, and heads of states, CEOs, and Secretary Generals of major international organizations who are appreciated for their contributions in the environment area participated.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) holds the Ministerial Conference on Environment and Development in Asia and the Pacific (MCED) every 5 years. In 2005, the 5th MCED was held in Korea, and as a host country, Korea arrived at a conclusion of 'Seoul Initiative (SI)' to present useful policy measures for the achievement of 'environmentally sustainable economic growth (green growth)' in the Asia and the Pacific region. As implementation projects for the SI, Korea carried out policy forums on green growth, programs for capacity building of developing countries, and pilot projects. With the support of member countries in our efforts and performances, it was determined at the 6th MCED that the SI project will be prolonged for another 5 years (2011~2015).

The Organization for Economic Cooperation and Development (OECD) also shows great interest in green growth. In June, 2009, Korea played a leading role in adopting the Declaration on Green Growth as the chair at the OECD Meeting of the Council at Ministerial Level (MCM). The United Kingdom of Great Britain, the United States and UNEP highly praised our role leading in Green Growth policy. 'Green Growth' continues to be adopted as one of the agenda for ministerial declarations in 2010, and in 2011.

- Leading discussions on environmental cooperation in the Northeast Asian region

The Ministries of Environment of Korea, China, and Japan hold the 'Tripartite Environment Ministers Meeting among Korea, China, and Japan (TEMM)' every year from 1999, in order to jointly respond to environmental problems of the Northeast Asian region, including dust and sandstorms (DSS), acid rain and illegal movement of wastes between countries, and to arrange cooperation measures for environmental improvement of this region.

At the 12th Tripartite Environment Ministers Meeting (May 2010, Hokkaido, Japan), common action plan for actual performance in the top 10 sectors of cooperation agreed at the 11th TEMM (June 2009, Beijing, China) was adopted.

Moreover, the status of promoting the common action plan for the 10 major sectors of

● The 13th Tripartite Environment Ministers Meeting among Korea, China and Japan

cooperation was evaluated at the 13th TEMM (April 2011, Busan, Korea), and student and business forums were held. The three countries also agreed to find cooperation measures for the information sharing between the countries in response to environmental damages caused by natural disasters.

Rapid industrialization and urbanization in the Southeast Asian region is worsening the problem of environment pollution, and thus increasing the importance of environmental cooperation in the region. In order to strengthen environmental cooperation with countries in Southeast Asia, Korea participated in the 9th ASEAN+3 Environmental Ministers' Meeting (October 2010, Brunei) and the 2nd Environmental Ministers' Meeting under the East Asia Summit (October 2010, Brunei), and held the 3rd Korea-Cambodia Environmental Ministers' Meeting (July 2010, Jeju), Korea-Indonesia Environmental Ministers' Meeting (July 2010, Jeju), and the 8th Korea-Vietnam Environmental Ministers' Meeting (April 2011, Seoul). Korea has also signed an MOU for Korea-Bangladesh environmental cooperation in May, 2010.

- Strengthening environmental cooperation between countries

For environmental cooperation between the countries in Central and South America, the session for cooperation in green growth was arranged at the 2nd Korea-Central and South America High Level Forum (May 2010, May) to share the vision and strategy of Green Growth with countries in the Central and South America. Korea signed the MOU for Korea-Ecuador environmental cooperation in September, 2010, Korea-Peru in November, 2010, and Korea-Costa Rica in December, 2010. At the 3rd Korea-Central and South America High Level Forum (May 2011, Seoul), session for cooperation in Green Growth was held to discuss detailed cooperation measures for the achievement of Green

● Petersburg Climate Change Conference

Growth with Costa Rica, Guatemala, and Venezuela.

Focusing on the countries that have signed the MOU for environmental cooperation with Korea, including the Netherlands, Denmark, France, Germany, Norway, and the UK, various information and datas are shared, and important figures pay frequent visits. Minister of Trade from Sweden in February, 2011, and Vice Minister of Environment from Czech in March visited Korea to discuss the cooperation measures in the area of environment. Also, in May, 2011, we received a couple of Amur Tigers from Russia, which contributed greatly to the proliferation of Amur Tiger in Korea.

Korea-Oman Environmental Ministers' Meeting (April 2010, Seoul), Korea-Kazakhstan Environmental Ministers' Meeting (September 2010, Kazakhstan), Korea-Kyrgyzstan Environmental Ministers' Meeting (September 2010, Kazakhstan) have been held, in order to establish the foundation for environmental cooperation with countries in the Middle East and Central Asia rich in resources such as petroleum, natural gas, and coal. Korea has signed the Korea-Uzbekistan MOU for environmental cooperation in February, 2010, and Korea-Kazakhstan MOU for environmental cooperation in September, 2010.

In January, 2010, Environmental Ministers' Meetings were held with Egypt, Algeria, and Tunisia, and we agreed to promote the cooperative partnership for Green Growth through sharing Green Growth policies and experiences. Also, Korea-Africa Environmental Cooperation Forum (November 2010, Seoul, Korea) was held, with African countries including the Ivory Coast, Morocco, Senegal, and Cameroon. At the forum, major environmental policies of each country were introduced, and discussions took place on the issue of strengthening environmental cooperation between the countries.

- Active response to Post-2012 climate change negotiation

Korea proposed the installation of registry reduction activities (NAMA Registry) of developing countries at the 16th United Nations Climate Change Conference in Cancun, Mexico (UNFCCC COP16, December 2010, Cancun, Mexico). Through the proposal, Korea played the role of bridging between the developed and developing countries going through conflicts at international meetings on climate change, by providing the foundations for the

● CBD COP 10

developing countries to be internationally appreciated for their various reduction activities. In particular, Korea presented a new paradigm on responding to climate change negotiations by proposing the resolution of climate change through a new method of 'Low-Carbon, Green Growth' for every country.

Moreover, Korea participated in major international meetings dealing with climate change, including the Petersburg Climate Change Conference (May 2010, Petersburg, Germany), and Delhi Conference on Climate Technology (November 2010, New Delhi, India). Through such efforts, Korea participated actively in forming international partnership for responding to climate change, by exploring ways to establish the post-2012 system.

● Experts' Meeting for South-South Cooperation in Biodiversity

● Seminar aimed to raise awareness of ABS

● International Symposium on Biodiversity

- International environmental leadership in international environmental conventions

Korea participated in the 10th Conference of the Parties to the Convention on Biological Diversity (October 2010, Nagoya, Japan), and played a major role in the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, a long-cherished ambition in the field of biodiversity. Moreover, Korea held three seminars to raise awareness of domestic ABS (Access to genetic resources and Benefit-Sharing), to let Koreans know about it to better prepare the age of competition on genetic resources.

Korea held the 3rd Ad-hoc Intergovernmental and Multi-Stakeholder Meeting on IPBES (June 2010, Busan, Korea), and played an important role in reaching the agreement (Busan Outcome) on the establishment of an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Also, Korea participated in the 41st (in 2010) and 42nd (in 2011) permanent committee of the Ramsar Convention, a treaty on conservation of wetlands, and played an active role as the chair. In May, 2011 in Incheon, experts meeting for South-South cooperation in biodiversity and international symposium for the promotion of awareness were held in order to build capacity of developing countries.

- Active response to discussions in connection with environment and commerce

After the conclusion of the 1st FTA with Chile in October, 2002, Korea signed the FTA with Singapore in February, 2006, and with EFTA (Iceland, Switzerland, Norway, and

Liechtenstein) in September, 2006, and these FTAs are currently effective.

Based on the experience of signing FTAs with these countries, the Korea-USA FTA was reached in June, 2007. In October, 2010, the Korea-EU FTA was signed. Moreover, Korea is currently promoting its FTA agreements with Canada, Australia, the New Zealand, and Peru, and conditions for FTA agreements with China and Japan are being arranged.

Korea has prepared response measures to prevent negative effects to Korea during the FTA process, and has specifically arranged a chapter for environment in the KOR-US FTA. These measures stipulate the obligation to protect the environment at a high level, exemption of applying and prohibition of evading obligations for environment conservation to promote commerce and investment, guarantee of system for environmental damage relief and restriction of violating environmental law, and promotion of opportunities for public participation.

Also, in the Korea-EU FTA, a chapter for commerce and sustainable development was arranged, provisions on environment conservation were enacted to secure sustainable development, and forums for the civil society and establishment of professional panels for discussions on environmental issues were also stipulated.

Plans for international environmental cooperation in 2011

- Strengthening environmental cooperation with international organizations

The topic of Green Growth is spreading and reinforced across the world, and Korea will

● 9th ASEAN+3 Environmental Ministers' Meeting

● 9th ASEAN+3 Environmental Ministers' Meeting

specifically strengthen its cooperation with international organizations to propagate its Green Growth policy to developing countries. As a joint project with the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the Policy Consultation Forum of the Seoul Initiative was held in Busan in July, 2011. In September, 2011, a program for building capacities of developing countries will be held in Incheon, Korea. Moreover, Korea plans to actively participate in environmental discussions of the Organization for Economic Cooperation and Development (OECD), by providing support for follow-up projects of the Green Growth Declaration (June, 2009) of the OECD, and for environmental performance evaluations.

- Leading discussions on environmental cooperation in the Northeast Asian region

Korea discussed response measures for dust and sandstorms (DSS) through 'Korea-China-Japan Joint Expert Evaluation on Chinese Inner Mongolia Naiman Desertification Recovery Area Technical Method' in June, 2011, and will discuss in the Meeting of Dust Research Association(I) in September, 2011, and Meeting of Dust Research Association(II) in November, 2011. In the second half of 2011, Korea will strengthen its environmental cooperation with Japan and China through the Korea-Japan Joint Committee on Environmental Cooperation and Korea-China Joint Committee on Environmental Cooperation.

Also, the 13th Post-Tripartite Environmental Ministers Meeting (Post-TEMM) will be held in the latter half of 2011 to evaluate the current status of promoting the 10 major

● 2nd Environmental Ministers' Meeting under the East Asia Summit

sectors of cooperation, and to decide the venue and the date of the 14th Tripartite Environmental Ministers' Meeting.

Furthermore, Korea will participate in the 10th ASEAN+3 Environmental Ministers' Meeting (October 2011, Cambodia) in order to find environmental cooperation measures with ASEAN countries and to spread Green Growth. Korea also plans to sign a memorandum of understanding for environmental cooperation with Lebanon and India.

- Strengthening environmental cooperation between countries

Korea plans to sign an agreement on Korea-US environmental cooperation, in connection with the effectuation of the KOR-US FTA, and promote 20 environmental cooperation tasks agreed upon with the US, including the promotion of exchange of environmentally-friendly technologies. Also, Korea-US Joint Committee on Environmental Cooperation will be regularly held to examine the status of and to encourage the implementation of environmental cooperation tasks, and to actively search for new environmental cooperation tasks.

In July, 2011, Korea held the Korea-Latin America Green Partnership Forum in Seoul, in which 13 countries from the Central and South America participated. During the forum, countries presented the status of their environment and policies, and bilateral meetings on environmental cooperation were held with each country.

Korea will actively promote environmental cooperation with countries which it has signed the MOU for environmental cooperation, including Chile, Peru, Ecuador, and Costa Rica. Korea plans to expand the basis of cooperation by signing MOU with Colombia and other countries.

● 1st Korea - Africa Environmental Cooperation Forum

Moreover, Korea will strengthen its environmental cooperation with Czech by signing the MOU for environmental cooperation with the Ministry of Environment of Czech in 2011. With Denmark, environmental cooperation in the field of green growth will be expanded through the Global Green Growth Institute (GGGI) financially supported by the government of Denmark. Through Korea-Russia Joint Committee on Environmental Cooperation to be held in the second half of 2011, Korea will discuss the issues on the expansion of the joint research project on the restoration of endangered species, and cooperation on establishing and operating basic environmental facilities.

As the Middle East countries increasingly show interest in environment, including research and development of new and renewable energy, they are beginning to increase investment in constructing environmental infrastructures, including the establishment of new green cities. Thus, Korea seeks to expand its environmental cooperation with countries in the Middle East, and is considering the hosting of Korea-Middle East Environmental Cooperation Forum in 2012.

In the second half of 2011, Korea will hold the 2nd Korea-Africa Environmental Cooperation Forum with countries that have signed the MOU for environmental cooperation, or are planning of signing. Environmental policies and major environmental issues of each country will be discussed to increase the understanding of the environment. Korea will find African countries' demands on the sector they hope to have environmental cooperation in order to establish the foundations for strengthening environmental cooperation with African countries.

- Active response to post-2012 climate change convention

Korea will actively respond to the international discussions on post-2012 climate change regime to continuously promote activities for the establishment of a creative climate change regime in which the developed and developing countries can coexist. Through such efforts, Korea will contribute to the international discussions on post-2012 climate change regime where every country is satisfied by leading to a compromise on the negotiations.

Thereafter, Korea seeks to promote the value of its national brand in the field of response to climate change. Also, Korea strives to promote its status in the international community as a role model in the paradigm shift to Low-Carbon Green Growth through the promotion of its efforts in responding to climate change. Moreover, at additional negotiations on the implementation of the Cancun Agreement (December, 2010), Korea will serve as the mediator that buffers the interests of developed and developing countries, while putting effort into securing autonomy in reductions.

- International environmental leadership by responding to international environmental conventions

As a follow-up measure of the 10th Ramsar Conference of the Contracting Parties (October 2008, Changwon, Korea), the Meeting on Implementation Network of the Changwon Declaration will be held in Changwon in August of 2011 to examine the status of implementation of the Changwon Declaration by each country, and to discuss the implementation measures.

Korea will participate in the 1st IPBES General Assembly to be held in Nairobi, Kenya in November, 2011 to contribute to actualize the future establishment of IPBES. Also, Korea will participate in the 43rd permanent committee of the Ramsar Convention to join the preparation for the draft decision for the 11th Ramsar Conference of the Contracting Parties (COP11) in 2011.

- Active response to discussions in connecting environment and commerce

Korea will arrange forums for the civil society and select professional panels as follow-up measures of the Korea-EU FTA as planned, to actively respond to environmental issues in the process of implementing the Korea-EU FTA. In preparation for the effectuation of the KOR-US FTA, Korea will organize the system for implementing the agreement of Korea-US environmental cooperation.

Meanwhile, Korea will actively participate in FTA negotiations with Canada, Australia, New Zealand and Peru, and make sure that the FTAs conserve domestic environment, while contributing to economic growth and sustainable development through free trade.

04

Leading Environmental Policies (2010)

The Four Major Rivers Restoration Project is planned in cooperation of several Korean Governmental Ministries, including the Ministry of Environment, Ministry of Land, Transport, and Maritime Affairs, Ministry of Culture, Sports, and Tourism, and Ministry for Food, Agriculture, Forestry, and Fisheries.

4-1. Green Card

□ Background

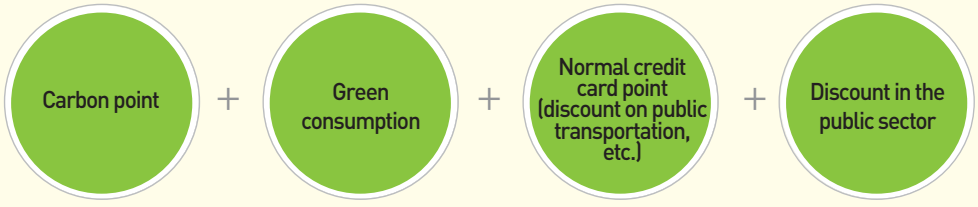
Korea has proclaimed 30% reduction target of greenhouse gases below BAU in the international community in 2010, and has been arranging various policies for greenhouse gases reduction. However, in the case of non-industrial sectors which account for 43% of the total emissions, specific policy measures have not been established, compared to the reduction policies for the industrial sector (target management system, etc.). Thus, the Ministry of Environment introduced the Green Card system which promotes energy saving and practicing green life in our daily lives, which can lead to reduction of greenhouse gases. The Ministry will provide actual incentives to change the perception that green consumption/life is tiresome, inconvenient and expensive, and give out Green points for credit cards that anyone can use easily.

□ Introduction to the system

[Constitution of Green Point (3+@)]

Points for Green Card can be distinguished into three types: 1) Carbon Point (when there is a reduction in the amount of electricity, water, and gas used, provided by the Ministry of Environment and the local government), 2) Green Consumption Point (when Green product* is purchased, provided by the manufacturing and distributing company), and 3) normal credit card point (when practicing Green life, including the usage of public transportation, provided by the credit card company). These three points will be combined as one point (Green Point) to be used as cash in affiliate companies (* Green product refers to products that have received the eco label and carbon label.)

Moreover, discounts will be provided for the usage of major tourism facilities of local governments nationwide and sports/cultural facilities to promote active practice of Green life. Certain amounts will be discounted when paying fees for the facilities with the Green Card, and differentiated benefits will be provided according to the amount of Green Points accumulated. Deficit of local governments will be partially conserved through funds for the operation of Green Card project.



[Status of participating companies and institutions]

As of May, 2011, a total of 27 companies (17 manufacturing companies, 8 distributing companies, and 2 green service companies) provided part of their sales on green products as points. Also, discounts are provided at 131 tourism facilities of local governments and sports/cultural facilities

[Status of participating manufacturers]

Classification	Companies
Manufacturing industry (17)	Hyundai Motors, Samchuly Bicycle, CJ Cheiljedang, Livart, LG Household & Health Care, Aekyung, Pulmuone, Lotte Confectionery, Yuhan-Kimberly, KyungDong Navien, Daelim B&Co., Samyang Corporation, Sugar Bubble, CJ Lion, Adelphia International, AmorePacific, Canon Korea Business Solutions
Distribution industry (8)	E-Mart, Lotte Mart, Homeplus, Lotte Department Store, Hanwha Galleria, Chorokmaeul, Orga Whole Foods, Mugonghae
Service industry (2)	Hollys Coffee, Angelinus

[Participation of public facilities of local governments]

National park	• 50% discount for 32 directly owned campsites and 10% for 40 parking lots
Natural recreation forest	• Free entrance to 36 national natural recreational forests
Daejeon	• 20% discount to Daujeon O World day ticket
Gwangju	• 50% discount to Uchi Park, 20% to Gwangju Museum of Art, 40% to Gwangju Folk Museum, 20% to Kids' Design Village DEKIVILL
Gyeonggi-do	• 20% discount to programs and exhibitions of Gyeonggi Arts Center • Free entrance to Bucheon Botanical Garden and Bucheon Nature Ecological Museum
Gangwon-do	• 20% discount to Ohjukheon & Gangneung Municipal Museum, 20% discount to Alpensia Resort Ocean 700 and Alpine Coaster
Gyeongsangnam-do	• 10% discount to entrance for exhibitions at Clayarch Gimhae Museum • (Hapcheon-gun) Free entrance to museums, Hapcheon Image Theme Park, and Odo Mountain natural recreation forest
Jeollabuk-do	• (Jeonju-si) Free entrance to Jeonju Zoo, 10% discount to programs at Sori Arts Center of Jeollabuk-do
Jeollanam-do	• (Mokpo-si) Free entrance to Museum of Natural History, Mokpo Museum of Literature, and Namnong Memorial Hall • (Boseong-gun) 10% discount to Taebaek Mountain Range Literature Museum, Tea Museum of Korea, Yulpo Saltwater Green Tea Pool

□ Features of green card system

[Green Card, profitable green life]

Green Card system increases financial benefits as people practice green life more and more. Declaratory campaign and education are important, however, it is more helpful for people to actually feel the practical benefits in practicing green life. Although the amount of points and discount rates provided by participating companies have not been decided, we expect the users to receive benefits of up to 250,000 won per year.

[Donation of accumulated points to environmental conservation]

The system will allow the donation of partial accumulated points to nature conservation, social welfare organizations, single parent families, and multi-cultural families, to actively promote the vitalization of social donations through points. By accessing the Green Card webpage (currently under construction), the portion (%) of points to be automatically donated each month can be decided. In order to promote transparent operations and to raise self-esteem, the usage of donations will be notified to individuals semiannually or annually.

※ *As a result of a survey by Job Korea, 'environmental conservation' was ranked 1st as the social activity that people would like to contribute to (March, 2011).*

[Green card that prevents excessive consumption, and that works together with small businesses and small and medium-sized enterprises]

Green Card promotes eco-friendly consumption, different from profit-oriented credit

● Meeting with Financial Institutions Participating in Green Card

Provided by the Ministry of Environment	Provided by the card, manufacturing, and distributing companies	Provided by the public sector
• 70,000 won/year of carbon point (maximum)	• 180,000 won/year of green life/consumption point	• Usage of facilities of public institutions and local governments
Electricity (40,000 won) Water (10,000 won) Gas (20,000 won) When ***more than 11%*** of amount used is reduced	• (Card company) Discount at affiliates (0.7%), discount of 200 won for public transportation • (Manufacturing company) For the purchase of green product (1.5%) • (Distributing company) Accumulated at green store 1.5%)	• Free entrance to natural recreational forests • 10% discount on fees of facilities in national parks • Discount on fees of sports/cultural facilities • Connection with special projects of each local government

cards that encourage irrational excessive consumption. In contrast to credit cards that differentiate the benefits provided according to the amount used during the previous month, Green Incentive (Green Consumption Point, Carbon Point, discounts for public facilities, etc.) is provided irrelevant to the records of the previously month. Moreover, the standard amount will be decreased for normal credit card points compared to other credit cards in order to prevent overspending.

The Green Card project is currently being promoted mainly on supermarkets, but it will be expanded to small and medium-sized enterprises by supporting the construction of Green POS system to small and medium-sized enterprises, including Orga Whole Foods and Mugonghae, and small local businesses brands like 'Nadle Store'.

□ Expected effects: Actual reduction of greenhouse gases and construction of virtuous green cycle

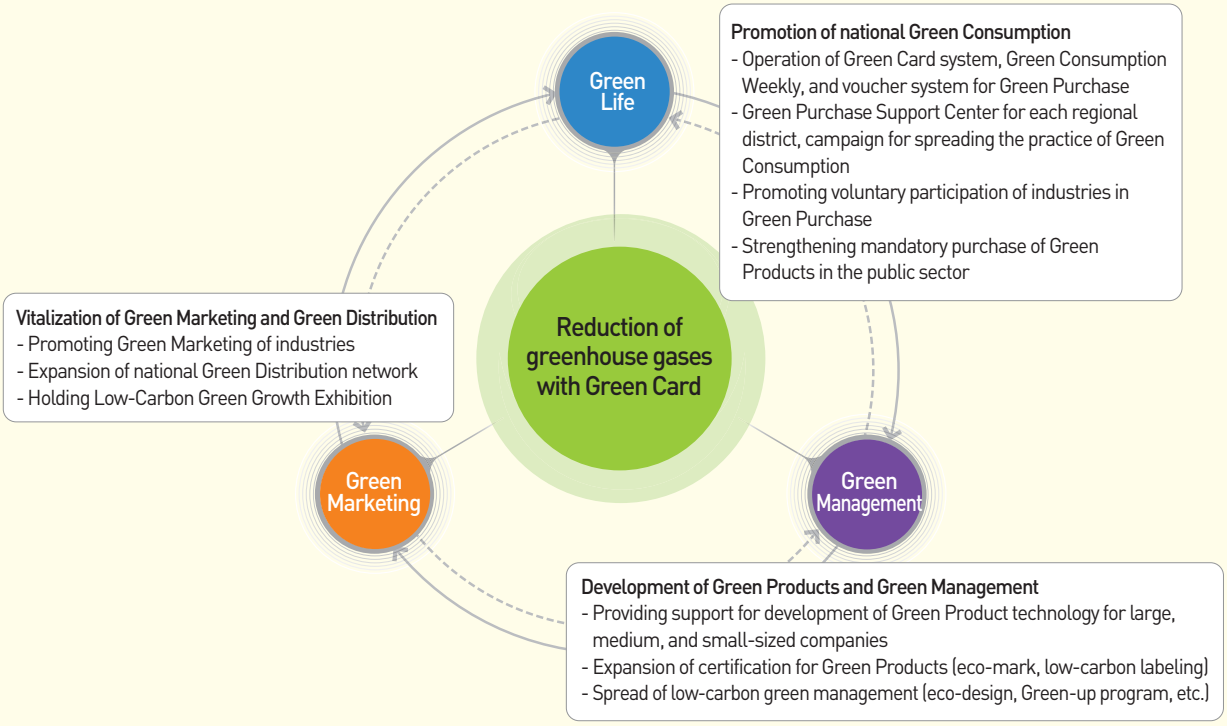
Reduction of 2 million tons/year of CO_2 (approximately 3% from households), effect of planting 749 million young pine trees.

Classification	Total	Green Consumption		Public transportation	Carbon Point
		Purchase of eco-friendly product	Green service		
Reduction	173,094tons/month	7,140 tons	594 tons + α	147,600 tons	17,760 tons

* When the number of Green Card holders reach 3 million, and energy (electricity, water, and gas) saving and green consumption reaches more than 10%

Green Value Chain: Green consumption → Green distribution → Green production

Through the provision of incentives to expand Green consumption, production and distribution of Green products will increase, leading to encouragement of Green consumption, and promotion of connection and development of policy for increasing Green products, including eco-mark and low carbon product certification.



□ Future plans: launch of Green Card at the end of June

Green Card will be issued by BC Card and KB Card from end of 2011 June. It will be issued from all credit card companies with the period of construction of the foundation for Green Card (installation of POS, etc.) and its vitalization (after 2013).

As the success of card products depends on the promotion after one to two months from their release, Green Card will be intensively publicized during May and August. Intensive promotions will be carried out through various channels, including public campaigns on TV, press (project articles, columns, etc.), and outdoor advertising on public institutions. In this coming October, a festival will be held at 'Low Carbon, Green Growth Exhibition (at COEX)' where companies participating in the Green Card project, card companies, local governments, and civil organizations participate.

4-2. Four Major Rivers Restoration Project

□ Background

The Republic of Korea, once one of the poorest countries in the world, has achieved rapid economic growth and it is now the 15th largest economy in the world. In this process, the environment around the rivers, the lifelines of the country, was damaged. In the First National Territory Plan (1972-1981), the watersheds of the four major rivers were developed, resulting in partial achievements in water control and water use. However, rapid urbanization and industrialization caused water pollution and degradation of rivers which threaten the function as infrastructure that is essential to national development and better quality of life.

Moreover, cases of floods and droughts occurred frequently due to climate change, calling for a fundamental measure to tackle such challenges. Therefore, on June 8th 2009, the Korean Government commenced the Four Major Rivers Restoration Project as a new growth engine, which will enhance the quality of life and invigorate the economy.

□ Major details of Four Major Rivers Restoration Project

The Four Major Rivers Restoration Project is planned in cooperation of several Korean Governmental Ministries, including the Ministry of Environment, Ministry of Land, Transport, and Maritime Affairs, Ministry of Culture, Sports, and Tourism, and Ministry for Food, Agriculture, Forestry, and Fisheries.

The first major task is to secure sufficient water resources in preparation for water shortage possibly caused by climate change (expecting 1 billion㎥ in 2016). River

● Location of reservoirs to be established and aerial view of the reservoir

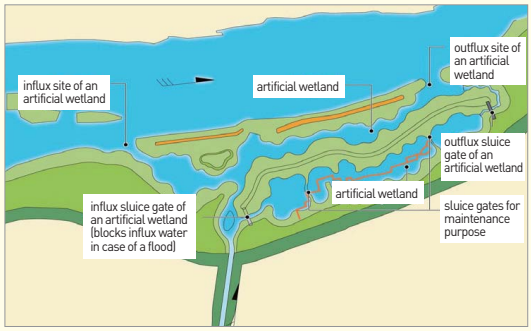
● Yipo Weir

channels will be dredged and 16 reservoirs and 3 small and medium-sized multi-functional dams will be installed. In addition, about 96 agricultural reservoirs will be heightened to secure 1.3 billion㎥ of water in total..

Secondly, flood control capacity will be expanded by approximately 920 million㎥ in preparation for 100~200 year-flood-frequency in order to reduce cost (4 Trillion Korean Won each year) and to prepare for severe weather events.

Third, investment will be concentrated on river basins that adversely affect the water quality of the Han River, Nakdong River, Geum River, and Yeongsan River. Through such

● Flood control capacity (left) and detention facility by rivers (right)



investment, we plan to enhance the currently stagnant quality of water of rivers to 86% of achievement of "outstanding water (3ppm in comparison to BOD)" in 2012, from 76% in 2008. Also, the ecological health of streams will also be promoted.

Fourth, waterfront areas will be developed as complex areas for culture and leisure for the local residents. Lastly, local development focusing around rivers, including green tourism and beautiful water scenery, will be promoted.

□ Current status of environment measures for the promotion of the Four Major River Restoration Project

[Status of promoting water improvement measures]

Regarding water quality in Korea, A water quality indicator, concentration of Biochemical Oxygen Demand (BOD) in Korea has been lowered as a result of installing many sewage treatment plants since 1970s. BOD at Palldang, a major drinking water source for 25 million people in areas of Seoul Metropolitan City and Gyeonggi Province, is close to the First Grade Water (1.0 ppm).

However, too much effort was put into BOD management that the problem of non-biodegradable organic substance of chemical oxygen demand (COD) and the concentration of TP, nutritive salt that is the cause of algae generation, remain stagnant or deteriorate. The average concentration of TP in rivers of Korea is 0.16~0.20mg/L, which exceeds the eutrophication standard (0.035~0.1mg/L) of OECD. Also, BOD in the Mulgeum region in the downstream of Nakdong River had once increased to 5.1ppm (4th class), which is higher than the double of the average (2.4ppm in 2008), due to algae generation caused by lack of water with the drought season in March of 2009.

The Four Major Rivers Restoration Project will become a cornerstone for overcoming the limitations of water quality management.

First of all, water quantity necessary for the improvement of water quality will be secured. In the case of the Nakdong River, approximately 200 million㎥ among 1 billion㎥ of additional water can be used for water quality improvement, and thus, the quality of

water during the dry seasons will be dramatically improved. The rate of progress for the construction of 16 reservoirs and the dredging of river channels for the securing of waters in four rivers is 97.0% and 91.3% respectively as of the end of May, 2011, and it is expected to be completed before June.

Secondly, water quality will be intensely improved by 2012 for 34 among 66 mid-watershed regions of the four rivers of which COD or TP is in increase, or if there is a large water source nearby.

In particular, the regime coefficient (maximum flow/minimum flow of rivers) of the four rivers is 90~270, which is very high, causing difficulties in the usage of water resource and water quality management during the dry seasons. Thus, 233 new chemical treatment facilities will be established in sewage and waste water treatment plants to reduce TP which causes algae generation during droughts. Also, 1,084 basic environmental facilities, including waste water treatment facilities, sewage treatment facilities, and livestock excretions management plants, will be established to reduce pollutants flowing into the four rivers.

River	Han	Nakdong	Geum	Seomjin	Yeongsan
Regime coefficient	90	260	**190**	270	130

The rate of completion for the establishment of 1,281 basic environmental facilities, including TP treatment facilities, and waste water and sewage treatment facilities, in the basins of the four rivers is 62.5%. The installation of 758 facilities will be completed by the end of the year, and all facilities will be completed by 2012.

Along with the establishment and reinforcement of basic environmental facilities, the standards for water quality of discharged water from sewage and waste water treatment facilities will be strengthened from January 1, 2012. The standard for TP has been strengthened by up to 10 times, although there are differences between regions.

Moreover, items subject to the system for the quantity management of water pollution of the four rivers have been expanded from biochemical oxygen demand (BOD) to TP starting from January 1, 2011. The amount of discharge has been allocated to each work place to be observed by real-time through tele-metering system (TMS) installed in each facility.

Third, measures for reducing the ever-increasing nonpoint pollution (40~60% of pollution load rate) will be promoted. In order to reduce nonpoint pollutants flowing in from muddy water of fields in high-altitude regions, and from artificial reservoirs of cities, waterway for drinking water, buffer vegetation belt, ecological wetland, ecological reservoirs, and facilities for infiltrating rain water will be established. Also, farmland (156.86㎢) within the stream areas will be compensated and rearranged to reduce TP by

Strengthening of standard for water quality of discharged water from sewage and waste water treatment facilities

Classification	Item (㎎/L)	Current	Region I	Region II	Region III	Remarks
Sewage treatment facility	BOD	10	5	5	10	
	COD	40	20	20	40	
	TN	20(60)	20	20	20	
	TP	2(8)	0.2	0.3	0.5	
Waste water treatment facility	BOD	20(30)	10	10	10	
	COD	40(40)	20	20	40	
	TN	40(60)	20	20	20	
	TP	4(8)	0.2	0.3	0.5	

Note) (Region I): Region for management of water source (water source protected area, waterside region, etc.)
(Region II): 34 regions for intense management, excluding regions for management of water source
(Region III): Basins of 4 rivers, excluding Region I and II

annual amount of 13.7㎥ contained in fertilizers that directly flew into the streams.

Fourth, the Ministry is in the process of arranging prompt control system to prevent and respond in the case of accidents in water pollution, including turbid water during constructions. When using vessels for construction in areas with large volume of water or with deep waters, eco-friendly construction method of suction-type will be used, and for shallow water areas, cofferdam and silt protectors for sand basins are established to minimize turbid water.

In prevention of accidents in water pollution including turbid water, 'Water Pollution Prevention Center (October, 2009)' was established, and warehouses for the storage of prevention equipments (8 warehouses in the areas of the 4 rivers) are established and operated nearby the construction sites.

[Strengthening of the health of aquatic ecosystem]

Although the rivers of Korea have maintained their natural state up to the 1950~60s, rapid economic development of the country led to the lack of water for supporting the ecosystem, and thus, the lack of healthy ecosystem due to the establishment of artificial structures including concrete to prevent flooding and traffic congestion.

The Four Major Rivers Restoration Project will ecologically restore the damaged ecosystem of the rivers.

929km of national rivers will be ecologically reconstructed, and 20 dry streams/covered streams with severe water pollution will be restored into ecologically healthy streams, and the project for recovering branch rivers, gullies, and streamlets will be continuously promoted.

Meanwhile, endangered species including the Gobiobotia nakdongensis will be

● Ecological Wetland Park of Hwa-cheon District

artificially proliferated and cultivated to discharge them in appropriate habitats for the maintenance of biodiversity, and to increase the population number through the Four Major Rivers Restoration Project. In the established reservoirs, fishways optimized in terms of the structure, slope, and water flow will be constructed to enable aquatic animals to move up and down the streams.

Moreover, monitoring on the change in aquatic ecosystem will be strengthened, by examining the aquatic ecosystem of the four major rivers, and restoration project for flagship species that reflect the ecological and geographical characteristics of the regions will be promoted. Also, the project for recovering the ecosystem of the branch rivers will be strengthened by allowing aquatic organisms to migrate into and to live in nearby flowing branches.

[Promotion of safety of drinking water]

In March, 2009, phenol was released due to a fire in a factory of Gimcheon nearby the Nakdong River. Water abstraction of the purification plant in the downstream of the Nakdong River was suspended, and the supply of water was restricted in the neighboring regions. Such action was due to lack of water, and the concentration of factories in the upper stream that discharge pollutants.

The Four Major Rivers Restoration Project will also promote policies that can enhance the safety of drinking water for the public.

First of all, the management system for various pollutants discharged from factories will be established. Currently, there are about 40 different types of water pollutants but there are more than 40,000 chemicals distributed from factories. It is in fact impossible to designate all of the 40,000 chemicals as water pollutants to establish separate effluent quality standards. As a measure, management system for discharging ecotoxicity will be implemented. The system checks whether organisms such as water fleas perish due to waste water. Such system will come into effect in 2011 to make sure that drinking water remains uncontaminated with waste water from factories.

Secondly, the monitoring system will be strengthened. The attachment of tele-

metering system (TMS) that began in 2008 was planned to be completed by 2010, and to additionally install automatic measurement network for water quality, currently established in 50 areas nationwide, in large industrial complexes. The system will enable real-time analysis of the rate of water pollution in regions where there are harmful water pollutants.

Third, buffer undercurrent facilities will be additionally established to disable the spread of pollutants in the case of accidents that cause pollution. With the outbreak of the phenol accident last year, the water system of the Nakdong River was examined. Feasibility study was completed on 20 regions, and new facilities will be constructed annually to prevent the suspension of water supply. At the same time, indirect sources of water, including riverbank filtration and riverbed filtration, will be found and formed, which are currently receiving attention as high-quality sources of water.

□ Expected effects

1.3 billion㎥ of water and 920 million㎥ of flood control capacity will be secured through the Four Major Rivers Restoration Project. Through the project, rivers will be reborn as the infrastructure that leads national development by solving the problems of flood, drought, and future water shortage. Also, water quality improvement of streams and restoration of the aquatic ecosystem will be put forward, contributing to the construction of a healthy aquatic ecosystem. Moreover, the four Major Rivers Restoration Project will contribute greatly to enhancing the level of leisure and quality of life, by creating cultural facilities including ecological wetland and ecological streams. Also, the project will lead the vitalization of regional economy as a Green New Deal project, and improve national competitiveness in water management.

□ Future plans

The Ministry of Environment will carry out strict process management to secure the best quality of establishment of environmental basic facilities for the improvement of water quality. Also, water quality prediction system on the 16 reservoirs will manage the quantity and quality of water, in order to continue the effect of securing of water and quality improvement with the Four Major Rivers Restoration Project. The Ministry will focus on spreading the effect of the project on improving water quality to all the streams of the country. Furthermore, the attachment of TMS and number of different types of pollutants will be expanded to eradicate the sources of pollution flowing into the four rivers, and control the amount of pollutant inflow by real-time.

4-3. Green City Pilot Project in Gangneung

□ Background

The amount of greenhouse gases emitted from city life is 43% of the total emissions. It takes up a huge part of the total emissions, but the expense for reduction is small, and immediate reduction effects can be seen. Thus, it is necessary to come up with greenhouse gases reduction measures appropriate for each city.

Low-Carbon Green City is a city of new concept actively accepting the combination of greenhouse gases reduction, green growth, and promotion of branding cities. The project for Low-Carbon Green City began from the common will of settling low-carbon green growth in its early stage by reducing greenhouse gases and environment pollution, and creating new engine for growth and jobs using green technology and clean energy.

Progress of the project

While various discussions on the construction of a new city brand which responds to climate change and leads to green growth, the foundation for pilot project for Low Carbon Green City was arranged as the President proposed the construction of a Low-Carbon Green City in the Gangwon region (Forum on the Development of the Gangwon Region, February, 2009), which possesses the nature' s gift of natural environment.

The basic concept of Low-Carbon Green City has been arranged through professional

Progress of promotion of Low Carbon Green City Project in Gangneung

Date	Contents
February 10, 2009 (Forum on development of the Gangwon region)	International model city for 'low-carbon green growth', necessary to emphasize the low-carbon green city as an international luxurious city (president)
May 28, 2009	Reporting the methods for promoting the construction of a low-carbon green city to the president
July 15, 2009	Selection of Gyeongpo region of Gangneung-si as the location for low-carbon green model city
July 22, 2009	Signed MOU on the pilot project for Low-Carbon Green City (the Ministry of Environment, Ministry of Land, Transport, and Maritime Affaires, Gangwon-do, and Gangneung-si)
December 30, 2009	Reporting the master plan and video on the pilot project for Low-Carbon Green City to the president
January 29, 2010	Development of low-carbon green city model, and confirmation and announcement of the basic structure
March ~ December, 2010	Promotion of service for establishment of a comprehensive plan based on the basic structure
March ~ May, 2011	Discussion on and confirmation of the comprehensive development plan (draft) by relevant departments

consultations, and Gyeongpo region of Gangneung-si was selected (July, 2009) as the location for the pilot project, decided by local governments under the supervision of Gangwon-do. Afterwards, MOU on the pilot project for Low-Carbon Green City was signed between relevant departments (July 22, 2009, the Ministry of Environment, Ministry of Land, Transport, and Maritime Affaires, Gangwon-do, and Gangneung-si) to arrange a system for project implementation. At the same time, the master plan was confirmed and announced (January 29, 2010), and the execution of the project was actualized, by promoting services for the establishment of detailed plans. In May, 2011, the "Comprehensive Plan on the Construction of Low-Carbon Green Model City in Gangneung" was arranged and confirmed through research, gathering public opinions, and discussions between relevant departments.

Strategy

The six sectors of eco-friendly soil usage, green transportation, natural ecology, energy, water/resource circulation, green tourism and life have been selected as the major factors of the model low-carbon green city.

In consideration of the environmental conditions of Gangneung-si richness of resources to be used for new renewable energy, including photovoltaic, solar and wind, as it is close to the sea, and possession of natural environment (Gyeongpo Lake and the East Sea), and historical and cultural heritage, including Sun Gyo Jang, Ojukheon, and Danoje Festival, the six major factors have been applied to the entire city.

First of all, a town for R&D and production of new renewable energy was constructed to create a new engine for growth by blending and combining green industry and technology. The foundations for green tourism resort city have been strengthened by forming the T-shaped area connecting the river (Gyeongpo River)-lake (Gyeongpo Lake)-sea (East Sea) as ecosystem restoration and water-friendly space, and by connecting the green traffic network for pedestrians and bicycles.

Financial resources needed for public projects including the establishment of basic facilities will be provided through government subsidies, and the project for securing self-sufficiency of the city, including forming a test-bed for green technology and industry, and green jobs will be supported through private investments.

Details on the construction of model Gangneung Low Carbon Green City

In order to construct a green city that harmonizes the city and natural environment, three themes have been drawn out from the six major sectors of low-carbon green city which is appropriate for the natural environment and liberal/social environment of Gangneung, and these three themes have been arranged as projects.

● Gyeongpo Lake

1) Carbon-zero city that responds to climate change

We hope to construct a future-oriented carbon-zero city that promotes green growth by combining green technology, including green construction, green traffic, and new renewable energy, with smart grid and information technology.

In order to achieve this, U-Bike system which enables remote/unmanned bicycle rental will be introduced, and circulative traffic system, including electric buses and transfer centers where people can observe the pleasant panoramic view of the city and the Gyeongpo coast, will be introduced to construct an eco-friendly green traffic network.

Demonstration study will be carried out on the state-of-the-art new renewable energy, including wind and solar power, appropriate for the regional characteristics, and a green technology theme park will be constructed as a research complex related with the study on new renewable energy. Residential spaces for the complex will utilize new renewable energy, and low-carbon houses will be constructed, including green homes that reduce energy through heat isolation and forestation around buildings utilizing passive technology. In addition, the project for improving the scenery and reducing energy by changing to energy-saving lighting, like LED, on major streets and nearby the Gyeongpo Lake, is under way.

On the basic environmental facilities (sewage treatment plants) within the complex, energy will be made self-sufficient by using photovoltaic and small wind turbines, and facilities for reusing rain water and sewage will be established and operated.

2) Construction of a clean and pleasant ecological city

An ecological network that utilizes natural environment (Baekdudaegan + lake + sea) of Gangneung will be constructed to enhance the image as a clean city, and make the city an international hub for eco-tourism by promoting it as a habitat for migratory birds and a region of excellent scenery.

First of all, Soonpogae wetland preserved near to the original state of the ecosystem will be left in its wild state, and be formed into an ecological wetland park. Gyeongpo Lake will be formed as a water-friendly ecological wetland near to its original state to improve its water quality. Also, a habitat for migratory birds will be created to construct an eco-tourism route, by connecting with neighboring regions including Sogeum River and Jeongdongjin.

The forest and green region which covers 50% of the complex will be utilized to create a Wellness Center for healing and rest area, including the treatment of atopic dermatitis and silver care. Pedestrian paths will be changed into green paths, and healing forest and green forest path will be created to promote the region as a green space representative for taking a walk, having a rest, and visiting the natural ecological culture.

3) Green culture tourism city that incorporates history and tradition

A place for culture will be created by utilizing various cultural assets, including Ojukheon and Sun Gyo Jang, and traditional festivals of the region, including Danoje and Yulgokje, and a street for artists where poets and writers freely create art will be arranged to form a distinctive historical and cultural tourism city.

First of all, a traditional Hanok village will be created and maintained to form a space where people can experience the traditional residential area of Hanok, ondol, and food. Also, the Gyeongpo Lake will be restored to provide the opportunity to experience the old waterways, and cultural assets and folk materials will be connected, including Sun Gyo Jang, Ojukheon, and the site for the birthplace of Hu-nan-seol-hun, to develop the region as a tourism belt which enables historical and cultural experiences. Also, ecology experience park, pine-scent park, and natural preservation facilities, including trails, will be established near the coast neighboring the Gyeongpo Lake to be utilized as the base for high-class ecological visit.

□ Expected results

As the social and economic expected effects of the model Gangneung low-carbon green city, the number of tourists will increase by 920,000 people, with profits of 85 billion won through the creation of new projects including experience opportunities and attractions. Also, by forming the test-bed for green technology, approximately 10,800 jobs

● Ojukheon

will be created, 1.23 trillion won of production inducement will arise, and 470 billion won of additional value will be created.

As for environmental effects, around 130,000 tons of greenhouse gases (CO_2) and 40,000 TOE (effect of substituting 300,000 barrels of petroleum) of energy is expected to be reduced. The rate of greenization will increase by 16.5%P, from original 43.5% (7,978,000m^2) to 60% (11,008,000m^2).

The model Green City can be used as a place for educating, publicizing, and providing experience to the public, and the image of the city will be enhanced through the development and utilization of regional resources and green technology. Moreover, we can expect the city to thrive as an international luxurious city which leads "green culture", and as a global green leader.

□ Future plans

The Ministry of Environment will quantitatively and rationally evaluate the objectives and plans for city construction to select two additional regions (September, 2011), by utilizing the "Index for the Evaluation of Low-Carbon Green Cities (15)". This will enable the expansion of "Low-Carbon Green City", the model of luxurious city for green growth which can respond to climate changes and reduce environmental pollutions, to 16 cities and provinces (instruction of the President, May 28, 2009). Moreover, administrative and financial support will be continuously provided, including the securing of budget based on the analysis and evaluation of project performances at the end of each year, in order to promote stable management of performances.

Furthermore, domestic and foreign advertising on the city brand of Gangneung will be promoted to induce the expansion of Low-Carbon Green City domestically, and to imprint the city as a luxurious city for green growth internationally to promote the region as a global tourist attraction. We hope to promote the Gangneung as the representative high-class green city of Korea within few years to promote the city brand that spreads the fragrance of pine trees to the world

4-4. Eco-friendly Food Culture Promotion

□ Background

Koreans eat different kinds of dishes that come with soup and prefer plentiful table setting. Such culture leads to the generation of large amount of food waste. The government has devised several measures for the improvement of food culture, but the efforts did not produce visible results. However, as the reduction of food waste is important in environmental and economic sense, the Comprehensive Measures for Food Waste Reduction was established in cooperation with relevant departments (Presidential Committee on Green Growth, Ministry of Environment, Ministry for Food, Agriculture, Forest and Fisheries, Ministry of Health and Welfare, etc.) in February, 2010. The comprehensive measures have laid out practical solutions for each relevant department, in order to reduce food waste by 20% by 2012. Accordingly, the Ministry of Environment is enforcing various efforts to shift the direction of policy from that focused on the treatment of already-generated food waste to one that restricts the generation of food waste.

□ Current status

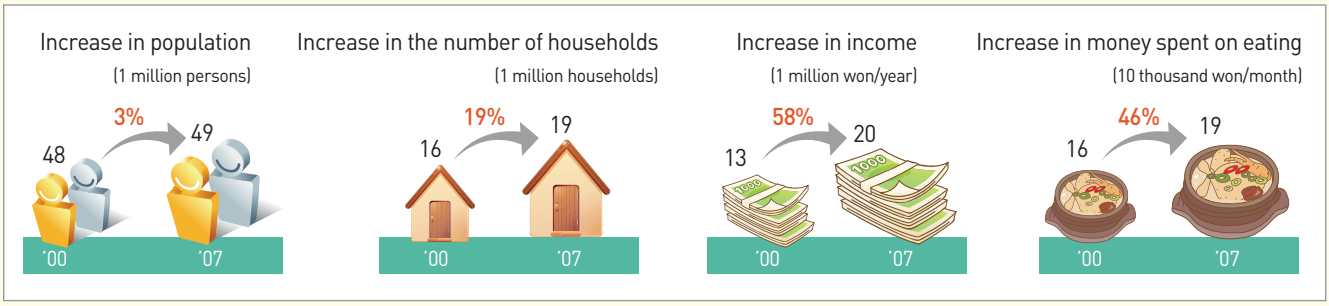
Status of generation

Daily food waste generation in Korea has increased 3% each year, from 11,400 tons in 2000 to 15,100 tons in 2008. It is expected that it will reach 17,000 tons in 2012 if the current rate continues. One of the major reasons for the increase in food waste is growing number of population and household. The number of households is increasing due to nuclear families, where households constitute of one to two person(s) and double income families constitute more than 43% of the total number of households. Also, the quantity of food provided at restaurants is plenty, and the amount of food ingredients thrown away due to eating out is increasing. Moreover, the public perception on favoring plentiful table setting is another major reason for the increase in food waste. Koreans consider it as a virtue to prepare meals with a table full of dishes, and restaurants provide excessive amounts of food for customer satisfaction.

Channel and constituents of generation

Food waste does not only include throwing away of cooked food, but also all the food thrown away from the process of production and distribution of ingredients, to the purchase, cooking, and after storage by the consumers. The amount of food waste generated during the distribution and cooking process accounts for 57% of the total food waste, left-over food accounts for 30%, food thrown away without being eaten is 4%, and

Reasons for Increase in Food Waste



food ingredients thrown away after being stored is 9%. More than 70% of food waste is generated from homes and small restaurants, 16% from large restaurants, and 10% from mass feeding facilities.

Problems arising from the generation of food waste

It costs 700 billion won annually to manage food waste, which equals 18 trillion won annually when converted into economic value. Also, various environmental problems are caused by food waste. In addition to the occurrence of odor during the collection of waste and soil pollution due to inappropriate management, greenhouse gases are emitted and energy is wasted due to food waste. The national amount of greenhouse gases emitted by food waste is 8,850,000 tons CO_2, which corresponds to the amount of carbon dioxide that 1.8 billion pine trees can absorb. The amount of energy consumption is 8.8 billion kwh, which is equivalent to the amount of electricity generated by 1,890,000 tons of crude oil. Moreover, the generation of food waste could lead to food shortage. The current degree of self-sufficiency of food in Korea is 50%, and self-sufficiency of grains is 27%. Under the situation of low rate of self-sufficiency, wasting food drives up the amount of imported agricultural and marine products. Imported agricultural and marine products have to be delivered far distances, and thus, freshness of food declines and carbon dioxide emissions increase.

□ Major details on measures for improving food culture

Arranging measures for each source of waste generation

The Ministry of Environment prioritized setting up a T/F team for reducing food waste. The T/F team selected ten major sectors from which food waste is generated, and signed MOUs for voluntary cooperation in reducing food waste by selecting subjects for implementation from each sector. In order to establish measures which match the characteristics of each sector, the Ministry consulted and adjusted the measures with

relevant stakeholders including relevant associations and institutions, and examined the progress of measures by managing the monthly generation of food waste.

First of all, in the public institutions sector, 2,600 people from 12 institutions, with the affiliated institutions of the Ministry of Environment up front, have been subject to the measures for reducing food waste. A total of 58.7% of food waste was reduced during 9 months, and no dishes were left over at the Nakdong River Basin Environmental Office, specifically. Among the public institutions, the Government Building Management Service has changed its cafeteria, where the plates have been changed to buffet-type plates, plates are collected based on the fact that dishes are left over or not, and every Wednesday is designated as a "No-Leftover day."

Next of all, for 161 rest areas on highways, Korea Tourism Organization, Korea Highway Service Company Association, National Campaign Headquarters, and the Ministry of Environment signed a voluntary contract altogether. Highway rest areas are being used as a place for national promotion campaign, where daily average of 1 million people uses the service. By classifying menus by standard and small quantity, operating a self-service bar where people can be served with additional dishes, and packing left-over food for customers, food waste generation has been reduced by 18.5% over 8 months.

Military camps have signed voluntary contracts with the Ministry of National Defense, medical camps with Korean Hospital Association, and funeral halls with Korea Funeral Trade Association. Restaurants nearby the Gwacheon Government Complex have set up a cooperative system with the Gwacheon City, Korea Restaurant Association, and 50 participating restaurants. Military camps have arranged measures to construct a system for optimizing the amount of meals and to operate a system to include information of the producer for receiving meals, medical centers for the system of menu selection where patients can choose their own menu, and restaurants in funeral halls for the adjustment of the minimum amount of food ordering allowed. Restaurants in Gwacheon are promoting the usage of small bowls for rice, and reduction of the number of side dishes. As a result, military camps have achieved up to 37% of reduction of food waste generation.

Moreover, three hotels in Seoul have expanded the order-made food corners, and are using double plates for refills that are smaller in size as an example. Hanwha Group is setting an example of reducing the purchase, cooking, and distribution of food, and minimizing additional food available. Six elementary, middle, and high schools, and five universities are promoting measures fit for their own characteristics. Visible results are being confirmed through these measures, where hotels and buffets have achieved 13.8% of reduction, 16.5% for large companies, 20.2% for elementary, middle, and high schools, and 36% for universities.

Implementation of volume based waste fee system

In addition to the measures for each source of generation, the Ministry of Environment will expand the usage of the volume based waste fee system, which imposes expenses that corresponds to the amount thrown away, as a measure for restricting the generation of waste. Currently, food waste is collected without charge or only a certain amount of expense is collected in 144 regions where food waste is separated. However, until 2012, management expenses will be imposed that correlate with the amount thrown away. As the method for measuring the amount generated, there is (1) purchase of measured rate plastic bags, (2) attaching chips to food waste bins, and (3) RFID (Radio Frequency Identification) system that manages information on the generation and management through wireless communications. The Ministry of Environment has newly created and enacted an article on restricting generation in the Standard Act on Food Waste, in order to promote the volume based fee system.

Results for each source of generation

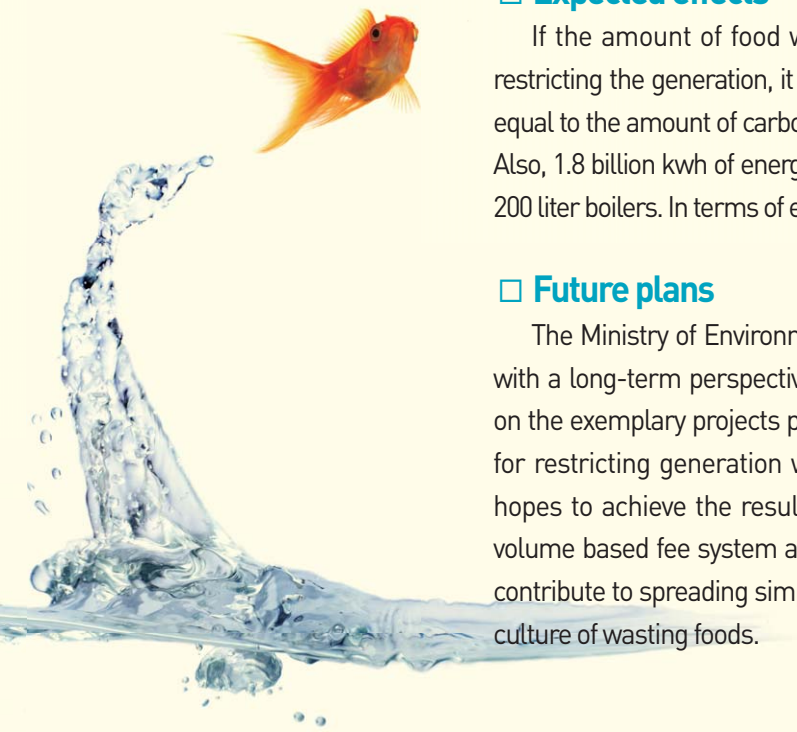
Source	Result of food waste reduction	Source	Result of food waste reduction
Affiliate institutions of the Ministry of Environment	(In December compared to March, 2010) 58.7%	Hotels and buffets	(In November compared to August, 2010) 13.8%
Cafeteria in government complexes	(In December compared to March, 2010) 40.1%	Large companies	(In November compared to September, 2010) 16.5%
Military camps	(In October compared to August, 2010) 37%	Universities	(In December compared to August, 2010) 36%
Restaurants in Gwacheon	(In November compared to August, 2010) 10.4%	Medical centers	(In November compared to August, 2010) 13.6%
Elementary, middle, and high schools	(In October compared to August, 2010) 20.2%	Funeral halls	(In December compared to August, 2010) 11%
Rest areas in highways	(In December compared to April, 2010) 18.5%		

Operation and evaluation of T/F team of local governments

Local governments have formed T/F teams to adjust the governmental policy on restricting the generation of food waste based on the characteristics of local governments. The T/F teams will establish a cooperative system not only with the environmental department but also with departments in agriculture and forestry, and hygiene to prevent the generation in the process of "production, distribution, and consumption". They also promote the policy for restricting generation in cooperation with private associations. In accordance with the guidelines of the Ministry of Environment, T/F

Classification		Collection method	
Measured rate plastic bag system		Purchase of bags → Discharge → Collection of exclusive bags only	
Payment chips/sticker system	Houses (restaurants)	Purchase and attachment of chips → Discharge → Collection after removal of chip	
	Condominium	Discharge of common containers → Attachment of chip (management office) → Collection after removal of chip ※ Imposing the chip purchase expense to each household by the management office	
RFID system		Discharge → Confirmation of information on measurement and source of discharge when collecting → Imposing expenses ※ Expenses for houses will be proportional to the frequency of discharge	

teams will arrange measures appropriate for each source of generation, operation of measured rate system, revision of ordinance of local governments, and execution of promotion and education. The Ministry of Environment will evaluate whether the T/F teams of local governments have been formed and policies for restricting generation have been arranged or not. For local governments with outstanding efforts, budgets will be supported, while the provision of national budget will be suspended for insufficient local governments.



□ Expected effects

If the amount of food waste generated is reduced by 20% through the policy on restricting the generation, it is expected that 1,770,000 tons of CO_2, will be reduced. This is equal to the amount of carbon dioxide emitted by 470,000 vehicles being driven for one year. Also, 1.8 billion kwh of energy can be saved, which equals 2,260,000 drums of kerosene for 200 liter boilers. In terms of economic value, 5 trillion won can be saved in 2012.

□ Future plans

The Ministry of Environment will continue its efforts to reduce food waste generation with a long-term perspective, not only striving to achieve short-term treatments. Based on the exemplary projects promoted by the Ministry of Environment until now, measures for restricting generation will be promoted in each region. In particular, the Ministry hopes to achieve the result of 20% reduction by 2012 through implementation of the volume based fee system across the nation. The reduction of food waste generation will contribute to spreading simple, yet graceful Korean food culture by improving the current culture of wasting foods.

05

Subsidiary & Affiliated Organizations

The National Institute of Environmental Human Resources Development(NIEHRD) is concentrating its efforts on training global environment professionals who are capable of dealing with environmental problem and possess an integrated understanding of the three dimensions of environment, economy and society, thereby taking the lead on 'Green Growth' in the future.

5-1. National Institute of Environmental Research

Since its establishment in 1978, the National Institute of Environmental Research (NIER) has been conducting many researches on the environment to support the technical implementation of environmental policies as a means of attaining pollution-free societies, thereby resolving current and future environmental issues.

In the 1980s, NIER focused on the analysis of air and water quality and conducted its research on the status of environmental pollution. From 1990 to 2004, it pushed forward various research projects such as the analysis of pollutant sources by type, the research on environment standard and legislation of official test method, the monitoring of national environmental qualities and the national development project of environmental engineering and technology. Since 2005, NIER has established an integrated research system in order to approach environmental issues not through separate work dealing with air and water quality in a divided manner, but rather through a holistic solution. In doing so, it prioritizes "receptor oriented" environmental health, chemicals management, nature conservation, and the improvement of environmental quality.

To realize the vision of jumping into a leading environmental research center which leads to 'Green Korea', NIER set out its objectives to take the lead in changing environmental policy through the preoccupation of future environmental issues and to enhance a customized policy support. Accordingly, it is focusing on the three big research projects as follows:

Firstly, NIER is strengthening its anticipative research against climate change through scientific research on climate change adaptation and mitigation, taking the initiative on green technology development and the augmentation of multilateral international cooperation. It is also currently investigating the influence of climate change on plants through 'Temperature gradient greenhouse' and 'Ecology tower', the technical development of CCS (Carbon Capture & Storage) watch and evaluation, and the joint development of the built-in structure of the Geostationary Environmental Satellite (2011 ~ 2018) with the United States NASA for the purpose of multi-dimensionally observing climate change and air pollutants in East Asia.

Secondly, NIER is promoting performance enhancement of water management systems through programs such as 'Real-time forecasting/alert system for water quality of the Four Major Rivers and their 16 dams,' the development of a predictive model which measures the degree of water pollution and estimates the arrival time of polluted water at the forebay/purification facilities in the event of water pollution as well as the amount of water the upper river dam should discharge. In accordance with changes in water environment management conditions, it is pushing forward customized policy

support on the performance evaluation of 'Total Maximum Daily Loads' and the assessment of aquatic ecosystems. Furthermore, it is supporting the improvement plan of treated water and sewage water quality management by strengthening safety measure for drinking water and by establishing the framework for the water industry.

Thirdly, it is also conducting living-oriented researches primarily focusing on citizens' health through, for instance, the preparation of an effective counter plan for coping with hazardous environmental factors and harmful animals and plants, the prevention and control of environmental diseases, more stringent risk assessment, and the study of strengthening control over harmful air pollutants such as PM2.5.

With the objective of quickly responding to the diversification of national water environment policies, the NIER has opened up the 'Water and Environment Research Center' in the Four Major Rivers area. The research center's main target is to implement a dynamic research system in order to provide "on-site integrated solution"; to secure basic environmental data about the rivers such as the flow rates and water qualities for the efficient establishment/execution of water control measures; and to solidify the connection among basic environmental researches in the river valley.

Furthermore, as an endeavor to promptly respond to the research active in the environment field, which is quickly diversifying, the NIER has expanded research facilities, establishing new ones such as the 'Toxicity Investigation Center (2008),' 'National Environmental Specimen Bank (2010),' and 'Climate Change Research Building (To be completed in 2011).'

In particular, the 'Climate Change Research Building,' which is scheduled to be completed in April 2011, is a zero carbon emission structure. It reflects one of the many efforts to fulfill the national need for 'Low Carbon Green Growth.' 66 new technologies including solar energy, geothermal energy, natural lighting and super insulation were applied during the construction of this building, which saves energy equal to the amount consumed by 70 average households. This structure is the first zero emission building in

● National Environmental Specimen Bank

● Climate Change Research Building

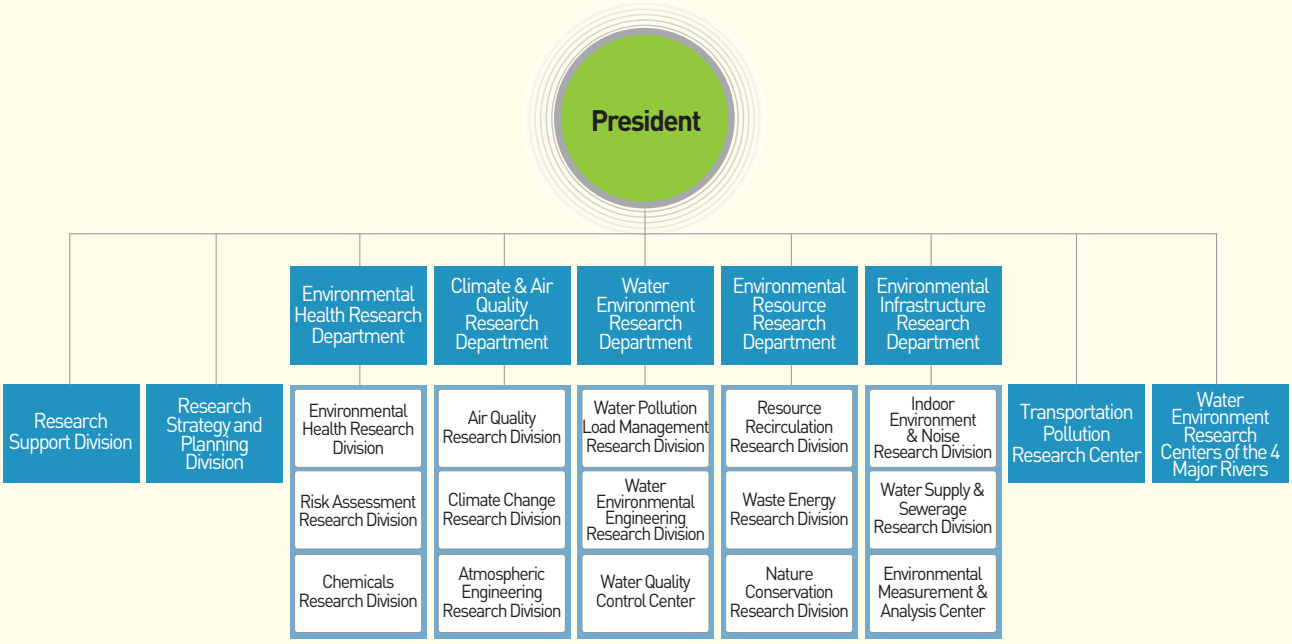
● General view of NIER building

the world, and is expected to promote public awareness on 'Low Carbon Green Growth'. Moreover, foreign diplomatic envoys in Korea as well as bidding committee members of the UNFCCC COP18 will be invited to the building completion ceremony in order to promote South Korea as the host nation of COP18.

From now on, the NIER will exert great efforts to become the number one research institute in the world by maximizing environmental policy support that will help realize low carbon society and by conducting high quality research to improve citizens' environmental satisfaction level.

□ Organization Chart

5 Departments, 15 Divisions and 7 Centers



5-2. National Institute of Environmental Human Resources Development

The National Institute of Environmental Human Resources Development (NIEHRD) is the only professional environmental education institute, the purpose of which is to train governmental officials from the environmental field and general public. In January 1980, the NIEHRD was first established as the Environmental Education Division under the National Environmental Protection Institute (NEPI), Environment Administration and has taken charge of nurturing environmental human resources for the past 30 years. In February 2006, the NEPI was relocated to the environmental research complex, and was officially launched as the National Institute of Environmental Human Resources Development (NIEHRD) to perform the significant role of educating both domestic and foreign personnel into environment expert.

The NIEHRD is concentrating its efforts on training global environment professionals who are capable of dealing with environmental problem and possess an integrated understanding of the three dimensions of environment, economy and society, thereby taking the lead on 'Green Growth' in the future. As a result, more than ten thousand environmental government officials, teachers and students have been visiting this institute annually. The NIEHRD continues to expand environmental training areas and demand with its specialized and intensive environmental education courses.

After holding international environmental education sessions for 26 people from 13 countries in 2005, the NIEHRD has expanded the list of participating countries from countries in the Asia Pacific region to those in Eastern Europe, the Middle East and Africa, producing 150 global environmental human resources annually. It works towards enhancing its competitiveness as a professional environmental education institute by solidifying cooperation for the international environmental education and improving global environmental reform.

The NIEHRD operates various educational services to train environmental human resources. The institute not only provides environmental government officials from different branches and technical experts from the environment industry with specialized education courses, but also offers customer-oriented training through legal education courses tailored to build skills for solving internationalized environmental issues and courses for individual performance enhancement.

Additionally, the NIEHRD has been conducting various field trips to environmental facilities such as the Sihwa Reed Wetland Park and the Environment and Resources Office for elementary, middle and high school students. It has also been offering experience/practice-centered green education programs to undergraduate students in

order to improve the individual performances and capabilities of participants.

The NIEHRD also adopted an online education center to ensure environmental education is always available without constraints such as those of time and location. By implementing work and environmental education side by side, we are able to not only save time, but also help enhance employee performance through self-development.

Since 2005, international education has been operating as well in response to the climate change and reducing greenhouse gas emissions. Through this program, Korea' s advanced environmental policy and technology is transferred to attending countries. The NIEHRD provides a great opportunity for foreign countries to conduct benchmarking strategies on environmental managerial techniques through field trips to environmental infrastructures. While expanding its environmental partnership internationally, the NIEHRD continues to work towards better positioning itself and functioning as a major environmental institution of an advanced environmental country.

The NIEHRD has administered the examination for the certification of Environment Measurement/Analysis specialist so as to improve the reliability and precision of measurement results (e.g. degrees of environmental pollution). This has allowed us to take a great step forward in controlling the system of measurement/analysis by training and awarding official qualification certificates to specialized analysts. This special workforce will work in public measurement/analysis institutions and similar agencies, thereby greatly contributing to securing global competitiveness.

Beyond offering education facilities, the NIEHRD has dormitories for trainees to ensure they are able to pay undivided attention to the training program. After regular training hours, various facilities such as the gym and billiard hall are available to students, enhancing the benefits of education by creating a synergistic effect.

In the future, the NIEHRD will organize the best education courses fostering environmental problem-solving skills and global competitiveness. Furthermore, it will set the finest example of Korea' s environmental education through its optimal education

● Education course for government officials

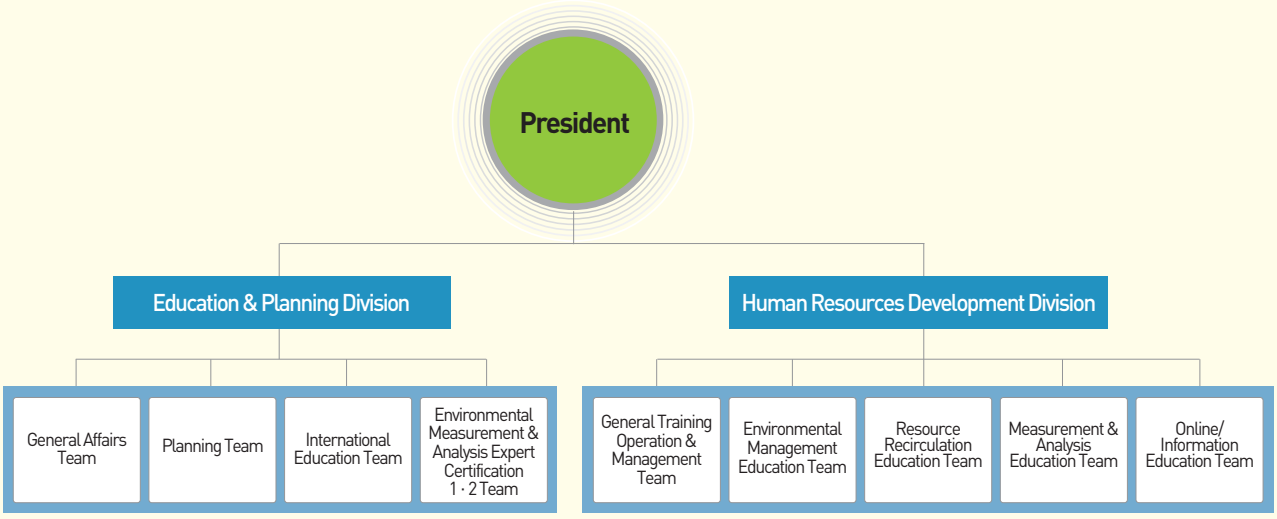
● View of PC room in dormitory

● Education course for performance enhancement

● Field trip of international education course

infrastructure attained through the collaboration of industries, universities, and institutes as well as the establishment of a global network. The NIEHRD will continue its search for environmental human resources who offer valuable input in solving the current environment crisis and resource crisis, and drive the symbiotic development of both the environment and growth.

□ Organization Chart



□ Goal and Major Tasks for Education/Training for 2011

Goal

Nurture Key Environmental Human Resources Leading Green Growth

Major Tasks

- Reinforce in-depth education for green growth
- Open/complement courses to cultivate experts including greenhouse gas verifiers
- Disseminate green growth by enlarging international education

Reinforce Low Carbon Green Growth Education

- Operate in-depth courses focused on practicing green life
- Open an education course for greenhouse gas verifiers
- Strengthen education for students, the future generations

Expand Customized Education

- Develop education courses meeting the needs of customers
- Redesign education courses for internal customers (environment)
- Open practice-centered in-depth education courses

Enhance Performance of International Environmental Education

- Expand education courses that disseminate green growth
- Bolster cooperation with international agencies
- Reinforce support for the local industry's advancement into overseas countries

Vitalize EMAE Certification System

- Enhance convenience in getting jobs with an early implementation of certification test
- Open education courses for applicants
- Improve systems such as strengthening incentives for final successful applicants

Establish Green Growth Infrastructure

- Build geothermal heating / cooling systems
- Replace lights with LED lights

5-3. Korea Environment Corporation

In January 1st 2010, Korea Environment Corporation (Keco) was established through the merging of the Korean Environment & Resources Corporation (ENVICO) and the Environmental Management Corporation (EMC) in order to handle all environment-related projects such as those involving issues of air/water/soil quality, resource circulation, and the environment industry. It represents Korea' s core institutions for "Green Growth," which stems from the acknowledgement that mankind is amid various issues of environmental turmoil such as global warming and environmental damage from reckless energy consumption.

By efficiently promoting pollution prevention, environment improvement and resource recirculation, Keco has established a management system for environment conservation and a circulatory resource control system. Hence it provides an environment-friendly blue-print for national development, upgrading the environment industry. As a leading institution aiming to achieve "Low carbon green growth" in Korea, Keco is dedicated to the five core projects below:

The first project is "Climate Change Response and Greenhouse Gas Reduction". By providing policy support and undertaking its project for reducing greenhouse gas emissions, Keco contributes to "Low Carbon Green Growth" as it trains professional workers to enhance performance in climate change response and promotes the voluntary practice of "Green life" among citizens.

Front View of Keco ●

The second project is called "Water Environment Improvement". In order to cope with muddy water, damaged water quality, and aquatic ecology, which may result during the process of the Four Major Rivers Restoration Project, Keco sets out tasks for monitoring, preventing, and controlling the relevant issues, In addition o improving water quality, Keco also tries to restore the health of the water ecology by, for example, conducting ecology restoration and contaminated soil/subterranean water purification, which restores contaminated watersides and environments of the streams close to a state of nature. Based on its technological capacity and knowledge from past experiences, Keco installs and provides support to waterworks facilities nationwide, contributing to the enhancement of waterworks supplies/services and the improvement of political credibility.

Water Quality TMS Center ●

The third project is the "Establishment of Circulation-Based Resources Management System". By implementing the recycling policy aimed at reducing further wastes and facilitating the proper management of wastes, Keco strives to promote recycling and substantial waste reduction. In addition, it seeks to maximize resource recirculation through industrious use of resources by utilizing its high technical capacity and specialty

in the field of waste management along with its outstanding human resources and equipments. By spreading energy supply created out of waste resources and biomass fuel, this project enables the reduction of greenhouse gases and the strengthening of national competitiveness. Keco is making every effort on commissioning/managing/operating local government resource circulation facilities and waste disposal utilities to ensure that wastes are both sanitarily and securely managed.

The fourth project offers environmental public health services. Keco emphasizes the importance of improving public health by discovering and alleviating problems with sources of pollution found in the living environment. For example, Keco provides information on air pollution and noise status to the public in an effort to create an environment with fresh air where citizens' qualities of life and health can be maximized. Having been accredited ISO/IEC 17025 and GLP, Keco provides quick and precise information about the effects of hazardous chemical substances that may pollute surrounding areas and harm the human body.

The fifth project is called "Policy Support and Environment Industry Support". Keco conducts technical review on the appropriateness of the central and local governments' environmental policies and operates Research & Development to support them,

● Seized Property Recycling Project

● Trial Run for Electric Car and Bus

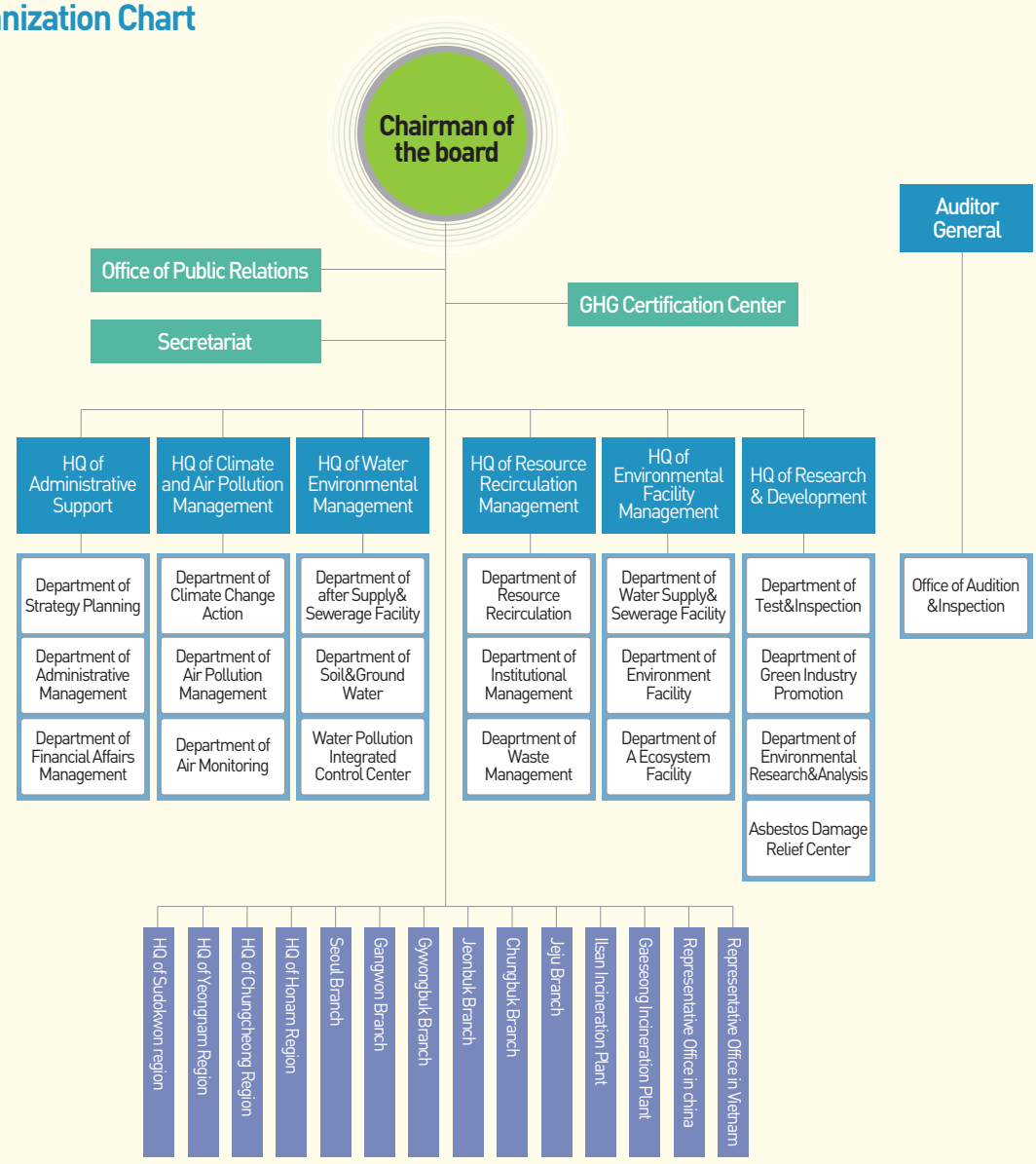
● The 66th Tree Planting Event

● Training Course for Environment Government Officials from Developing Countries

● Environment Safety Inspection for Children°Øs Playground

contributing to the advancement of the nation's environmental industry. In addition, it provides support to small business operators that lack environment-related technology and information/management capacities so as to strengthen the fundamentals of the environmental industry. Furthermore, Keco makes its best effort to support domestic environmental companies' entries into overseas markets for fostering the environmental industry as a new growth engine, and to further strengthen international and inter-Korean environment collaboration.

□ Organization Chart



5-4. Korea National Park Service

Since the first designation of Jirisan Mountain as a national park in 1967, local governments have been managing Korean national parks for 20 years. Following the handover of the authority to manage the national parks to the central government, the Korea National Park service was first established in 1987 to effectively promote park management projects such as those involving research/analysis on park resources, installation/maintenance of facilities, and the publication of park maps and promotional materials.

Since the initial designation of Jirisan Mountain as a national park in 1967, a total of 20 locations have further been designated as national parks. 16 places were designated as Mountain/Land National Parks, Hallyeohaesang and Dadohaehaesang as Marine National Parks, Taeanhaean as a Coastal National Park, and Gyeongju as a Historical National Park, encompassing 6,580km^2 in total, amounting to 6.6% of the nation' s entire territory. Among this, 3,827km^2 (58% of the whole national parks) have been designated as Mountain/Land National Parks.

For the systematic management of natural resources, KNP conducts natural resource inspections for all of the parks every ten years. To understand the status of park resources and the park' s ecosystems, KNP annually monitors park resources to update its databases and conduct scientific researches, which will be used to support park management policies (e.g. national park resource management), the establishment of plans for park management, the designation of special protection zones in national parks, and the design of field trip courses.

Some of the primary resource regions such as major wild animals and plants'

● View of Jirisan Jangteomok Shelter

● View of Jirisan Jangteomok Shelter

● Conducting an Exploration Program

habitats, wetlands, and valleys were designated as special protection zones to restrict visitor entries in the region, thereby supporting the restoration of damaged natural resources.

The 44 endangered plant species out of a total of 66 designated species in Korea are located in the country' s national parks. Targeting 36 of these endangered species (including Cypripedium japonicum and angraecum), KNP has devised a strategy for the restoration of such endangered species; beyond the protection of current habitats, this plan involves the construction of a botanic garden and a proliferation/cultivation facility in 16 of the national parks. Additionally, thorough investigation on the present condition of the Mountain Goat' s inhabitation in Seoraksan and Odaesan is under progress as part of a similar project working towards the restoration of the Asiatic Black Bear in Jirisan.

In its efforts to accomplish its goals of "Nature-Friendly Park Facility, and Low Carbon Green Growth", KNP is currently undertaking 16 tasks in accordance with its five major work goals. Tasks include the preparation of methods to induce advanced park usage, the expansion of new facilities satisfying the conditions of "Low Carbon Green Growth", the installation/maintenance of park facility for enhanced convenience, the undertaking of park facility project in order to improve residents' welfare, and the improvement of park environment, etc.

KNP is committed to addressing natural disasters caused by recent abnormal changes in weather. It has taken numerous steps every year to strengthen the performance of the Disaster/Safety management system.

In addition, various precautionary measures are implemented to promote safe hiking practices. Such measures include training courses on various subjects (e.g. safe mountain climbing, first aid, muscle and bone stretching, and the use of hiking gears),, lessons on appropriate responses to different types of death accidents, and pre-hike warming up programs. The "Hiking Safety Training" program is under progress to keep national park visitors informed about safety requirements and instructions on handling

● View of Bukhansan Dulegil

● View of Hallyeohaesang Marine National Park

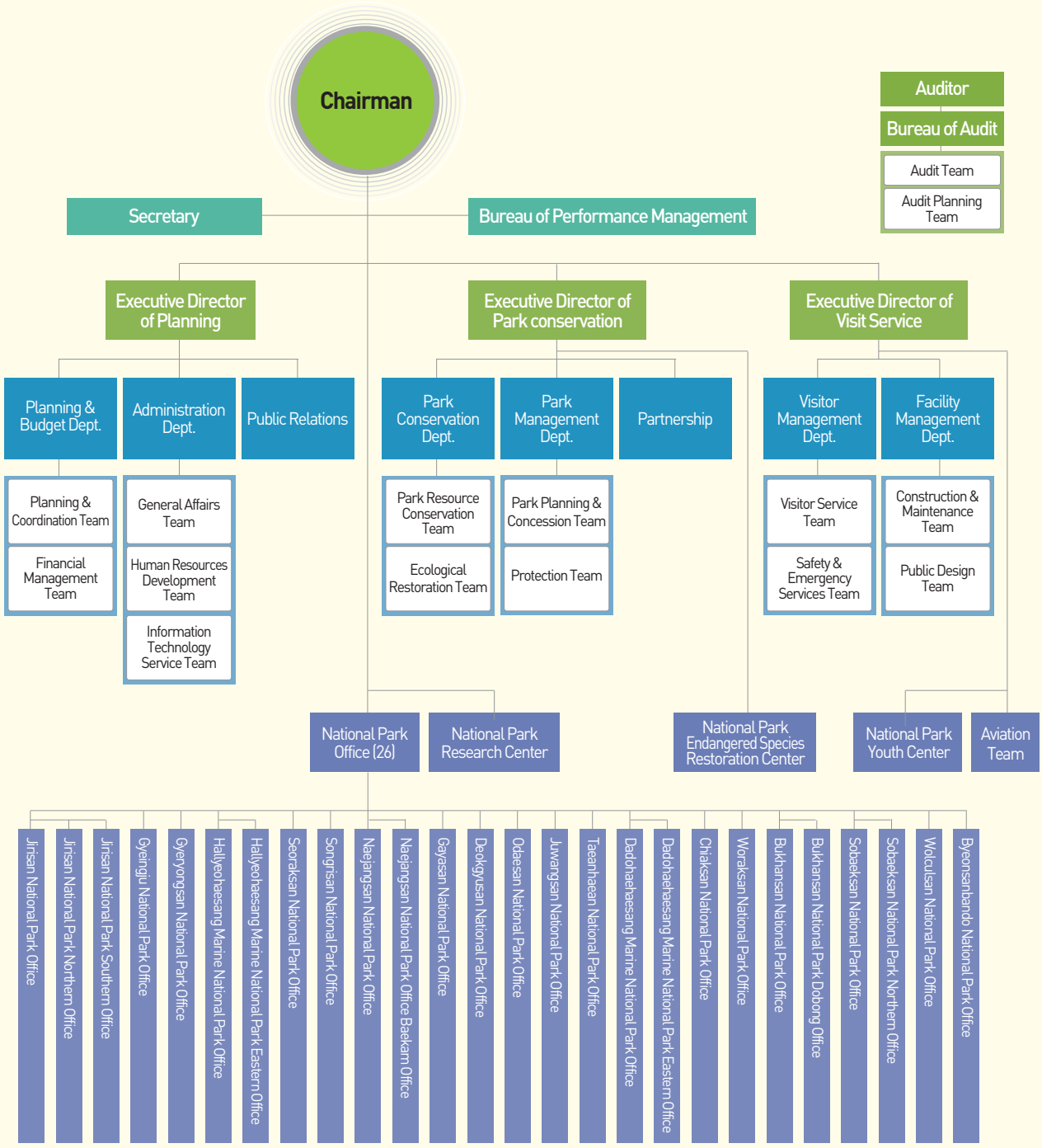
hiking equipments. Additionally, a guidebook for safe mounting climbing is published every year, and rescue activities are well-coordinated with professional mountain rescue teams to ensure safety.

KNP broadened its range of activities beyond domestic realms by signing an MOU with foreign park management authorities and other inter-governmental organizations achieving significant progress in constructing close relationships with international societies and internalizing global park management standards. The International Union for Conservation of Nature and Natural Resources (IUCN) has changed its category of 14 national parks in Korea (e.g. Seoraksan Mountain) from V level to II level, which reflects that the constant effort to secure and maintain the value of national parks has been approved as those meeting global park management standards.

In addition, executive offices for the "Forum for Korea' s Protected Region" and "The Korean MAB (Man and Biosphere) National Committee", which consists of related government branches, research institutes and experts, are built and operated in the KNP' s office, which undertakes a leading role in managing protected region through the government.

In an effort towards the conservation and sustainable use of national park resources, KNP will develop a park resources conservation system, construct a customer-oriented exploration program, and establish a world class park management system through continuous cooperation with advanced countries. Building on its perception that national parks are a starting point towards "Low Carbon Green Growth", KNP is working not only on the conservation of park resources, but also on the creation of a variety of high value citizen participation programs that allow the exploration of areas surrounding the parks in order to promote regional development while also laying infrastructure for tourism.

☐ Organization Chart



5-5. SUDOKWON Landfill Site Management Corporation

Founded in July 2000 as a corporation affiliated with the Ministry of Environment, SUDOKWON Landfill Site Management Corporation (SLC) has been working towards not only treating wastes from metropolitan regions in an eco-friendly way and converting them into useful resources, but also creating a pleasant environment park in the surrounding areas.

The landfill site, which is under the control of SLC and located 40 minutes away from Seoul, was built with environmentally friendly methods. Its size is 20 million m2 (equivalent to the size of 2,800 soccer fields) making it the landfill of the largest scale in the world. The site takes and sanitarily processes processing waste influxes from 24 million people living in Seoul, Incheon, and Gyeonggi province.

The quantity of general wastes from households, construction sites, and industrial site transported to the landfill site amount to 18,000 ton per day. Highly dense leaking water and gas from the landfill site is safely treated with cutting-edge technological capacities. The facility' s systematic management is rated as a very outstanding example in the world. The OECD' s Environmental Performance Review of Korea once mentioned, "The landfill site in Korea is the biggest in the world, serving as a good model for the international society."

The basic foundation facility consists of an underground water draining layer, a solidification water shutting layer, and a leaking water draining layer, forming an infrastnacture with a total size of 165cm used to prevent pollution caused by leaking water. In order to bury and manage wastes in a sanitary manner, landfill gas collection and treatment facilities are installed to prevent waste layers from sinking; other major facilities include leaking water draining and treatment facilities, internal transportation roads, outer banks, and environmental pollution reduction facilities, adding to the safety

- View of Landfill Site 1 where Dream Park Golf Course will be constructed, and 50MW Landfill Gas Power Plant

- Citizens visiting Ecological Pond in Sudokwon Landfill Site

and cleanliness of the site' s management system.

In order to apply a more stable processing method for leaking water with fluctuating qualities and quantities, SLC has taken numerous steps towards the continuous improvement of landfill procedures and the effective management of the facility as it contributes to the improvement of water quality. The leaking water treatment facility is able to discharge 6,700 m^3 of water per day. Leaking water goes through the processes of anaerobic digestion, denitrification and nitrification, first chemical coagulation, and oxidation-coagulation before it is discharged. The economic and efficient automated process is successfully built into the structure, triggering beneficial effects such as reduced processing costs and technology transfers to areas abroad.

Abiding by its motto 'Wastes = Resources' , the corporation has introduced a sustainable resource circulation system that focuses on waste minimization through the improvement of the environmental efficiency of waste management and studies the development of alternative energy sources. For example, a 50MW Landfill Gas Power Plant, which is the biggest in the world, makes practical use of landfill gases generated from the landfill site. Through the use of this power plant, the corporation generates 40 billion Korean won worth of electricity annually and secures 850,000 tons of carbon emission credits.

In particular, the government is currently promoting the construction of the 'Sudokwon Environment Energy Complex (an area consisting of a waste resource energy town, natural energy town, bio energy town, and environment and culture town)' as a pilot project for waste resource and biomass energy. If completed in 2020, it will generate 2.61

● Leachate Water Draining and Treatment Facilities that Discharge 6,700 ton of Water

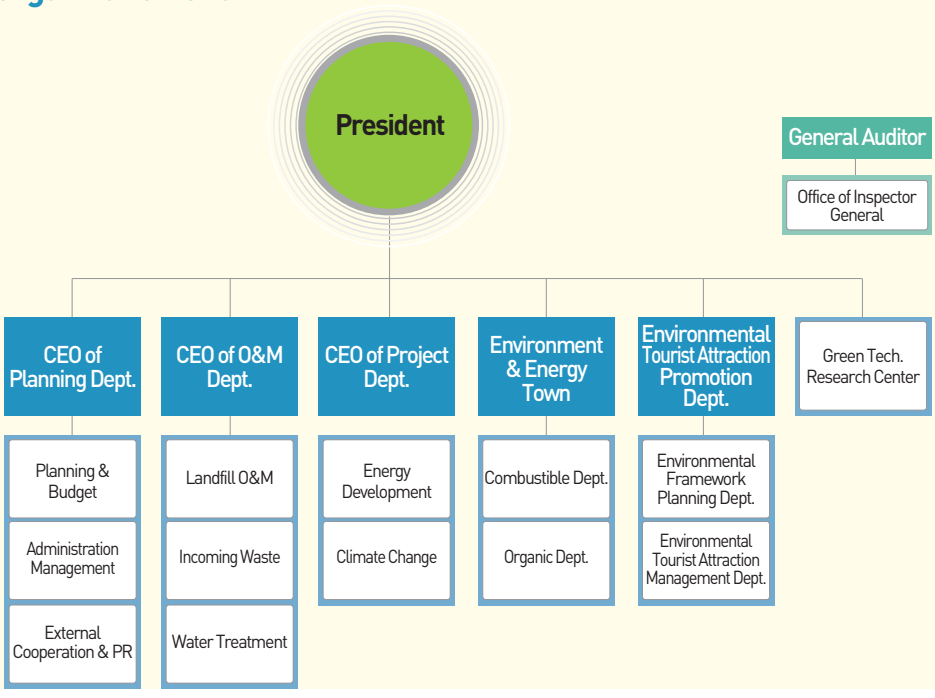
million Gcal of energy annually, leading to the substitution of crude oil, which amounts to 1.92 million barrels, and the diminishment of CO_2 by 1.2 million tons every year.

Used landfills are being converted into an environmental ecology park called 'Dream Park', where 10 million trees are to be planted, for citizens of the municipal areas and community residents. To accommodate diverse leisure activities while promoting healthier lifestyles among urban citizens, a variety of facilities have been established, ranging from sports parks to green bio complexes with ecological ponds and wild flower gardens. Various events such as the 'Wild Flower Exhibition", "Incheon Pentaport Rock Festival", and "Chrysanthemum Festival" are hosted in the spring, summer, and autumn respectively.

SLC will continue to make business more efficient through business activities and the creation of creative and flexible organizations with the aim of placing the Sudokwon Landfill Site in the center of the new renewable energy industry, making it the standard of environmental facilities. Furthermore, SLC is planning to host several sports games during the '2014 Incheon Asian Game,' including golf, swimming, and horseback riding. Furthermore, it will make its best effort to transform the biggest landfill site in the world into a world class environmental tourist attraction, along with the "Gyeong-In Ara Sea Route" (expected completion at the end of 2011), Incheon International Airport, and Songdo/Chungra Economic zone.

● Soil Covering Process during Sanitary Landfill

□ Organization Chart



5-6. Korea Environmental Industry & Technology Institute

The Korea Environmental Industry & Technology Institute (KEITI) is a subsidiary governmental institute established in April 8, 2009 in accordance with the Development of and Support for the Environmental Technology Act. It was created for the purpose of improving the quality of life, contributing to national economic advancement through the promotion of green technology development and green product consumption, and establishing plans supporting the overseas export of the environmental industry suitable to government policies.

KEITI was established from the merging of the Korea Institute of Environmental Science and Technology (KIEST) and the Korea Organization of Eco Products (KOECO) in accordance with the government' s advancement policy for public institutes. Afterwards, the two institutes, which had both previously performed R&D and Green Mark Accreditation, were effectively transformed into a single professional institute capable of providing the environmental industry with the one-stop service covering entire development processes from technological development to export promotion.

In order to fulfill these roles and responsibilities, KEITI is performing various tasks involving R&D, industry cultivation, export promotions, accreditation procedures of technology and products, training programs for professional human resources, the vitalization of corporate green management, and the collection and supply of information related to the environmental industry and technology.

Diverse R&D projects of KEITI are underway; they include environmental R&D, Eco-innovation Projects for the next generation receiving 1.5 trillion won in subsidies over a ten year period starting in 2011, the prevention of soil and underground water pollution, the development of environmental converging technology, etc. Through the promotion of these projects, KEITI has achieved commercialization worth about 600 billion won. They have been selected as an excellent investment expansion project by the National Science and Technology Council for eight consecutive years. Moreover, KEITI nurtures green industries by providing environmental industrial promotion funds, operating an environmental venture center, and training workers to produce of specialists. In addition, it is also in charge of new environmental technology/eco-products/green technology/carbon footprint labeling certifications. Furthermore, KEITI is making its best effort to spread green management among industries through the operation of green industry designation policies while supporting the supply of eco-products by hosting an annual eco-products expo.

KEITI strives to promote a number of projects in particular, but it also spearheads

● Office building of KEITI

nurturing domestic environmental industry and expanding support for overseas trade in accordance with the government's platform to establish the environmental industry into the Korea's leading export industry, thereby helping domestic enterprises in environmental fields realize potential gains from overseas exports. A few major projects representing such efforts of the institute are as follows:

First, in order to enhance inter-governmental cooperation on development/application of environmental technology, KEITI supports international joint research projects, which are a part of R&D projects. Second, KEITI takes a leading role in helping countries involved in the inter-governmental project with environment management master plans, working towards the establishment and enhancement of environmental cooperation networks between Korea and counterpart countries. In doing so, numerous accomplishments have been achieved. For example, Korea secured the contract for the landfill site construction project and the reuse project involving the use of advanced wastewater treatment technology from Cambodia and the Azerbaijani Republic in 2009. Third, on/off-line export consulting services as well as professional consulting services have been made available as a way to provide Korean enterprises with comprehensive export consultation in an effort to encourage overseas marketing for Korean environmental enterprises. Fourth, KEITI is committed to administering the "Feasibility Study Assistance Program for Overseas Environmental Project" to help domestic enterprises in environmental fields properly evaluate the technological and economical feasibility of overseas environmental projects, thereby supporting overseas trade activities. For example, the brand-new greenhouse gas reduction technology developed by domestic environmental business found its way into the Chinese market for Clean Development Model (CDM) in 2009 with assistance from this project. KEITI has also helped domestic environmental businesses receive orders from abroad such as those for the remodeling of wastewater treatment facilities in SAFWA, Saudi Arabia and the installation of a dust collector for a thermal power plant in Nghi Son, Vietnam. During its operation of such projects, KEITI has

● Ceremony for completion of LFG plant in Reclaimed Land of Gaziantep, Turkey

● Meeting with companies participating in Green Management Promotion Project for construction industry

● Seminar for Uzbekistan Environmental Management Master Plan Project

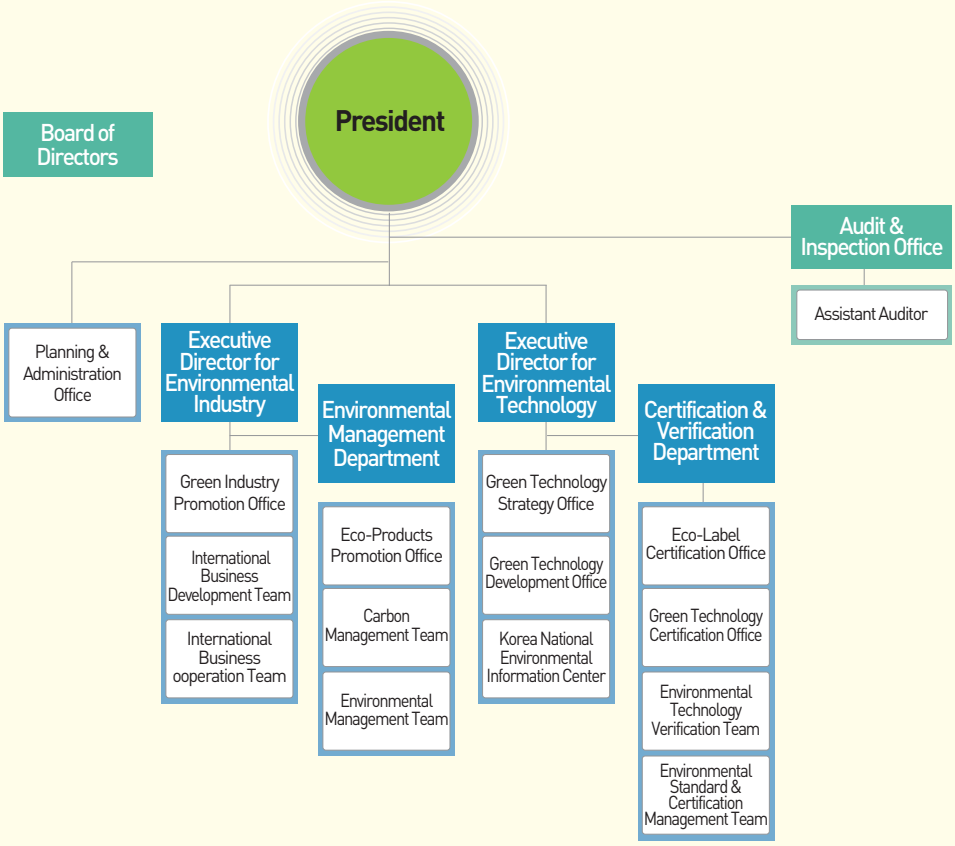
● Enter into a contract of Korea-China Biomass Development and CDM project

promoted a variety of projects for overseas business for Korean environmental enterprises, resulting in friendly ties and cooperative networks in the environmental field while establishing its presence in the emerging environmental market. Consequently, KEITI has been able to accomplished more than 300 billion won of exports so far.

As a core institute for realizing "Low Carbon, Green Growth", KEITI will promote the key projects for green growth involving the development of green technology, cultivation of the environmental industry, export assistance, and promotion of green management. In this way, KEITI will keep working assiduously so that the institute can grow into a world class specialist organization in the field fostering environmental industry technologies for Low Carbon, Green Growth.

□ Organization Chart

Structure (2 directors, 2 headquarters, 7 chambers, 1 center, and 6 teams)



06

Main Events in 2010

Through the 32nd IPCC session conference, Korea expressed itself to be working hard as a main prop within the international society framework to tackle the climate change. Without a doubt, it was a great opportunity for Korea to enhance awareness on the national vision of 'Low Carbon Green Growth' for the next 60 years, promoting itself as a leading nation in combating the climate change.

6-1. Main events in 2010

□ The 4th Business for the Environment Global Summit (B4E)

Global political and economic leaders and representatives from international institutions and non-governmental organizations visited Seoul to take part in 'the 4th Business for the Environment Summit (B4E 2010)' from 21-23 April. The B4E 2010 is co-sponsored by the United Nations Environment Program (UNEP), UN Global Compact, World Wildlife Fund (WWF), and the Korean Ministry of Environment.

The summit continued for three days from 21 April as a commemoration of Earth Day (April 22, 2010). Economic professionals as well as representatives from various nations, international institutions, and NGOs discussed solutions for various issues such as energy efficiency, green growth strategies, water management, and the development of clean technology, and also shared information about sustainability agreement to develop new approaches in the field

During the summit, participants as well as leading panels suggested new environmental strategies and approaches along with innovation plans as follows:

- To combine development targets such as securing food resource with overall climate change strategies
- To accept a brand-new water management model covering economic, environmental, social concerns as a whole in the basin area.
- To expand supply chain sustainability and the green supply chain by requesting supplier and partner agencies to fulfill the requirement and guidelines for improved sustainability.

- To induce integrated perspectives of long-term investment which take the environment and sustainability into consideration
- To produce brand-new goods or services that give consumers pro-environmental values and therefore lead them to different consumption patterns
- To establish company-level strategies for bio-diversity valuing economic and social aspects of the ecosystem
- To bring about broader participation in the UN's major special plans such as 'Caring for Climate' and 'CEO Water Mandate Project' held by the UN Global Compact

The UN Secretary General Ban Ki-moon said "What we really need for the economic and social well-being is green growth." He also claimed, "Climate change, desertification,

decreasing biodiversity is a threat per se to achievement of Millennium Development Goals. What we need is practice, innovation, and will. Hopefully, I think corporations should take the initiative."

South Korean President Lee, Myung-Bak also delivered the keynote address, expressing his agreement on the points made by UN Secretary General Ban and further claiming that all countries of the world could bring about development enabling the securitization of both economic and environmental benefits. In particular, he emphasized Korea' s green growth acceleration policy and other special bills, focusing on the Major Four River Restoration Project.

The President of the Maldives Mohamed Nasheed and the President of Guyana Bharrat Jagdeo also attended the summit, presenting the countries' plans for low carbon growth. Former U.S. Vice President Al Gore, who was awarded the Nobel Peace Prize and the Academy Award, and other prominent figures attended the summit as well and sent a message through a video conference to all those present.

UNEP Secretary General Achim Steiner urged global entrepreneurs and leading people in financial circles to acknowledge the necessity to build a new paradigm in approaches to environmental problems. "With the 20th century' s old-fashioned economic model, it is impossible to achieve low carbon and resource-efficient economic development procedures urgently needed by the Earth' s 6 billion population, particularly considering the fact that the world population is expected to rise to 9 billion by 2050. A Shift to green growth economy is inescapable. What' s left is to decide whether to push forward to make this shift happen as was planned or just to sit on our hands on the matter." said Achim Steiner.

In response such remarks from prominent figures, top global entrepreneurs of the world made a promise to focus on reinforcing efforts to solve environmental problems, which are today' s most urgent problematic issue, as well as devoting themselves to quantitative expansion.

□ The 32nd Intergovernmental Panel on Climate Change

The 32nd Intergovernmental Panel of the Climate Change Session co-sponsored by the Ministry of Environment, the meteorological agency, and the Ministry of Foreign Affairs and Trade was held from 11-14 October 2010 in BEXCO, Busan. More than 350 participants - particularly governmental representatives from 130 countries, chair of the Intergovernmental Panel on Climate Change (IPCC) Rajendra K. Pachauri, delegates from United Nations Environment Program (UNEP) and World Meteorological Organization (WMO), Prime Minister Kim Hwang-sik, GGGI Chair Han Seung-soo, Minister of Environment Lee, Maanee, Member of National Assembly (MNA) and

● Prime Minister's Dinner Message

Opening Ceremony ●

Chairman of Environment and Labor Committee (ELC) Kim Sung Soon, Chief of the Korea Meteorological Administration Jeon Byung-sung, and Mayor of Busan Metropolitan City Hur Nam-sik, have added value to the conference, closing on October 14 with a press conference.

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in recognition of global warming as a substantial problem. Through the IPCC, climate experts from various parts of the world provide the rest of the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences, simultaneously searching for adaptation and mitigation options.

The fourth IPCC report in 2007 scientifically proved that climate change caused by global warming is more likely a human-induced rather than naturally occurring

● Main Conference

phenomenon that is likely to cause large repercussion on a global scale.

The hosting of the 32nd IPCC session by our country is of greater significance than merely hosting a national event. This session reviewed the outline and contents of the Synthesis Report included in the Fifth Assessment Report.

In addition, it examined the progress of two special reports on issues with regard to the United Nations Framework Convention on Climate Change (UNFCCC) and as well as renewable energy sources, climate change adaptation and mitigation, and risk management in case of climate disasters. In particular, there was an intensive discussion on the continued criticism and heightened level of public scrutiny of the Fourth Assessment Report and on the InterAcademy Council's (IAC) report suggesting the necessity of an overall reorganization of the IPCC structure, establishing a future direction for the structure of the IPCC and its assessment report as well as the organization's object. Above all, it was noticeable that public interest and awareness on the role of the IPCC was elevated to a significant level, as many domestic and foreign news agencies came to attend the press conference about the consequences of the session held by the IPCC chairman group.

Through this conference, Korea expressed itself to be working hard as a main prop within the international society framework to tackle the climate change. Without a doubt, it was a great opportunity for Korea to enhance awareness on the national vision of 'Low Carbon Green Growth' for the next 60 years, promoting itself as a leading nation in combating the climate change. Moreover, by holding various sub-events such as 'the Exhibition center for tackling national climate change (October 11~14, 2010, BEXCO, BUSAN) and 'CEO's Special lecture with breakfast by IPCC chairman (October 15, 2010, Lotte Hotel, Seoul), the host nation was highly praised as the best session among the others held in the past.

□ The 2nd Ministerial Regional Forum on Environment and Health in Southeast and East Asian Countries

● Conference of Ministers

The 2nd Ministerial Regional Forum on Environment and Health in Southeast and East Asian Countries was held for three days (July 14-16) in Jeju Island under the theme of 'International Cooperation for Strengthening Environment and Public Health'. International institutions such as WHO and UNEP, as well as representatives from 14 Asian countries and 200 domestic/foreign experts, attended this event.

At the opening ceremony on July 15, the Minister of Environment Lee, Maanee, the Minister of Health and Welfare Jeon, Jae Hee, WHO's Regional Director for the Western Pacific Shin, Young-soo, UNEP's Regional Director for Asia and the Pacific Region Park, Young-Woo, and Jeju governor Woo, Keun-min participated at the event as they gave opening and welcome remarks, accompanying various sub-events such as the promotional event of the 2nd Regional Forum on Environment and Health in Southeast and East countries.

● Senior Talks

● Other Sub-events

At the ministers and seniors' conference (July 14-15), members of the conference focused on the review of membership countries' implementations of environment/health action commitment and also talked about building governance and tightening partnership for better environmental quality and health care in Asia. Furthermore, there were various additional sub-events such as the Korea-China Joint Seminar on technology and the Forum on Environment and Asbestos, providing useful information about Korea's Environment and Health policy and technology.

'Jeju Declaration' was adopted in this forum, which consists of the foundation of the Task Force that will be responsible for drawing a development plan for the forum. The Task Force will focus on cooperation for the establishment and implementation of national environment/health action plan, method study of opening a program dedicated to strengthening local capabilities for the environment and health, acceleration of technological collaboration among Southeast and East Asian countries, establishment and vitalization of local governance, expansion of membership, collection of stable funds, etc.

In addition, environment sector cooperation improvement plans, which include POPs management in East Asian region and support for the climate partnership program, were also discussed through Korea-Indonesia, Korea- Cambodia Talks among Environment Ministers.

The 2nd Ministerial Regional Forum on Environment and Health in Southeast and East Asian Countries contributed to the exchange of information and technology for the enhancement of the environment and health management capabilities by inspecting each country's environment/health action plan commitment and sharing experience and knowledge.

Moreover, the forum provided the framework for Korea to take an active role in environmental and health issues in Asia, greatly boosting Korea's image and class as an environmental leader. From here on, we will continue to support this matter in order to

achieve the successful execution of the 'Jeju Declaration', which is a significant achievement of this forum.

□ The 3rd Intergovernmental Platform on Biodiversity and Ecosystem Services

The third intergovernmental meeting on Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) was held at Busan, Republic of Korea, from 7 to 11 June 2010. This meeting was co-sponsored by UNEP and the Ministry of Environment of the Republic of Korea. A total of 280 people, including 88 government representatives, 46 international institution members, and several NGO representatives, attended this meeting.

Following the discussion about the necessity of establishing an intergovernmental platform on biodiversity and ecosystem service over the past few years, delegates in the third meeting adopted the Busan Outcome document at 11:51 p.m. on 11 June 2010. The document sets the path for establishing an IPBES, similar mechanism to the International Panel on Climate Change (IPCC).

The international community has consistently asked the establishment of an IPBES, as biodiversity is declining and the ecosystem continues to deteriorate. The establishment of an IPBES is expected to contribute to preventing loss in biodiversity and restoring the damaged ecosystem by providing key scientific information needed for policymakers. Between 2008 and 2009, there were two intergovernmental conferences carried out by UNEP, in order to reach achievement on the foundation of IPBES. Finally, an approval of IPBES was achieved at the third meeting.

● Opening Ceremony

● Senior Talks

Main contents of the Busan Outcome, which led to the establishment of an IPBES, are as follows:

• It came to an agreement that IPBES should be established as an independent and intergovernmental body under UN supervision.

- (Range) Governmental requests would be responded through an IPBES plenary session. Non-governmental requests will be dealt with by the plenary.
- (Function) Regular assessment on biodiversity and ecosystem services should be conducted based on the existing researches. Priority setting should also be included for capacity enhancement on biodiversity and ecosystem services in developing countries.
- (Plenary) Only government representatives can exercise decision making authority; non-governmental panel will attend as an observer. A single chair and four vice-chairs will be selected to an equal number of five continents.
- (Funding) Funding would be established based on financial supports from

governments and voluntary contributions from international institutions and others.

● Regional Session

• Principles of IPBES

- This is to avoid duplicate works on biodiversity and ecosystem services and to carry out the task based on the existing knowledge.
- This is to secure scientific independence, reliability, specialty and legitimacy through peer review and clear decision-making process.
- This is to provide politically topical information, but not to be prescriptive policy.
- This is to acknowledge the difference in biodiversity within and among regions, and to take responsibility for an effective participation of each developing country based on the equal distribution of region.

• Busan Outcome and other related documents should be delivered to the 65th Session of the UN General Assembly, which is recommended to review the document and perform the procedure of establishing an IPBES.

• It is recommended that UNEP be assumed as a temporary IPBES Secretariat through collaboration with UNESCO, FAO, and UN.

The approval of the establishment of an IPBES is praised to be the greatest advance on biodiversity and ecosystem conservation activities in '2010 International Year of Biodiversity'. The Republic of Korea not only hosted the third meeting, but Chan-Woo Kim, Director General of the Ministry of Environment, Republic of Korea, chaired the meeting as well, further aiding the process for the establishment of an IPBES.

Chan-Woo Kim said, "Although the international community in the 21st century is confronted with many environmental problems, the establishment of an IPBES will enable us to contribute to a global green growth trend by consolidating policymaking procedures and enabling the scientific evaluation of biodiversity, overall contributing to the strengthening of environmental sustainability."

The government of the Republic of Korea is planning to actively participate in global efforts in order to reverse the decline of biodiversity, by joining 'Post-Busan' procedure for instance, until the IPBES eventually settles down to a steady state.

07

Appendix

The Ministry of Environment takes responsibility for environmental conservation and has twelve subsidiary organizations including National Environmental Dispute Resolution Commission, National Institute of Environmental Research (NIER), National Institute of Biological Resources and National Institute of Environmental Human Resources Development, Greenhouse Gas Inventory & Research Center of Korea, and eight local environmental offices.

7-1. Environmental Administrative Mechanisms

□ Administrative Organizations

Environmental Administrative Structure

The president makes the final decision on environmental policy based on environment related laws that have been formulated by the General Assembly, and the policies are executed through relevant administrative departments.

Environmental policy is implemented diversified among departments · offices · agencies of the central government, and thus the decision-making and executing systems are complicated and diversified. In other words, the policy is implemented by eight central departments/offices/agencies, including the Ministry of Environment, river basin (local) environmental offices, city/town and city/county/autonomous districts, and their subsidiary organizations and institutional investors.

Ministry of Environment

The Ministry of Environment takes responsibility for environmental conservation and has twelve subsidiary organizations including National Environmental Dispute Resolution Commission, National Institute of Environmental Research (NIER), National Institute of Biological Resources and National Institute of Environmental Human Resources Development, Greenhouse Gas Inventory & Research Center of Korea, and eight local environmental offices. There are four public organizations including Korea Environment Corporation, Korea National Park Service, Sudokwon Landfill Site Management Corporation (SLC), and Korea Environmental Industry & Technology Institute. In addition, for in-depth research on environmental policy, policy development, as well as for review of environmental impact assessment reports, the Korean Environment Institute was established under the umbrella of the Office of the Prime Minister.

Main Office

The Ministry of Environment that is in direct charge of developing comprehensive environmental policies consists of 2 departments, 3 bureaus, 7 offices, 32 divisions, 4 teams and 1 task force team (486 regular personnel as of November, 2010). The major responsibilities of the Ministry include: ①the establishment of a framework for environmental administration through the enactment and amendment of environmental Acts and the introduction of environmental institutions; ②the development and implementation of the mid- to long-term comprehensive measures for environmental conservation; ③setting regulatory standards; ④administrative and financial support for

local environmental offices and municipalities to promote environmental management; and ⑤international cooperation in environmental conservation.

National Environmental Dispute Resolution Commission (NEDRC)

Under the article 4 of the Environmental Dispute Adjustment Act, the National Environmental Dispute Resolution Commission was established to settle disputes over damages caused by environmental pollution. This Commission was established under the Ministry of Environment, and other Regional Environmental Dispute Resolution Commissions under Seoul City, metropolitan cities and provinces. The NEDRC consists of the Chairperson (first rank, standing), eight non-standing members, as well as the secretariat (21 regular personnel as of November, 2010) that coordinates and assists activities for dispute resolution.

National Institute of Environmental Research (NIER)

For the purpose of supervising research testing and evaluation affairs regarding nature conservation and environmental pollution control, the National Institute of Environmental Research was separated from the Korea National Institute of Health in July, 1978 and was established as a specialized research institute in the environmental field. Thereafter, separated from the Department of Health & Society, it became an affiliated organization of the Agency of Environment in 1980 when the Agency of Environment was newly established. In July 22, 2005, for the purpose of being transformed as a result-oriented research institute, it changed its name into 'National Institute of Environmental Research' and reorganized its departments.

The National Institute of Environmental Research conducts research, foundation examinations and assessment that are needed for supporting the policy establishment of the Ministry of Environment. The NIER is composed of 5 departments, 15 divisions, 2 research institutes and 2 centers (318 regular personnel as of November, 2010).

National Institute of Biological Resources

This Institute was launched in March 2007 as a specialized research institute in conserving biological resources, to conduct research and the study of effective conservation and use of national biological resources and promote / exhibit biological resources. It is composed of 2 departments and 8 divisions (102 regular personnel currently in November, 2010).

National Institute of Environmental Human Resources Development (NIEHRD)

This Institute was launched as a specialized institute in environmental education,

separated from NIER in December 2006, in order to educate and train public officers and citizens involved in the environment sector. It is composed of 2 divisions (30 regular personnel as of November, 2010).

Greenhouse Gas Inventory & Research Center of Korea

In July, 2010, in accordance with 'the Framework Act on Low-Carbon and Green-Growth', it was launched in order to establish and adjust mid-and long-term comprehensive information management plan on greenhouse gas, establish and adjust overall management plan on greenhouse gas statistics, and supervise the matters regarding establishment/support of greenhouse gas reduction target by nation and sector. It is composed of 3 teams (10 regular personnel as of November, 2010).

Local Environmental Offices

As a specialized local administrative institute to manage areas like four major river basins, there are four River Basin Environmental Offices (Han, Nakdong, Geum, and Yeongsan), and three Regional Environmental Offices (Wonju, Daegu, Jeonju). In addition, the Metropolitan Air Quality Management Office is responsible for improving the air quality of metropolitan areas. (796 regular personnel as of, 2010)

Local environmental offices are responsible for ①the development and implementation of regional environmental management plans; ②consultation on the Prior Environmental Review System (PERS) and Environmental Impact Assessment (EIA); ③conservation of the natural environment and ecosystems; ④inspection of pollution sources and the measurement and analysis of environmental pollution; ⑤fostering and support for the environment-related industry; ⑥control over both businesses which emit designated waste and waste treatment companies; and ⑦guidance and supervision on the operation of environmental infrastructure.

In addition to the aforementioned tasks, 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 tap water businesses according to special law on watershed. 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 Organizations

As environmental affairs are so diverse, complex, and wide-ranging, the Ministry of

Environment has cooperated with other governmental bodies including eight Ministries. The representative ones include Korea Forest Service, in charge of forests, which take a large share of the land and are home to a diversity of plants, animals, and microorganisms; the Ministry of Land, Transportation and Maritime Affairs which is responsible for water quantity management, river/stream management, marine environmental management and transportation policies which are closely related to air quality, as well as land use plans that 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 of policies for control over businesses which emit pollutants.

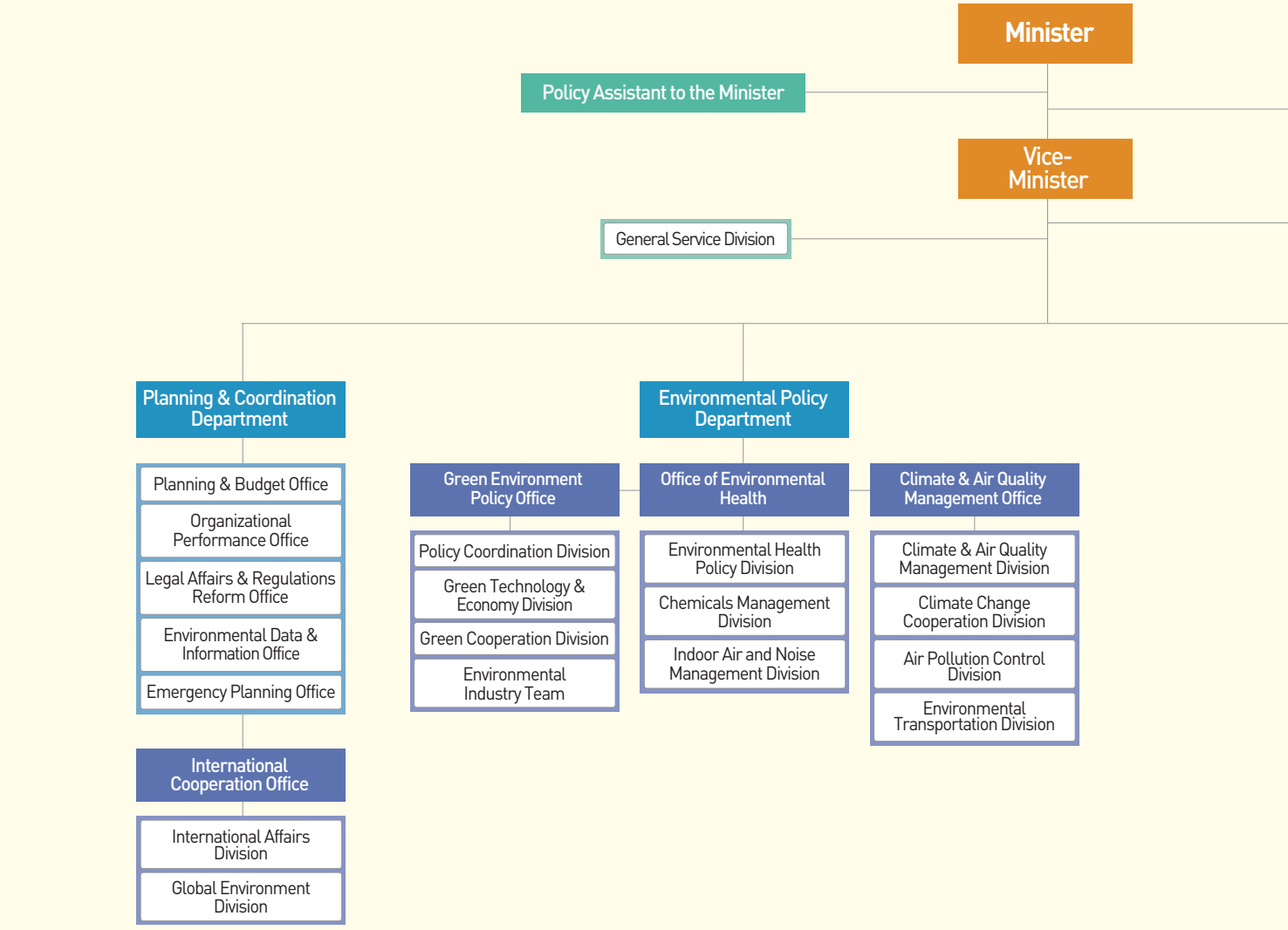
Local (Municipal) Governments

Environmental affairs are divided between central and local governments. In other words, the Ministry of Environment develops a framework for environmental policies including the enactment of environmental Acts and sets regulatory standards; and the responsibilities for implementation are shared by local environmental offices and local governments.

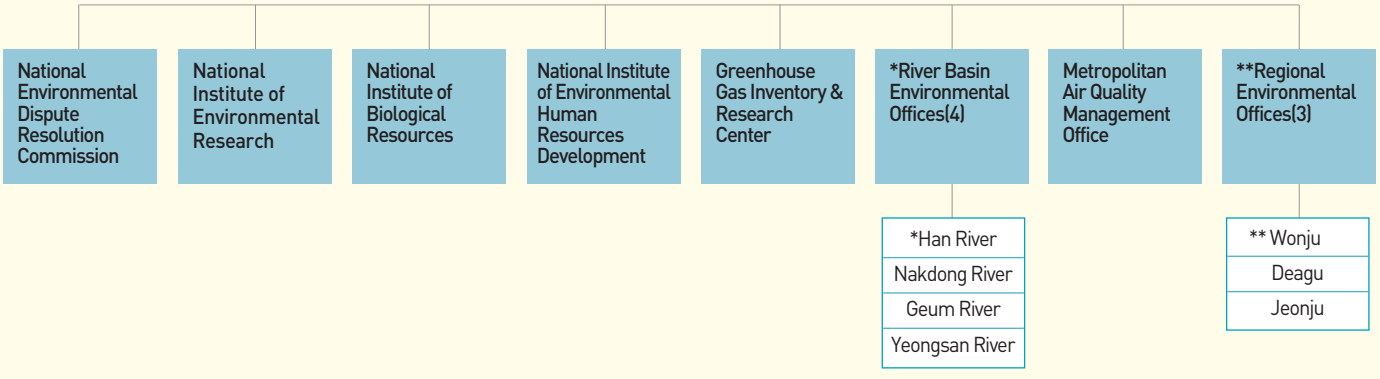
Major tasks of local governments are divided into two categories: one category consists of their own environmental affairs- development and implementation of regional environmental conservation policies within the administrative jurisdiction, collection and treatment of municipal waste, treatment of sewerage and livestock waste, and regulation on noise, vibration and gas emission of vehicles; and the other category consists of matters authorized by the Minister of Environment, such as control and management of pollutant-emitting companies in and around industrial complexes and the imposition of environmental improvement charges.

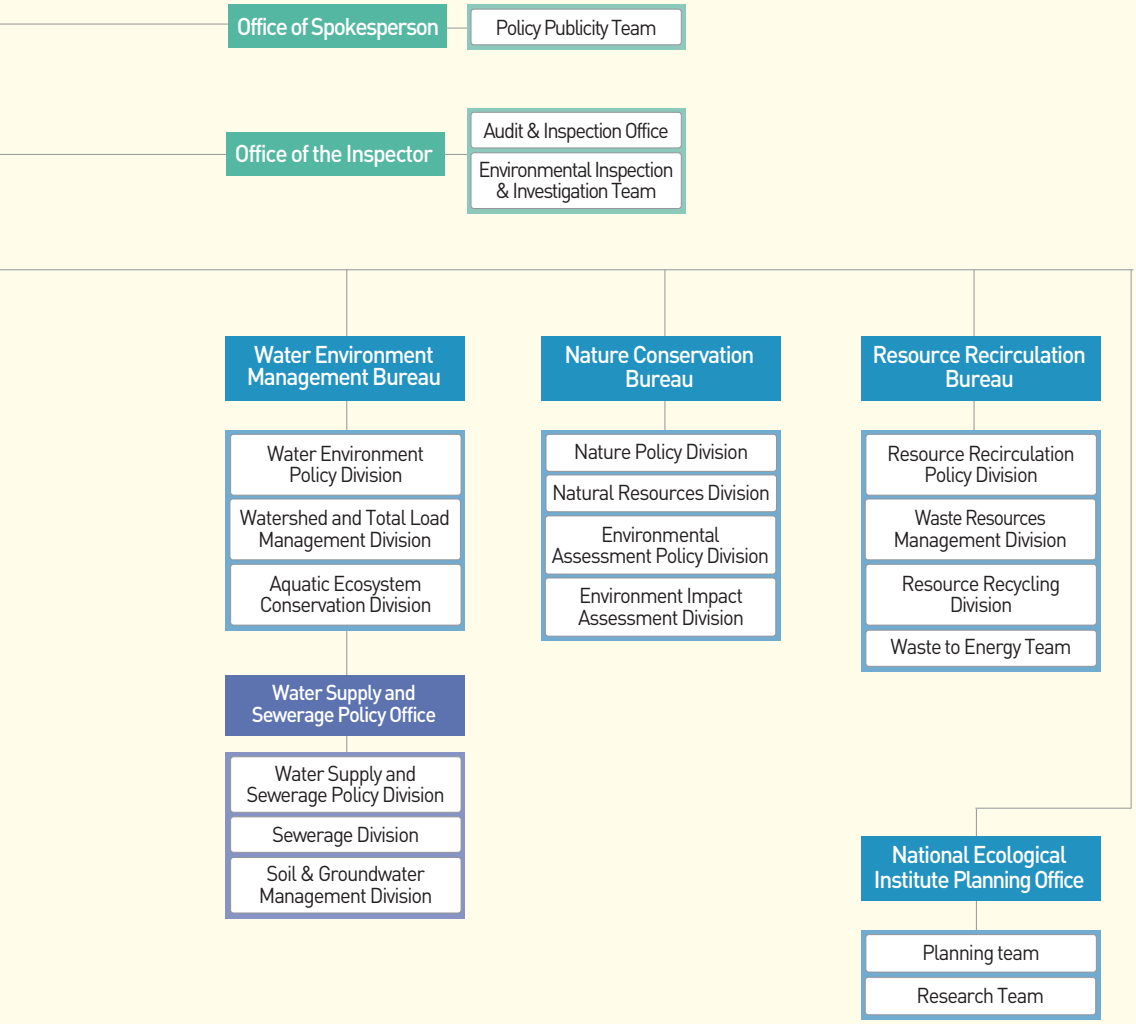
Organizations involved in environmental administration within local governments are different in terms of their types and roles. 16 metropolitan cities set up an environmental green area bureau, an environmental affairs bureau, or a department that incorporates the environment, culture, tourism and marine. Municipalities set up an Environmental Protection Division, an Environmental Management Division, or a department that incorporates maritime and urban function to take charge of environmental affairs.

□ Organization Chart



Subsidiary Organization




Office of Spokesperson
Policy Publicity Team
Office of the Inspector
Audit & Inspection Office
Environmental Inspection & Investigation Team
Water Environment Management Bureau
Water Environment Policy Division
Watershed and Total Load Management Division
Aquatic Ecosystem Conservation Division
Water Supply and Sewerage Policy Office
Water Supply and Sewerage Policy Division
Sewerage Division
Soil & Groundwater Management Division
Nature Conservation Bureau
Nature Policy Division
Natural Resources Division
Environmental Assessment Policy Division
Environment Impact Assessment Division
Resource Recirculation Bureau
Resource Recirculation Policy Division
Waste Resources Management Division
Resource Recycling Division
Waste to Energy Team
National Ecological Institute Planning Office
Planning team
Research Team

Affiliates


Korea Environment Corporation
Korea National Park Service
Sudokwon Landfill Site Management Corporation
Korea Environmental Industry and Technology Institute

Personnel

(As of November 2010)

	Subsidiary Organization											
MOE	NEDRC	NIER	NIBR	NIEHRD	River Basin Environmental Office(503)				Metropolitan Air Quality Management Office	Regional Environmental Office (236)		
					Han	Nakdong	Geum	Yeongsan		Wonju	Daegu	Jeonju
487	23	318	102	30	146	134	109	114	57	78	98	60

Contact Information and Websites of Subsidiary/ Affiliated Organizations

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(NIBR)	(82)32-590-7000	http://nibr.go.kr/
National Institute of Environmental Human Resources Development (EHRD)	(82)32-560-7774	http://ehrd.me.kr/
Greenhouse Gas Inventory & Research Center(GIR)	(82)2-6913-1310	http://www.gir.go.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	Major Roles and Responsibilities
Office of Spokesperson	• Establishment and coordination of public relation plans and strategies on major policies • Management of public relation activities within a division and support for press conferences
Office of the Inspector	• Audit & inspection issues and the inspection of MOE and its subsidiary organizations • Comprehensive coordination of investigation and regulation activities on pollutant emitting facilities
General Service Division	• Personnel Affairs Management • Operation of Public Information System and Management of building information and access • Management of Contract and Purchase/Procurement of goods
Planning & Coordination Department	• 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 Department	• Formation of comprehensive mid-and long-term plans for environmental protection • Support for the development of environmental technology and industry • Environmental education and cooperation with private environmental organizations • Environmental health and control of toxic chemicals • Prevention of environment pollution in daily lives including indoor air quality, noise, and dust
Climate & Air Quality Management Office	• Air quality improvement and the establishment of basic plans for the management of air quality in metropolitan areas • Establishment of comprehensive plans for the management of air-pollutant-emitting businesses • Measures to prevent automobile exhaust and to encourage the use of low-polluting fuel • Establishment of mid-and long-term plans to address climate change
International Cooperation Office	• International environmental cooperation between countries, regions, and organizations • International cooperation on climate change and affairs on multinational treaties
Water Environment Management Bureau	• Formation of basic policies to preserve water quality • Establishment of water quality management plans for each watershed and related areas • Investigation on water ecosystem, and plans for investigation and restoration • Management of industrial wastewater, livestock wastewater, and non-point sources
Water Supply and Sewerage Policy Office	• Establishment of basic waterworks plans and implementation of measures to control water demand • Implementation of measures to nurture and support water industry • Establishment of framework plans on sewerage and household wastewater treatment • Formation of comprehensive measures to preserve soil and groundwater
Nature Conservation Bureau	• Development of basic policy for nature conservation • Conservation of ecosystem and management of national parks • Environmental Impact Assessment and Prior Environmental Performance Review
Resource Recirculation Bureau	• Establishment of framework plans and comprehensive measures for waste treatment • Development of framework plans for household and industrial waste management • Formation of framework plans for waste-to-resource • Formation of framework plans for waste recycling and support for recycling industry

7-2. Environmental Quality Standards

Air

Air Pollutants	Standard
Sulfur Dioxide (SO_2)	≤0.02ppm (an annual average) ≤0.05ppm (24-hr average) ≤0.15ppm (1-hr average)
Carbon Monoxide (CO)	≤9ppm (8-hr average) ≤25ppm (1-hr average)
Nitrogen Dioxide (NO_2)	≤0.03ppm (an annual average) ≤0.06ppm (24-hr average) ≤0.1ppm (1-hr average)
Particulate Matters (PM10)	≤50㎍/㎥ (an annual average) ≤100㎍/㎥ (24-hr average)
Ozone (O_3)	≤0.06ppm (8-hr average) ≤0.1ppm (1-hr average)
Lead (Pb)	≤0.5㎍/㎥ (an annual average)
Benzene	≤5㎍/㎥ (an annual average; to be applied from 2010)

Note : 1. 1-hr average: the 999th 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 10um) 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

Pollutants	Standard Value (㎎/L)
Cadmium (Cd)	≤0.005
Arsenic (As)	≤0.05
Cyanide (CN)	Not Detected (Limit of Detection 0.01)
Mercury (Hg)	ND (LOD 0.01)
Organic Phosphorus	ND (LOD 0.0005)
Polychlorinated Biphenyls (PCB)	ND (LOD 0.0005)
Lead (Pb)	≤0.05
Hexachromium (Cr^{6+})	≤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(㎎/L)	SS(㎎/L)	DO(㎎/L)	Coliforms (No./100㎖)	
							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

a. 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)

b. Good : High DO levels, few pollutants, good condition of ecosystems and residential use after a general purification process (e.g., sedimentation, filtration and sterilization)

c. Fairly Good : Good DO levels, few pollutants, good and moderate condition of ecosystems and residential/ swimming pool use after a general purification process (e.g., sedimentation, filtration and sterilization)

d. Fair : Moderate concentrations of DO, average amount of 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

e. Fairly Poor : Low concentrations of DO, many pollutants, agricultural use and industrial use after an advanced purification process

f. Poor : Lower concentrations of DO, significant amount of pollutants, 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

g. Very Poor : Almost no DO, polluted water and few fish to survive

h. A certain grade of water can be used for lower-grade water purpose.

i. 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)	Standard								
			pH	COD (mg/L)	SS (mg/L)	DO (mg/L)	T-P (mg/L)	T-N (mg/L)	Chl-a (mg/m³)	E-Coliforms (No. of E- Coliforms /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 matters such as garbage	≥2.0	≤0.15	≤1.5	≤70	-	-
Very Poor	VI		-	>10	-	<2.0	>0.15	>1.5	>70	-	-

Reference

1. 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.
2. 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.
3. 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: ㎎/L)

Category \ Water Use		Living Water	Agricultural Water · Fishery Water	Industrial Water
General Pollutants (4 in total)	pH	5.8∼8.5	6.0∼8.5	5.0∼9.0
	No. of E-Coliforms	≤5,000 (MPN/100㎖)	-	-
	Nitrate Nitrogen(NO_3-N)	≤20	≤20	≤40
	Chloride (Cl-)	≤250	≤250	≤500
Specific Hazardous Substances (15 in total)	Cadmiun (Cd)	≤0.01	≤0.01	≤0.02
	Arsenic (As)	≤0.05	≤0.05	≤0.1
	Cyanide (CN)	≤0.01	≤0.01	≤0.2
	Mecury (Hg)	≤0.001	≤0.001	≤0.001
	Organic Phosphorus	≤0.0005	≤0.0005	≤0.0005
	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

1. Chloride (Cl-) standard may not be applied in case it falls under one of the following items:
   a. Fishery Water
   b. Where concentration of Chloride (Cl-) does not pose a threat to the public health for the purpose of use of ground water
   c. Temporary increase of concentration of Chloride (Cl-) due to overflow of sea water
2. In case agricultural/fishery water and industrial water are used for living water, the standard of water quality for Living Water shall be applied.

Drinking Water Quality Standard

Tap Water

Concentration Standard

(Unit: ㎎/L)

Classification		Water Pollutants	Standard	Classification		Water Pollutants	Standard
		55 Substances in total		Hazardous Organic Substances	Organic Substances	Benzene	0.01㎎/ℓ
Micro-organism		Total Colony Counts	100CFU/㎖			Toluene	0.7㎎/ℓ
		Total Coliforms	ND/100㎖			Ethyle Benzene	0.3㎎/ℓ
		Fecal Coliforms	ND/100㎖			Xylene	0.5㎎/ℓ
		Escherichia Coli	ND/100㎖			1.1Dichloroethylene	0.03㎎/ℓ
Hazardous Inorganic Substances		Pb;Lead	0.01㎎/ℓ			Carbontetrachloride	0.002㎎/ℓ
		F:Fluoride	1.5 ㎎/ℓ			1,2-Dibromo-3-Chloropropane	0.003㎎/ℓ
		As;Arsenic	0.01㎎/ℓ		Pesticide	Diazinon	0.02㎎/ℓ
		Se;Selenium	0.01㎎/ℓ			Parathion	0.06㎎/ℓ
		Hg;Mercury	0.001㎎/ℓ			Fenitrothion	0.04㎎/ℓ
		CN;Cyanide	0.01㎎/ℓ			Carbaryl	0.07㎎/ℓ
		Cr;Chromium	0.05㎎/ℓ		Disinfection Residues	Free Residual Chlorine	4.0㎎/ℓ
		NH_3-N;Ammonium Nitrogen	0.5㎎/ℓ			THMs;Trihalomethanes	0.1㎎/ℓ
		NO_3-N;Nitrate Nitrogen	10㎎/ℓ			Chloroform	0.08㎎/ℓ
		Cd;Cadmium	0.005㎎/ℓ			Bromodichloromethane	0.03㎎/ℓ
		B;Boron	1.0㎎/ℓ			Dibromochloromethane	0.1㎎/ℓ
	Volatile Organics	Phenol	0.005㎎/ℓ			Chloralhydrate	0.03㎎/ℓ
		1.1.1-Trichloroethane	0.1㎎/ℓ			Dibromoacetonitrile	0.1㎎/ℓ
		PCE;Tetrachloroethylene	0.01㎎/ℓ			Dichloroacetonitrile	0.09㎎/ℓ
		TCE;Trichloroethylene	0.03㎎/ℓ			Trichloroacetonitrile	0.004㎎/ℓ
		Dichloromethane	0.02㎎/ℓ			HAA;Haloacetic acid	0.1㎎/ℓ
		1,4-Dioxane	0.05㎎/ℓ	Aesthetic Substances		Zn;Zinc	3㎎/ℓ
Aesthetic Substances		Hardness	300㎎/ℓ			Cl-;Chloride	250㎎/ℓ
		Consumption of $KMnO_4$	10㎎/ℓ			Total Solids	500㎎/ℓ
		Odor(Other than sterilization)	ND			Fe;Iron	0.3㎎/ℓ
		Taste(Other than sterilization)	ND			Mn;Manganese	0.05㎎/ℓ
		Cu;Cooper	1㎎/ℓ			Turbidity	0.5 NTU
		Color	5			SO_4^{-2};Sulfate	200㎎/ℓ
		Sulfactants	0.5㎎/ℓ			Al:Aluminium	0.2㎎/ℓ
		pH	5.8~8.5				

Treatment Technique Standard

Classification	Standard	Detailed Standard
Virus	Remove or inactivate 99.99% or more	• The inactivity ratio must be 1 or higher. • Measurement of turbidity and residual chlorine - The average value of two samples measured consecutively must not exceed 0.5NTU, and each sample must not exceed 1.0NTU - More than 5,000 ton/day: Measurement of turbidity and residual chlorine at 4-hr intervals more than six times during a day - Under 5,000 ton/day: Measurement of turbidity and residual chlorine at 12-hr intervals more than two times during a day • Turbidity standard and application time by capacity - More than 95% of the number of monthly samples must not exceed 0.3NTU (0.5 NTU in case of slow filter), and each sample must not exceed 1.0NTU - Monitoring water quality of individual filter basin at 15 minutes interval by using the consecutive measuring device - More than 100,000 ton/day: July 2004, more than 50,000 ton/day: May 2007, more than 5,000 ton/day: January 2007, and under 5,000 ton/day: July 2010 (application time)
Giardia Cyst	Remove or inactivate 99.99% or more	

Bottled Water

Classification		Water Pollutants		Standard
		53 items in total		
Micro-organism		Total Colony Counts	Psychrophilic bacteria (21℃)	100CFU/㎖
			Mesophillic Bacteria (35℃)	20CFU/㎖
		Total Coliforms		ND/250㎖
		Fecal Streptococci		ND/250㎖
		Pseudomonas aeruginosa		ND/250㎖
		Clostridium Perfringens		ND/50㎖
		Salmonella		ND/250㎖
		Shigella		ND/250㎖
Hazardous Inorganic Substances		Pb; Lead		0.01㎎/ℓ
		F; Fluoride		2.0㎎/ℓ
		As; Arsenic		0.01㎎/ℓ
		Se;Selenium		0.01㎎/ℓ
		Hg;Mercury		0.001㎎/ℓ
		CN;Cyanide		0.01㎎/ℓ
		Cr;Chromium		0.05㎎/ℓ
		NH_3-N;Ammonium Nitrogen		0.5㎎/ℓ
		NO_3-N;Nitrate Nitrogen		10㎎/ℓ
		Cd;Cadmium		0.005㎎/ℓ
		B;Boron		1.0㎎/ℓ
		Bromate		0.01㎎/ℓ
Hazardous Organic Substances	Volatile Organics	Phenol		0.005㎎/ℓ
		1.1.1-Trichloroethane		0.1㎎/ℓ
		PCE;Tetrachloroethylene		0.01㎎/ℓ
		TCE;Trichloroethylene		0.03㎎/ℓ
		Dichloromethane		0.02㎎/ℓ

Classification		Water Pollutants	Standard
Hazardous Organic Substances	Volatile Organics	Benzene	0.01㎎/ℓ
		Toluene	0.7㎎/ℓ
		Ethyle Benzene	0.3㎎/ℓ
		Xylene	0.5㎎/ℓ
		1.1Dichloroethylene	0.03㎎/ℓ
		Carbontetrachloride	0.002㎎/ℓ
		1,2-Dibromo-3-Chloropropane	0.003㎎/ℓ
		1,4-Dioxane	0.05㎎/ℓ
	Pesticide	Diazinon	0.02㎎/ℓ
		Parathion	0.06㎎/ℓ
		Fenitrothion	0.04㎎/ℓ
		Carbaryl	0.07㎎/ℓ
Aesthetic Substances		Hardness	500㎎/ℓ
		Consumption of $KMnO_4$	10㎎/ℓ
		Odor (Other than sterilization)	ND
		Taste (Other than sterilization)	ND
		Cu;Cooper	1㎎/ℓ
		Color	5
		Surfactants	ND
		pH	5.8~8.5
		Zn;Zinc	3㎎/ℓ
		Cl-;Chloride	250㎎/ℓ
		Total Solids	500㎎/ℓ
		Fe;Iron	0.3㎎/ℓ
		Mn;Manganes	0.3㎎/ℓ
		Turbidity	1.0 NTU
		SO_4-2;Sulfat	200㎎/ℓ
		Al:Aluminium	0.2㎎/ℓ

* ND : Not Detected

** Total Colony Counts are inspected within 12 hours after being bottled at 4℃

Public Water Supply Facilities (Well, spring, mineral spring)

Classification		Water Pollutants	Standard
		49 items in total	
Micro-organism		Total Colony Counts	100CFU/㎖
		Total Coliforms	ND/100㎖
		Fecal Coliforms	ND/100㎖
		Escherichia Coli	ND/100㎖
		Yesinia enterocolitica	ND/2ℓ
Hazardous Inorganic Substances		Pb; Lead	0.01㎎/ℓ
		F; Fluoride	1.5㎎/ℓ
		As; Arsenic	0.01㎎/ℓ
		Se;Selenium	0.01㎎/ℓ
		Hg;Mercury	0.001㎎/ℓ
		CN;Cyanide	0.01㎎/ℓ
		Cr;Chromium	0.05㎎/ℓ
		NH3-N;Ammonium Nitrogen	0.5㎎/ℓ
		NO3-N;Nitrate Nitrogen	10㎎/ℓ
		Cd; Cadmium	0.005㎎/ℓ
		B;Boron	1.0㎎/ℓ
Hazardous Organic Substances	Volatile Organics	Phenol	0.005㎎/ℓ
		1.1.1-Trichloroethane	0.1㎎/ℓ
		PCE;Tetrachloroethylene	0.01㎎/ℓ
		TCE;Trichloroethylene	0.03㎎/ℓ
		Dichloromethane	0.02㎎/ℓ
		Benzene	0.01㎎/ℓ
		Toluene	0.7㎎/ℓ
		Ethyle Benzene	0.3㎎/ℓ
Hazardous Organic Substances	Volatile Organics	Xylene	0.5㎎/ℓ
		1,1-Dichloroethylene	0.03㎎/ℓ
		1,4-Dioxane	0.05㎎/ℓ
		1,2-Dibromo-3-Chloropropane	0.003㎎/ℓ
		Carbontetrachloride	0.002㎎/ℓ
	Pesticide	Diazinon	0.02㎎/ℓ
		Parathion	0.06㎎/ℓ
		Fenitrothion	0.04㎎/ℓ
		Carbaryl	0.07㎎/ℓ
Aesthetic Substances		Hardness	300㎎/ℓ
		Consumption of $KMnO_4$	10㎎/ℓ
		Odor (Other than sterilization)	ND
		Taste (Other than sterilization)	ND
		Cu;Cooper	1㎎/ℓ
		Color	5
		Surfactants	0.5㎎/ℓ
		pH	5.8~8.5
		Zn;Zinc	3㎎/ℓ
		Cl-;Chloride	250㎎/ℓ
		Total Solds	500㎎/ℓ
		Fe;Iron	0.3㎎/ℓ
		Mn;Manganese	0.3㎎/ℓ
		Turbidity	1.0 NTU
		$SO4^{-2}$;Sulfate	200㎎/ℓ
		Al:Aluminium	0.2㎎/ℓ

Public Sewage Treatment Facility

Classification \ Item	BOD (㎎/L)	COD (㎎/L)	SS (㎎/L)	T-N (㎎/L)	T-P (㎎/L)	Total Coliform (No/ml)	Toxic Unit (TU)
Sewage treatment capacity more than 50m³/day	≤10	≤40	≤10	≤20	≤2	≤3,000	1
Sewage treatment capacity less than 50m³/day	≤10	≤40	≤10	≤40	≤4		

Reference

1. The discharge water standard of pollutants, such as phenol, etc, of public sewage treatment facility shall be determined and notified by the Minister of Environment upon the request of an operator installing the facility; provided, however, that it is a pollutant which can be treated by the applicable facility and shall be within the discharge permission standard applicable to special management zone among the table of water pollutants under Paragraph 2 (B) of Annex 13 'the Enforcement Decree of the Water Quality and Ecosystem Conservation Act.'

2. The discharge water standard of total nitrogen and total phosphate in the winter season (From December 1 to March 31) shall be less than 60㎎ and less than 8㎎, respectively.

3. The discharge water standard of the public sewage treatment facility installed in each zone shall be under 1,000 coliforms/㎖.

   (1) Clean zone under Annex 13 of the Enforcement Decree of the Water Quality and Ecosystem Conservation Act.

   (2) The areas within 10km of upstream distance from water source protection areas and boundaries, in accordance with Article 7 of the Water Supply and Waterworks Installation Act

   (3) The areas within 15km of upstream distance from water supply facilities, in accordance with Paragraph 17 of Article 3 of the Water Supply and Waterworks Installation Act

4. The discharge water quality standard of more than 50m³ of daily sewage treatment capacity shall be applied to the public sewage treatment facility installed in waterside zone in accordance with Paragraph 3 of Article of 4 of the same Enforcement Decree.

5. The discharge water quality standard of toxic unit shall refer to the standard for acute toxicity test on water flea, and shall be applied only to the public sewage treatment facility satisfying all of the following requirements:

   (1) Waste water must inflow from waste water discharging facility satisfying (3) (12) (14) (17) ~ (20), (23), (26), (27), (30), (31), (33) ~ (40), (46), (48) ~ (50), (54), (55), (57) ~ (60), (63), (67), (74), (75) and (80) of Paragraph 5 of Annex 4 of Enforcement Decree of the Water Quality and Ecosystem Conservation Act

   (2) Daily sewage treatment capacity must be more than 500m³.

Wastewater Treatment Facility

Classification	Application period and water quality standard									
	By Dec. 31, 2010	Jan. 1, 2011 ~ Dec. 31, 2011	Jan. 1, 2012 ~ Dec. 31, 2012				After Jan. 1, 2013.1.1			
			Ⅰ Zone	Ⅱ Zone	Ⅲ Zone	Ⅳ Zon	Ⅰ Zone	Ⅱ Zone	Ⅲ Zone	Ⅳ Zone
BOD (㎎/ℓ)	≤ 20(30)	≤20(30)	≤20(30)	≤20(30)	≤20(30)	≤20(30)	≤10(10)	≤10(10)	≤10(10)	≤10(10)
COD (㎎/ℓ)	≤40(40)	≤40(40)	≤40(40)	≤40(40)	≤40(40)	≤40(40)	≤20(40)	≤20(40)	≤40(40)	≤40(40)
SS (㎎/ℓ)	≤20(30)	≤20(30)	≤20(30)	≤20(30)	≤20(30)	≤20(30)	≤10(10)	≤10(10)	≤10(10)	≤10(10)
T-N (㎎/ℓ)	≤40(60)	≤40(60)	≤40(60)	≤40(60)	≤40(60)	≤40(60)	≤20(20)	≤20(20)	≤20(20)	≤20(20)
T-P (㎎/ℓ)	≤4(8)	≤4(8)	≤0.2(0.2)	≤0.3(0.3)	≤0.5(0.5)	≤4(8)	≤0.2(0.2)	≤0.3(0.3)	≤0.5(0.5)	≤2(2)
Total Coliforms (No./㎖)	3,000	3,000	3,000	3,000	3,000	3,000	3,000 (3,000)	3,000 (3,000)	3,000 (3,000)	3,000 (3,000)
Toxic Unit (TU)	–	≤1(1)	≤1(1)	≤1(1)	≤1(1)	≤1(1)	≤1(1)	≤1(1)	≤1(1)	1(1)

Reference

1. Despite the above table, the standards for water discharged from waste treatment facilities of industrial and agro-industrial complexes shall be determined and notified by the Minister of Environment upon the request of an operator installing the facility; provided, however, that it is a pollutant which can be treated by the applicable facility and shall be within the discharge permission standard applicable to special management zone among the table of water pollutants under Paragraph 2 (B) of Annex 13 Enforcement Decree of the Water Quality and Ecosystem Conservation Act.

2. The parentheses in the Table above refer to the standard for the quality of water discharged from the waste treatment facility at agro-industrial complexes.

3. The discharge water quality standard of toxic unit shall refer to the standard for acute toxicity test on water flea.

Subjected Zone

Classification	Scope
I Zone	a. Source water protection areas designated and noticed in accordance with Article 7 of Water Supply and Waterworks Installation Act b. Areas designated and noticed as special control areas out of the special control areas designated/noticed in accordance with the Paragraph 1 of Article 22 of Framework Act on Environmental Policy c. Watersides respectively designated and noticed in accordance with Paragraph 1 of Article 4 of Act Relating to the Han River Water Quality Improvement and Community Support, Paragraph 1 of Article 4 of Act on the Nakdong River Watershed Management and Community Support, Paragraph 1 of Article 4 of Act on the Geum River Watershed Management and Community Support and Paragraph 1 of Article 4 of Act on the Yeongsan & Sumjin River Watershed Management and Community Support d. Areas designated and publicly noticed by the Minister of Environment as the areas in streams inflowing to Saemangeum area in accordance with Paragraph 1 of Article2 of Special Act on Promotion of the Saemangeum Project
II Zone	Areas designated and publicly noticed by the Minister of Environment as the areas where COD or T-P has exceeded or may exceeds the target standard in accordance with Paragraph 2, Article 24 of the same act among the mid-watershed designated by Paragraph 2, Article 22 of the same act
III Zone	reas designated and publicly noticed by the Minister of Environment as the areas included in water systems of the Han River, Nakdong River, Yeongsan River and Sumjin River among the mid-watershed designated by Paragraph 2, Article 22 of the same act
IV Zon	Areas excluding I Zone, II Zone and III Zone

Public Treatment Facility for Human/Livestock Waste

Item / Classification	BOD (㎎/L)	COD (㎎/L)	SS (㎎/L)	Total Coliforms (No/㎖)	Others (㎎/L)
Human Waste Treatment Facility	≤ 30	≤50	≤30	≤3,000	T-N : ≤60 T-P : ≤8
Livestock Waste Treatment Facility	≤30	≤50	≤30	≤ 3,000	T-N : ≤60 T-P : ≤8

Soil Contamination Standard

(㎎/㎏)

Soil Contamination (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	500	2,000	450	1,500	6,000
Arsenic	25	50	200	75	150	600
Mercury	4	10	20	12	30	60
Lead	200	400	700	600	1,200	2,100
6 chrome	5	15	40	15	45	120
Zinc	300	600	2,000	900	1,800	5,000
Nickel	100	200	500	300	600	1,500
Fluoride	400	400	800	800	800	2,000
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	1,020
Xylene	15	15	45	45	45	135
Total petroleum hydrocarbons (TPH)	500	800	2,000	2,000	2,400	6,000
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: land used for paddy fields, orchards, ranches, mineral bath resorts, and building lot (applicable only to the lots for dwelling purpose under (a), Paragraph 8, Article 5 of the Enforcement Decree of the Cadastral Act) school lots, drain, aquaculture, park, historical site, burial ground, in accordance with the land classification of the Cadastral Act , and children amusement facilities (applicable only to outdoor facilities) in accordance with Paragraph 2, Article 2 of the Safety Management Act on Children Amusement Facilities.

2. Area 2: land used for forest, salt farm, sites (all sites other than those of Area 1), warehouse sites, streams, water supply, physical Activity zones, amusement parks, religion activity zones, and multipurpose lots (applicable only to (1) or (3) of Paragraph 27, Article 5 of the Enforcement Decree of the Cadastral Act), in accordance with the land classification of the Cadastral Act.

3. Area 3: land used for factories, parking lots, gas stations, roads/railroads, embankments, and multipurpose lots (all multipurpose sites other than those described in Area 2) in accordance with the land classification of the Cadastral Act, and the land used for military and national defense purpose under (1) through (5) of Paragraph 1, Article 2 of the Act of National Defense and Military Installations Projects

4. In case of returning the acquired land in accordance with Article 48 of the Act on the Acquisition of Land, etc for Public Works and the Compensation Thereof, or removing soil pollutions, etc in the returned/granted areas in accordance with Article 12 of the Special Act on Support for Areas Granted to the US Forces, the zone standard according to the usage after return of the applicable land shall be applied.

5. 'Benzo (a) pyrene' item shall be applied only to the areas using the facilities manufacturing and storing toxic materials and the waste sleepers (ex: railroad lots, park, plant lots and streams, etc)

Specification Standard of Toxic Substances

1) Chemicals of which LD50 capable of killing half of experimental rodents in acute oral toxicity test is less than 300 mg per kilogram

2) Chemicals of which LD50 capable of killing half of experimental rodents in acute dermal toxicity test is less than 1,000 mg per kilogram

3) Chemicals of which the concentration (LC 50, 4hr) capable of killing half of experimental rodents in acute inhalation toxicity test is less than 2,500 ppm or 10 mg/liter, when exposed as gas or steam

4) Chemicals of which the concentration (LC50, 4hr) capable of killing half of experimental rodents in acute inhalation toxicity test is less than 1 mg/liter, when exposed as particle or dust

5) Chemicals which cause necrosis of scarfskin as well as thick skin within 1 hour, when exposed to the skin for 3 minutes

6) Chemicals of which the concentration (LC50, 96hr) capable of killing half of experimental fish in toxicity test is less than 1.0 mg per liter

7) Chemicals among substances with bioconcentration factor of more than 500 for fish, of which the maximum amount of non-observation of bad effect is less than 10 mg/day as a result of repeated administration toxicity test for 90 days or which have abnormal effect on liver, kidney, etc in a long-term experiment for more than 90 days

8) Chemicals which show a positive reaction in animal test (in vivo) of genetic toxicity tests, genetic variation test using bacteria or in vitro experiment with higher standard, but have not completed carcinogenicity test

9) 1st grade chemicals proven to cause cancer in more than two types of carcinogenicity tests or classified as substances causing cancer by international institutions, such as the International Cancer Research Center, or 2A grade chemicals declared to have risk of causing cancer

10) Chemicals known to have bad influences on human fertility and occurrence through the evidence related to human bodies or believed to cause bad influences on animal fertility/occurrence in animal experiments or research, therefore thought to cause bad influences on human body as well

11) Chemicals or their combinations that contain more than 1 percent of toxic substances specified in paragraphs 1 through 8

12) Chemicals or their combinations that contain more than 0.1 percent of toxic substances specified in paragraphs 9 through 10

Indoor Air Quality Standard

Pollutants Public Facilities	PM10 (μg/m³)	CO_2 (ppm)	HCCHO (μg/m³)	Floating Bacteria (CFU/m³)	CO (ppm)
Underground stations, underpass shopping district, waiting rooms of passenger automobile terminals, waiting rooms of railroad stations, passenger terminals in airports, waiting rooms of harbor facilities, libraries, museums, funeral service halls, public sauna, large-scale shops	≤ 150	≤ 1,000	≤ 100		≤ 10
Medical institution, child care center, national/public elderly care facilities and geriatric hospitals, postnatal care centers	≤ 100			≤ 800	
Indoor parking lot	≤ 200				≤ 25

7-3. Present State of Environmental Acts

□ Environmental Act System

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 concretize environmental rights guaranteed by Article 35 of the Constitution. The concept of Environmental Acts can be interpreted in a broad sense and narrow sense, according to the scope it covers. Environmental Acts, in a broad sense, includes all laws that stipulate 'environment', or 'natural environment and life environment', as regulated in Article 3.1 of the Framework Act on Environmental Policy. In a narrow sense, Environmental Law signifies laws that the Ministry of Environment directs according to Article 40 of Government Organization Act, or laws related to the preservation of natural environment and life environment, and prevention of environmental pollution.

However, environmental problems cannot be solved solely by the laws that are directed by the Ministry of Environment but are rather closely related with land policy, energy policy and industrial policy. Thus, when discussing the problem of preserving and improving the environment in general, understanding Environmental Acts in a broad sense will be appropriate.

□ Enacted & Amended Acts in 2010

The Asbestos Damage Relief Act and the Special Act on the Support for 2012 World Conservation Congress were enacted in 2010, and 19 acts in total, such as the Management of Drinking Water Act, the Act Relating to the Han River Water Quality Improvement and Community Support, the Water Supply and Waterworks Installation Act, etc. were revised or enacted. Main revisions and enactments are as follows:

A. Asbestos Damage Relief Act (enacted)

In order to aid those who suffered from physical damages due to asbestos but didn't receive any compensation, this act provides that nation, local governments and industries, which have shared the benefits from asbestos, would provide financial resources and pay relief wages to them.

B. Special Act on the Support for 2012 World Conservation Congress

Since the 2012 World Conservation Congress will be held in Jeju Special Self-Governing Province, national support is necessary for successful event. Therefore, in order to internalize green life in people, reinforce international environment cooperation,

Table 1. History & Current Status of Environmental Acts

1960 (6 Acts)	1970~1980 (9 Acts)	1990~2010(48 Acts)		
		Current Status	Date of Enactment	Date of Revision
Environmental Pollution Prevention Act (Enacted on Nov.5, 1963)	Environment Conservation Act (Enacted on Dec.31, 1977)	Framework Act on Environmental Policy	Aug. 1, 1990	Feb. 4, 2010
		Clean Air Conservation Act	Aug. 1, 1990	May. 21, 2009
		Framework Act on Sustainable Development	Aug. 3, 2007	Aug. 3, 2007
		Environmental Education Promotion Act	Mar. 21, 2008	Mar. 21, 2008
		Environmental Health Act	Mar. 21, 2008	Mar. 21, 2008
		Indoor Air Quality Control in Public Use Facilities, etc. Act	Dec. 30, 1996	May 25, 2010
		Noise and Vibration Control Act	Aug. 1, 1990	Apr. 11, 2007
		Foul Odor Prevention Act	Feb. 9, 2004	Feb. 4, 2010
		Special Act on Metropolitan Air Quality Improvement	Dec. 31, 2003	Mar. 28, 2008
		Water Quality and Ecosystem Conservation Act	Aug. 1, 1990	Mar. 22, 2010
		Act Relating to the Han River Water Quality Improvement and Community Support	Feb. 8, 1999	May. 25, 2010
		Act on the Nakdong River Watershed Management and Community Support	Jan. 14, 2002	Dec. 31, 2008
		Act on the Geum River Watershed Management and Community Support	Jan. 14, 2002	Dec. 31, 2008
		Act on the Yeongsan & Sumjin River Watershed Management and Community Support	Jan. 14, 2002	Dec. 31, 2008
		Natural Environment Conservation Act	Dec. 31, 1991	May. 17, 2007
		Act on Special Measures for the Control of Environmental Offenses	May. 31, 1991	Dec. 31, 1999
		Environmental Dispute Adjustment Act	Aug. 1, 1990	Mar. 21, 2008
		Act on Antarctic Activities and Environmental Protection (jointly enacted)	Mar. 22, 2004	Mar. 22, 2004
		Act on the Promotion of the Purchase of Environment-Friendly Products	Dec. 31, 2004	Feb. 4, 2010
		Act on Environmental Test and Examination	Oct. 4, 2006	May. 25, 2010
		Environment Improvement Expenses Liability Act	Dec. 31, 1991	May. 25, 2010
		Asbestos Damage Relief Act	Mar. 22, 2010	Mar. 22, 2010 (Enforcement: Jan. 1, 2011)
	Natural Park Act (Enacted on Jan.4, 1980)	Natural Park Act	Jan. 4, 1980	Dec. 31, 2008
		Special Act on the Ecosystem Conservation of Islands such as Dokdo Island	Dec. 31, 1997	May. 21, 2009
		Wetland Conservation Act (jointly enacted)	Feb. 8, 1999	Mar. 21, 2008
		Environmental Impact Assessment Act	Dec. 31, 1999	Mar. 28, 2008
		Soil Environment Conservation Act	Jan. 5, 1995	May. 17, 2007
		Act on the Protection of Baekdudaegan Mountain System (jointly enacted)	Dec. 31, 2003	Mar. 5, 2009
		National Trust Act on Cultural Heritage & Natural Environment Assets (jointly enacted)	Mar. 24, 2006	Mar. 24, 2006
		Special Act on the Support for 2012 World Conservation Congress	May. 17, 2010	May. 17, 2010

1960 (9 Acts)	1970~1980 (6 Acts)	1990~2010(48 Acts)		
		Current Status	Date of Enactment	Date of Revision
Act Relating to the Protection of Birds, Mammals and Hunting (Enacted on Mar.31, 1967)		Wildlife Protection Act	Feb. 9, 2004	Jul. 23, 2010
	Environmental Pollution Prevention Corporation Act (Enacted on May 1, 1983)	Environment Management Corporation Act	May. 21, 1983	Jan. 1, 2010
		Korea Environment Corporation Act	Feb. 6, 2009	Jan. 1, 2010
		Act Relating to Special Accounting for Environment Improvement	Jan. 5, 1994	Dec. 30, 2006
		Development of and Support for Environmental Technology Act	Dec. 22, 1994	Jan. 7, 2009
Act Relating to Toxic & Hazardous Substances (Enacted on Dec.13, 1963)		Toxic Chemicals Control Act	Aug. 1, 1990	May. 25, 2010
		Persistent Organic Pollutants (POPs) Control Act	Jan. 26, 2007	Feb. 4, 2010
Waste Cleaning Act (Enacted on Dec.31, 1961)	Waste Control Act (Enacted on Dec.31, 1986)	Waste Control Act	Dec. 31, 1986	Jul. 23, 2010
		Act on the Disposal of Sewage, Excreta & Livestock Wastewater (annulled)	Mar. 8, 1991	Feb. 4, 2010
		Act on the Management and Use of Livestock Manure (jointly enacted)	Sept. 27, 2006	Mar. 21, 2008
		Act on the Promotion of Saving and Recycling of Resources	Dec. 8, 1992	Jul. 23, 2010
		Act on Resource Recycling of Electrical and Electronic Equipment and Vehicles (jointly enacted)	Apr. 27, 2007	Mar. 22, 2010
		Act on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal	Dec. 8, 1992	Mar. 22, 2010
		Act on the Promotion of Construction Waste Recycling	Dec. 31, 2003	Dec. 28, 2006
		Promotion of Installation of Waste Disposal Facilities and Assistance, etc. to Adjacent Areas Act	Jan. 5, 1995	Dec. 27, 2007
		Sudokwon Landfill Site Management Corporation Act	Jan. 21, 2000	Dec. 29, 2005
	Compound Waste Treatment Corporation Act (Enacted on Dec.28, 1979)	Korea Environment (& Resources) Corporation Act	Dec. 27, 1993	Mar.21,2008 (Abolished on Dec. 31, 2009)
Sewerage Act (Enacted on Aug.3, 1966)		Sewerage Act	Aug.3, 1966	Jan. 7, 2009
Water Supply and Waterworks Installation Act (Enacted on Dec.31, 1961)		Water Supply and Waterworks Installation Act	Dec.31, 1961	May 25, 2010
		Management of Drinking Water Act	Jan.5, 1995	Mar. 22, 2010

and support global environmental conservation with a successful hosting, legal grounds have been laid for the establishment of the 2012 World Conservation Congress Organization Committee and administrative/financial support.

C. Management of Drinking Water Act

This revised act stipulates that i) drinking salty ground water is included in the category of drinking water for manufacture/sales in order to broaden the range of consumers' choice, ii) legal grounds of sanitation standards, which a person installing and managing water chiller/heater must comply with, were established in order to prevent pollution of drinking water from water chillers/heaters installed in the public facilities, iii) it requires a distributor who makes others to manufacture drinking water and sell/distribute it under its own trademark to report to mayors or governors, in order to prevent drinking water from going spoiled during distribution, iv) it mandates the drinking water quality inspection institutions to comply with the matters regarding record/preservation of inspection results, v) considering the influence of drinking water on the people, it gives the Minister of Environment or mayors and governors an authority to order the withdrawal and destruction of the applicable product in the event that there is a potential risk of harming the public health due to drinking water, and, if necessary, to publicly notify the violation of laws.

D. Act Relating to the Han River Water Quality Improvement and Community Support

According to this revision, the Total Maximum Daily Loads, which is voluntarily operated in the Han River System, must be carried out mandatorily, like it is done in other water systems such as Geum River, Nakdong River, Yeongsan River and Sumjin River.

E. Water Supply and Waterworks Installation Act

Until now, the installation of factories in the upper region of the water source protection areas has been strictly restricted for the protection of the water quality of water source. However, this regulation was operated as a governmental policy with weak legal grounds. This revision established the foundation for operating the system under stable legal structure and promoted the use of rainwater by adding the government offices to the locations where rainwater use facilities must be installed (previously, only indoor gyms and sports complexes were subject to mandatory installation of rainwater use facilities), considering that a necessity of the use of rainwater has been increased for coping with climate change and establishing a permanent countermeasure for drought.

F. Wildlife Protection Act

According to the revised act, an evaluation on ecosystem risk classification for wildlife, which may disturb the ecosystem balance, is to be conducted. Depending on the result, the Ministerial Enforcement Decree will designate wildlife that may disturb the ecosystem.

G. Waste Control Act

The revised act changed the waste recycling report system to permit system to enhance the management of product recycling waste that may cause harm to the public health and environment, introduced the harmfulness standard for product manufactured from recycled wastes, and gave the relevant authority to order the return of imported wastes in case there is any difference between imported wastes and reported waste.

In addition, it applies the modified standard and method for handling to intermediate treatment waste, which is an easy-to-recycle waste, and reinforces management/supervision of the central government to minimize the side effect of monopoly when the local governments outsource the operations of collection/transportation of domestic wastes to the private sector. Furthermore, it imposes a penalty or fine against a person who manufactures, distributes or sells standard plastic waste bag or other signs indicating waste, etc without the outsourcing contract with the governor of the Special Self-Governing Province governors, mayors, county governors and heads of ward offices.

It expands the subjects that comply with the reduction of food waste (previously, those discharging domestic waste) into those discharging business waste in case they discharge food waste, and may order a waste disposal company to dispose all stored wastes in case it closes business temporarily or permanently. Finally, it may exempt an individual or a corporation from criminal penalty even if such individual or corporation violates any provision of the Waste Control Act, unless such individual or corporation neglects reasonable and considerable caution and supervision regarding such violation.

□ Environment-related Acts Under Other Ministries

As shown in the table below, there are over 60 environment-related acts under more than 15 other ministries.

As such, since the environment-related acts are governed by many governmental ministries, there is a potential risk of regulatory hole with respect to each ministry' s authority. In addition, because there is a possibility that policy orientations among ministries may be different and cause conflict or inconsistency, close cooperation among the ministries is required to prevent this problem.

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 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, Aggregate Picking Act, Public Waters Management Act, Hot Spring Act, Act on 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, Act on Urban Park 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 US Forces, Special Act on Support, etc for Pyeongtaik City Upon the Transfer of the US Military Bases, Mine Pollution Prevention and Reclamation Act, Special Act on Development of East, West, 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 & Harbor	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 of 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, etc

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