

## SANITATION COUNTRY PROFILE

### REPUBLIC OF KOREA

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**Decision-Making:** The Presidential Commission on Sustainable Development (PCSD) was established in 2000 directly under the Presidential office. Since then the Presidential Decree, which provides a legal basis for the establishment of the Commission, has been revised three times, focusing on the expansion of its membership and responsibilities while taking into account the outcomes of the World Summit on Sustainable Development (WSSD). Currently, the Commission is composed of 77 members, all appointed by the President. 48 members were appointed based on the recommendations of local governments and local civil organizations. The remaining 27 members are from citizens' organizations, academia, business, and the research and legal communities active at the national level. The PCSD aims to facilitate dialogue among its members concerning sustainability issues. The PCSD, as an advisory organization to the President, is responsible for addressing the following: matters relating to establishing direction and planning of major policy for development and conservation; matters relating to the formulation and implementation of the plans related to Agenda 21 and WSSD Plan of Implementation; matters relating to corresponding strategies to major international conventions on the environment including UNFCCC; other matters relating to environmentally friendly and sustainable development.

In 1996, the Republic of Korea adopted a National Action Plan for Agenda 21. The Ministry of Environment (MOE) played a key role in the preparation of the action plan within the Government. The MOE is also responsible for the policies relating to Environmental Impact Assessments (EIA). Those who plan to carry out projects that are subject to EIA must prepare draft assessments, which are made public, and hold a public hearing on the proposed project. Along with the governmental Assessment System, the Prior Environmental Review System (PERS), one of the major preventive policy instruments, aims to balance development and preservation by identifying possible environmental impacts of development plans or projects in the early stages of planning. The MOE is also implementing mid and long term environmental conservation plans which lay down guidelines for all sectors for harmonizing efforts for environmental improvement. In order to implement Green Vision 21, a long term environmental plan covering the period 1996-2005, the MOE established the second mid-term comprehensive plan (1998-2002) for environmental improvement, originally established in 1997. The second plan reflects the government's desire for sustainable development in the 21st century and consists of 141 unit projects, in which 16 central government agencies are involved along with local governments.

In 2002, the Environmental Preservation Committee was abolished under the revision of the Framework Act on Environmental Policy. In its place, PCSD now coordinates environmental policies. In order to help integrate sustainable development issues into the decision-making process, multi-disciplinary experts should participate in national environmental plans and policies; capacity-building programs should be developed for experts in the government ministries; and inter-ministerial coordinating panels and consultative meetings to coordinate and integrate inter-ministerial policies for sustaining national development projects should be revitalized. For information regarding gender equality and women's participation in decision-making, please refer to relevant paragraphs in the sub-section on Decision-Making in the Human Settlement Country Profile.

A. Basic Sanitation: The Ministry of Environment is responsible for environmental policies and programs including water quality management, waste management, and water supply and sewage treatment. Legislations and regulations that pertain to sanitation include the following: the Sewerage Act (1966); Wastes Management Act; Act on the Disposal of Sewage, Excreta and Livestock Wastewater; Water Quality Conservation Act; etc.

B. Solid Wastes: The government is in charge of making and amending policies and regulations related to waste management, and therefore established the "Comprehensive Waste Management Plan." Local authorities are responsible for formulating and executing waste management policies, which are tailored to specific local conditions, based on general national plans. The MOE is cooperating with other ministries including the Ministry of Finance and Economy (MOFE), the Ministry of Budget and Planning

(MOBP), the Ministry of Commerce, Industry and Energy (MOCIE), the Ministry of Health and Welfare (MOHW), the Ministry of Construction and Transportation (MOCT), and the Ministry of Justice (MOJ), to formulate and amend polices and to secure the national budget.

The Republic of Korea has adopted standards on packaging methods and guidelines on industrial waste minimization. These are mandatory in accordance with Article 11 of the Clean Air Conservation Act, Article 9 of Water Preservation Act on the Promotion of Savings and Recycling of Resources, and Article 25 of the Waste Management Act. The MOE enacted an act for promoting the recycling and proper treatment of construction and demolition waste in 2003. This law will take effect on January 1, 2005. Major environmental policy instruments utilizing economic incentives for waste minimization and recycling include: the Environmental Improvement Charges (1991); the Deposit-Refund System for Waste Disposal (1992); the Waste Treatment Charge System (1992); the Volume-based Collection Fee System for Domestic Wastes (1995); the Extended Producers Responsibility System (2003). See also under Hazardous Wastes.

C. Hazardous Wastes: The MOE is in charge of laws and policies regarding hazardous waste management including the “Law on the Control of Transboundary Movement of Hazardous Wastes and their Disposal”. Non-governmental parties participate in establishing major national waste management polices through such platforms as a civic environmental policy committee consisting of 23 NGOs (including the Korea Waste Movement Network and the Korean Federation for Environmental Movement) and an interfaith environmental policy committee incorporating 7 different religious groups. The Presidential Commission on Sustainable Development (PCSD), mentioned earlier in this report, which consists of representatives from government, industry and civic groups, also plays a critical role in waste policy formation.

D. Radioactive Wastes: The Ministry of Science and Technology is responsible for establishing and implementing nuclear regulatory guidelines for the transport, handling, and disposal of radioactive waste. The Ministry of Commerce, Industry and Energy (MOCIE) sets up and executes measures in relation to the disposal of low- and intermediate-level radioactive waste (LILW) and the establishment of interim storage facilities for spent fuel.

### **Programs and Projects:**

A. Basic Sanitation: The central government and local authorities are expanding wide area water supply systems, tap water conserving facilities, and drainage and sewerage systems. In particular, the MOE has been especially active in providing financial support for the construction of water supply facilities and sewage treatment facilities in rural areas. For aspects related to freshwater, please refer to the Freshwater Profile section.

B. Solid Wastes: The MOE established and executed the 2nd Nationwide Polices for Solid Waste Management (2002-2011) to help build a sustainable society by promoting waste reduction and recycling. The Republic of Korea is also promoting recycling and safe waste treatment by introducing the Volume Based Collection Fee System and constructing sanitary landfill facilities in both metropolitan and provincial areas.

With regard to waste reduction policies, the volume-based waste collection fee system has been implemented since January 1995, charging for waste treatment based on the volume of waste produced, as opposed to the previous method which formulated charges based on property and building size. The comprehensive provision for food waste reduction and recycling was established in December 1996, to solve the problems caused by the enormous amounts of food waste being produced. MOE established a new “food reduction, recycling and treatment plan” in 2003. Various kinds of programs have been adopted to promote environmentally friendly food culture, including providing practical guidelines in homes and restaurants, adopting an ‘environmentally-friendly restaurant’ model system, building a food

bank network and expanding food waste recycling facilities. To reduce the amount of packaging wastes, packing material and design have been restricted, and use of refillable products is encouraged. Since 1994, to reduce the amount of waste from disposable products, the use of disposable products, such as instant dishes, spoons and lunch boxes, has been constrained and regulated in restaurants, public baths, and lodging facilities. Since 1999, the use of disposable bags has also been regulated; they can no longer be distributed free of charge, in department stores, shopping centers and shops larger than 33? in size.

Resource recycling program: A deposit system has been implemented since 1992 for products that are considered easy to recycle. This promotes waste recycling by requiring deposits from product producers and importers; the money is returned in proportion to a given producer's performance in recycling. The deposit system was replaced by an Extended Producers Responsibility (EPR) System in January 2003. Under the EPR system, the items subject to mandatory recycling for producers are as follows; products such as home appliances including TV sets, refrigerators, air-conditioner units, washing machines, computers, mobile phones (2005), audio sets (2005), tires, lubricants, fluorescent lamps, batteries, packaging materials such as paper packs, aluminum cans, glass bottles, and PET bottles (foodstuffs, liquors, cosmetics, detergents, some portion of pharmaceutical products), plastic packaging materials (foodstuffs, liquors, cosmetics, detergents, pharmaceutical products) and Evaporated Polystyrene (EPS) buffers (for home appliances). In the event a recycling-required producer fails to reach the mandatory quantity of recycling, the producer will be subject to the recycling charges for the remaining-portion by adding up additional dues of certain rates with recycling charges.

Since 1995, a waste treatment charge system, which requires waste treatment costs to be paid in advance, has been executed for products such as hazardous material containers, batteries, antifreeze, gums and disposable diapers. Voluntary agreements for voluntary recovery and recycling have been implemented since 2000. Under the program, producers can collect and recycle used household appliances such as TVs, refrigerators, washing machines, glass bottles, metal cans, and tires voluntarily. Since 1994, public institutions have been strongly encouraged to procure 13 designated recycled items - expanded to 269 items in 2003 - including toilet paper, note books, and photocopy paper. To induce customers to buy recycled goods, the "recycled goods guarantee" system was adopted for recycled products with high quality such as office supplies and building materials. Consumers can now place more trust in recycled goods as they compete with better-known brands that may be more environmentally damaging. In an effort to promote a more environmentally friendly industry in the ROK, the measures mandated by the Environmentally Friendly Industry Promotion Act, enacted in 1995, are being implemented by the Ministry of Commerce, Industry, and Energy (MOCIE). These include financial assistance programs for the promotion of cleaner technology R&D; programs to promote the recycling of raw materials, including the introduction of the Good Recycled Mark, which is given to excellent recycled products; and programs to promote environmental management, including the introduction of the ISO14000 System and development methodologies for life cycle assessment (LCA).

The MOCIE operates the Center for Development of Resources Recycling Technology in order to revitalize the resources of the recycling industry and facilitate technology development of small recycling companies. The Center spearheads the development and transfer of resources for recycling technology, and implements relevant education and training programs. The "Good Recycled Mark", which is given to high-quality recycled products, is one example of an overall campaign to heighten awareness and boost consumer confidence in the quality of recycled goods, while at the same time, expanding the demand for such goods. As of 2002, 94% of demand for forest products was met by import from other countries in the Republic of Korea. Private enterprises have undertaken voluntary initiatives to curb this trend by enhancing recycling of waste forest products, for example, recycling product residues and waste products to produce boards.

C. Hazardous Wastes: Development of clean manufacturing technology and waste reduction measures include: development of clean manufacturing technology was encouraged to constrain waste generation at the production level; operation analysis, waste reduction goals and implementation tools were investigated to minimize the volume of waste released at production level, depending on the characteristics of each industry; and a waste reduction guideline for industry has been put into force since 1996 to promote designated waste reduction. Expansion and privatization of designated waste facilities measures include: five designated waste facilities are in operation to deal with hazardous waste such as metals generated in industries properly and safely; 4 of 5 designated waste facilities were privatized, in order to help lay a foundation for a cost-effective and efficient waste management industry. The management of a designated waste facility that is not privatized is in trust with Private Corporation. Management of hazardous waste producers measures include: since 1999, designated hazardous waste management must secure/demonstrate official authorization at each stage of handling, from disposal to transport and treatment, as well as annual accounting; a certificate system of long-range transboundary waste has been mandatory for waste transported over 100 km from disposal sites, to trace and check the treatment path, since 1999; a certificate system for legal treatment of waste was established in 2001 to execute real-time monitoring of waste generation and its treatment path; and, infectious wastes generated in hospitals have been regulated under the Waste Management Program since August 2000, in order to maintain strict control over them.

Waste disposal fees are levied depending on the volume of waste discharged. This system has resulted in the reduction of waste generation and an increase in the volume of recyclables. The Deposit-Refund System for recyclable products went into effect in 1992 to reduce the volume of waste by applying the Polluter Pays Principle, and to encourage the retrieval of reusable items. The Waste Treatment Charge System was established in 1992 to curb consumption of products and containers that are difficult to collect, dispose, recycle, or manage. The waste treatment charge system will be revised to ensure effectiveness and efficiency, and substantially internalize the cost of environmental pollution.

D. Radioactive Wastes: The Republic of Korea currently has a construction plan for a national radioactive waste management complex in the LILW repository. Under the plan, the LILW repository will be in operation as of 2008, and a central spent fuel interim storage facility will be built by 2016. With respect to spent fuel, due to its high radioactivity, an interim storage facility of an appropriate size will be designed and constructed to help prevent radiological accidents and to safely manage spent fuel.

**Status:** Socio-economic aspects: The percentage of the population living in absolute poverty in the Republic of Korea has drastically decreased due to rapid economic growth. Absolute poverty comprised approximately 40.9 % of the total population in 1965; within three decades, it had decreased to 3.9 % in 1995. However, the economic crisis at the end of 1997 resulted in massive unemployment. It caused a great increase in the number of poor and the number of recipients of Livelihood Protection. Due to this crisis, poverty was recognized as a huge social problem. Therefore, the expansion and reinforcement of the social safety net was necessary for coping with this problem.

Present public assistance programs include living expense aid, health care, educational assistance, funeral expense support, small business loans, and job creation projects, among others. Living expense aid is provided for households whose income does not meet the minimum cost of living, regardless of age and ability to work. The number of recipients receiving the living expense aid has increased approximately three times from 540 thousand persons in 1999 to 1,540 thousand persons in 2000. After carefully assessing a recipient's need to work, among those who are able to work, including desire for work experience, age, health, and family situation, a self-support aid plan for each household is made by a public social worker. After that, the direction and the kind of services necessary for self-support are determined, and then services such as job search assistance, vocational training, job placement and financing for self-reliance are provided.

The Republic of Korea's fertility rate has rapidly declined from 6.0 in 1960 to 1.47 in 2000 as a result of the successful implementation of family planning programs. The population growth rate declined from 3.0 % in 1960 to 0.71 % in 2000. The population growth rate still continues to decline, and it is expected to stabilize in the year 2023; thus the Republic of Korea has reached the last stage of demographic transition. The drastic decline in the fertility rate to below the replacement level since the mid 1980's has brought about new population problems, such as population aging, labor force shortages, and a decrease in the school-age population. Because of this, the government adopted new population policies in 1996 with an emphasis on the quantitative and welfare context for the advancement of the quality of life.

The tourism industry currently comprises 4.72% of GDP and employment in the tourism industry constitutes 9.3% of the employment of the population (1998, K-TSA). Tourism is one of the three highest value-added industries. The number of foreign visitors to Korea for tourism purposes has increased from 2,340,000 in 1998 to 5,321,000 in 2000, an increase of 127.4%. Tourism profits during that time increased from US\$ 3,265 billion to 6,609 billion, a 102.4% increase. Foreign tourists visiting Korea totaled 5,321 thousand in 2000, with an increase of 14.2% from the preceding year. This broke the record of 5 million tourists visiting Korea for the first time in the history of the country and showed the highest growth rate in the 1990s.

*Ecosystem:* In the past several decades of socio-economic turbulence in the Republic of Korea, deforestation has resulted in landslides, droughts, and floods. Thus, since the 1960s, the government has been actively engaged in rehabilitation and reforestation efforts focused on degraded mountain regions. The results have been successful in reversing and preventing further soil degradation. In Korea, as of 2000, forestland constituted about 6.4 million ha, representing 65% of total land area. However, the forestland per capita is very low, 0.15 ha, only 20% of the world average. The total stock volume is 407 million m<sup>3</sup> and the average stock volume per ha is estimated to be 63 m<sup>3</sup>. Forestlands are classified into national, public, and private forests by ownership and into reserved and semi-reserved forests by utilization. National forests account for 22% of the total forestland and five National Forest Offices cover most of them. Forests owned by local governments and public organizations such as educational institutions account for about 8% of the total forestland and only 8% of the total stock volume. Private forests account for 70% of the total forestland. Private individuals and organizations such as peoples' parties, families, temples, and cooperative groups own them.

Since 1998 the government has begun to create recreational forestlands and as of 2002 there were 92 such places throughout the country. It is estimated that 2 million people have visited these recreational forestlands. In addition, since 2002, efforts have also been made to create 73 forest patches such as small tracts, forest experiencing facilities, and small-scale recreational facilities in forests nearby cities. The Republic of Korea is located in a temperate monsoon climate zone where the average annual rainfall of 1,283mm is considered adequate. However, two thirds of the rainfall is concentrated during the summer and there are frequent early or pre-summer droughts when water demand for agriculture peaks.

A. Basic Sanitation: The capacity for treating wastewater in the Republic of Korea is 18,400 thousand ? per day; 70.5% of sewage was treated as of 2000. The specific target established for coverage of water supply is to increase it from 83.6% in 1996 to 95% in the year 2011; the target for sanitation coverage is an increase from 53% in 1996 to 80% in 2005. The technical needs for wastewater treatment are the elimination of nitrogen and phosphorus and treatment of insoluble materials; for water purification it is technology enabling advanced treatment processes to eliminate hazardous substances, taste and odor. Industrial water effluents and waste disposal have had significant effects on the sustainable development of coastal fisheries. In the last 30 years, the development of industrial complexes and many new cities in the Korean coastal area has made the disposal of industrial water effluents and sewage from urban areas an urgent issue.

In March 1991, the Nakdong River, a major source of drinking water for millions of people, was contaminated by phenol discharged from an electronics company upstream. This incident provided a lesson to the business community that environmental conservation efforts may make a critical difference in securing profitability, firm value, and a positive business image. In 1994, people again were reminded of the importance of environmental health when the serious pollution of Sihwa Lake, which was formed by building a tide embankment for converting seawater to freshwater, received full coverage in the local papers. In the last 30 years, the development of industrial complexes and many new cities in the Korean coastal area has made the disposal of industrial water effluents and sewage from urban areas an urgent issue. For the conservation and sustainable use of living marine resources, Korean waters have become the focus for the prevention of marine pollution from both land-based activities and sea-based activities. The government is conducting a long-term research program to monitor and assess changes in the marine ecosystem caused by marine pollution. Based on the results of this research, ecosystem distribution status is reported and an environmental sensitivity map and a map of the wetlands are being made.

B. Solid Wastes: The expansion of waste facilities as of the end of 2002 was as follows: 232 landfill facilities with a total capacity of 362,561 thousand m<sup>3</sup> were in operation, and 18 facilities were under construction; 56 incineration facilities with a total capacity of 8,611 tons per day were in operation and 19 facilities were under construction; 249 food waste recycling facilities were in operation, and 4 facilities were under construction; and, 187 waste recycling facilities were in operation and 29 facilities were under construction as of 2003. Municipal and industrial waste totaling 277,740 tons per day was generated in 2002. By implementing a volume-based waste system, the amount of disposed municipal waste has decreased by 43.2% and the amount of recycled wastes in turn has increased by 145.9% compared to 1994; restrictions have been applied to the use of heavily packaged and disposable products. This trend indicates that the “polluter pays” principle leads to a voluntary reduction in waste generation. Notably, the volume-based waste system has resulted in a profit of 3,940 billion won in social and economic fields during the first 5 years; the system offers a clear economic incentive to reduce and recycle waste.

C. Hazardous Wastes: The amount of designated waste released was 8,192 tons per day, as of 2002. This amount had been increasing annually due to continued economic development, but declined during 1997’s financial crisis, and has been increasing again since 1999. The amount of waste exported and imported are 115 and 14,360 tons respectively, amounts equivalent to 689 thousand and 3,045 thousand US\$ respectively, as of 2001.

D. Radioactive Wastes: The government is responsible for protecting the public and the environment from any hazards associated with radioactive waste. In order to ensure safe management of radioactive waste, which is temporarily stored at nuclear power plants, a permanent repository for LILW and an interim storage facility for radioactive waste and spent fuel are required. With respect to spent nuclear fuel, the Korean government has not yet decided whether to directly dispose of, or to recycle the fuel. Because of the increase in the number of operating nuclear power plants and radioisotope users, the volume of LILW and spent fuel continues to rise. Therefore, much effort is being exerted to reduce the volume of radioactive waste.

### **Capacity -Building, Education, Training and Awareness-Raising:**

A. Basic Sanitation: According to the Waste Management Act, the managers of waste treatment facilities or the manufacturers who produce industrial waste (including hazardous waste) should be trained on the relevant regulations and treatment methods of the waste every three years. Their employers can replace the managers and the manufacturers on the training. They must also undertake the training whenever they violate the Waste Management Act and related regulations. The MOE has conducted education and training programs at regular intervals for local government employees involved in drinking water supply and sewerage services.

B. Solid Wastes: Each ministry formulates and implements policies and programs related to changing consumption patterns, in waste management, among others. The MOE devised the 2<sup>nd</sup> Comprehensive National Waste Management Plan (2002-2011) in 2002. Its ultimate target is to set up the foundation of a “Sustainable Resource Recycling Society.” Provinces and local governments are requested to set up their own Waste Management Plans, too. In the classroom, the “Environmental School Program” provides students with opportunities to learn how to recycle, among others.

C. Hazardous Wastes: The MOE set up a certificate system for the legal treatment of designated hazardous waste in 1999. Under the system, those who treat and dispose of designated hazardous waste must demonstrate official authorization at each stage of handling and report to the regional office of MOE. In 2002, MOE introduced an electronic version of the system enabling users to report on-line. Additional information is available at the Ministry of Environment website: [www.me.go.kr](http://www.me.go.kr).

D. Radioactive Wastes: Information is available from the websites of the Ministry of Science and Technology (MOST) and Ministry of Commerce, Industry and Energy (MOCIE) at: [www.most.go.kr](http://www.most.go.kr); and [www.mocie.go.kr](http://www.mocie.go.kr).

**Information:** Information is available from the websites of the Ministry of Environment and the PCSD at: [www.me.go.kr](http://www.me.go.kr); and [www.pcsd.go.kr](http://www.pcsd.go.kr). The MOE is implementing research projects for developing Sustainable Indicators and System of Integrated Environment and Economic Accounts (green GDP). The Eco Labeling and the Green Building Certificate System are also in force. An information network for water resources management is being developed. The Ministry of Agriculture and Forestry and the Ministry of Construction and Transportation are collecting information from the agricultural sector and the Ministry of Environment and the Ministry of Construction and Transportation are collecting data for the household and industrial sectors. The information on water resources is being managed, updated and provided on web pages and in other digital formats through the “Water Resource Management Information System” operated by the Ministry of Construction and Transportation. These Ministries distribute the information through the media to related agencies, including research institutions, and to the general public. Foreign distribution is accomplished through a World Wide Web Site. Although there is no way to include all of the information relating to sustainable development, the National Statistical Office publishes a yearbook with a core set of information gathered from each part of the government. The OECD requires that various environmental documents and information be published for the OECD every other year. The Republic of Korea has yet to provide all of the data required by the OECD. The Ministry of Environment has developed a long-term environmental statistics development plan in order to satisfy this requirement. The plan also improves the methods of evaluating and analyzing data and enhances comparability among the OECD countries. In 1999, the Republic of Korea established the Northeast Asian Information Center for the Environment to exchange information between countries in the region. An Environmental Information Center will soon be established jointly with China, Mongolia and Russia to collect and exchange environmental information on the Tumen River basin.

A. Basic Sanitation: Information on the generation and treatment of municipal and industrial waste (including construction waste and designated hazardous waste) is collected by the MOE annually through the local governments and the local offices of the MOE. The information on the generation and treatment of waste is available in a printed report and on the website of the MOE and the National Institute of Environmental Research (NIER, <http://www.nier.or.kr/>).

B. Solid Wastes: The MOE website ([www.me.go.kr](http://www.me.go.kr)) provides information including policies, regulations and statistics related to waste management. Korea Resources Recovery & Reutilization Cooperation (KORECO) Website ([www.koreco.or.kr](http://www.koreco.or.kr)) and Sudokwon Landfill Site Management Corporation Website ([www.slc.or.kr](http://www.slc.or.kr)) provide information related to waste recycling and municipal waste landfill facilities.

Information about research and technologies on waste treatment and recycling is available from the NIER website (<http://www.nier.or.kr/>).

C. Hazardous Wastes: The MOE website ([www.me.go.kr](http://www.me.go.kr)) provides information including laws, policies, regulations, and statistics related to hazardous waste management. The Korea Resources Recovery & Reutilization Cooperation (KORECO) Website ([www.koreco.or.kr](http://www.koreco.or.kr)) also provides information on the “certificate system for legal treatment of designated hazardous wastes.”

D. Radioactive Wastes: Information is also available from the websites of the Ministry of Science and Technology (MOST) and Ministry of Commerce, Industry and Energy (MOCIE) at: [www.most.go.kr](http://www.most.go.kr); and [www.mocie.go.kr](http://www.mocie.go.kr).

**Research and Technologies**: The promotion of innovation in environmentally sound technologies (ESTs) is being undertaken through the implementation of the Environmental Engineering Technology Development Project (1992-2001) and the Basic Environmental Technology Development Project as well as through the establishment of the Long-Term Comprehensive Plan for Environmental Technology Development (1998-2007). The Highly Advanced National Project (HAN Project) is an environmental research project that includes a technology project which covers non-polluting manufacturing technology, clean product development, and clean production methods. In order to systematically and comprehensively develop and cultivate domestic ESTs and promote the development of low-pollution technologies, the Ministry of Environment annually implements research projects such as Eco-technopia 21 and encourages the relevant agencies to use advanced ESTs to meet environmental standards. In addition, in order to promote low-pollution technology development and raise consumer awareness of environmental preservation, an eco-labeling system has been adopted.

The 21st Century Frontier R&D Programme is an ambitious long-term program following up on the HAN Project. The program was initiated in 1999, and its mission is to develop core technologies to help secure leading-edge technologies in promising areas, including industrial waste recycling, crop functional genomics, sustainable water resources, plant diversity, and so on. In 1995, the Ministry of Environment decided to introduce the Environment-Friendly Business Operation (EFBO) programme, which is a proactive environmental management practice that promotes cooperation between industries and the government and the development of innovative technologies and practices by NGOs. Business organizations adopting this method are asked to strictly re-evaluate, manage, and develop new environmentally friendly product designs, production processes, and final treatment processes. The evaluation of environmental impact includes the entire production and supply chain, from product design to raw material acquisition, input, production and post-treatment of pollutants. The EFBO program also includes revised environmental protection standards, clearly defined roles and responsibilities, a public education and awareness training program, prevention and clean up procedures, in-door inspection plans, and urgent action plans. The Ministry of Environment expects industries to implement pollution abatement production processes.

A. Basic Sanitation: About US\$ 27 million is being input annually to research and technology development on water resources. The government has pushed ahead with several research projects such as promoting the efficiency of purification facilities and developing a high-purifying treatment process as part of the G-7 project. Based on the results of these research projects, the government will promote developing a new treatment technology for drinking water such as a next-generation purification system and putting it to practical use from 2002. The government will also concentrate its efforts on developing technologies related to the whole system of producing and supplying tap water by managing purification facilities in a science/information-oriented way to reinforce the management of the existing facilities, systematizing the management of the pipelines network and establishing a leakage prevention system.

Also, the government is pushing forward with research projects such as developing devices and systems for water conservation and recycling, to help rationalize demand management.

The government is working on details for the development of environmental technology in the areas of water and clean technology. Sustainable Water Resources Research is being carried out to expand and secure available and sustainable water resources by 3 billion tons, which was about 10% of water consumption in the Republic of Korea as of 1998. About US\$ 77 million will be invested in the research project by 2010. A research system was established to develop sustainable technologies and to monitor the status of the agricultural environment in terms of water quality. A study on the environmental improvement around Shiwha Lake is currently being conducted. National research and development programs in environmental science and technology and HAN's G-7 Projects were planned and evaluated by the National Science and Technology Council, in which private sector experts participate; and the 21st Century Frontier R&D Programme was launched in 1999, which covers, among other things, water resources development & management.

**B. Solid and Hazardous Wastes:** Funding of 85.9 billion won was invested in the waste management field to encourage the development of environmental technologies including resource recycling and the treatment of hazardous waste under G-7 projects. The MOE has been cooperating since 2000 with the Ministry of Science and Technology on the 21st Century Frontier Project. National research and development programs in environmental science and technology and HAN's G-7 Projects were planned and evaluated by the National Science and Technology Council, in which private sector experts participate; and the 21st Century Frontier R&D Programme was launched in 1999, which covers industrial waste recycling and so on.

**C. Radioactive Wastes:** Advanced technology is being developed to reduce waste volume and to enhance waste stability. Also, basic research on high-level radioactive waste disposal is being conducted to address public concern regarding the long-term safety associated with spent fuel management.

**Financing:** To efficiently prioritize investment and secure new revenue sources, the government introduced the Special Account for Environmental Improvement in January 1995. Revenue sources include various charges imposed on polluters, transfers from general and other accounts, loans from the National Bond Management Fund and foreign loans.

**A. Basic Sanitation:** The Korean government will continue to increase the budget for the improvement of the water supply and water quality and sanitation. The table below shows the budget trends in recent years for water quality improvement:

<Table: Environmental Budget>

(Unit: 100 Million Won)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MOE Budget	1,887	4,716	6,729	8,851	10,802	11,131	11,536	13,023	14,143	14,336	14,036
Allowance for Water Quality Improvement	2,500	2,490	3,121	3,978	6,867	6,132	6,714	9,317	12,250	14,293	15,837
Total (Environmental Budget)	4,387	7,206	9,850	12,829	17,669	17,263	18,250	22,340	26,393	28,629	29,873

Source: The Ministry of Environment

B. Solid Wastes: 30% of the total installation costs of municipal waste landfill facilities built by local authorities are funded by the national government. 1.5 billion won is granted for each general waste treatment facility located in a rural area. 30 to 50% of the total installation costs of waste incinerators will be provided to local authorities through funding from the national treasury. 60 billion won is provided as a loan for recycling companies to promote the development of recycling technologies each year. Economic incentives in the form of preferential tax treatments are given to recycling companies to encourage this emerging industry. For aspects related to economic incentives for waste minimization, please refer to the sub-section on Programs and Projects.

C. Hazardous Wastes: The development of hazardous waste treatment technologies is partly funded through the national government. For details please refer to the MOE website ([www.me.go.kr](http://www.me.go.kr))

D. Radioactive Wastes: Information is available from the websites of the Ministry of Science and Technology (MOST) and Ministry of Commerce, Industry and Energy (MOCIE) at: [www.most.go.kr](http://www.most.go.kr); and [www.mocie.go.kr](http://www.mocie.go.kr).

**Cooperation:** The Republic of Korea actively participates in regional environmental cooperative mechanisms in Northeast Asia, including the Tripartite Environment Ministers' Meeting between China, Japan, and Korea (TEMM), the Meeting of Senior Officials on Environmental Cooperation in Northeast Asia (NEASPEC), the Northeast Asia Conference on Environmental Cooperation (NEAEC), and the Northwest Pacific Action Plan (NOWPAP). The activities of these mechanisms include the exchange of information on the role of local authorities, the use of economic instruments, and energy efficient technologies, etc.

A. Basic Sanitation: The MOE is planning to host the ISO/TC224 (International Standards for Water Supply and Sewerage Services) conference in 2004. Information for other activities is also available at [www.me.go.kr](http://www.me.go.kr).

B. Solid Wastes: As a part of the government's efforts to cope with climate change in the waste management area, landfill gas will be utilized in electricity generation as a form of resource recycling. The government maintains strict control over the import and export of hazardous wastes in accordance with the Basel Convention and the OECD guidelines, and will continue to participate in international conferences related to waste management. (rewritten table)

C. Hazardous Wastes: The Republic of Korea became a party to the Basel Convention in February 1994, and enforced the Law on the Control of Transboundary Movement of Hazardous Waste and their Disposal in 1995. Government permission is required to export or import hazardous waste as designated in the annex under the Basel Convention, or as amber waste as designated in the OECD guidelines. The export and import of hazardous waste is under tight control according to the Basel Convention and OECD guidelines. International cooperation is promoted through participation in international conferences such as the Basel Convention, COP, Working Level Meeting, etc.

D. Radioactive Wastes: The Republic of Korea will continue to participate in international organizations and collaborate with foreign countries in the sharing and exchange of information. Domestic standards and practices on the disposal of LILW will follow the guidelines of the IAEA and other international organizations, to ensure safe radioactive waste management.