*Last update: April 2002*

**Republic of Korea**

## CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES

**Decision-Making:** The Ministry of Foreign Affairs and Trade is mainly responsible for decision-making regarding international cooperation. The Ministries concerned also participate in the decision-making process. Moreover, the Office of Prime Minister provides coordination between Ministries concerned on inter-ministerial issues.

When the Foreign Trade Act (FTA) was amended on December 8, 1992, the government added a new provision for the preservation of the environment or natural resources. According to Article 5 of the FTA, "The Minister of Commerce, Industry and Energy may restrict or prohibit exports and imports of goods in accordance with the Presidential Decree, in cases where such restriction is necessary for protecting the life, health, and safety of human beings, protecting the life and health of animals or plants, or protecting and preserving the environment or domestic resources."

The Presidential Commission on Sustainable Development, composed of 13 related Ministers and 20 private sector's representatives, was established in September 2000 in order to comply with the President's request for advice on the matters related to major domestic policies, the Agenda 21 and major international environmental conventions, which are essential for sustainable development.

The Korean government has actively participated in international efforts to respond to global challenges on sustainable development. The government has implemented several international environment laws domestically, also taking into account the result of international conventions on sustainable development whenever it forges new national policies.

Major groups, such as women, NGOs, trade unions, farmers, and business and industry can also express their concerns through various means, including the mass media. The Presidential Commission on Sustainable Development, composed of 13 related Ministers and 20 representatives from the private sector, is also an important mechanism for reflecting major groups' views on international cooperation.

**Programmes and Projects:** To meet the challenges of harmonizing environment and development, the following tasks are under consideration:

- Pursuit of sustainable development through trade liberalization;
- Enhancement of mutual supportiveness of trade and environment;
- Provision of financial resources and technical assistance for developing countries; and
- Promotion of environmentally conscious and balanced economic development.

**Status:** The Republic of Korea provided approximately 212 million US dollars as Official Development Assistance (ODA) in the year 2000. The Republic of Korea contributed 5.6 million US dollars to the Global Environment Facility (GEF) during the period of 1995-1997, and the same amount in Korean Won during the period of 1998-2002.

The Republic of Korea has also participated actively in the work of international organizations such as the WTO to drive sustainable development through trade liberalization. In addition, the Republic of Korea joined the OECD in October 1996.

Based on the Science and Technology Promotion Act, the Republic of Korea has been providing Thailand, Malaysia, India, and Kenya with agricultural technology since 1972.

**Capacity-building, Education, Training and Awareness-Raising:** Stricter environmental standards are being applied to exported products. Due to growing public awareness of environmental issues, domestic environmental standards are gradually being strengthened. To enhance public awareness on consumption patterns, the eco-labeling system was introduced in 1992 and public green procurement in 1994.

**Information:** Various kinds of information related to the Republic of Korea's international cooperation can be accessed through the Internet.

- General: Ministry of Foreign Affairs and Trade,
- Investment-related sites: Korea Investment Service Center, Bank of Korea
- Economy-related sites: Ministry of Finance and Economy
- Sustainable Development-related sites: Presidential Commission on Sustainable Development

The Republic of Korea also submits reports related to trade, investment, and economic growth to the World Trade Organization, covering issues such as liberalization of trade, mitigation of approval procedures related to export or import transactions, abolishment of import diversification, etc.

**Research and Technologies:** Many public and private research institutes are active in producing analytical studies and policy recommendations on international cooperation to enhance sustainable development. Some institutes, such as KEI(Korea Environment Institute) and KDI(Korea Development Institute) are focusing on environmental and developmental issues. Other research institutes renowned for their studies in the area of economics, including KIEP(Korea Institute for International Economic Policy) are also interested in issues concerning sustainable development. They provide various analytical reports on economic development in light of sustainable development.

**Financing:** The people and the government of the Republic of Korea recognize that poverty and financial hardship of developing countries are major impediments to sustainable development. To support developing countries, the Republic of Korea established the Economic Development Cooperation Fund in 1987 and the Korea International Cooperation Agency (KOICA) in 1991. These institutions run various environmental cooperation programs for developing countries.

**Cooperation:** To discuss the pollution problem of the Yellow Sea and to discuss movements of long-range transboundary pollutants, the Republic of Korea is promoting environmental cooperation in North-East Asia. Korea is actively involved in the preservation efforts in the Asia-Pacific region, in close cooperation with other countries in the region. The Republic of Korea has initiated several regional cooperation programmes, such as Northwest Pacific Action Programmes (NOWPAP), Northeast Asia Sub-regional Programme of Environmental Cooperation (NEASPEC) and Tripartite Environment Ministers' Meeting (TEMM) between Korea, China and Japan. The Korean government is also expanding international economic cooperation programmes to aid sustainable development efforts of various international organizations, such as OECD, UNCSD and UNCTAD.

The government is actively participating in the negotiation of new or revised international environmental rules, including follow-up meetings for the implementation of existing international agreements. The government is implementing environmental agreements such as the UN Framework Convention on Climate Change, the Convention of Biological Diversity, Cartegena Biosafety Protocol, etc. The government is also substantiating bilateral environmental cooperation agreements signed with Japan, China, and the Russian Federation as well as facilitating environmental cooperation mechanisms with Australia, Canada, Mongolia, the United States, and Member countries of the European Union.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

**Decision-Making:** The Ministry of Foreign Affairs and Trade has the overall responsibility for the formulation and implementation of trade policy. When the Foreign Trade Act (FTA) was amended on December 8, 1992, the government added a new provision for the preservation of the environment or natural resources. According to Article 5 of the FTA, "The Minister of Commerce, Industry and Energy may restrict or prohibit exports and imports of goods in accordance with the Presidential Decree, in cases where such restriction is necessary for protecting the life, health, and safety of human beings, protecting the life and health of animals or plants, or protecting and preserving the environment or domestic resources."

The Republic of Korea recognizes that stabilization of the free trade system under the guidance of the World Trade Organization (WTO) is essential to promoting sustainable development. The Republic of Korea also recognizes that the consensus of different nations in such areas as improvement of market access opportunities is crucial for international trade and environmental cooperation.

Paticipation of major groups such as women and NGOs in decision-making is basically the same as the one described in the previous chapter.

**Programmes and Projects:** To meet the challenges of reconciling environment and development, the following tasks are under consideration:

- Pursuit of sustainable development through trade liberalization; and
- Enhancement of mutual support for trade and environment.

**Status:** In a country like Korea with a large population and scarce resources, trade can be a critical policy tool for creating jobs and earning hard currency. The Korean economy went through unprecedented hardship and placed itself under the IMF bailout programme in 1998. Since the 1997 financial crisis, Korean economy has been moving towards a new system, in order to be more transparent, market-oriented, accountable and competitive. As such, the Korean government has been implementing wide ranging reform and restructuring measures in the financial, corporate, labor and public sectors. There has been substantial progress, but the reform process is not yet complete. The process must continue until the Korean economy cures its structural weaknesses and inefficiencies.

As trade and investment increase and the economy improves, the government actively encourages companies to manage their business in an environmentally friendly manner, and companies voluntarily strengthen environmental management as a whole. As seen from the economic crisis of late 1997, consumption patterns shift toward environmentally friendliness and consumption levels drop rapidly, regardless of any impact on the environment

**Capacity-building, Education, Training and Awareness-Raising:** Stricter environmental standards are being applied to exported products. Due to growing public awareness of environmental issues, domestic environmental standards are gradually being strengthened. Therefore, export increases do not increase environmental problems.

**Information:** Various kinds of information related to Korea's trade, investment, and economic growth can be accessed through the Internet.

- Trade-related sites: Ministry of Foreign Affairs and Trade, Korea International Trade Association
- Investment-related sites: Korea Investment Service Center, Bank of Korea
- Economy-related sites: National Statistics Office, Ministry of Finance and Economy, Ministry of Commerce, Industry, and Energy

The Republic of Korea also submits reports related to trade, investment, and economic growth, to the World Trade Organization, covering issues such as liberalization of the trade business, mitigation of approval procedures related to export or import transactions, abolishment of import diversification, etc.

**Research and Technologies:** Many public and private research institutes are active to produce analytical reports on trade and environment issues. Some institutes, such as KIEP (Korea Institute for International Economic Policy), KEI (Korea Environment Policy) can provide informations on trade issues. The contact details of these institutes are follows:

- KEI: http://www.kei.re.kr/
- KIEP: http://www.kiep.go.kr

**Financing:** National budget and private funds are available

**Cooperation:** The Republic of Korea has also participated actively in the work of international organizations such as the WTO to drive sustainable development forward through trade liberalization. Furthermore, the Republic of Korea has joined the OECD on October 1996.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 3: COMBATING POVERTY

**Decision-Making:** The Ministry of Health and Welfare is responsible for the policies concerning public welfare support, health insurance and pension plan. Specifically, the National Welfare Planning Board was established in 1995, which is chaired by the Health and Welfare Minister and comprised of government bureaucrats, scholars, researchers, and welfare program managers. The committee plays a key role in constructing a new framework for welfare policies, which includes evaluating the health and welfare status of the country, making short- and long-term plans, and putting priority on various policies concerning health and welfare issues.

Non-governmental parties are active in advisory committees concerning welfare policies. Various anti-poverty programs are promoted by NGOs, such as welfare foundations, religious organizations, and volunteer groups. The opinions of the local governments are reflected to the decision-making prior to the decision confirmation, and, they make decisions on their own local plans and programs according to the central government's basic guidance. Certain percentage of members in all government committees should be portioned with women in order to reflect the women's opinion on the major programs, and the participation rate of women is gradually increasing.

The Republic of Korea's national strategies are focused on:

- Securing the minimum standard of living for the poor;
- Improving work capabilities through occupational training, increasing work opportunities for the poor, and providing business fund loans;
- Increasing welfare services for the elderly, the disabled, and children;
- Supporting the procurement of housing (e.g., public housing for the poor, convalescent home) and providing loan of reservation for the poor;
- Increasing the extent of medical insurance benefits;
- Enlarging the boundary of unemployment insurance;
- Providing measures to tackle the newly emerging problem of digital divide in this era of digital economy

Korean government has established the basic principle for the poverty eradication. So called Productive Welfare (or DJ Welfarism which is named after the President Kim Dae Jung) is taken as a guiding principle for establishing the social welfare policies. This principle can be distinguished from old form of direct aid to the needs into providing public aid for the ultimate goal for transforming those in needs to achive participants of the social growth engine.

**Programmes and Projects:** The current social welfare system in the Republic of Korea consists of three components: (i) social insurance (National Health Insurance, National Pension, Employment Insurance, Industrial Accident Compensation Insurance), (ii) public assistance (livelihood protection, educational aid, housing benefit, medical aid, veterans relief, disaster relief), (iii) social welfare services (for the disabled, the elderly, children, women and mentally handicapped). The following diagram shows the social security system which has developed over the last four decades.

Highlights of accomplishments in this area include:

- Introduction of Employment Insurance System (1995) and subsequent expansion to cover all workplaces (1998*)*;
- Including a rural regional pension plan (1995);
- Enforcing the National Basic Livelihood Security Act (2000) to Secure 100% the minimum life for the poor;
- Introducing an urban regional pension plan and a non-contributory pension plan (1999);

Increasing the maximum number of days covered by medical insurance to one full year for the entire population (2000).

**Status:** 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 percent of the total population in 1965; within three decades, it had decreased to 3.9 percent in 1995. However, the economic crisis at the end of 1997 has brought a massive unemployment. It caused a great increase in the poor and the number of Livelihood Protection recipients. The issue on the poverty from this crisis has been understood as a huge social problem. Therefore, the expansion and reinforcement of social safety net was necessary for coping with this problem.

To establish a full coverage of the social safety net, the National Basic Livelihood Security Act was enacted with a consensus among the civil organizations, political parties, and the government, and it was enforced on October 1, 2000 after the preparation of one year.

With the establishment of National Basic Livelihood Security System, the basic livelihood for the low-income class earning less than the minimum cost of living is institutionally secured and various poverty counter-measures for those who are able to work have become.

The living expenses are provided for the households whose income does not meet the minimum cost of living, regardless of their age and ability to work. The number of recipients receiving the living expenses is increased approximately three times from 540 thousand persons in 1999 to 1,540 thousand persons in 2000. To those who can work among the recipients, the self-support assistance programs such vocational training, job placement, and financing for self- reliance are provided.

To those who can work, the self-support assistance programs are strongly emphasized. After carefully assessing recipient's needs to work including desire for work experience, age, health condition, family situation, a self-support aid plan for each household is made by the public social worker. After that, the direction and the kind of services necessary for self-support are determined, then services such as job searching, vocational training, job placement and financing for self- reliance are provided.

Present public assistance programs include livelihood aid, health care, educational assistance, funeral expense support, small business loans, and job creation projects, among others. Some 1.5% of GDP was expended for social security in 2000, which comprised 9.1% of the central government's budget.

**Capacity-building, Education, Training and Awareness-Raising:** National Basic Livelihood Security System provides systematic self-support services so that recipients who have ability to work to free themselves from poverty. This is realizing a productive welfare. The objective of the Self-support program enables people in the low-income bracket with working abilities to have self-supporting abilities by providing secure jobs and supporting those people to be self-support. Self-support Service is "step-by-step capacity development strategy" which gradually enhances self-supporting desire and ability of the poor people through systematic support system such as consulting, job training, job introducing etc. In order to successfully and efficiently provide the services, the government increased the number of self-support guardian institutes and established self-support information centers. And the government plans to gradually increase the public social workers.

**Information:** Information is available from the website of the Ministry of Health and Welfare (MOHW) at: www.mohw.go.kr

**Research and Technologies:** Information on the research and technologies of the social welfare policies is available from the website of MOHW at: www.mohw.go.kr

**Financing:** The proportion of health and welfare in the government budget has been rapidly growing in recent years to implement various social security programs, such as health insurance plans, the National Pension Scheme, etc. The budget of the MOHW in 2001 amounted to 7.5 trillion won (approximately USD 5.7 billion). Since 1975, the government has sponsored private fund programs to help those in need. For example, Joint Social Welfare Fund was established to continue on such efforts in 1998. There are two categories to the Joint Social Welfare Fund raising programs: first, fund raising in the beginning and end of the year and second, all-year-round fund raising. There has been a substantial increase in fund due to corporate donations from big companies. The fund is used for emergency aid programs and designated trust programs.

**Cooperation:** Korea's Official Development Assistance (ODA) expenditure reached USD 212 million during 2000, which amounted to 0.049 percent of the GNP. This was a 33.3 percent retreat compared to the previous year. Among ODA projects approved in 2000, USD 108 million was assigned to the area of education and health while USD 123 million was set aside for SOC construction, including transportation and energy. Bilateral ODA assisted other nations through the Economic Development Cooperation Fund (EDCF) and the Korea International Cooperation Agency (KOICA). Uzbekistan (USD 18 million) was the largest beneficiary in 2000, followed by Vietnam (USD 16 million), China (USD 14 million) and Tunisia (USD 12 million). For multilateral ODA, the major recipient bodies were International Development Association (IDA) (USD 34.5 million), Africa Development Bank (AfDB) (USD 12.5 million) and Asia Development Bank (ADB) (USD 9.4 million).

Korea will join in international efforts to promote development and eradicate poverty from developing countries, particularly from the least developed countries. To this end, Korea will make efforts to gradually increase ODA and untying aids, in particular to the Least Developing Countries (LDCs) according to its economic condition and capacity.

With regard to the technical assistance programs, Korea made a commitment to participate in the DDA global trust fund by contributing USD 300,000 and will study various plans to increase its contribution up to USD 1 million in the long-term. Through the KOICA program, whose aim is to train workers from developing countries, Korea invited officials in charge of

trade from developing countries and conducted a study related to international trade laws and the WTO. In addition, Korea will reinforce its training assistance by sharing our knowledge and experience with developing countries. A total of nine training programs for officials from developing countries took place from 1992 through 2001 in the area of duties. All totaled, 164 officials from 24 countries attended these programs.

For developing countries to overcome poverty and pursue sustained economic development, reducing excessive external debt is a top priority. To this end, developing countries must effectively manage their external debt while Korea has provided comprehensive debt relief. Korea supports the international community's efforts to resolve the external debt issues of low-income countries, and is willing to participate in such endeavors. Korea completed two bilateral agreements with Indonesia and one with Pakistan, acording to the Paris club's agreement with the external debt-restructuring of Indonesia and Pakistan. Currently, Paris club is in negotiation for the third agreement on debt-relief on Pakistan's official debts of USD 12.5 billion (as of November 2001), of which Korea's exposure amounts to USD 747 million.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 4: CHANGING CONSUMPTION PATTERNS

**Decision-Making:** The Ministry of Environment (Waste Policy Division, Environmental Economics Division, Environmental Technology Division), the Ministry of Commerce, Industry and Energy (Industry Environment Division), and the Ministry of Foreign Affairs and Trade (Environment and Science Division) all have responsibility for changing consumption and production patterns. Each ministry formulates and implements policies and programs related to changing consumption patterns, such as end-use energy consumption, waste management, consumptive use of water resources, urban and land use planning. At the local and provincial level, local authorities and the Regional Environmental Management Offices of the Ministry of Environment have responsibility.

Legislation related to changing production and consumption patterns includes the following: (*dates in parentheses indicate the date of enactment or the latest date of revision)

- Act Relating to Environmental Improvement Charges (February 8, 1999)
- Act Relating to Promotion of Resources Saving and Reutilization (December 31, 1999)
- Act Relating to Environmental Technology Support and Development (February 3, 2000)
- Act for the Promotion of an Environmentally Friendly Industrial Structure (December 29, 1999)
- Air Quality Preservation Act (April 15, 1999)
- Water Quality Preservation Act (January 21, 2000)

The Republic of Korea has also adopted standards on packaging methods and materials, emission limits of air pollutants and wastewater and guidelines on industrial waste minimization. These are mandatory in accordance with Article 11 of the Air Quality, Water Preservation Act, Article 15 of the Act Relating to Promotion of Resources Saving and Reutilization, Article 25 of the Waste Management Act.

The National Action Plan for Agenda 21 is directed, inter alia, toward changing consumption and production patterns. Specific issues that are addressed include the following:

- Disseminating and promoting cleaner production methods for the production process
- Reducing wastes and promoting recycling in the production process
- Establishment of environmentally-friendly production and consumption mechanism
- Promoting the use of clean fuel and mitigating sulfate content of fuel
- Promoting the use of recyclable energy
- Using environmentally friendly technologies for sustainable production
- Extension of clean energy using, Mitigating sulfur content of fuel
- Mitigating wasteful consumption patterns, promoting awareness of sustainable consumption

**Programmes and Projects:** Among the programmes which the government is implementing in this area in cooperation with industries, consumer associations and others are the following:

- Designate environmentally friendly enterprise to promote establishment of environmentally friendly production system.
- Search for actions that the government and industrial sectors can undertake jointly
- Green Family Programme: Advertise sustainable consumption in conjunction with the newspaper publishing company "Donga Ilbo"
- Promoting production and consumption of environmentally friendly products: Activating the Eco-labeling Program, part of the establishment of a system which promotes markets for and consumption of environmentally-friendly products.

There are, in addition, selected measures for changing consumption patterns in the areas of energy, natural resource use, waste reduction and recycling. Examples follow:

- Efficient use of energy and natural resources: In order to promote efficient use of energy and natural resources, the Republic of Korea is adopting regulatory policies, economic instruments and social policies. For example, water fees will gradually be raised to reflect the full cost of supplying and preserving the quality of water and maintaining the resource base. The conservation of resource base is promoted by a national campaign for water conservation. The wide use of water-saving equipment is another way to reduce the waste of water resources. Standardization of equipment is now promoted and legal recommendations are used through the amendment of laws related to construction and housing that promote the installation of water saving equipment. The adoption of a water reclamation and recycling system has been

initiated and preferential taxation is given to such facilities. The government of the Republic of Korea encourages the development of energy-efficient motor vehicles in conjunction with improved public transportation systems and energy-efficient home appliances to make efficient use of energy. In 1993, the government prepared the Five-Year Plan of Energy Saving intended to provide fundamental policy directions on energy management and consumption. The objectives of the Plan are: to reform the existing industrial transportation and building structures into energy-saving facilities; to facilitate the private sector's investment in energy-saving facilities by providing preferential financing and taxation; and to develop and commercialize energy-saving technologies at an early stage. To this end, hundreds of specific programs were prepared.

- Waste disposal fees are levied depending on the volume of wastes discharged. This system has resulted in the reduction of waste generation and an increase in volume of recyclables. The Deposit-Refund System for products containing toxic materials or discharging mass wastes 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 which are difficult to collect, dispose, recycle, or manage. The two major systems will be revised to ensure effectiveness and efficiency, and substantially internalize the cost of environmental pollution.
- Environmental Improvement Charges: It is established upon the Polluter-Pays Principle and is imposed on the owners of large buildings and diesel-powered vehicles, as they discharge relatively large quantities of pollutants.
- Product Charge System: It is charged on a product according to its level of environmental friendliness with the aim of reducing the amount of wastes generated at the production stage and to enhance its quality.
- Volume-based Collection Fee System: Household waste is being disposed of using standard, plastic waste disposal bags, through which the volume of wastes is reduced and recycling activities are being promoted.
- Reduce taxes and provide a clean production technology development fund.
- Emission Charge System: It is Charges are brought to bear upon companies exceeding established permissible limits of air pollutants and wastewater discharges.

메모 [u1]: I'm not sure of your intended meaning. Is my substitution correct?

Companies voluntarily utilize cleaner production technology and invest in equipment in the light of LCA analysis, eco-design and environmental supply chain management. An eco-labeling programme is in effect on the basis of Life Cycle Assessment, which is conducted on all stages of a product's life, from production and consumption, to ultimate disposal or recycling.

Among the major projects and activities underway are research programs to develop Eco-labeling awarding criteria and Eco-mark products selection criteria; a Cleaner Production Technology Development Support Programme; and an environmental technology research and development project -- the Pre- pollutant prevention technology research project.

**Status:** From 1995 to 2000, the economy grew at the rate of 7.2 percent and energy consumption, at the rate of 9.2 percent.

**<Distribution and Use of Waterworks>**

| | 1991 | 1993 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|
| Supply ratio (%) | 80.1 | 81.1 | 82.9 | 85.2 | 86.1 |
| Supply capacity (10,000 ton/day) | 1,687 | 2,010 | 2,184 | 2,569 | 2,659 |
| Water supplied per capita per day (L) | 376 | 394 | 398 | 395 | 382 |

* Data: The Ministry of Environment, Environment White Book, 2000

**<Annual Targeted Reduction of Packaging Materials Made of Synthetic Resin>**

| | | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|
| Shock-absorbing materials used in packing the electric home appliances | For major makers | 10% or more | 30% or more | 30% or more | 30% or more |
| | For minor makers | 10% or more | 20% or more | 20% or more | 30% or more |
| Tray or package used in packing eggs | | 60% or more | 60% or more | 80% or more | 80% or more |
| Tray used in packing the fruit(apple and pear only) | | 5% or more | 15% or more | 15% or more | 60% or more |
| Cup for instant noodles | | - | 10% or more | 10% or more | 60% or more |
| Tray used in packing cosmetics, toys, dolls, etc | | 40% or more | 40% or more | 60% or more | 60% or more |

* Data: The Ministry of Environment, Environment White Book, 2000

**<Plan to expand amount of loads carried by Subway in Seoul>**

| | 1995 | 2000 | 2005 | 2010 | 2020 |
|---|---|---|---|---|---|
| Ratio of load carried by Subway (%) | 34 | 45 | 50 | 60 | 70 |

* Data: The Ministry of Construction and Transportation, Transportation Complex Plan, 1997

Energy consumption per person in 1997 (TOE) was 3.93. Dependency on petrol in 1996 was 60.5%, and dependency on important energy resources in 1996, at 97.3 percent.

메모 [u2]: This is a standard term used and defined by the organization requesting the report? If not, then the phrase is vague.

The consumer movement has developed from the Consumer Protection Movement of the 1970's to the environment protection activities of the 1980's and to the current Movement for Sustainable Consumption, which includes the suppression of over-consumption and the encouraging of recycled product usage. For example, the “reusable shopping bag” campaign was well-responded to by many groups and individuals. Direct trade with farmers who are producing organic agricultural products is a way of putting sustainable consumption by consumers into practice. District-based information bulletins which intermediate the trade of used items are effective tools to facilitate the recycling and reuse of products. Other activities such as the 'frugal market,' which is a type of flea market, are operated by district administrations in Seoul in cooperation with women's association. With the increasing preference for environmentally-friendly products amongst consumers, the business sector is also actively engaging in the sustainable production and consumption movement by adopting energy saving and environmentally-friendly processes.

The unsustainable lifestyle has a tremendous negative influence on the environment. With rapid economic growth, the consumption and production patterns in the Republic of Korea are becoming like those of developed countries. This means that the government, industries, families and individuals should change their consumption patterns that are detrimental to the environment. The Republic of Korea is putting high priority on policies which improve efficiency in the use of energy and natural resources and developing effective means to reduce wastes and promote recycling. In the 90's, globalization of the economy and the balanced growth between sectors, which are most likely to affect consumption patterns, are the principal objectives of the Korean government. Especially after the Earth Summit held in Rio in 1992, the concept of Sustainable Development is relatively well accepted by the public.

**Capacity-Building, Education, Training and Awareness-Raising:** The government of the Republic of Korea encourages the rise of informed consumers by providing information that can assist consumers in selecting environmentally sound products. The eco-labelling program has become a valuable tool for helping consumers identify the less-polluting products and encouraging industries to develop and produce a wide range of less-polluting products which meet higher standards. The Eco-Mark Association, a private body established on June 27, 1992, is composed of representatives from consumer organizations, environmental organizations, businesses, and distribution sectors, as well as environmental experts and journalists.

In addition, the government

- educates and explains success stories of and the need for industries to adopt environmentally friendly production patterns
- educates the public on the Designation Environment-friendly Enterprise Program.
- conducts education and training programmes for managers and technicians on environmental management and clean technology production.
- Promotes eco-design for products and service.

A media company, Donga Ilbo, actively promotes sustainable consumption patterns as part of a Green Energy Family programme.

**Information:** The National Environmental Technology Information Center was established to collect and disseminate environmental technology information in 1999. Information is also provided through environment industries exhibitions and environment technology seminars. Audits are undertaken by the National Assembly Session and by the Audit Division within each Ministry concerned. Information is made available to potential users through the Internet at the address linked below.The Republic of Korea organized an International Expert Meeting on Sustainable Consumption: Trends and Traditions in East Asia, from 27 to 29 January 1999 in Chejudo, Republic of Korea.

**Research and Technologies:** Clean and environmentally sound technologies are promoted and applied in production through LCA, impact assessment, collection and analysis of information, improved methods of production, investment in equipment and analysis of effectiveness. Other technology-related issues that are being addressed include: Life Cycle Assessment; new eco-design techniques and applied experience research to devise criteria for eco-labeling; and R&D on composting technologies.

**Financing:** The Cleaner Production programme is financed by the National budget and special funds. The Green Energy Family is financed by the National budget.

**Cooperation:** The government of the Republic of Korea hosted the Workshop on Policy Measures for Changing Consumption Patterns in 1995 to contribute to the international work program of the UN United Nations Commission on Sustainable Development. Also, the Republic of Korea is participating in the regional and international discussions and forums as an effort to change consumption patterns. It participates in the UNEP Cleaner Production Programme, OECD, and the APEC ISTWG (Industrial Science and Technology).

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 4: CHANGING CONSUMPTION PATTERNS - ENERGY

**Decision-Making:** The Ministry of Commerce, Industry & Energy (MOCIE) manages the Special Account for Energy and takes responsibility for planning and guiding all energy-related activities. In addition, MOCIE plays an important role in sponsoring energy corporations and research institutes such as Korea Electric Power Corporation (KEPCO) including 6 generation companies (GENCO), Korea Energy Management (KEMCO), Korea Gas Corporations (KOGAS), Korea Institute of Energy Research (KIER), and Korea Energy Economics Institute (KEEI). According to the Rational Energy Utilization Act, MOCIE formulates National Energy Basic Plan every 5 years and takes full responsibility for implementing that plan.

In addition, the Task Force on Energy Pricing teamed up with the Ministry of Commerce, Industry, and Energy, the Ministry of Construction, and Transportation, the Ministry of Environment, the Ministry of Finance, and Economy, etc. is working on energy price reform to reduce growing energy consumption in industrial and transportation sectors.

The Ministry of Construction and Transportation tries to improve urban transportation system and thus reduce air pollutant emissions by enhancing an access to public transportation system in partnership with local governments

In 1979 the government promulgated the Rational Energy Utilization Act to implement comprehensive and aggressive policies on energy efficiency and conservation. In 1997, this act was revised to incorporate a Pre-notification System of Energy Prices, which was designed to make consumers more responsive to energy policies.

According to the Rational Energy Utilization Act:

- Measures to reduce carbon dioxide emissions shall be considered when the Minister of Commerce, Industry, and Energy establishes National Energy Plan (Article 4) or when City Mayor or Local Governor establishes Local Energy Plan (Article 5).
- Those who desire to carry out a project of bigger than a specified scale (10 thousand toe/yr.) shall consult a relevant authority after analyzing its carbon dioxide emissions (Article 8, Article 9).
- To minimize environmental impacts from increasing energy supply, energy suppliers shall reinforce Demand Side Management (DSM) (Article 12(1),(2))
- To encourage voluntary energy conservation of energy-intensive industries. Voluntary Agreement Program shall be introduced (Article 12(2))
- If it deems necessary for energy efficiency enhancement, the Minister of Commerce, Industry and Energy may order public institutions to use or install energy-efficient facilities (Article 13)
- Korea Energy Management Corporation (KEMCO) may function as Energy Service Company (ESCO) to encourage energy-intensive industries to install energy-efficient facilities and to implement $CO_2$ emissions reduction program (Article 76, Article 77(2))

*Regulations, incentives, subsidies directed at consumers*: The government has played a central role in price setting process. For the regulation purpose, the government imposed customs tariffs, VAT, special excise tax, traffic tax, etc. to reduce energy consumption including oil, LNG, and coal and increase revenues. A progressive tariff is being imposed to reduce electricity consumption in households. The government has implemented demand side management programs such as load management, time-of-use rate system, discount system for voluntary curtailment, and rebate for efficient lighting systems. To reduce energy consumption in the transportation sector, the government imposes progressive car tax to reduce the demand for motor vehicles and control the demand for large sedans.

*Regulation, incentive, subsidies directed at industries*: The government bans the production and sale of appliances and equipment, which can not meet the Minimum Efficiency Performance Standards. The government provides 10% tax credit for the investment in energy-efficient facilities as well as facilities using renewable energy. In addition, 5.25% low-interest loans are offered for energy service companies (ESCOs) and investment in energy-efficient facilities as well as facilities using renewable energy.

National energy policy is based on the following core principles:

- high efficiency, low energy intensity socio-economic structure;
- enhancement of energy security;
- reduction of greenhouse gas emissions;
- successful completion of energy industry restructuring;

The government sets the challenging goal as follows:

- to provide 2% of the total energy consumption with renewable energy by 2006
- to build one million energy efficient homes during the next 10 years by providing tax incentives, subsidies, and performance certification programs.
- to provide one million households with Combined Heat and power by 2002
- to sign a Voluntary Agreement with 600 energy intensive industries by 2003

*Development of energy policy options*: The Korea Energy Economics Institute (KEEI), supported by MOCIE, is national principal energy policy research organization. It provides a broad range of research works on energy policy options to the government, industry and non-profit organizations faced with energy challenges.

*Green Energy Family (GEF) Movement***:** Green Energy Family Movement, started in 1995, was designed to address global environmental problems by enhancing energy efficiency through diffusion of energy-efficient facilities in the Republic of Korea. Green Energy Family is a partnership movement of systematic and voluntary participation from the citizens, companies, NGOs and the press. Green Energy Family is a nationwide volunteered and cooperative economic movement to enhance energy efficiency and reduce social costs. Through participation in Green Energy Family, companies can reduce energy costs, while energy providers can lessen the burden of expanding energy supply capacity. The government can guide technological development with low cost and inform the public of the importance of energy efficiency. Energy conservation problem cannot be solved simply by cost reduction. It should be perceived as environmental ethics of the society. GEF is in pursuit of sustainable development through the actions of harmonizing 3Es(Energy, the Economy, and Environment). Rapid increase in energy consumption causes global warming. GEF is a voluntary nationwide energy/environment movement which started with the purpose of contributing to addressing global environmental problem through energy conservation and $CO_2$ reduction. Companies participating in GEF Movement are 477 companies in Green Lighting Movement, 106 companies in Green Motor Movement, 66 companies in Green Energy Design Movement and 77 companies in Green Cooling Movement, totaling 726 companies in 1,374 operating sites in total.

*Citizen Coalition for Energy Conservation*: In 2000, Citizen Coalition for Energy Conservation was established in collaboration with the government to promote consumer participation in energy conservation efforts. In addition, a lot of experts in energy and environment joined the NGO. The NGO are making efforts to change consumption pattern of consumers as well as to increase opportunities for consumer to play a leading role in energy conservation.

**Programmes and Projects:** Direct and government-funded subsidies are widely used to defray the higher, up-front capital costs of renewable technologies. For example, Local Energy Program is greatly contributing to the installation of facilities using renewable energy. Under this program, the central government (MOCIE) provides local governments with subsidies to effectively implement the installation of facilities using renewable energy such as photovoltaics, wind power etc. This program consists of 2 sub-programs: (i) the Infrastructure Build-up Program such as the establishment of local energy planning, the feasibility study on the new and renewable energy with great potential in the local area, and public awareness enhancement of energy efficiency, fully supported with 100% of project costs; and (ii) the Demonstration Project to invest in the energy efficient facilities or the utilization of the new and renewable energy with great potential in the local area, provided with 80% of capital costs.

**< Local Energy Developments Projects: 1996~2000>**

| | Number of projects | Subsidy (unit: million won) |
|---|---|---|
| Local Energy Infrastructure | 131 | 6,455 |
| Pilot Project for Local Energy | 68 | 22,956 |
| Total | 169 | 29,411 |

*Expansion of Combined Heat & Power***:** It is a program to provide mass energy consumers with heat and electricity through cogeneration including municipal waste incineration, industrial waste heat. There are two major areas; District Heating & Cooling and Industrial Complex Combined Heat & Power (CHP). For the promotion of the program, the government enacted comprehensive Energy Supply Act in1991 and has been providing the suppliers and users with tax incentives, environmental regulation relaxation and long-term low interest loan of USD 1 million since 1983. Until 2001, District Heating have provided to 980,000 households in 19 districts, covering 8.5% of total households. 211 buildings are being supplied with district cooling. In addition, 20 companies are providing Combined Heat & Power (CHP) in 18 industrial complexes.

*Financial Support to promote Energy Service Company (ESCO)*: Energy Service Company invests in energy utilizing facility with guarantee of performance and later collects the invested capital and profit from the saved energy cost. As of 2000, 96 companies are registered as ESCO. The government has supported ESCO with USD 54 million of long-term low-interest rate loan and has triggered the market development by demonstration projects and procurements in the public sector.

*Green Energy Family Movement*: To enhance public awareness about benefits from energy-efficient equipment and facilities, GEF initiated Green Lighting, Green Motor and Green Energy Design Program.

*Energy Auditing:* Energy Auditing is an information transfer program to assist energy consumers in understanding and employing technologies and practices to use energy more efficiently. MOCIE provides energy auditing services for energy-intensive industries and buildings. Depending on the performance, financial supports are provided if necessary.

*Energy Efficiency Standards & Labeling Program*: Started in 1992 for market development and public awareness of energy-efficient products, the objective of the program is to encourage manufactures to produce more energy-efficient products by offering incentives so that end-users can have more options to purchase energy-efficient products.

*Financial Support for Energy Efficiency Investment*: To encourage the installation of energy efficient equipment and facilities, the government funds USD 330 million a year with long-term low-interest for Integrated Energy Supply, Energy Efficient Facility Installation, Alternative Energy Dissemination and Housing Insulation. Furthermore, it supports energy conservation companies (ESCOs) with initial capital investment.

*Voluntary Agreement (VA)*: It is an agreement between energy-intensive company and the government. A company sets a goal for GHG reduction and concrete action plan, and the government supports the company with various measures.

*R&D and Dissemination of Greenhouse Gas Reduction Technology*: MOCIE is supporting research, development and dissemination of energy-efficient technologies, new and renewable energy technologies and clean energy technologies. 50 energy efficiency technology development programs, including those related to industrial boilers, furnaces and motors, are under way, and new and renewable energy development programs including photovoltaics, biomass and wind power are under way.

*Community-driven Energy Projects*: Series of projects are developed to support local governments in implementing measures to rationalize energy-use. MOCIE provides energy technology information and supports energy conservation projects of the local governments through KEMCO main local centers.

*Energy Saving in the Public Sector*: The government initiated the Energy Saving Performance Contracting Program to help the public buildings sector reduce energy consumption. In addition, the government made it a priority for the central government agencies and local administrations to use energy efficient equipment and appliances such as high-efficiency motors, 26mm slim-type fluorescent lamps. The government continues to monitor the effects of such energy-saving activities and provide related information through workshops and other public campaigns.

**Status:** The share of fire woods and other renewable energy, which had accounted for nearly 20% of the Republic of Korea's total energy consumption in the early 1970s, has been reduced to less than 1% in 1999. Since it was introduced in the mid-1990s, LNG grows to cover 9.1% of total energy consumption. The Republic of Korea launched nuclear energy program in the late 1970s and currently supplies 14.2% of its energy needs through nuclear power generation.

In 2000, the Republic of Korea paid USD 37.6 billion for its energy import, which was equivalent to 19.0% of its total import. The Republic of Korea, poor in natural resources endowment, depends on overseas importation for over 97% of its energy supply. In 2000, the Republic of Korea has been ranked as the 10$^{th}$ largest energy consumer in the world as well as the 4$^{rd}$ largest oil importer.

**< Primary Energy Consumption (unit: 1,000 ton) >**

| | Coal | Petroleum | LNG | Hydro | Nuclear | Fire Wood & Other | Total |
|---|---|---|---|---|---|---|---|
| 1996 | 32,200 | 99,898 | 12,172 | 1,301 | 18,481 | 1,161 | 165,213 |
| 1997 | 34,799 | 109,080 | 14,792 | 1,351 | 19,272 | 1,344 | 180,638 |
| 1998 | 36,039 | 90,582 | 13,838 | 1,525 | 22,422 | 1,526 | 165,932 |
| 1999 | 38,155 | 97,270 | 16,849 | 1,517 | 25,766 | 1,806 | 181,363 |
| 2000 | 42,911 | 100,280 | 18,924 | 1,402 | 27,241 | 2,130 | 192,888 |

The Republic of Korea has been transformed from a barely self-sustaining agricultural economy into a highly sophisticated and export-oriented industrial one. Since major energy intensive industries such as steel, cement, paper, and petrochemical industries have led manufacturing sector, the Republic of Korea's economic growth has been accompanied by even faster growth in its energy consumption, which resulted in large trade deficit. According to rapid change in consumption pattern and economic growth, transportation, residential and commercial sectors are growing fast while requiring a large amount of fuels.

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

*Public Campaign on Energy Efficiency & Conservation***:** MOCIE has been actively engaged in the public campaign to draw nationwide public interest in energy efficiency and conservation. To this end, the government produces and distributes VTR cassettes, movies and various PR materials including fans, hats and hangs street campaign banners, although mass media such as TV, radio, newspapers and diverse types of publications are employed as a major PR means. The government also carries out activities in cooperation with businesses and NGOs in order to enhance the people's awareness and participation in energy conservation efforts. Moreover, it organizes exhibitions and diverse cultural events on a regional basis to publicize successful cases of energy conservation. Practical technologies and information on energy conservation can effectively reach individual industries and homes through those channels.

*Energy Conservation Events*: November is designated as the "Energy Conservation Month", when various enlightenment events are held to draw the public people's interest in energy conservation. And the first Friday of every month is designated as the "Energy Conservation Day". Energy Conservation Exhibition named ENCONEX has been annually organized since 1975 to propagate updated energy conservation technologies and equipment at home and abroad, and to provide information on specified technologies for interested companies in the industry, buildings and transportation sectors. Energy Conservation Convention has been also biennially held to arouse the energy conservation spirit among people and to award those who made considerable contributions to the cause.

*Energy Pavilion*: Energy Pavilion was constructed within the Exposition Science Park precinct in Taejon in 1993. It functions as a living text of all aspects of energy. In 2000, total 201,829 people visited this pavilion.

*Fostering Training Course*: This course is to foster operators of energy-equipment subject to certification inspection, operators of gas boilers and certified energy managers. Anyone who is not a certified engineer but desires to become an operator of energy equipment subject to certification inspection takes this course. This course, consisted of 20 hours (3 days) includes structure and operation of the boiler and pressure vessel, fundamentals of boiler management, fuel and combustion control, etc. Anyone who is a certified engineer of the equipment subject to either general or certification inspection, but desires to become an operator of the gas boiler at the same time takes this course, too. It includes fundamentals of the LPG and LNG, operation, maintenance and safety control of the gas boiler, etc.

*Education for Local Energy Planning Officials*: In 1999, 290 local officials responsible for local energy planning were educated for five days on local energy planning guidelines, governmental energy conservation policies, and so on.

*Early Education*: The Ministry of Education designated 58 elementary and 12 middle schools as "Demonstration Energy Conservation Schools" in 1999. In addition to financial assistance of about USD 5,417 per each school, the government supports educational aids such as books, videotapes and diskettes for the designated schools. As authorized by the law, KEMCO is in charge of training programs for the energy managers and operators of energy equipment and facilities to upgrade their skills as well as enhance their safety control proficiency. There are also a variety of training and education courses.

*Practical Business Training Course*: All energy managers or operators of energy-equipment in a company are eligible for this training course of one day (7 hours). The curriculum includes policies of energy conservation, law and regulations related to rational energy utilization, efficiency and safety of energy-equipment, new technologies of conservation, measures of preparing for the Convention on Climate Change, etc.

*Other Training & Education Courses*: There are other training and educational courses for the staffs of cooperative organizations in the field of energy conservation, the staffs in charge of PR and education in energy-related organizations, managers of energy appliances manufacturing companies and managers of outstanding companies in energy management.

**Information:** MOCIE supports energy conservation business through collecting, analyzing, processing and disseminating energy information through internet, PC communication networks and publications. Analyzed and processed information and data is also available for end-users such as universities, industries, research institutes and the general public.

*Energy Statistics Materials Gathering and Publication*: MOCIE and KEEI collect and analyze energy information about supply and demand trend from diverse domestic and foreign sources. Processed statistical data and information are published and circulated in the form of printouts and books so that end-users may have access to the basic data for their energy conservation business.

*Energy Data & Information Service through PC Communication Networks and Internet*: Through PC communication network and Internet homepage (www.mocie.go.kr), MOCIE offers the latest energy information.

*Operation of Business Promotion Office*: MOCIE provides total business service network named "Inno-Net"(http://innonet.ne.kr) to strengthen the competitiveness of the small- and medium-sized companies competitive power.

*Energy Cyber Adventure*: Energy Cyber Adventure was held on Internet (http://event.kemco.or.kr) for a month in September 1999 with various kinds of events such as energy conservation quiz, games, etc. to draw public attention to energy conservation. About 30,000 people participated in the events.

*Publications*: KEMCO publishes and distributes periodicals which contain useful and diverse new energy conservation technologies and systems, successful cases of energy conservation in some companies, outstanding and effective energy conservation policy programs in some governments, etc., with a view to playing a bridge role in information exchange among organizations concerned. "Energy Management", a monthly staple magazine of KEMCO, has a circulation of some 7,000 a month. About 7,000 copies of "Energy Conservation Handbook" containing energy information such as energy policies and the present energy situation at home and abroad are biennially published. It also publishes some other books including "Energy Products Directory", "Statute Book of the Rational Energy Utilization", "Energy Consumption Statistics", "Technical Information Pamphlet", and so on.

**Research and Technologies:** New and renewable energy accounted for 1.1% (2,131 thousand tons of oil equivalent) of total energy supply as of the end of 2000. Municipal and industrial waste represents 92.8% of total new and renewable energy. Although solar thermal water heating units have successfully been commercialized and deployed, they are still less competitive in energy market and thus account for only 2.2%. Also photovoltaic system technologies have completed basic research phase and entered the utilization phase, expanding use of photovoltaic power system in isolated small islands. But only 0.2% of the total renewable energy comes from photovoltaic system due to a variety of market barriers.

**<Use of New & Renewable Energy: 2000>**

| | Waste | Bio mass | Solar Thermal | Small Hydro Power | Photovolatic Power System | Wind Power | Total |
|---|---|---|---|---|---|---|---|
| Amount (1000 ton) | 1977.7 | 82.0 | 41.7 | 20.5 | 5.1 | 4.1 | 2131.0 |
| Share (%) | 92.8 | 3.8 | 2.0 | 1.0 | 0.2 | 0.2 | 100 |

*Photovoltaics*: In 1980s photovoltaic systems for telecommunication, navigation lights, and measurement equipment, have been installed for demonstration. The demonstration of monocrystalline silicon photovoltaic module was achieved through R&D program. In addition, operation and maintenance technology development has facilitated photovoltaic system deployment. As a result, electricity generation cost of photovoltaic systems on island is similar to, even lower than those of diesel power plants because they require relatively low maintenance cost. The government concluded that photovoltaic systems are the most appropriate power systems for small islands with less than 50 households. Rural electrification by photovoltaic systems was initiated to provide remote areas with electricity in remote islands in 1990s. A stand-alone photovoltaic system of 100 KW on Ho island in Chungnam province was built with domestic materials and equipment in 1993, and another facility on Hawa island in Chungnam was upgraded from 25 KW to 60 KW in 1995. To effectively create a market for photovoltaic systems, a new exhibition center was opened in 1997 at Jungyeo Park in Kwangju city. Total installed capacity of photovoltaic systems amounted to 3.7 MWp by 1999. But more R&D investments will be needed to make photovoltaic systems competitive in energy market. A portfolio of measures will play an important role in broadly installing grid-connected photovoltaic systems.

*Solar Thermal Energy*: Unlike the other heating systems, solar thermal types require relatively low initial investment cost and have proven to be cost-effective. The government is making efforts to spread residential use of solar water heating systems in rural areas and small- and medium-sized cities. Currently, low-temperature solar thermal system is commercially available and medium-high solar collector systems are under development. 184,700 units of residential solar thermal water heater have been installed as of 2000. There is a large market potential in the areas such as fish farming, swimming pool, process heat and so on. For more deployment, investments in solar thermal energy infrastructure and demonstration project of solar thermal energy technology should be enhanced.

*Wind Power*: Energy generated from wind power would be economically feasible if the average wind speed is more than

4~5m/sec. In the Republic of Korea, wind energy resources are available along coasts, on high mountains and in small islands. By the end of 2000, 20 wind plants have been installed with a total capacity of 7.1MW in Jeju island, Pohang, and so on. Especially, the central government in partnership with local governments is implementing a wind power project in Jeju Island as a benchmark for renewable energy deployment in the Republic of Korea.

As of October 2000, 10 units are in operation and 7 units are under construction. In addition, a feasibility study was conducted for the power plant using both photovoltaic and wind power in small islands which do not have access to the national electricity power grid system. Meanwhile, the private sector is involved in development of blade and induction generator technology.

*Renewable Energy and Biomass*: To promote energy from municipal waste and reduce burden on landfills, the government continues to disseminate municipal solid waste incinerators linked with district heating and industrial waste incinerators. Combustible municipal waste has a calorific value of more than 5,000 kcal/kg, with high conversion potential into heat energy.

In 1993, the Waste Management Law was revised to encourage industrial complexes to use waste as a feedstock for waste heat production. New industrial complexes with areas of greater than 500,000 $m^2$ are required to install collective industrial incinerators. However, installation of incinerator has brought about complaints about air pollution from local community.

Therefore, significant prevention measures and campaign will be required to make those facilities much more acceptable in the local community. In the future, the government will promote industrial incinerators to solve waste disposal problem as well as to make most of the heat energy generated from waste incineration.

Landfill gas recovery has a significant potential because organic waste generation accounts for 26.5% of total municipal waste at 11,774 ton/day (1998), 70.4% of which are stored in landfills. Despite its high potential, landfill gas recovery is still relatively at a primitive state of development. There has not been the project on commercial landfill gas recovery in the Republic of Korea yet. But 14 large-scale landfill sites present attractive opportunities for project development with the estimated gas generations of 647 thousand $m^3$/day.

Methane gas recovery from agricultural and industrial organic waste is also available, totaling 310.8 steam ton/day at 90 facilities such as livestock farms, water treatment facilities, and liquor factories as of the end of 2000. In the meantime, as an alternative to fuel wood, use of fuels made of rice husk, which is one of the largest wastes, generated at rice paddy, amounted to 42.8 thousand toe.

Currently, renewable energy is not economically feasible in the Republic of Korea. Compared to the conventional fossil fuels, renewable energy is still costlier. The generation cost of wind power installed on Jeju island is nearly 0.1$/kWh without considering labor cost for O & M. For photovoltaics, the generation cost is more than 1$/kWh. But, it can be competitive with other power plants in remote islands. Nuclear power is considered to be much cheaper than renewable energy. However, in the face of strong complaints and opposition from local communities it has difficulties finding a place for nuclear waste disposal. Hydropower is also cheaper electricity power source. However, it is difficult to find appropriate sites for hydropower projects.

The government established the 10-year National Plan for Energy Technology Development (1997-2006) which incorporates three energy technology plans: new and renewable energy, clean energy, and energy efficient technology. The main goals of the plan are to meet 2% of total energy supply by new and renewable energy by 2006; to reduce 10% of final energy consumption by 2006; to advance clean energy technologies, especially to reduce SOx, NOx, dust and $CO_2$.

To meet this challenge, the government established goals for energy technology, considering current technological level, available funds and market potential. In addition, the government selected 21 high-priority programs to promote early commercialization and deployment and make R & D program more effectively taking into consideration: firstly high energy saving potential; secondly environmental friendliness; and lastly high initial capital cost which increases private investment risks.

High-priority programs are selected by the following criteria: a technology which has a large potential for energy conservation, energy security, and environmental protection; a technology which the private sector finds it difficult to develop due to the lack of economic feasibility, and thus should be initiated by the government.

Four high-priority programs among 11 new and renewable energy technologies were selected taking account of the market potential and competitiveness of those technologies. The high-priority programs thus selected are solar thermal energy, photovoltaic power system, fuel cell, and IGCC.

**<10-year National Plan for Energy Technology Development>**

| | | High-Priority Program | General program |
|---|---|---|---|
| Energy Efficient Technology | Industry | Chemical Separation Technology<br>Dryer<br>Energy Conversion & Storage<br>HVAC<br>Industrial Energy | Combustion<br>Dying Machinery<br>Paper Machinery<br>Process Control and Automation<br>Chemical Reaction Process<br>Heat Exchange<br>Structural Materials<br>Functional Materials |
| | Buildings | Energy Efficient Building Technology | Building Energy Management<br>Building Automation System<br>Building Insulation |
| | Transportation | | Fuel-Efficient Vehicles |
| | Electricity | Lighting System<br>Induction Motor<br>Small-Scale Cogeneration | Refrigeration<br>Customer Electricity Management<br>Electric Exchange<br>Energy Storage<br>Electric Heat<br>Superconductivity Power Equipment<br>Demand Side Management |
| New & Renewable Energy | | Solar Thermal<br>Photovoltaics<br>Fuel Cell<br>IGCC | Biomass<br>Wind Power<br>Coal Utilization Technology |
| Clean Energy | | Fluidized Bed Combustion<br>Coal Ash Utilization Technology<br>Combustion Treatment Technology<br>New Catalyst for Oil Refining<br>$CO_2$ Separation and Recovery | Coal Preparation<br>Pulverized Coal Combustion<br>Regeneration and Treatment of Used Catalyst<br>Biocatalytic Desulfurization and Pro-cess Development for Oil Refining<br>Fixation and Utilization $CO_2$ |

**Financing:** Investment in energy-saving facilities or R&D of energy technologies entails great expenses, which is a practical burden on manufacturers. Besides, small- and medium- enterprises may not have adequate access to normal banking channels. The preferential long-term loans and/or various tax incentives provided by the government may encourage voluntary participation in energy efficiency and conservation investments.

The government has provided long-term and low interest rate loans from the Fund for the Rational Use of Energy (hereinafter referred to as the "Fund"), along with tax incentives, for energy efficiency and conservation investments. KEMCO funded by the MOCIE is in charge of its management and monitoring.

*Types of Projects to be Funded and Size of Loan*: The fund for rational use of energy supports rational use of energy, mass energy supply projects and dissemination of alternative energy projects. Rational use of energy may be achieved by the installation of energy conservation facilities which include cogeneration facilities for industry & large buildings, production of high-efficient products, non-electric cooling systems, installation of energy conservation facilities, regional energy development projects and energy service companies (ESCOs).

*Types of Fund to be Loaned Installation Costs*: These types of fund eligible for loan include (i) the purchase of the proper facilities and their incidental facilities and equipment, (ii) installation and retrofit works, (iii) design and superintendence (including expenses for the introduction of technology), and (iv) test run of the facilities, expenses for the purchase of land and expenses for erecting buildings which do not contain constructions indispensable for the installation of the facilities. But, in case of mass energy supply projects by local governments and government-sponsored institutes, the expenses for the purchase of the building site for installing facilities are funded and in case of regional energy development projects by local governments, the expenses for feasibility study are funded.

*Operation Costs*: Those are confined to the expenses needed for the operation of one-rotation (3 months) of the facilities on the basis of the annual or estimated sales of the products produced by the facilities.

*Terms of Loan* (as of 1999): The loans for installing energy-saving facilities or equipment in most cases have 3- to 5-year grace period and 5-year repayment period with 5.5-7.5 % of interest rate which are about half the market or prime rates. Up to 90-100% of investment money can be provided to the applicants. The maximum amount eligible for industrial energy-saving facilities and VA is 3 billion won per project; 5 billion won per project for ESCOs and regional energy development; 1 billion won for energy-saving facilities in building and transportation; 10 million won per house for home insulation retrofit for housing. Funds are available to both the public and the private sector companies.

*Tax Incentives*: The government provides tax incentives for energy efficiency investments. Until 1997, the replacement with or installation of energy-efficient facilities and equipment has been qualified for 10% of income tax credit for domestic products while 3% for foreign ones. But since 1997, a 5% income tax credit has been applied, regardless of its origin provided, to replacement of old industrial kilns, installation of energy-saving facilities, alternative energy facilities, other facilities which are assessed to save more than 10% of energy-consumption.

**Cooperation:** To address energy and environmental challenges, the Republic of Korea are strengthening the cooperation with the international agencies. Through this activity, the Republic of Korea maintains various channels with foreign countries to exchange technical and policy information and develop joint programs, and disseminates the information to the interested parties at home and abroad.

*Bilateral Cooperation*: KEMCO keeps close relationships with other relevant organizations abroad to exchange energy information and staffs, and to develop collaborative programs such as training, joint seminar or joint research. Its main partners are ECCJ, NEDO, DOE, ADEME.

*Multilateral Cooperation*: The Republic of Korea has actively participated in 11 programs by established IEA and energy cooperation in APEC.

The government has played a leading role in dealing with climate change. In order to formulate and implement measures to deal with the Framework Convention on Climate Change (FCCC), an inter-ministerial committee on the FCCC, comprised of related government agencies, research institutions and private companies, was established in April 1998 with the Prime Minister as the head of the committee. In December 1998, comprehensive measures to cope with FCCC were formulated, and have since been promoted.

Poor in endowment of energy resources, the Republic of Korea has been aware of the importance of the rational utilization of energy and promoting systematically designed programs for energy conservation.

After the Rio Conference, energy-saving efforts of the government of the Republic of Korea have been further strengthened. The government amended the Rational Energy Utilization Act, in January 1999, in order to mitigate $CO_2$ emissions by coordinating the domestic energy conservation efforts with the global environmental issue.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 4: CHANGING CONSUMPTION PATTERNS – TRANSPORT

**Decision-Making:** The Ministry of Construction and Transportation (MOCT) is responsible for management and decision-making concerning all national traffic related matters. Transportation offices in MOCT are Transport Policy Office, Surface Transportation Bureau, Road Bureau, Civic Aviation Bureau, New Airport Construction Planning Team, High-speed Railway Construction Planning Team, Metropolitan Transportation Policy Office and National Railroad Administration. Especially its Transport Policy Office is in charge of comprehensive management and coordination of roads, railroads, ports, airports and other transport systems. The Ministry of Maritime Affairs and Fisheries (MOMAF) is responsible for sea transport matters. As the highest organization of decision-making in transport fields, the National Transportation Committee, based on the Transportation System Efficiency Act, has decided to establish comprehensive transportation plans and to manage adequate policies expanding transportation networks, developing infrastructure financing and other transport matters. It consists of 25 members including the Prime Minister as a chairman, 9 related ministers and 15 non-government members. The central government has the enforcement authority for most transport related laws and regulations and is also responsible for establishing transport policies. Most transport policies other than these have been relegated to local governments and those local bodies establish and implement their own traffic and transportation measures according to their individual needs and within the scopes stipulated in the higher relevant laws.

Major laws and regulations that address transport and traffic systems in the Republic of Korea include the Transportation System Efficiency Act, Passenger Transport Service Act, Automobile Management Act, Road Act, Aviation Act, and Marine Transport Act. Of them, the Transportation System Efficiency Act plays a role as basic principles on the constrcution of transportation infrastructure and management of transport systems in Korea. Many efforts have been made since the Rio Declaration to reduce motor vehicle emissions. These include reinforcing traffic inducement charges aimed at stimulating usage of mass transport, establishment and implementation of traffic demand management measures along with financial assistance to stimulate the bus industry, and increasing central government's subsidies to local governments for subway construction (from 25-30% to about 40-50%). In the public sector, a private car restriction system exists where drivers are restricted from using their cars every 10 days. To encourage participation from the private sector, participating drivers who drive smaller cars are given various discounts of parking fees and expressway tolls.

In accordance with the Transportation System Efficiency Act, enacted in February 1999, a 20-year National Intermodal Transportation Plan was established so that the functions and features of intermodal transportation could achieve maximum effects. A 5-year mid-term transportation Infrastructure Investment Plan has also been drawn up at the same time for more efficient implementation of the long-term plan. Expansion of transport infrastructures including road networks, railways, ports and airports is being carried out in accordance with the National Intermodal Transportation Plan, which is a 20-year long-term plan in infrastructure expansions for the transport sector with infrastructures to be expanded as follows according to that plan:

| Year | | 1997 | 2004 | 2009 |
|---|---|---|---|---|
| Roads | Expressways | 1,889 km | 3,700 km | 4,336 km |
| | National roads | 12,459 km | 12,733 km | 113,083 km |
| Railroads | Length (Revenue service railroads) | 3,118 km | 3,472 km | 3,700 km |
| | Doubke-track rate | 28.9% | 38.1% | 51.4% |
| Airports | Passengers (1,000 persons/year) | 42,800 | 64,000 | 72,040 |
| | Cargo (1000 tons/year) | 2,020 | 3,570 | 4,630 |
| Seaports | Capacity (1million ton/year) | 295 | 598 | 801 |

The government of Korea is trying to adopt new transport concepts, such as light railway. For example, two projects, Seoul-Hanam and Busan-Gimhae corridors, have been designated as pilot light railway projects and will receive partial funds from the central government to be carried out as private participation investment projects.

Major programs undertaken are as follows:

- Better meeting the commercial, private, and public needs for mobility in both urban and rural areas: promoting village shuttle buses and other supplementary buses or bus services in remote areas.
- Promoting traffic efficiency, such as reduction of heavy traffic hours, provision of mass transport modes, etc.
- Policies implemented in this area include strengthening government's financial supports, to mass public transportation, assessing inner-city traffic congestion fees, and designating special management zones in areas prone to traffic congestion.
- Reducing emissions from transportation, such as carbon dioxide, carbon monoxide, nitrogen oxides, particulate matter and volatile organic compounds:
- Preparing for buses to switch over from diesel fuel to CNG by installing CNG pumps at all public garages constructed and rented by the public sector. Other policies include tax incentives and parking discounts given to compact cars.
- Promoting non-motorized modes of transport, such as cycle paths and footpaths: Bicycle routes and parking facilities have been expanded. In particular, more bicycle parking facilities are being added near subway stations in order to facilitate transfer from bicycle to subway. Furthermore, local governments are strongly recommended to have no-car streets on weekends to promote change over from automobile-oriented to pedestrian-oriented transport policies.

The provision of parking lots in downtown areas has been restricted in order to ease congestion in area by making parking difficult, in addition to reducing the availability of parking lots. Furthermore, park & ride facilities will be installed at, around, and near subway stations for easier connection between subways and automobiles.

The traffic effects evaluation system is utilized when implementing large-scale road, railway and housing projects to formulate transportation measures. Major cities are required to establish mid and long term urban transportation plans and any urban plans drawn up by these cities which contain transportation plans are recognized as the required mid and long term transportation plans, thereby ensuring that urban plans and transportation plans are coordinated and mutually supplement each other.

Appraisal Guidelines for Transport Infrastructure Investment was established and announced to provide standard guidelines on how to estimate transport demand and what to check out, which shall be considered in times of evaluating the feasibility for the project of transport facilities development in January 2002. This is intended to enhance the efficiency of investment for transport facilities through objective and trustworthy appraisal of the investment. The extent of application of the Guidelines is as follows in respect to the projects of transport facilities development such as highways, railways, airports and seaports with total expense ranging over 10 billion Won.

**<The Application Extent of Appraisal Guidelines for Transport Investment>**

| Category | Applicable Facilities | Remarks(Excluded Facilities) |
|---|---|---|
| Roadway | - Highways and state roads in metropolitan city, province, county city, gun and gu, etc. | - Tunnels, bridges |
| Railway | - Railways, high-speed rails, metropolitan rails, etc. | - Traffic signals modernization, road crossing improvement |
| Airport | - New airport development including apron, terminal and landside projects | - Terminal projects (Security/screening betterment projects) |
| Seaport | - Designated seaports (Trading ports) | - Coastal port and fishing port development projects |
| Logistics Center | - Intermodal cargo terminal and ICD construction projects, Logistics center of more than 300,000 pyong | - Cargo terminal, Logistics center of less than 300,000 pyong |

Scholars and researchers take part in decision making of transport related policies via transport related policy-making committees. Views of business people on major policies are reflected through industry groups and transport related civic

organizations. Such consideration of private sector opinions in policy making are stipulated in the relevant laws. The Civil Complaint Processing System and the supervision of the National Assembly are additional avenues for reflecting people's opinions on the policies. Seoul and its metropolitan area can be said to be the areas that most urgently require solutions to transport problems. The private sector takes part in policy-making by participating in various committees. In addition, it takes on the role of monitor and supervisor of policies by participating as investigators on sensitive issues as well as giving policy suggestions and making civil complaints.

**Programmes and Projects:** There are major investment projects in the transport sector in Korea. Among major investment projects from 1996 to 2001, the total length of new road construction is 1,476km and the expansion of roads is 463.6km. Among currently operating highways such as Gyeongin Expressway, Yongdong Expressway, Suburban Seoul Expressway, and Namhae Expressway, 4-10 lanes expansions have been made on congested sections. The West Coast Expressway (total length: 247.4km) was newly constructed to enhance the connection between major cities. Its construction is part of a plan to build highways to serve as axis of national development. To reduce city traffic, 71.1km of road will be constructed in Suburban Seoul to serve as the beltway of the capital city.

The total length of railway expansion is 1,362.7km. The first priority was put on the section of transport difficulties to make those ways electrified double tracks. The lengths are: Suwon-Cheonan length of 55.6km in Gyeongbu line, Songjeongni-Mokpo length of 70.6 km in Honam line, Iksan-Yeosu length of 199.1 km in Jeolla line. The electrified double track projects are scheduled to be finished by 2002.

In the sea port sector, the Mega Hub Port development goes ahead according to the plan of the Two Port (Busan port and Gwangyang port) system. The Gaduckdo new port will possess 24 berths, 4.6million container handling capacity per year. Gwangyang new port will possess 24 berths with 5.28 million container handling capacity per year. This Two Port system project is on-going by stages.

To develop regional base ports that can support the industrial development, Asan port, North Incheon port, New Mokpo port, New Ulsan port, New Yeongilman port, Boryeong port and New Mangeum port construction projects are underway. Asan port will be developed for the purpose of serving as an alternate part for the mobilization of material resources and to serve as a trading base with China. Asan port will be developed for 62 berths with 6.2 million tons cargo capacity. The target year for completion of Asan port is 2011.

In the airport sector, as of March 2001, the first phase of the Incheon International Airport development plan has been successfully completed with the construction of two runways, a passenger terminal building, a cargo building and other facilities along with a direct expressway linking Seoul to the airport. The second phase is to build an extra highway by 2011 as well as two more runways and passenger concourses. Access roads to the airport will be expanded to meet delivery transport demands.

As part of the regional airport expansion plan, Gimpo airport will enhance its operating ability by improving control facilities. Gimpo airport is now entirely used for domestic flights since the opening of the Incheon International Airport . In the Busan area, Gimhae and Ulsan airports will improve their airport facilities by stages to meet increasing airport traffic. In the Honam area, Muan new airport will be constructed as well as Uljin airport for the northern Gyengsang area.

**Status:** At the end of 1999, the total length of the roads was 87,534 km, of which 65,356 km or 74.7% were paved. Approximately 20.5% of the paved roads (13,407 km) have four lanes, 79.5% (52,052 km) have two lanes or less. The total number of vehicles were 11,164 thousand. This figure was a 2,695 thousand increase from 1995. Passenger cars totaled 7,837 thousand, trucks 2,298 thousand, and buses 993 thousand.

The volume of traffic as of 1999 was 5,600 million people, 769 million decreases compared to 1995. Among total traffic volume, intercity volume was highest at 5,605 million, city bus about 390 million, charter bus 103 million and express bus 43 million people.

The truck traffic volume was about 401 million tons as of 1999. Compared to 1995, this was a 7 million ton decrease. Among total traffic volume, district cargo was first at 397 million tons and route cargo volume was 3.8 million tons.

The total length of railways was 3,119 km as of 1999, which was an 18 km increase compared to 1995. Electrified railway routes were 661 km in 1999, which was a 106 km increase compared to 555 km in 1995.

Public transport services are provided by buses (express, urban, and shuttle), subways, and taxis. An express bus, having more seats and less stops, runs along major corridors of the city. Some of the express buses run to the suburban cities from urban centers. A city bus is a regular bus, which runs between residential areas usually, with many stops. A community bus is a small feeder bus which runs short routes in a specific pattern. Demand for shuttle buses has increased in line with the expansion of the subway network. Actually, 80 private bus companies operate about 8,374 buses on 363 bus routes.

**Capacity-Building, Education, Training and Awareness-Raising:** With regard to measures taken to encourage enhanced use of public transport, car-pooling, non-motorized transport, etc.:

- Bus-only lanes have been expanded, and traffic congestion fees are exempted for high occupancy vehicles.
- Every Monday is designated as Public Transportation Day and people are encouraged to use public transportation.
- Expanded areas where transport cards can be used for both buses and subways in order to make transfers between buses and subways more convenient.
- Adding more elevators and moving walks inside subway stations, in addition to installing more bicycle parking facilities near subway stations.

With regard to measures taken to educate the public on traffic safety:

- Opened the Children's Traffic Park to educate children on traffic safety.
- Introduced traffic safety education in curriculum at primary and secondary schools.
- Introduced rehabilitative education for traffic violators and drunk drivers has been made mandatory.

A mutual association has been set up so that transport companies can be responsible for their own insurance in cases of accidents involving buses and taxis and trucks. However, many disputes have arisen between accident victims and mutual associations that are responsible for insurance settlements. As a result, a dispute settlements committee was set up as a government organization to coordinate and mediate the disputes.

**Information:** Traffic volume and traveling speed are being studied by local governments. The MOCT conducts traffic studies for expressways, national highways, government-supported local roads, and other major local roads.

Aside from this, the data on passenger and commodity movements between and within regions is important to the analysis of transport policies and plans. In order to set up transportation database, the MOCT has been carrying out the National Transportation Database Project since 1998 under Transportation System Efficiency Act (TEA).

The followings are the major contents being involved in the National Transportation Database Project :

- the survey of the origins and destinations of passenger movements and commodity flows data in interregions and 7 large cites (Seoul, Busan, Incheon, Daegu, Daejeon, Kwangju, and Ulsan). These data are updated every five years on the basis of the field surveys.
- traffic volumes and travel speed data have been collected over expressways, national highways, government-supported local roads. These data are surveyed through permanent traffic recorder or manually, and updated every year.
- traffic generation units are also surveyed after the facilities are classified by use. The data are collected over cites with population of over 300,000.
- additional data element is transportation-purpose maps that are built based on National Geography Information System. The maps have lots of attributes required for application of ITS technologies and network analyses.
- Analysis of transportation policies and trends worldwide.

All these data are analyzed, transformed into database format, maintained, and distributed to entitled users. Information related to transportation database is available at the Transport Policy Office section of the MOCT homepage (www.moct.go.kr) and at the National Transportation Database homepage (www.ktdb.or.kr).

**Research and Technologies:** A national transportation database which helps to study transport policies and investment plans has been built and being improved. Various data including socio-economic data, person and commodity travel movements and GIS-based transport network data are surveyed and analyzed periodically. MOCT plans to strongly recommend the use of the data when major transport investment projects are studied. The database is currently available to transport academics, industry professionals and publics without charge. The Korea Transport Institute (KOTI), a government-funded research agency, provides recommendations and alternatives for the nation's transport policy and assists in creating the optimal transport system through specialized researchs and technical innovations. The KOTI's most recent research activities include researches on policies for national, metropolitan, and local transport system, strategies for strengthening Korea's transport industry, deployment of the Intelligent Transport System, and creation of trans-national transport networks in Northeast Asia region to make Korea the transport and logistics hub in the region. Based on these researches, the KOTI publishes about 30 to 40 reports a year.

**Financing:** In order to construct the transport infrastructure, the "Special Account for Transport Facilities" has been set up at MOCT. This special account consists of revenues from fuel taxes (gasoline and diesel taxes), automobile consumption taxes, and airport/seaport service charges. This special account is further divided into five accounts: road, railroad, airport, port, and metropolitan area transport accounts.

As part of the mass transit facilities, construction and operation of subways is supported by the railroad account. Support for building public garages comes from the wide area transport account. Financing Special Account loans money to the private sector when fund support is needed to upgrade passenger terminals.

It has been difficult to induce private investment in the light railway projects, which have been implemented as a private participation investment (PPI) project, because of low government support. The government, therefore, in an effort to promote private investment, has raised its support rate within 40% of the construction cost along with the land costs. At present, preferred proposers for Seoul-Hanam and Busan-Gimhae lines, which are being implemented by MOCT as pilot projects, have been selected and negotiations are in progress. These two pilot projects are scheduled to be completed in 2005.

**Cooperation:** The Republic of Korea has concluded air agreements with 73 countries and maritime agreements with 12 countries and is also a member of ICAO, UIC, IMO, and other international organizations. The Republic of Korea is making every effort to actively participate in international transport-related activities and discussions via OECD, APEC, and WTO.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

**Decision-Making:** The Ministry of Health and Welfare (MOHW), and especially the Women Health and Welfare Division under the Bureau of Health and Welfare for Families, is the body most directly involved with demographic issues. Other groups involved are KIHASA (The Republic of Korea Institute for Health and Social Affairs) and PPFK (Planned Parenthood Federation of the Republic of Korea).

On the major groups involvement channels in the decision-making, see under Chapter 3 (Decision-making: Coordinating Bodies).

**Programmes and Projects:** Future directions of the government policy include the following programme areas:

- developing and disseminating knowledge concerning the links between population, environment, and sustainable development;
- formulating integrated policies for environmental and social-economic development, taking into account demographic trends and factors;
- implementing environmental and socio-economic development programmes at the local level.

**Status:** The Republic of Korea's fertility rate has rapidly declined as a result of the successful implementation of family planning programs. The population growth rate declined from 3.0 percent in 1960 to 0.93 percent in 1990. The population growth rate still continues to decline, and it is expected to stabilize in the year 2028; thus the Republic of Korea has reached the last stage of demographic transition. The drastic fertility rate change below the replacement level since the late 1980's has brought about new population problems, such as population aging, labour 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.

**Capacity-Building, Education, Training and Awareness-Raising:** No information available

**Information:** Information is available from the website of the MOHW at: www.mohw.go.kr

**Research and Technologies:** Information is available from the website of the MOHW at: www.mohw.go.kr

**Financing:** National budget is available.

**Cooperation:** Information is available from the website of the MOHW at: www.mohw.go.kr

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH

**Decision-Making:** The Ministry of Health and Welfare is most directly involved with health issues. However, local governments sometimes make their own decisions on local plans and programs. Under the Ministry of Health and Welfare, there are three bureaus; Health Policy Bureau, Health Promotion Bureau, and Pension and Medical Insurance Bureau. Under Health Promotion Bureau, there are Health Centers, Health Subcenters, National Medical Center, National Mental Hospital, National Tuberculosis Hospital and National Rehabilitation Center. And there are two administration bodies under the supervision of the Ministry such as The Korea Food and Drug Administration (KFDA) and the National Institute of Health (NIH). The Ministry of Health and Welfare will provide preventive healthcare for everyone and construct a health information system and health surveillance system.

On the major groups involvement channels in the decision-making, see under chapter 3 (Decision-making: Major Groups Involvement).

**Programmes and Projects:** The guiding principle of the recent health policy of the Republic of Korea is the advancement of service quality in order to prevent and treat a variety of diseases for everyone, regardless of social class and residential area. The rapid economic growth has led to adjustments in health and social fields. Some national public health programs are directed toward health education to prevent smoking, drinking, and the spread of HIV/AIDS. Social and economic pressures in the Republic of Korea have affected workers both physically and mentally, calling for large scale social and health programs. These are some of the measures taken by the government for the protection and promotion of national health while continuing sustainable development:

- improvement of the quality of public health care,
- improvement of primary health care for farming and fishing communities with special emphasis on development and enforcement of lifelong health management programs,
- provision of safe water supply,
- an increase of medical service provisions and planning capacity for regional communities, and
- expansion of disease prevention activities.

To evaluate nutritional status, the National Health and Nutrition Survey is conducted every three years under the National Health Promotion Act. The data collected is used to improve the national health and nutritional status and set up plans for food supply.

The nutrition educators in charge of nutrition counseling are selected among local government officials. These professionals provide advice on cooking methods to enhance nutritional value of foods at food service facilities including hospitals, schools, and dormitories.

**Status:** The general health status in the Republic of Korea has greatly improved in the past three decades and it is now in good condition, as shown by the changes in relevant social indicators, such as in the life expectancy and infant mortality rate. The National Medical Insurance System expanded to the entire population in 1989 has contributed to the upgrading of health levels. Recent improvements in living conditions have brought about reduced prevalence rate of communicable disease. However, poor eating habits, workaholism, lack of physical exercise, and smoking and drinking behaviours are all contributing to the growth of chronic diseases. Therefore, there is a growing need for disease prevention and health promotion programs that will focus on improving environmental conditions and life-styles.

**Capacity-Building, Education, Training and Awareness-Raising:** Information is available from the website of MOHW at: www.mohw.go.kr

**Information:** The government has made various materials for health education and distributed them to the local governments and other government authorities concerned. The ministry has also arranged training courses for health personnel to cope with the rapidly evolving health environment.

To enhance the effectiveness and efficiency of the health education system, the MOHW supported the Korea Institute for Health and Social Affairs (KIHASA), which would collect information and publish education materials.

The government is operating the Internet-based information system named 'Disweb' and 'Health Guide' which provide overall disease prevention information to the public. Disweb is especially focusing on the communicable disease control.

**Research and Technologies:** Information is available from the website of MOHW at: www.mohw.go.kr

**Financing:** The expenditure of the MOHW equalled 4.97% of the general account of the national budget in 1999 fiscal year and public health-related expenditure totalled USD 9,651,000,000.

**Cooperation:** The Republic of Korea cooperates with international institutions in:

- Implementation of health research programs, seminar, and health worker's training programs supported by WHO;
- Implementation of a project related to extension of health and medical services affiliation with the United Nations.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

**Decision-Making:** The Ministry of Construction and Transportation (MOCT) is responsible for the stability of the people's residential lives and the improvement of the level of people's dwellings. The Ministry assists the low income groups by providing National Housing Fund for assistance in buying or leasing houses and supporting the construction of public rental housing.

Inter-ministerial reviews and consultation processes are ensured by the law. The Ministry of Environment is responsible for environment-related policies and programs including water and air quality management, waste management, and water supply and sewage treatment. Local authorities are the bodies mainly involved with urban and provincial programs in the areas under their jurisdiction. The Commission on National Policy has decided to establish adequate comprehensive national territorial plans and to manage sustained policies optimizing housing supplies, promoting effective land use, improving basic environmental protection facilities, expanding transportation networks, and developing water resources. About 20 non-government members participate in the National Comprehensive Construction Planning Board.

The purpose of a *human settlement development plan* is to improve the quality of socioeconomic and environmental situations. Since 1988, the government has implemented the Two Million Housing Construction Plan. Although increasing supplies have significantly eased housing shortage problems, the problem persists, especially in highly populated urban areas. The widening gap in the income level, disparity of living conditions in different regions, and sudden increases in housing prices and rent have caused increasing financial burdens on non-homeowners. Because of the continuing trend towards a nuclear family unit and increasing population, a rational plan applicable to wide areas was required to meet the increased demands for housing. The government responding to such demand has adopted diverse plans and policies to optimize housing supplies.

These plans include the Forth Comprehensive Territorial Development Plan in 2000 and the annual Comprehensive Housing Construction Plans. The government has also introduced public rental housing programmes supported by government's finances for low income groups. From 1989 to 1993 the government initiated Permanent Rental Housing Program supported by government's finances reached 85 percent of the construction cost for the 10 percent of the lowest income class. During this period 19,000 permanent rental houses were constructed by Korea National Housing Corporation and local authorities. In 1998 the Korean government has started National Rental Housing Program which provide 30 percent support in construction costs from government finances. This program lasts by the year of 2003 when 200,000 national rental housing units will be supplied into the Korean rental housing market. The national rental houses soothe the hard residental conditions of low income people, because they pay only 40～50 percent of private rental price and have the right to prolong the contract period.

By the end of the 2002 Korea will achieve its 100% housing supply. And the government recently unveils its plans to construct total 5,000,000 housing units between 2003 and 2012 (annually 500,000 units). This plan makes it possible to change the government policies focused in quantity of housing into the dwelling quality of the Korean people.

Furthermore, the promotion of stable human settlement development is being implemented through various regional plans, farming and fishing village settlement plans, and remote land development plans. Efforts to improve basic living conditions, such as in housing, transportation, and environment center around resolving housing shortages, improving housing conditions, alleviating traffic congestion in cities, and maintaining a clean environment.

**Programmes and Projects:** Information is available from the website of MOCT at: www.moct.go.kr

**Status:** The Republic of Korea encourages resource saving and environmentally friendly land development plans, and promotes developing policies that balance development and preservation. In order to create pleasant living conditions and to improve the quality of life, the Republic of Korea is constructing energy conserving and environmentally sound traffic systems, such as a well-networked subway system, exclusive bicycle roads, rotaries and beltways, and radial and circular transportation networks between metropolitan areas and their outskirts. In 1994, a bus-only lane system (designated by a blue line), which makes travelling by bus much faster during the rush hour, was introduced to some of the main roads in big cities to encourage the public to use buses. The local authorities plan to expand this system. In addition, the Bicycle Use Pormotion Act was enacted to promote the use of bicycles to alleviate urban traffic problems. This law includes provisions related to expanding the

designation and construction of bicycle only lanes, and facilitating the use of land owned by the central and local governments for bicycle keeping facilities.

Economic instruments, such as congestion fees on cars entering designated areas, high parking fees in public parking lots which have previously been open to the public without charge, are major programs which have already been implemented. Moreover, comprehensive plans are underway to link traffic management with urban planning. For example, the development of multi-centered cities will disperse the concentration of traffic throughout the area. Instead of having people flocking to one area for work, school and/or for recreational purposes, financial and shopping district, schools, etc. will be dispersed throughout the city and into the suburbs to alleviate human traffic as well as car traffic. In addition, the construction of the self-sufficient cities outside Seoul will allow people to work and live in the cities without commuting to Seoul for their livelihood.

**Capacity-Building, Education, Training and Awareness-Raising:** Information is available from the website of MOCT at: www.moct.go.kr

**Information:** Information is available from the website of MOCT at: www.moct.go.kr

**Research and Technologies:** The Republic of Korea is developing waste recycling systems and environmentally safe waste disposal systems. In order to supply high quality water, the central government and local authorities are expanding wide area water supply systems, tap water conserving facilities, and drainage and sewage systems. 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.

**Financing:** National budget is available.

**Cooperation:** To promote environmentally-friendly city development plans and encourage implementation of sustainable development plans in building new cities, the Republic of Korea will seek technical and financial support for planning and developing new cities from various international institutions, including the Sustainable Cities Program of Habitat II, the Regional Development Bank, and the World Bank.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

**Decision-Making**: In September 2000, the Presidential Commission on Sustainable Development of the Republic of Korea was established. The Commission directly belongs to the Presidential office and is composed of 35 members. The 13 Ex-officio members are composed of 12 cabinet-level Ministers (Finance & Economy, Foreign Affairs & Trade, government Administration & Home Affairs, Agriculture & Forestry, Commerce-Industry & Energy, Environment, Construction & Transportation, Planning & Budget, etc.) and one coordinator (Senior Secretary to the President for Welfare and Labor). Twenty-two commissioned members are from citizens' organizations, academia, business, and the research and legal communities.

The PCSD aims to facilitate dialogue among the members concerning sustainability issues. The PCSD, as an advisory organization to the President, is responsible for addressing the following matters:

- Matters relating to establishing direction and planning of major policy for development and conservation should be taken into consideration simultaneously. To facilitate this function, PCSD is entitled to preview principal long-term plans and policies on development and conservation.
- Matters relating to the formulation and implementation of the plans related to Agenda 21 should be adopted at the UNCED.
- Matters relating to the domestic implementation schemes and corresponding strategies to major international conventions on the environment including UN Framework Convention on Climate Change.
- Other matters related to environmentally friendly and sustainable development.

The Ministry of Environment (MOE) manages the Special Account for Environmental Improvement and decides the policies relating to economic instruments. In 1996, the Republic of Korea adopted a *National Action Plan for Agenda 21*.

The Ministry of Environment is also responsible for the policies relating to Environmental Impact Assessments (EIA). In order to ensure the objectivity of the EIA, Central and Regional Committees for EIA, which consist of professors, engineers, and specialists, review the assessment. Residents are invited to the hearing process of 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), as one of major preventive policy instrument, aims to balance developing and preservation by identifying possible environmental impacts of development plans or projects in the early stages of planning.

The Ministry of Environment is implementing mid and long term environmental conservation plans which lay down guidelines for all sectors for harmonizing efforts for environmental improvement. As a concrete action plan of the long term (1996-2005) environmental plan (Green Vision 21) the Ministry of Environment established the second mid-term comprehensive plan (1998-2002) for environmental improvement, originally established in 1997. The second plan reflects the government's will for sustainable development in the 21$^{st}$ century and consists of 141 unit projects, in which 16 central government agencies are involved along with local governments.

In the central government, sustainable development requires an interdepartmental coordination mechanism. In 2002, the Environmental Preservation Committee was abolished according to the revision of Basic Environmental Policy Act. Instead, PCSD performs coordinating environmental policies. The government is implementing the Prior Environmental Review System for simultaneously considering development and preservation when it establishes major governmental policies and plans relating to development and preservation.

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 interministerial coordinating panels and consultative meetings to coordinate and integrate inter-ministerial policies for sustaining national development projects should be revitalized.

In capacity-building measures, the central government played a central role in the past, but recently the role of local governments has been increasing gradually to meet their local needs.

**Programmes and Projects:**

• *Integrated Environmental and Economic Accounting*: To integrate environmental and economic aspects in decision-making, it is necessary to establish a system of Integrated Environmental and Economic Accounting (IEEA). With IEEA, the government (and potentially private firms) can obtain correct information on citizens' welfare. 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. The Republic of Korea recently launched a project to establish an IEEA system based on the United Nations System of Integrated Environment and Economic Accounts (SEEA).

The recent introduction of local autonomy in the political system of the Republic of Korea has brought about conflicts on environmental problems between central and local governments or between local governments themselves. Therefore, dispute settlement mechanisms are required to resolve the conflicts. Furthermore, basic principles and mechanisms predefining rights and obligations of related parties are also necessary to prevent such disputes in advance. To help reconcile conflicts, the government will create a conciliatory mechanism such as an "Association of Local Autonomous Governments."

• *Economic Incentives*: The Emission Charge System (1983), 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) are major environmental policy instruments utilizing economic incentives.

• *Environmental Impact Assessment*: The EIA system was introduced in 1977 by the Environmental Preservation Act, and in 1993, the Environmental Impact Assessment Law was enacted. The EIA system aims to balance environmental preservation and economic development through the analysis and investigation of the impacts of certain development and business projects on the environment before implementation. In the Republic of Korea, the EIA has been applied to 62 projects in 17 areas.

See also under decision-making.

**Status:**

National Decision-Making Structure

| | |
|---|---|
| 1. National Sustainable Development Coordination Body: | YES |
| 2. National Sustainable Development Policy: | YES |
| 3. National Agenda 21/other strategy for SD: | YES |
| 4. Local/Regional Agenda(s) 21: | YES |
| 5. Environmental Impact Assessment Law: | YES |
| 6. Major Groups involved in Sustainable Development Decision-Making: | YES |

National Instruments and Programmes

| | |
|---|---|
| 1. Sustainable. Dev. or environmental education incorporated into school curricula: | YES |
| 2. Sustainable Development Indicators Program: | NO |
| 3. Ecolabel Regulations: | YES |
| 4. Recycle/Reuse Programs: | YES |
| 5. Green Accounting Program: | NO |
| 6. Access to Internet: | YES |
| 7. Access to World Wide Web: | YES |
| 8. A national World Wide Web Site for Sustainable Dev. or State of the Environment: | YES |
| http://www.me.go.kr | |

Policies, Programmes, and Legislation

| Does your country have either a policy, programme, and/or legislation consistent with Agenda 21 in: | |
|---|---|
| 1. Combatting poverty: | YES |
| 2. Changing consumption and production patterns: | YES |
| 3. Atmosphere: | YES |
| 4. Land Use Planning: | YES |
| 5. Forest and Deforestation: | YES |
| 6. Desertification and Drought: | YES |
| 7. Sustainable Mountain Development: | YES |
| 8. Sustainable Agriculture: | YES |
| 9. Biological Diversity: | YES |
| 10. Biotechnology: | YES |
| 11. Oceans and Coastal Areas: | YES |
| 12. Freshwater Management: | YES |
| 13. Toxic Chemicals: | YES |
| 14. Hazardous Wastes: | YES |
| 15. Solid Wastes: | YES |
| 16. Radioactive Wastes: | YES |
| 17. Energy: | YES |
| 18. Transport: | YES |
| 19. Sustainable Tourism: | YES |

**Capacity-Building, Education, Training and Awareness-Raising:** No information available

**Information:** Information is available from the websites of the Ministry of Environment and PCSD at:

- MOE: www.me.go.kr
- PCSD: www.pcsd.go.kr

**Research and Technologies:** No information available

**Financing:** National budget is availble.

**Cooperation:** The Republic of Korea actively participates in regional environmental cooperative mechanisms in Northeast Asia, including the Northeast Asia Regional Environmental Programme (NEAREP), 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.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 9: PROTECTION OF THE ATMOSPHERE

**Decision-Making:** The Ministry of Environment (MOE) is primarily responsible for decision-making regarding air quality management policies and programs in the Republic of Korea. Several ministries are also participating in activities to address climate change and stratospheric ozone depletion issues as well as air quality conservation. These ministries include the Ministry of Finance and Economy, the Ministry of Commerce, Industry, and Energy, the Ministry of Construction and Transportation, the Ministry of Health and Welfare, and the Ministry of Science and Technology.

In order to secure sustainability of major national development projects, the Presidential Commission on Sustainable Development (PCSD) was established in September 2000. The PCSD is expected to play a major role in integrating environmental concerns into development projects. As of October 2001, the PCSD has held four official meetings, and is playing an active role in integrating environmental concerns into the design and implementation of developing projects.

The central government is responsible for establishment of laws and regulations, while local governments set local air quality standards and emission limits and implement region-specific air quality control programs.

The Environmental Policy Act (enacted on the 1st August 1990, the 6th revision on the 31st December 1999) and the Air Quality Preservation Act (the 8th revision on the 3rd February 2000) has been enacted for supporting air quality control activities. Under these laws, ambient air quality standards and permissible emission limits are established for 6 and 28 air pollutants, respectively.

Economic incentives have been applied to strengthen air pollution controls; examples include the Emission Charge System and the Environmental Improvement Charge System. The Emission Charge System, introduced in 1983, placed levies on polluters in proportion to the volume of pollutants discharged. Currently, 19 air pollutants are subject to the levies. The Environmental Improvement Charge System requires owners of large buildings or diesel-powered vehicles to pay a fee when they discharge relatively larger quantities of pollutants. The Act on Environmental Improvement Charge System was enacted in December 1991 as a way to embody the "Polluter Pays Principle" in environmental policies.

The government is also considering new legislation, called the Climate Change Act, to mobilize national resources to help address climate change.

Other national plans include the introduction of the Ozone Warning System and the improvement of the Emission Charge System, the urban transportation system, and environmental standards. The government will also regulate Volatile Organic Compounds (VOCs) emission facilities by conducting a comprehensive review of the harmful effects of VOCs on the environment. Also to be included are improvements in the emission inspection system which will soon measure the actual emissions of moving automobiles. In addition, multilateral environmental agreements such as the Montreal Protocol and the Convention on Climate Change are being carefully followed. Regional cooperation is being promoted in efforts to strengthen joint research and to build an information exchange system in East Asia. Right now, the government is pushing ahead with the enactment of the Special Act on Capitol Region Air Quality (CRAQ) as a step toward improving the air quality of the capitol and surrounding metropolitan areas. A CRAQ Taskforce has been formed to build and run the supporting infrastructure. The Ministry of Environment is also in the process of establishing the Special Act on management of Persistent Organic Pollutants to minimize the effects of such hazardous chemicals as dioxin.

**메모 [u3]:** Vague. The gov't will regulate emission facilities? How about this: "The government will also help strengthen the oversight of VOC-emitting facilities by…." No need to spell out "VOC." All enviro professionals know this.

**메모 [u4]:** Haha! You mean quality?

The automatic air pollution monitoring network measures seven atmospheric pollutants which includes TSP, SO2, NO2, CO, and O3, among others. Vans equipped with air pollution measuring devices cover heavily polluted areas or areas in which stationary units have not yet been established. The acid rain monitoring network is in operation. The information from these stations is being relayed to the central data bank of the Ministry of Environment in order to assess and coordinate the efforts against air pollution.

The Environmental Vision 21 has provided long-term policy direction including air quality management from 1996 to 2005. The Mid-term Plan for Environmental Improvement (1997-2001) was followed in order to put the Vision 21 into practice in more detail.

In 1998, a sweeping change was made in the existing plan reflecting the Asian financial crisis of 1997 so that the Second Mid-term Environmental Improvement Plan was reformulated and implemented until now.

The State Environmental Vision for a New Millennium was established in June 2000. The Vision is aimed at protecting a biosphere in which nature and humans coexist in harmony. To achieve this goal, four principles are emphasized:

메모 [u5]: The 1st yr of the new millennium is 2001.

- Conversion of end-of-pipe environmental approaches to pollution prevention
- Development of environmental policy based on market economy and democracy
- Integration of environmental concerns into economic and development policies
- Active participation in international efforts to solve global environmental problems

According to this vision, the Ministry of Environment is clarifying the Action Plan for the State Environmental Vision.

In order to participate in global efforts to combat climate change, the Republic of Korea has undertaken various initiatives on a voluntary and non-binding basis. The government established an inter-governmental committee led by the Prime Minister in December 1998. The committee formulated and has been implementing a National Action Plan to reduce greenhouse gas emissions.

Concerning activities on protecting stratospheric ozone, the government is to push forward with the annual phase-out schedule, which was set out according to the Montreal Protocol and subsequent amendments. To this end, the Act for the Control on Production and Use of Ozone Depleting Substances was enacted in January 1991. The annual consumption of ozone depleting substances (ODS) is being gradually phased out to meet the requirement specified by the Montreal Protocol.

The office of the Prime Minister organizes meetings to coordinate conflicts between ministries and agencies involved in the decision-making process regarding national air pollution control policies. Local governments play major roles in implementing the national policies, including establishment of local ambient air quality and emission standards, designation and management of Air Quality Management Regions (AQMD), and monitoring and site inspection of emissions.

In order to secure private sector participation in the decision making process, the Ministry of Environment holds various policy dialogues with stakeholders. The Ministry of Environment has been organizing regular meetings, called the *"Environmental Policy Consultation Meeting"* with the representatives of leading environmental NGOs. Businesses can also participate in establishing and updating environmental policies and programs through regular consultative meetings with the Ministry of Environment. Policy dialogues are held with the general public in order to collect views as well as increase public awareness. The discussions of the meetings are reflected in the decision-making processes by the Ministry of Environment. Non-governmental parties participate in an advisory committee on air quality preservation. With respect to air quality control, the early drafts of the MOE policy reflect various opinions from stakeholders including the general public, businesses, and academia.

**Programmes and Projects:** The Ministry of Environment has measures to restrict and control emissions, manage volatile organic compounds (VOCs), and designate facilities by air pollution discharge amounts

Pollution prevention measures are also applied to energy consumption, including regulation of sulfur content for fuel oils (light oil, B-C oil, etc.), and obligatory use of clean fuels such as LNG in electric power plants and apartment complexes.

Gasoline-powered automobiles manufactured from 1987 are required to use unleaded gasoline. The Ministry of Environment has established emission standards for newly manufactured automobiles and automobiles in operation, and quality standards for various types of fuel. In order to reduce motor vehicle emissions from diesel-powered vehicles, the Ministry of Environment is promoting, initiating, and subsidizing the replacement of diesel-powered buses with compressed natural gas (CNG) buses. The plan is to ultimately replace 20,000 city buses by 2012, beginning with the replacement of 3,000 buses by 2002 in cities hosting the 2002 World Cup.

Economic incentives, such as the emission charge and the environmental improvement charge system, have been introduced to incorporate the "Polluter Pays Principle" into environmental policy.

To assess the impacts of major development projects on air quality, an environmental impact assessment system was established in 1981. Developers are encouraged to select development sites and establish air pollution control programs while considering potentially adverse effects to the neighboring environment.

For greenhouse gas reduction, the government has been implementing 36 programs based on the National Action Plan established in 1999. They include the reduction of energy consumption and greenhouse gases in commercial, household, and industrial sectors, replacement of diesel-powered buses with CNG buses, enhancement of carbon sinks, and promotion of recycling of landfill gas.

Especially in the industrial sector, major companies are participating in Voluntary Agreement Programs which are organized by the central and local governments. The government provides incentives such as grants and subsidies to energy saving or greenhouse gas reduction activities.

With respect to stratospheric ozone protection activities, in 1992 the government introduced a licensing system for ODS production quotas, and prohibited new construction of ODS production facilities in 1995. Moreover, CFCs and Halons

production licenses are issued to only one producer of each substance. Any import of CFC-11.12 and Halon 1301, 1211 is prohibited.

Since 1992 the government has had a fund consisting of levies placed on production and importation of ODS. This fund is used to financially support development of substitutes and alternative technologies and provide loans to companies which replace existing CFC-using facilities with alternative facilities. The Ministry of Environment is collaborating closely with the Ministry of Commerce, Industry, and Energy to diffuse the use of bio-diesel as part of greenhouse gas reduction efforts.

Also, the government introduced an environmental labeling system for such goods as refrigerators and air conditioners in 1997. The scheme is to induce consumers to choose non-CFC containing products and thus to encourage manufacturers to produce products using CFC substitutes. The Ministry of Environment is currently operating an Air Quality Monitoring Network and conducting joint research China and Japan to cope with the long-range transport of air pollutants. In conjunction with the Meteorological Administration and local government agencies, the Ministry of Environment is also administering a Yellow Sand System.

**Status:** Major threats to the atmosphere in the Republic of Korea derive from increasing intensity of urban air pollution and a high level of energy consumption. The rapid increase of automobiles, traffic congestion, ozone concentration, and high industrialization and economic development, all pose serious problems to the environment. In response to this problem, the Republic of Korea has formulated a number of policies and regulations. In order to reduce emission of air pollutants, the government has designated industrial facilities as emission facilities and has continued to monitor and regulate emission standards being met at these facilities. The government has lowered the maximum permissible sulphur content of diesel and B-C oil and has encouraged the use of cleaner burning fuels. Since 1987, unleaded gasoline has been produced and sold in he Republic of Korea. Emission of air polluting substances such as SO2, TSP, etc. has been reduced as the result of the implementation of new air pollution abatement policies.

• *Ambient air quality*: Sulfur dioxide concentrations have been substantially decreased, in part because of the expanding supply of cleaner fuels and low-sulfur oils. The concentrations of ozone and fine particles, however, still remain a problem in urban areas. This is caused by the rapid increase in the use of motorized vehicles in the Republic of Korea. Ambient air qualities in selected major cities are shown in the following table.

**<Ambient air qualities in selected major cities>**

| Division | | Seoul | Pusan | Taegu | Kwangju | Wulsan | Environ-mental standard |
|---|---|---|---|---|---|---|---|
| SO2 (ppb) | 1995 | 17 | 23 | 31 | 10 | 28 | 30/ year |
| | 2000 | 6 | 10 | 9 | 6 | 13 | |
| PM-10 (μg/m³) | 1995 | 78 | 73 | 81 | 49 | 69 | 80/ year |
| | 2000 | 70 | 62 | 63 | 58 | 52 | |
| $O_3$ (ppb) | 1995 | 13 | 16 | 17 | 16 | 15 | 60/8 hour |
| | 2000 | 17 | 22 | 18 | 17 | 21 | |
| $NO_2$ (ppb) | 1995 | 32 | 27 | 28 | 20 | 23 | 50/ year |
| | 2000 | 34 | 24 | 29 | 20 | 23 | |

* Strengthening the standard of SO2 (20/ year, 150/ hour), PM-10 (70/ year) since January 2001.

**<Sectoral Greenhouse Gas Emissions (unit: 1,000 total carbons)>**

| Division | 1990 | 1995 | 1996 | 1997 |
|---|---|---|---|---|
| Energy | 65,578 (81.1%) | 102,652 (82.0%) | 112,863 (83.1%) | 118,562 (83.9%) |
| Industry | 7,393 (8.9%) | 11,531 (9.2%) | 12,170 (9.0%) | 12,390 (8.8%) |
| Agriculture | 4,383 (5.3%) | 4,237 (3.4%) | 4,281 (3.2%) | 4,230 (3.0%) |
| Land-use change and forestry | -6,212 (-7.5%) | -5,517 (-4.4%) | -6,441 (-4.7%) | -7,228 (-5.1%) |
| Waste disposal | 10,144 (12.2%) | 12,210 (9.8%) | 12,928 (9.5%) | 13,380 (9.5%) |
| TOTAL | 83,286 | 125,113 | 135,801 | 141,334 |

**<Emissions of Greenhouse Gases (unit: 1,000 total carbons)>**

| Division | 1990 | 1995 | 1996 | 1997 |
|---|---|---|---|---|
| CO2 | 64,278 (77.2%) | 105,131 (84.0%) | 114,688 (84.5%) | 119,783 (84.8%) |
| CH4 | 15,640 (18.8%) | 16,254 (13.0%) | 16,967 (12.5%) | 17,417 (12.3%) |
| N2O | 146 (1.4%) | 1,885 (1.5%) | 1,944 (1.4%) | 2,055 (1.5%) |
| HFC | - | 675 (0.5%) | 788 (0.6%) | 1,046 (0.7%) |
| PFC | 1,915 (2.3%) | 390 (0.3%) | 637 (0.5%) | 540 (0.4%) |
| SF6 | 308 (0.4%) | 778 (0.6%) | 777 (0.6%) | 498 (0.3%) |
| TOTAL | 83,286 | 125,113 | 135,801 | 141,334 |

• *Emissions of ozone-depleting substances (ODS)*: There is no data available on the emissions of ozone depleting substances. However, there is data available for consumption of ozone depleting substances.

**<Consumption of ozone depleting substances (units: ton)>**

| Substances / Year | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|---|---|
| CFCs | 28,740 | 21,655 | 11,202 | 10,946 | 10,807 | 9,022 | 9,813 | 5,852 | 7,796 |
| Halon | 926 | 806 | 408 | 411 | 445 | 499 | 430 | 289 | 298 |

(source: Environmental Statistic Yearbook)

**Capacity-Building, Education, Training and Awareness-Raising:** The government is conducting environmental education programs for the general public including young children, women, entrepreneurs, and scientists. Education is provided for all primary, secondary, and university level students and teachers.

The National Institute of Environemental Research (NIER), a subsidiary of the Ministry of Environment, provides compulsory education for government officials and engineers involved with pollution control and prevention. The Korea Environmental Preservation Association organizes education and training programs for environmental managers of firms. NGOs and civic organizations are also participating in environmental education activities for the general public, which are supported by the Ministry of Environment.

Mass media, such as newspapers and TV, play a key role in improving public awareness of environmental issues as well as climate change. Brochures and booklets are also useful tools in the Republic of Korea.

Information: Various air pollution control policies and programs as well as air quality data are available on the Ministry of Environment website (www.me.go.kr) which is regularly updated. Part of the air quality data is obtained from the website of the NIER (http://nier.go.kr). The National Environmental Technology Information Center, under the Ministry of Environment, provides information related to environmental technology on its website (www.konetic.or.kr).

Information relating to climate change and energy are also provided on the website of the Ministry of Commerce, Industry, and Energy (www.mocie.go.kr) and Korea Energy Economics Institute (www.keei.re.kr).

**Research and Technologies:** The Ministry of Environment has established a nationwide ambient air quality monitoring network which measures six air pollutants. These pollutants are sulfur dioxide, particulate matter, ozone, nitrogen dioxide, carbon monoxide, and lead. Each station is also equipped to monitor acid rain. The data collected from these stations are transmitted to the Ministry of Environment and published periodically on the Ministry of Environment website (www.me.go.kr).

With respect to research and development in the field of environment, the government has been carrying out the Environmental Technology Development Project from 1992 to 2001. As follow-up activities, the Eco-technopia 21 will be launched starting from 2001. It is a ten year project aiming for developing environmental technologies to address challenges in the 21st century.

At the same time, the government is carrying out research on greenhouse gas and air pollutant reduction technologies.

**Financing:** The Ministry of Environment budget for the year 2000 increased 12.9% from 1,154 billion won (910 million USD) in 1999 to 1,302 billion won (1,026.8 million USD) and now accounts for 2.32% of the government's total budget (125,179 billion won, 98.7 million USD). About 3.6% (47 billion won, 37 million USD) of the Ministry of Environment's budget is allocated for air pollution control. This represents a 390% increase in the air pollution control budget, and the budget is expected to continue to increase.

**Cooperation:** Recently, there is a growing concern about the long-range transport of air pollutants in the East Asian region. Research projects on this are jointly conducted among the neighboring countries of the Republic of Korea, Japan, and China.

The Republic of Korea is experiencing adverse health effects and daily inconveniences caused by Louiss aerosol, also known as the yellow sand phenomenon, originating from desert areas in China and Mongolia. The Tripartite Meeting of Environment Ministers among Korea, China, and Japan reached an agreement to carry out the project on Ecosystem Restoration for the western part of China. The Meeting was held in February 2000, and the Workshop on Ecological Conservation in Northeast China followed in December.

In the field of transboundary air pollution, a five-year (1999-2004) joint research project is being conducted among the three countries. In addition, the Republic of Korea is participating in the Acid Deposition Monitoring Network in East Asia (EANET), which was initiated by the Japanese government along with ten countries in the East Asian region since 1993.

In order to study the effect of transboundary air pollution and possible abatement measures, the Republic of Korea is to foster cooperation among the East Asian countries, and joined the Convention on Climate Change in December 1993 to solve the climate change problems. In accordance with the recommendation of the Convention, the Republic of Korea has prepared a national report on the emission of greenhouse gases and has encouraged research into the possible measures to reduce the production and emission of such gases.

The Republic of Korea ratified the United Nations Framework Convention on Climate Change (UNFCCC) in December 1993, and signed the Kyoto Protocol in September 1998. The government is ready to constructively join international efforts by fully enforcing the Kyoto Protocol by 2002.

The Republic of Korea also acceded to the Vienna Convention, the Montreal Protocol, and its London Amendment to the Montreal Protocol in December 1992. Subsequently, the Republic of Korea accepted the Copenhagen Amendment and the Montreal Amendment to the Montreal Protocol in February 1994 and August 1998, respectively. Domestic measures to phase out ozone depleting substances, which is a requirement of the Convention, the Protocol, and its Amendments, have been successfully taken.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 10: INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES

**Decision-Making:** The Ministry of Construction and Transportation (MOCT) is responsible for nationwide land management plans and policies, but much of the policy and decision making authority regarding land resources use and management are left to the local governments. The role of the central government is to collect opinions from the local governments and set or recommend the general direction of government policies. Experts participate in related advisory committees and residents have the right to attend the hearing process.

The legal system for land ownership consists of the Constitution, civil laws, and a variety of public laws. The Constitution guarantees land ownership, civil law contains legislation on land ownership, and public laws stipulate the restrictions and limitations. The Act on the Utilization and Management of the National Territory exists as the framework act on use of national territory and land use plans. Farmland Act and Forestry Act that stipulate specific uses depending on development purposes are enforced as lower ranking regulations.

Based on the Act on Comprehensive Planning for Construction on National Lands, an integrated land use plan has been implemented in order to enable sustainable land resources management. Additional acts and regulations that support the procurement of sites for housing and industrial complexes were implemented to make up for the shortage of land resources. Recently, GIS techniques and Land Information Network Systems are being utilized for comprehensive and efficient territorial management.

While the previous three Comprehensive National Development Plans were primarily led by the central government, the Fourth Comprehensive National Plan encourages the active participation of local governments, residents, and NGOs as well as the central government. Whereas the central government plays a relatively passive role in introducing guidelines for national land policy and in enforcing pertinent laws, the local governments take charge of establishing and implementing feasible plans. Private enterprises are expected to engage in expanding local investment and cooperating with academia. Local residents and NGOs play a major role in expanding participation and monitoring.

**Programmes and Projects:** The Comprehensive National Plan is the highest-ranking plan in the area of national land development and maintenance. In particular, the Fourth Comprehensive National Plan concentrates on the process of planning itself as well as the results and on the pursuit of cooperative planning that actively involves the central government, local governments, and community residents from the beginning to the end. It adopts a bottom-up approach of gathering opinions from various regions and social strata instead of the routine top-down approach.

The central government, local governments, and local residents are all encouraged to take part in land use planning. Furthermore, much importance is being given to discussions and coordination among relevant ministries as there is much difficulty in implementing policies that have not been agreed to by all concerned.

The Fourth Comprehensive National Plan also aims at establishing a full-scale management system to enhance harmony between the development and conservation of the national land environment. First, the plan puts priority on the conservation and restoration of mountain, river, and coastal ecosystems. Second, the plan is designed to provide a clean and sound living environment by purifying and preventing environmental pollution. Third, to provide a clean water supply, an integrated foundation for water resource management should be built by zone to secure the quality of water resources.

Three Comprehensive Territorial National Development Plans have been implemented since the 1970s. The First Plan (1972-1981) focused on establishing developmental centers along with the Seoul-Pusan axis as the foundation for rapid economic growth. The Second Plan (1982-1991) sought to control the excessive population concentration in the capital region and to foster regional development by balancing population distribution throughout the nation and by improving the living environment. For public welfare and environmental conservation, the Third Plan (1992-2001) is aimed at balanced national development by building industrial belts.

As urbanization increased with economic growth, an immediate necessity for housing and industrial sites arose, and various policies were implemented to efficiently supply housing and industrial complexes. But, despite efforts to implement systematic and environmentally friendly land use plans, side effects, such as difficulties in developing suburbs and traffic-related problems,

have arisen. At present, the government is in the process of drawing up the Fourth National Plan (2000-2020). Unlike the previous plans, the Fourth Plan sets active conservation of the national land environment as the main goal for effective sustainable development planning. All sectors of national planning, including SOC construction, urban development, industrial siting, and tourism development, are geared toward the goal of creating an environmentally friendly nation.

- *Food security*: The authorized exclusive use zone was extended, while that for exclusive agricultural use was diminished. That is, when building barns or rural residences not directly related to crop production within the Agriculture Promotion District, a permit is required instead of the routine report system.
- *Rural development*: The Fourth Comprehensive National Plan aims to expand environmentally friendly crop production by fostering organic farming, actively developing overseas agricultural markets, and developing rural new towns to meet rural housing and recreational demands.
- *Viability of rural areas*: To promote the urban-rural exchanges and boost rural household income, Green Business and Green Tourism are to be launched by expanding tourist farms.
- *Environmental aspects*: The Framework Act on Environment Policy and water and air pollution-related regulations are being amended or newly enacted with the objective of harmonizing the environment and development in national land planning.
- *Social aspects*: The Fourth Comprehensive National Plan also enacts the provisionally titled "Basic National Land Law" to substantiate the power of execution for sustainable development.

**Status:** From 1991 to 1997, 560.0 $km^2$ of mountainous area was converted into farmland, residential land, factory sites, golf courses, ski resorts, and other uses (66.6 $km^2$, 65.0 $km^2$, 86.7 $km^2$, 67.2 $km^2$, and 275.4 $km^2$, respectively). 493.4 $km^2$ were converted to non-agricultural purposes.

**Capacity-Building, Education, Training and Awareness-Raising:** Information on land management and resources is made available to the general public through the Internet and other channels. (Internet Homepage of Ministry of Construction and Transportation) The public may also access information on land use by exercising the right to request the release of information, filing a formal inquiry, and accessing open documents.

**Information:** The National Geographic Information System Project is under way at the national level. It aims to use national lands efficiently and manage national spatial information comprehensively in order to prevent various disasters and prepare for the highly advanced information society in the 21st century.

The project's activities during the first stage (1995-2000) cover the development of topological maps, common thematic maps, and computerized cadastral maps. It also involves computerization of underground facilities, development of GIS application systems for public purposes, development of GIS-related technology, training of professional staff in GIS, standardization of the GIS, and assistance for research projects on national GIS.

The project activities during the second stage are classified into the four following major sectors: framework establishment, data production, data distribution, and data application.

**Research and Technologies:** Information is available from the website of MOCT at: www.moct.go.kr

**Financing:** National budget is available.

**Cooperation:** No information available

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 11: COMBATING DEFORESTATION

**Decision-Making:** The Korea Forest Service is under the Ministry of Agriculture and Forestry and has the overall responsibility for establishment and execution of forest policies and laws relating to forest and forestry. The Service's primary function is to establish and implement all types of forest and forestry policies such as the establishment of forest resources, protection and development of forests, forest management, exploitation and utilization of forest products, research, and training, etc.

In accordance with the Forest Law, which was enacted in 1961 and amended in 1994 to reflect emerging challenges and opportunities in forest resource management, the Fourth 10-year Forest Plan was formulated. The Promotion and Advancement Law of Forestry and Mountain Region was formulated to promote the intensive management of private forests which make up 71 percent of all forests and to develop sustainably the mountain villages in Korea. The Basic Forest Law was formulated in 2001 to guide the fundamental forest policy focusing on implementing sustainable forest management by balancing the harmony between conservation and use of forest resources. The Arboretum Establishment and Promotion Law was also formulated in 2001 for conservation and utilization of genetic resources of plants resources.

In 1973, the first 10-year National Forest Plan was devised to complete the afforestation of bare forestlands and enhance the protection of the existing forests. Through the Forest Plans, Korea has successfully afforested the country. In recent years, the primary theme in managing natural resources has been sustainable development so as to achieve and maintain a balance and harmony between development and conservation, as emphasized at UNCED and a variety of other international conventions and fora. Therefore, the implementation of sustainable forest management is embodied in the Fourth Forest Plan, which was launched in 1998.

The Basic Forest Law and Forest Law will guarantee the public involvement along with the stakeholder groups participation in the process of forest policy formulation. The Forestry Cooperatives are the non-governmental forestry collaborative bodies pursuing the improvement of the socio-economic position of their members, forest owners, and villagers through their collaborative projects for forest protection, reforestation, silvicultural activity, collection and sale of non-wood forest products, etc. Citizen groups are also being involved more actively in forestry issues by means of National Campaign for Tending Forests of Life. Forest of Life Movement ignited citizen groups' aggressive involvement in forestry issues and gave birth of other citizens groups such as Northeast Asia Forest Forum, Forests of Peace, and School Yard Forest Movement. These forest movements have been established as a movement to reform Korean society.

**Programmes and Projects:** From 1998 to 2007, the Korea Forest Service will implement the fourth Forest Development Plan. In this plan, Korea Forest Service will complete government-led reforestation program and switch it to forest management program based on the self-regulation and promotion of forest owners. To meet the diverse social demand from forests and the recent international forest policy trend, the primary objective of the fourth plan is to establish and develop sustainable forest management. Besides that, the Korea Forest Service will endeavor to achieve following goals; (i) developing valuable forest resources, (ii) fostering competitive forest industry, and (iii) promoting healthy and pleasant forest environment. To achieve these goals, the Korea Forest Service will improve the national forest land management system through environmentally sound utilization of forests and forest management in accordance with its purpose and function.

To promote the national and private forests management, the Korea Forest Service will introduce by-proxy management system and multiple management system and train foresters intensively as a main body of forest management. The Service will also promote sustainable management of forest resources through establishing commercial forests and expanding their management infrastructure, enhance the competitiveness of forest industries by promoting timber industry and marketing system, and strengthen conservation and management of forest ecosystems.

Furthermore, the Service will establish effective prevention system of forest disasters, strengthen urban forests management for pleasant urban living environment, create forest recreation areas based on the special characteristics of the regions, provide training sites for the youth, and create sound forest recreation culture. Finally, the Korea Forest Service will expand the mountain village development program, prepare the unification of Korea, and promote the international cooperation for the forestry-related issues and development of the plantation abroad.

**Status:** In Korea, as of 2000, forestland is about 6.4 million ha, representing 65% of total land area. However, the forestland per capita is very low of 0.15 ha, only 20% of the world average. The total stock volume is 407 million ㎥ and the average stock volume per ha is estimated to be 63 ㎥.

Forestlands are classified into national, public, and private forests by ownership and reserve and semi-reserve forests by utilization. National forests account for 22% of the total forestland and most of them are managed by five National Forest Offices. Forests owned by local governments and public organizations such as educational institutions are classified as public forests. Public forests 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.

The total value of forest products in 2000 was about 2,962 billion won, representing 0.57% of the GNP. Of this, the value from timber production was only 107 billion won, and most of the value came from mushrooms, nuts, and other non-wood forest products.

**Capacity-Building, Education, Training and Awareness-Raising:** Various activities promoting the general public's awareness of forest cultures are under progress to ignite the traditional thoughts on nature of recognizing the harmony and balance among heaven, earth, and human beings and refurbish nature-oriented environmental ethics.

Over two million people privately own 71 % of forestland. The active management of small-scale private forests is, therefore, critical in achieving sustainable forest management. To promote safe forest management, projects for cooperative management of private forests and multiple purpose management related with short-term income sources, including mushrooms, mountain vegetables, bee-keeping, and wild flowers for improving living environments in rural communities are under progress across the country.

The Forest Works Training Center was established in 1982 as part of the Korea-Germany Forest Management Project. The center is training the forestry workers about the professional technical discipline of forestry activities. The center's aim is to train the forestry workers as professional forest technicians who is qualified for the forest management technique under the National Techniques Qualification Law. These professional forest technicians are conducting various forest activities such as reforestation, tending, and harvesting and subsequently contributing the sustainable forest management.

Recently, the Korean government has developed diverse forest-related environmental education programs and forest-culture related activities. These programs will be expanded upon in the near future.

**Information:** Various kinds of information on forest-related policies can be accessed through the Internet. (http://www.foa.go.kr)

**Research and Technologies:** At the Korea Forest Research Institute, several researches were carried out to evaluate the accessibility of data for criteria and indicators at the national level based on those of the Montreal Process. These research projects are at the preliminary stage, and more research on criteria and indicators will be added in order to implement sustainable forest management in Korea. Currently, a research project on the methodologies for implementing sustainable forest management at the unit and site level is in progress.

Some preliminary research has been carried out on the elements discussed during the IPF (Intergovernmental Panel on Forests) and IFF processes, such as forest-related knowledge, transboundary air pollutants, criteria and indicators for sustainable forest management, evaluation of the multiple benefits of forests, trade and environment, and timber certification. Relevant research will be strengthened and broadened, and the results will be utilized to implement IPF and IFF proposals for action through existing and, if appropriate, new legislation, forest policies, long-term forest plans, and forest programs.

**Financing:** The Korea Forest Service will invest about USD 10.3 billion, including the private sector's investment, by 2007 in order to achieve the sustainable forest management.

**Cooperation:** Korea is also actively participating in the international fora dealing with forest and environmental conservation issues. The Korean government ratified forest and environment-related conventions such as: the United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa (UNCCD), the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). We furthermore have made efforts for sustainable forest management through regional forest cooperation (i.e. the Montreal Process). Bilateral forestry cooperation arrangements have been made with seven countries such as the Peoples Republic of China, Mongolia, Myanmar Australia, etc. to enhance forestry fields cooperation through research collaboration, technology transfer, and education and training.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

**Decision-Making**: The Korea Forest Service of the Ministry of Agriculture and Forestry (MOAF) is the primary organization responsible for this sector which is most closely allied to forestry issues. The Ministry of Foreign Affairs and Trade takes charge of the international cooperation for combating desertification and drought.

The United Nations Convention to Combat Desertification (UNCCD) in Countries Experiencing Drought and/or Desertification, Particularly in Africa was signed in 1994. The Korean government ratified the Convention on August 17, 1999.

Public and private sectors support the financial and technical assistance of afforestation and rehabilitation of degraded forest and desert area, through bilateral and multilateral cooperation and joint research programs.

Major policy on the combat desertification focused on investigation of current impact of Yellow Sand and its remedy by forest sector in North-East Asia. In doing so, Korean government is implementing the joint research projects by bilateral cooperation with China and Mongolia. Successful achievements of rehabilitation of degraded forest land in Korea has also initiated educational programs for forest officers from developing countries which are being suffered by desertification to introduce them the experiences of Korea.

Korea Forest Service is national coordinating body of the project relating to afforestation and rehabilitation with emphasis on transfer of technology. Korea International Cooperation Agency (KOICA) is one of important organization in terms of oversea development in financial support to the joint projects with other countries. Through our experience and know-how, Korean government plans to increase participation in combating desertification in this region.

**Programmes and Projects:** Korea will actively increase bilateral and international cooperation through participating in various activities sponsored by international organizations that aim to implement the Forest Principles and other various international conventions on this matter.

As a bilateral cooperation, KOICA provided fund to the project of afforestation in China, particularly in Miyun Reservoir, which had been agreed during the summit between Korea and China in 1998. North-East Asian Forest Forum also initiated the project of Friendship Forest Establishment in China and Mongolia since 2000.

**Status:** Desertification is one of the most serious regional problems especially in Africa and Asia which diminishes the environmental quality of affected countries as well as indirectly affects neighboring countries. Furthermore, land degradation resulting from erosion caused by ecosystem disturbances such as climate fluctuations, deforestation, and agricultural/livestock exploitation raises serious environmental problems. Desertification is getting expanded more and more because of significant financial burden on soil protection and rehabilitation projects.

Specifically, in the past several decades of socioeconomic turbulence in the Republic of Korea, deforestation has resulted in landslides, droughts, and floods. Thus, the government has been actively engaged in rehabilitation and reforestation efforts focused on degraded mountain regions since 1960s. The results have been successful in reversing and preventing further soil degradation.

The Republic of Korea has accumulated valuable experiences and technology from the past reforestation and erosion control projects in denuded lands. Therefore, our vast experience and modern technology could be used to solve desertification problems in seriously affected countries in Asian countries.

The Republic of Korea will continue to contribute to rehabilitating degraded land and ecosystem conservation and providing international cooperation for combating desertification.

**Capacity-Building, Education, Training and Awareness-Raising:** Since the invitation of Mongolian scientists to provide an opportunity to show the status of forest rehabilitation in 2000, KOICA installed the training program of combating

desertification for developing countries including China and Mongolia in 2001. The program will be extended to invite more countries, which are being suffered by desertification.

Since the Yellow Sand is widely spreading and affecting Korean peninsula during spring season, Korean people are well aware of the reason and impact of Yellow Sand from the desert of China and Mongol. People's awareness is now ever increasing the importance of role of forest and afforestation and rehabilitation of degraded and desert area.

**Information:** Various kinds of information on forest-related policies can be accessed through the Internet. (http://www.foa.go.kr)

**Research and Technologies:** International cooperative research project has been implement between Korea and China since 1996. The projects are focused on the issues of Yellow Sand and air pollution in China. Research scientists from both countries hold regular symposium every year to discuss on the issues of desertification. They also provide monitoring sites in inner Mongolia. The cooperative research project between Korea and Mongolia are emphasis on the establishment of tree nursery near Ulanbataar. Those efforts of cooperative project ensure the greening the degraded and desert area, and consequently the migration of Yellow Sand.

**Financing:** Korea Forest Service keeps its endeavor to increase financial support for the projects under implementation to control combat desertification in China and Mongolia. NGO group including North East Asian Forest Forum and private sector are also willing to support the work in China and Mongolia.

**Cooperation:** The Republic of Korea has strengthened cooperation with various countries in forestry development and management through such efforts as the signing of the Forestry Techniques Agreement with Germany for greening the land. Since 1980s, the Korean government has invited many officials from developing countries in Southeast Asia and other regions. Recently international cooperations of this field with neighboring countries, especially China and Mongolia, for the exchange of forestry experts and joint research programs have been strengthened.

Through our experience and know-how, Korean government plans to increase participation in combating desertification in this region. On the other hand, we are making earnest efforts to acquire the Korean people's attention regarding this issue through holding the Northeast Asia Forest Forum, campaign of the Global Sharing Movement, etc. In doing so, the private sector will play a significant role in environmental cooperation and we will mobilize these efforts to reduce poverty at the regional and international level.

Korea will actively increase bilateral and international cooperation through participating in various activities sponsored by international organizations that aim to implement the Forest Principles and other various international conventions on this matter.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

**Decision-Making:** The Korea Forest Service (KFS) of the Ministry of Agriculture and Forestry (MOAF) is the primary organization responsible for mountain lands most closely affected by forestry policy.

The Basic Forest Law and the Promotion and Advancement Law of Forestry and Mountain Region provide that the central and local government can designate the Region of Mountain-village's Promotion for developing the mountain region and improving its indigenous inhabitants. The Korean government also establishes and implements the integrated policies and strategies to develop the new and additional income sources of mountain villagers and better their standard of living.

In the process of rapid industrialization and urbanization in Korean society over the last two decades, mountain areas covered 46% of the total land area of the country have been depopulated, aged in population, and lagged in the social infrastructure and living environment. In repose, the Korean government has initiated various measures designed to enhance the economic, social, and physical conditions of mountain villages since 1995. These measures include the promotion of forestry, which is the main industry of such areas, in order to secure employment opportunities and the improvement of living environment and social infrastructure.

The Forestry Cooperatives are the non-governmental forestry collaborative bodies pursuing the improvement of the socio-economic position of the mountain villagers through their collaborative projects for forest protection, reforestation, silvicultural activity, collection and sale of non-wood forest products, etc. The non-governmental organizations such as Eco-village Movement are actively involved in the development and improvement of mountain region.

**Programmes and Projects:** Integrated rural development projects initiated by the Korean Forest Service have been under progress since 1995, with the major objectives of improving living conditions, promoting eco-tourism, and raising the income level by developing new income sources, including forest byproducts in forest communities. These projects are expected to achieve balanced and harmonized national land use and promote sustainable development in secluded mountainous areas in the Republic of Korea.

The measures to achieve the sustainable rural communities can be categorized into four parts. The first is to develop diverse income sources under the consideration of each mountain village's physical, social, and economic characteristics. The second is to develop and improve forestry and agricultural production conditions. The third is to improve living environment. It includes improvement of transportation, telecommunications, and public health, providing clean water for daily use, developing sewage systems in forest communities, creating beauty in forests and villages, and promoting forest lodgings fitting in with regional characteristics. The fourth is to promote the exchanges programs between mountain villages and urban communities. Through these measures it can be possible to obtain a better public understanding and awareness for mountain villages area and to contribute to a healthy and comfortable life.

**Status:** The Republic of Korea is a typical mountainous country where forests account for 65% of total landmass. Forest ecosystems are vulnerable to degradation due to soil conditions and heavy rains that occur during summer. Since the early 20th century, forests have been devastated through excessive and illegal cuttings. Recently, the public demand for various benefits provided by forests, including watershed management and recreational sites has increased, thereby pressuring the government to implement sustainable mountain development.

To improve watershed capacities, forest management in the areas surrounding major rivers is intensified and erosion control dams are continuously constructed. Valley erosion controls are to be also tightened. The forest areas for recreation activities are increasing to meet the rapidly growing demand for recreational sites and improve public health by adding forest-bathing sites.

**Capacity-Building, Education, Training and Awareness-Raising:** The voluntary participation and self-awareness of the mountain villagers are the basis of the mountain-region development project. There are many opportunities for the local residents to participate in this project such as the Mountain Village Development Committee, Village Meeting, public hearing, etc. The Committee composes of the representatives of village, government officials, planers, relevant experts, etc.

**Information:** Various kinds of information on mountain-related policies can be accessed through the Internet.

- MOAF: http://www.moaf.go.kr
- KFS: http://www.foa.go.kr

**Research and Technologies:** Korea Forest Research Institute is carrying out a lot of researches relating to mountain-region development such as the criteria for sustainable mountain development, the project on the various type development taking into consideration of each mountain village's unique natural and cultural characteristics, etc.

**Financing:** The Korea Forest Service will invest about USD 591 million, including the private sector investment, by 2007 in order to enhance the economic, social, and physical conditions of mountain villages.

**Cooperation:** Various kinds of information on mountain-related cooperations are available from the websites at:

- MOAF: http://www.moaf.go.kr
- KFS: http://www.foa.go.kr

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

**Decision-Making:** The Ministry of Agriculture and Forestry (MOAF) is responsible for policies on sustainable agriculture and rural development. The MOAF is trying to bring more participation of research institutes, consumer groups, experts, farming households and related organizations, including the National Agricultural Cooperative Federation and the Rural Development Administration, in the decision-making process of acts, regulations and policies relating to sustainable agriculture.

In this regard, the Committee for Environment-friendly Agricultural Development was established in July 1999, with participation of government officials, experts, NGOs, consumer groups, the National Agricultural Cooperative Federation and the National Forestry Cooperative Federation.

The Ministry of Agriculture and Forestry established the “Environment-friendly Agriculture Act" to promote sustainable agriculture in 1998, revised it, and subsequently detailed ordinance and regulation effective on July 1, 2001 which tried to modify the certification system to correspond to the international standards of organic farming. In case of using farmland for purposes other than agricultural production or farmland improvement, it should be approved by the Minister of Agriculture and Forestry, after considering the value of farmland conservation and its effects on other farmlands. In Agricultural Promotion Zones, we restrict the construction of any facilities except those for processing agricultural and marine products, agricultural research and test, community, farmers' houses, agricultural and stock raising, military facilities, rivers, dikes, roads, and railroads. However, diversion of farmlands for the following purposes is banned:

1. Installation of facilities which emit air or water pollutants above a level that is likely to harm the agro-environment,

2. Installation of facilities which are likely to hinder agricultural progress and to deteriorate farmland conservation as follws:

- Common houses larger than 15,000 ㎡
- Recreational facilities
- Restaurants, golf courses, massage parlors, and motels larger than 500 ㎡
- Single houses and their neighboring convenience facilities larger than 1,000 ㎡
- Retail buildings, factories, and warehouses larger than 20,000 ㎡
- others: larger than 10,000 ㎡

Through close cooperation among her ministries, the Republic of Korea has been annually reviewing national policies related to enhancing food security in order to meet the basic goal of the 1996 World Food Summit. The fundamental basis for national policy on food security is the "Rural Development Measures and Agricultural Policy Reform Plan", which was drawn up by the Presidential Commission on Rural Reconstruction (PCRR). All of the major stakeholders involved in promoting food security, including farmers' organizations, consumers' organizations, scholars, and representatives from the government, participated in the formulation of participation-based agricultural and rural policies, particularly, for food security. And since the inauguration of the new administration in February 1998, a broad-based reform has been undertaken as part of the government's efforts to ensure consistent national food security, in almost every part of the nation including the economic, political, and social areas, in line with the Rural Development Measures, the Agricultural Policy Reform Plan, and the basic objectives of the World Food Summit.

In July 1996, the Ministry of Agriculture and Forestry established its "Environmental Policy in Agriculture, Forestry and Fisheries for the 21st Century". The main emphasis of the policy is placed on reducing pollution and other environmentally harmful effects of agriculture, conserving and improving the agro-environment, and encouraging environment-friendly farming systems, such as organic farming and low input sustainable agriculture.

The state declared the year of 1998 as "the Beginning Year of Environmental Agriculture" which symbolized the more active governmental commitment in Sustainable Agriculture.

In 1999, the state initiated the direct payment program for the environment-friendly farming in environment protection areas who are willing to exercise environment -friendly farming practices.

Also, in January 2001, the state established "Five Years Plan for the Pomotion of the Environment-friendly Ariculture" which involves the medium and long term goals for the promotion of the environment-friendly agriculture, including the reduction of the amount of pesticide and chemical fertilizer use by up to 30% of 1999 levels by 2005.

The Korean government has adopted methods of maintaining and improving the basic agricultural environment, such as soil and water, emphasized measures to maximize the positive effects of agriculture on the environment and to develop agriculture as a pollution filtering industry, and restricted agricultural land diversion. Major policies to accomplish sustainability in the field of agriculture include the followings: 1) to use chemical fertilizers and pesticides properly, in accordance with soil characteristics and pest intensity; 2) to support farmers for fostering environment-friendly farming, such as organic farming and low input sustainable agriculture (LISA); 3) to improve the productivity of sustainable agriculture through new environment-friendly technologies; 4) to support the recycling of agricultural byproducts like straw, livestock wastes, etc., and return them to agricultural fields for use as organic fertilizers, and 5) to expand direct payment policies for environment-friendly agriculture.

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. To overcome these problems, the government has set up a "Ten year Rural Water Development Plan" (1995～2004) with the following objectives:

- Developing irrigation systems in all paddy fields located in Agricultural Promotion Zones;
- Developing supplementary irrigation in areas susceptible to severe drought;
- Conserving water and increasing the stability of agricultural water supply by renovating superannuated irrigation facilities; and
- Reclaiming farmlands and increasing the amount of good quality farmland through Large Scale Comprehensive Agricultural Development Projects.

For the conservation and sustainable use of animal genetic resources, the government adopted the following policies under the “Rule on the Management of Genetic Resources” enacted on November 22, 1985:

- Policy for the development of the domestic beef industry
- Continuous support for the construction of facilities for the domestic beef industry (native Korean cattle) and for cattle farming, as well as pursuit of policy to secure a foundation for rearing domestic cattle from 1993 to 1997.
- Establishment of a preservation system for collective breeding in order to promote the genetically superior domestic cattle through artificial mating.
- Implementation of a model policy for stabilizing calf production since July 1998 to secure a foundation for domestic cattle reproduction and the development of this industry.
- Preservation and rearing policy for Jindogae, dogs originated on Jindo Island
- To preserve the original breed and make its superiority known to the public, the Preservation and Rearing Act for Jindogae was amended in July 1997, and a national Jindogae research institute was established in 1998.

A variety of groups participate in decision making on environment-friendly agriculture, including farmers’ groups, communities, and women groups related to agriculture, and even non-agricultural groups. As the role of women in agriculture is receiving more emphasis, women’s participation is increasing. The common ways of participation of major groups in decision making are as follows:

- The representatives of the groups participate as members of the committee on sustainable agriculture.
- Opportunities are given to the public when the government holds public hearings to collect opinions and suggestions before making important decisions. In addition, doors are always wide open to groups making recommendations to the government through direct meetings with policy makers, written recommendations to the government, and indirect contacts.

The government accepts all reasonable opinions and suggestions.

**Programmes and Projects:** The Republic of Korea submitted to FAO jer Report on the Implementation of the World Food Summit Action Plan in April 1999. The government’s major actions related to the agricultural and fisheries sectors are summarized as follows:

- Collecting background information required to set national nutritional targets and establishing a policy plan for food supply and demand through the annual National Nutritional Survey;
- Disseminating, on a regular basis, information on agricultural prospects derived from surveys and analyses of weather forecasts, statistical data on areas where crops were planted, food production, stocks and consumption, and foreign market development; stockpiling major food crops for food security and promoting stable prices for agricultural and fisheries products;
- Facilitating rice distribution and marketing by focusing on the formation of Comprehensive Rice Processing Complexes (RPC) in major producing areas in order to reduce costs involved in rice distribution, by preventing post-harvest losses, helping high-quality rice production, and fostering the agricultural processing industry in rice producing areas;

- Setting up and implementing a "Comprehensive Plan for Rice Industry Development" to ensure self-sufficiency in rice, enacting the Sustainable Agriculture Promotion Act in late 1997 with a view to promoting environment-friendly agricultural practices and establishing a National Strategy for Biological Diversity in December 1997;
- Setting up an "Agro-Environmental Policy towards the 21st Century" in July 1996 and, in accordance with this policy, decreasing the use of pesticides and fertilizers and expanding sewage and wastewater treatment facilities in rural areas to ensure that pollution problems arising from agricultural production are effectively addressed;
- Formulating policy measures to maintain a food production base, including projects for farmland maintenance, developing water resources for agriculture, and improving irrigation and drainage, taking fully into consideration the fact that rice production at an optimal level is essential for achieving domestic food security;
- Executing various projects for developing and conserving a variety of animals and plants by collecting and improving various animal and plant genetic resources for food and agriculture;
- Developing technologies for sustainable and stable food production and carrying out training and education services to provide producers with efficient productive farming technologies;
- Completing the first phase of the Agricultural and Fisheries Development Plan (AFDP) in 1998 and undertaking the second phase of the Plan in order to improve the living conditions of agricultural and fisheries areas by promoting education, medical care, and pensions for farming households;
- Reforming the four major producers' cooperative associations the National Agricultural Cooperative Federation (NACF), the National Livestock Cooperative Federation (NLCF), the National Fisheries Cooperative Federation (NFCF), and the National Forestry Cooperative Federation (NFCF)), taking into account farmer's groups, relevant professors, researchers, and consumers' increased criticism of the cooperatives' operational inefficiencies and amalgamating central bodies of the NACF with the NLCF on July 1, 2000, proceeding with continuous structural adjustment of the central bodies as well as rearrangement of non-viable small associations.
- Faithfully implementing the commitments under the UR Agreement on Agriculture, endeavoring to harmonize sanitary and phytosanitary inspection measures with relevant international standards, by participating in the WTO Committee on Sanitary and Phytosanitary Measures, and striving to protect domestic consumers, animals, and plants from food-borne diseases and unexpected outbreaks and proliferation of foreign animal and plant diseases, in compliance with the International Plant Protection Convention (IPPC) and the international standards established by relevant international organizations, including the Office of International Epizootics (OIE) and the Codex Alimentarius Commission; and
- Providing education and training courses on agricultural and rural development for trainees from developing countries in Asia and Africa and countries in transition to market economies, in order to assist their efforts to develop agriculture, and cooperating in various cost-sharing agricultural research and development projects with UN agencies, such as FAO, UNDP, IFAD, and CGIAR research centers (CIMMYT, CIP, ILRI, and IRRI).

To prevent resource and energy waste, deterioration of the quality of agricultural products, and environmental contamination, a new fertilization system that determines fertilizer application rates based on soil testing was established in 1992: 1) to readjust fertilizer application rates for 73 crops to lower levels to preserve the environment; 2) to establish fertilizer systems for each crop through soil testing; and 3) to study fertilizer application management with bulk blending fertilizers through soil testing.

**Status:** Until 1990, agricultural policy focused on increasing crop production through the development of harvesting multiple rice species and high-yield species, and high dose fertilizer application was recommended to achieve this objective. As a result, new problems emerged, such as increasing instances of plant disease and environmental contamination.

Major irrigation facilities are classified as reservoir, weir tube well, infiltration gallery, etc. As a result of the government's continuous efforts to achieve agricultural modernization, a sound agricultural base for rice production has been established. Accordingly, a total of 880,000 hectares, or 77% of the total paddy rice area, is now irrigated by the irrigation facilities.

The government recognizes the need to increase the efficiency of agricultural water use, and great efforts have been made to conserve water and to increase the stability of the infrastructure by renovating superannuated irrigation facilities. Small-scale irrigation systems are managed by farming communities under the supervision of local authorities, and all expenses are charged to the farmers. Large-scale irrigation systems are managed by the Korea Agricultural & Rural Infrastructure Corporation (KARICO), which supplies irrigation water to farmers free of charge.

The government has constructed drainage facilities, such as pumping stations, sluice gates, and canals, in areas that are subject to habitual flooding. The construction is usually carried out by the municipal authorities or KARICO. Approximately 234,560 hectares of agricultural land are prone to flooding, about 43% of which have been improved by 2000. The remainder will be completed by 2009.

Area of paddy field where additional irrigation facilities have been installed since 1995 is 101,533 hactares, 8.8% of the total irrigated paddy field area. Areas of restored water-logged lands is 43,761 hactares, 18.7% of the total water-logged lands.

The statistical information on the consumption of primary inputs such as seeds, fertilizer, and pesticides in The Republic of Korea for the past five years is as follows:

- Seed Production (Rice, M/T): 1996 (10,094), 1997 (12,258), 1998 (12,620), 1999 (12,623), 2000 (12,982)

- Fertilizer Usage (kg/ha): 1996 (424), 1997 (421), 1998 (406), 1999 (398), 2000 (382)
- Pesticide Usage (kg/ha): 1996 (11.5), 1997 (11.8), 1998 (10.4), 1999 (12.2), 2000 (12.4)

**Capacity-Building, Education, Training and Awareness-Raising:** The government has been carrying out model projects nationwide to promote environment-friendly and sustainable agriculture since 1998. Environment-friendly Agriculture Promotion Area have been established in 5 places in 1998, 6 places in 1999 and 7 places in 2000. Environment-friendly agriculture model villages for practicing IPM and INM farming practices have been built in 16 places in 1999 to 16 places in 2000.

The Korean government has many programs to train farmers in IPM (Integrated Pest Management) and to assist environment-friendly agricultural groups in training farmers who are willing to learn organic farming and low input sustainable agricultural techniques. Soil conditioners are distributed periodically to the farmers to improve conditions of soil quality. Loans and subsidies are given to entitled farmers for certain projects, which are designed to develop sustainable agriculture.

The Korean government usually adopts education and mass media measures to inform the public, especially farmers, of sustainable agriculture. It focuses on why environment-friendly farming is important and necessary and how it is done. Consumer's role in developing sustainable agriculture is not neglected either. Recently, the Korean government developed a new project through which farmers, consumers, and policy makers cooperate and support each other for sustainable agriculture.

The Korean government has developed energy efficient and energy saving greenhouse blueprints and distributed them to farmers. Research and development are focused on how to increase solar energy utilization rates and other environmentally sound energy uses. In the agricultural machinery sector, energy efficient technologies are being developed.

The government is taking the following measures to reduce the amount of use of pesticide and chemical fertilizer by up to 30% of 1999 levels by 2005.

- Operating 150 pest forecasting sites around the country and 1403 field observation sites so that rice farmers can control pests effectively and timely through close observations of pest occurrences and outbreaks.
- Conducting research to develop mass rearing techniques for natural enemies, such as predatory mites, white-fly parasitoids, etc., in order to extend biological control method.
- Periodically educating farmers so that they can abide by pesticide guidelines that contain information on crops, pests, application rates, frequencies, and pre-harvest pesticide application period. This can minimize the misuse of pesticides by farmers.

The IPM (Integrated Pest Management) Program has implemented IPM training for 266 extension staff members (Training of Trainers, TOT) and 9,566 farmers (Farmer Field Meetings, FFM), including season-long field training to provide firsthand experiences in rice paddies.

The IPM Program has executed IPM validation and training on non-rice crops, including greenhouse crops, potatoes, peppers, apples, persimmons, watermelons, pears, and citrus fruits, in nine provinces since 1997. 317 extension officers were trained as IPM trainees, who in turn trained 600 farmers in 1999.

With a view to achieving multiple objectives, such as increasing forage production, preventing soil erosion, improving soil fertility, preserving landscape features, and capitalizing on eco-tourism resources, the Korean government, in close cooperation with farmer's organizations, is conducting a nationwide campaign to foster the cultivation of winter feedcrops and green manure crops, including Chinese milk-vetch, rye, and Italian ryegrass. It is called the Green Field Movement. For the optimal use of plant nutrients, precise soil testing are done by county governments. Farmers use proper fertilizers in accordance with the soil test results, whether they are organic or inorganic. The IPM training and education programmes for the safe use of pesticides by farmers are supported, too. The Korean government initiated direct subsidies for environment-friendly farming in 1999. Direct subsidies are granted to farmers in environment protection areas who are willing to exercise environment-friendly farming practices.

To maintain and improve soil productivity, soil conditioners like lime and silicated fertilizers are distributed to the nutrition deficient areas, and loans are granted to farmers in order to transform soil.

**Information:** Agriculture-related information can be found on the Internet web sites at:

- Ministry of Agriculture and Forestry: www.maf.go.kr
- Rural Development Administration: www.rda.go.kr

**Research and Technologies:** A research system was established to develop sustainable technologies and to monitor the status of the agricultural environment in terms of soil quality, water quality, and the quality of agricultural products. The government has been modeling integrated nutrient management and studying nutrient balancing in crop cultivation since 1998. The relationship among the farming area, the kind of crop and fertilizer, and the amount of chemical and organic fertilizers applied was investigated. The amount of nutrient input, plant uptake, remnants in soil, volatilization, etc. was also studied.

With regard to optimizing effective and efficient use of various sources of nutrition, the government tried to establish integrated nutritional management skills. Firstly, the real situation of fertilizer application in farmlands for more efficient nutrient managements has been investigated since 1998, and the amounts and kinds of chemical and organic fertilizers applied were studied. Secondly, nutrient balance has been studied to decide the basic balance of applied nutrients since 1996. The inputs, outputs and balance of nitrogen, phosphate, and potassium for major crops have been investigated.

With regard to the effects of ultraviolet radiation on plants, animals, and agricultural activities, researches have been undertaken to study the characteristics of the initial growth of Tilia Amurensis Rupr. seedlings by administering environmental stress through UU-B radiation, the effects of UV irradiation on the growth of vegetables, and the effects of UV radiation on the growth and yield of sweet potatoes. The results indicated that UV radiation decreased the germination rate and the chlorophyll content. It also affected the growth of trees. UV-B radiation inhibited height growth, leaf growth, and chlorophyll formation. The inhibition was UV-dose dependent, and consequently, growth was increasingly inhibited as UV-B radiation levels increased. UV-B radiation caused leaf scorching, glazing or chlorosis, and stunting or dwarfing.

In order to promote crop diversification at the farm level, the government undertook the following:

- Development of various rice cultivars for 19 geographical areas;
- Research and development of specialized crops for specific areas through the establishment of 32 small-scale experimental stations in local areas.

With regard to early warning systems for the monitoring of factors affecting food supply and demand, meteorological observatories have been established in 72 locations for traversing observations under the Korean Meteorological Administration and in 78 places for agricultural meteorological observation under the Rural Development Administration. Also, a joint committee on agricultural meteorology for stable food production has been established and is managed by the Rural Development Administration and the Korean Meteorological Administration.

**Financing:** Rural industrial complexes were established for industrial development and enhancing rural residents' income. As of 2000, 295 complexes were established, locally employing about 68,000 individuals. Also, tourist farms are being developed to promote regional development and increase rural income by linking the natural environment of rural areas with agricultural development. Now we have 370 places, locally employing about 2,000 individuals.

**Cooperation:** In collaboration with UNDP, the Korean IPM (Integrated Pest Management) Program (ROK/93/001, ROK/95/004, and ROK/96/008) has been in operation since 1993. During this time, we have achieved some notable results.

The validation trial of rice IPM methodologies carried out in 1992, verified that IPM methods can reduce pesticide use by more than 50% without significant changes in yield compared with conventional methods.

The IPM and INM Program are providing much stimulation for the success of environmental agricultural policy, which includes the target of reducing use of pesticide and chemical fertilizer by 30% of 1999 levels by 2005.

The IPM Program has strengthened the cooperation systems of the Northeast Asian region in order to reduce crop losses due to migratory pests and pesticide applications through the exchange of IPM experts and information.

There has been no official relationship between the global IPM Facility and the Korean government/Korean IPM Program.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

**Decision-Making**: The government has prepared various systems to protect and/or sustainably use biological diversity and has been identifying ways to promote participation of local governments and residents in the policy-making process.

The Ministry of Environment is responsible for biodiversity conservation in the Republic of Korea. It shares the responsibility with the Ministry of Agriculture and Forestry (Forestry Administration), the Ministry of Science and Technology, and the Ministry of Maritime Affairs and Fisheries. There is no governmental unit or research center that focuses only on biodiversity related activities. Instead, most of the governmental agencies and research centers associated with natural resource management are addressing biodiversity issues. For this purpose, the Nature Conservation Bureau in the Ministry of Environment is taking a central role. In 1994, the Bureau conducted a nationwide survey on the conservation of biodiversity entitled "Biodiversity Korea 2000."

The Convention on Biological Diversity was signed in 1992 and ratified in 1994. The Convention on International Trade in Endangered Species of Wild Fauna and Flora was signed in 1993 and the latest report was submitted in 1995. The Republic of Korea joined the Ramsar Convention in 1997.

In the national legislation, the Natural Environment Conservation Act provides the basic and comprehensive legal basis for biodiversity conservation activities. The Natural Park Act, the Cultural Properties Protection Act, the Forestry Act, and the Law Concerning Wildlife Protection and Hunting are also part of existing conservation measures. There is a national plan called "the Master Plan for Natural Environmental Preservation" for nature conservation, a broad strategic document which includes the National Strategy for Biodiversity Conservation adopted in 1997. The central government, local governments, experts, NGOs, and landowners of forest areas and protected areas share the responsibility for biodiversity conservation. However, the government's role is still the most important.

While reinforcing existing policies, the Republic of Korea will take additional measures to conserve biodiversity. The National Strategy for Biodiversity Conservation includes new ecosystem protection approaches, in which harmonization between the landowners' rights and the efficient management of protected areas would be emphasized. The second national survey on the natural environment is being undertaken from 1997 to 2002. The identification of valuable and vulnerable ecosystems and species is one of the main objectives of the national survey.

Various official designations for protected areas (i.e., natural ecosystem protection areas, national parks, bird and mammal protection areas, and natural forest protection areas) allow parcels of conserved land to function as *in situ* biodiversity conservation areas. Such protected areas account for around seven per cent of the total national land area. In addition, the Republic of Korea has adopted several species protection measures such as creating new classifications (i.e., Natural Monuments, Special Wild Fauna and Flora, and Protected Wild Birds and Mammals) to help protect endangered or declining populations of wild species. Despite these activities, biodiversity in the Republic of Korea has diminished continuously as a result of rapid economic development. At least 194 known species, including tigers and leopards, have disappeared or are endangered.

**Programmes and Projects:** The government has also implemented various programmes for the protection and sustainable use of biological diversity through, such as designation and management of protected areas, compensation for damages caused by wildlife, and surveys of biodiversity in forests wetlands and coastal areas.

**Status:** In 1994 the Ministry of Environment published a report, "Biodiversity Korea 2000" that was prepared after a comprehensive review on the status, problems, and strategies for the protection and sustainable use of biodiversity in The Republic of Korea.

**Capacity-Building, Education, Training, and Awareness-Raising:** As part of our efforts to raise public awareness for the protection of biodiversity, the Ministry of Environment has established an eco-study center, promoted ecotourism and facilitated assistance for NGOs activities in public education. In addition, the ministry has conducted capacity building projects for taxonomy, which is essential for the protection and sustainable use of biodiversity.

**Information:** Currently the Ministry of Environment, together with other relevant ministries such as the Ministry of Agriculture and Forests and the Ministry of Science and Technology, has provided necessary information for the protection and sustainable use of biodiversity. In particular, the Ministry of Environment is also providing information about the status of biological livelihoods, designation and management of protected areas, and biodiversity-related policies through the Internet.

**Research and Technologies:** In 1994 the government prepared necessary systems and networks for the promotion of research and development of technologies that are aimed at protection and sustainable use of biodiversity, and is conducting various research and development projects at both national and local levels.

**Financing:** Financial resources to cover various biodiversity programs have been limited. Although the national budget for nature conservation in 1994 was estimated at 585 billion Korean won (or USD 730 million at that time), financing for biodiversity conservation has not yet been estimated systematically. As emphasis on biodiversity issues gradually increases, financial resources will be expanded.

**Cooperation:** The Republic of Korea has also taken active roles in regional cooperation programs such as the East Asia Biosphere Reserve Network (EABRN) under the Man and Biosphere (MAB) Program of UNESCO.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

**CHAPTERS 16 AND 34: ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING**

## Decision-Making:

***Technologies***: Based on accumulated experience with environmental technology R&D management, the Korea Institute of Environmental Science & Technology (KIEST), supervised by the Ministry of Environment, has been dedicated to the promotion of environmental technology in the Republic of Korea. KIEST's activities include planning, management, evaluation, and application of environmental technology R&D, support of companies for start-ups and establishing environmental technologiy database for promoting Korean environmental industry.

메모 [u6]: This isn't a word. In my studies for a master's degree in science and technology policy, I never once heard this word. Do you mean "environmental technology database?"

Established as a non-profit public organization under the Ministry of Environment, the Environmental Management Corporation (EMC) is executing various projects and activities for pollution control and environmental improvements. An example of EMC activities include the Environmental Technology Verification (ETV) program. In this program, the EMC aids local governments and private companies to select the best available environmental technology. Also, the EMC provides various kinds of information on environmental technologies to both domestic and foreign consumers in order to support businesses that are marketing advanced environmental technologies, attract environmental investment, and boost the international competitiveness of the Korean environmental industry.

In order to strengthen precautionary environmental conservation policy more effectively, the ISO 14000 was introduced by the Ministry of Commerce, Industry, & Energy (MOCIE) under the legal basis of the Environmentally-Friendly Industrial Structure Promotion Act. However, realizing that private accreditation bodies that operate on a non-governmental voluntary basis would better integrate and coordinate the program, the Korea Accreditation Board (KAB) was established in 1996. Since then, KAB has been carrying out the Pilot EMS Certification Program, in which 37 enterprises are involved.

The Patent Act and the Copyright Act are two pieces of legislation in place to protect intellectual property rights (IPRs) with a view to promoting investments related to the transfer of ESTs.

In order to systematically and comprehensively develop and cultivate domestic environmental technologies and promote the development of low-pollution technologies, the Ministry of Environment is implementing research projects such as Eco-technopia 21 on a yearly basis and encouraging the relevant agencies to use advanced environmental technologies, to meet the environmental standards. In addition, in order to promote low-pollution technology development and raise consumers' awareness of environmental preservation, labelling of environmentally friendly products system was adopted.

It was pointed out that projects should incorporate areas of national importance such as pollution prevention, ecosystem restoration, and global environmental preservation. Furthermore, more effort should be applied on commercializing the technologies already developed. Such evaluations formed the basis of the Eco-technopia 21 Project. If the project proceeds smoothly, the level of environmental technology in the Republic of Korea will approach that of advanced countries in a relatively short time frame. Through the project, KIEST plans to invite overseas environmental specialists for seminars and presentations. Moreover, recognizing that systematic training and education of technology experts are as important as technology development in sustainable development of the Korean environmental industry, Korean environmental specialists will be sent to foreign universities and companies and, in return, environmental experts of developing nations will be invited to train and study in the Republic of Korea.

Even when a first-class environmental technology is developed or adopted, if that technology lacks in practicality reflecting present situation, new technology users will not fully trust and take advantage of the technology. Therefore, when a new environmental technology is developed, it will be objectively evaluated and its environmental performance will be posted so technology users will be confident about the new technology and make full use of it. Under the Environmental Technology Verification System, a new environmental technology will receive either a document review or a performance evaluation after 3 to 6 months of actual operation at pilot scale. The technology that passes through this rigorous process will receive a certification from the government and incentives are given to users when they apply the new technology to public facilities, thereby encouraging the adoption of new technology. Starting in 2002, two new systems will be implemented -- a bonus

system and a reimbursement system. When a public facility has a new technology installed and saves money as a result of using that technology, a portion of the savings is given out as a bonus. Under the reimbursement system, when a technology developer applies a new technology to a facility at ones own expense and the technology is proven to be a success, the entire installation cost is reimbursed to the developer.

It is becoming more difficult to solve complicated problems with only the central governments environmental policy. Therefore, led by universities in the region, research capabilities of industries, colleges, research institutes, public institutions and private firms should be combined to investigate the region-specific environmental problems, develop environmental technologies to counter pollution, nurture the regional environmental industry and disseminate new environmental technologies. Out of those needs, the Regional Environmental Technology Development Centers (RETDCs) were established and now the centers operate in heavily polluted areas to serve as focal institutions that can address regional environmental issues autonomously. The first two RETDCs were founded in the Yeosu and Ulsan areas in December 1998. Since then eight more were established in 2000 and five more in 2001. In 2002, Jeju Island will have its own center.

Stakeholders are brought together with a view to promoting and improving the selection, transfer and application of environmentally sound technologies through a number of mechanisms such as a 1998 international conference on clean production (co-organized with UNEP) and the establishment of the Evaluation Center for New Environmental Technology. In addition, the Korean government, in conjunction with CSD, UNEP, and UNCTAD, is presently working out a publicly owned environmental technology transfer project as one of the plans indicated in the Program for the Further Implementation of Agenda 21, which was adopted in the UN Special Session of June 1997.

***Biotechnologies***: Biotechnology and related industries in the Republic of Korea's are still in a phase where government leadership is important. As biotechnology increases its profile, the Korean government and businesses are drawing up measures for her development. To coordinate efforts by the public and private sectors, the Korean government set up, in October 2001, the Biotechnology and Industry Committee, which is chaired by the Science and Technology Minister, under the National Science and Technology Council, a policy-setting body presided by the President.

The Republic of Korea enacted the Biotechnology Fostering Law in 1995 to help establish research infrastructure, research and commercialize applications of biotechnology, and facilitate industrialization of biotechnology. It stipulates the roles of individual governmental agency as follows.

- The Ministry of Science and Technology should provide support and coordination for individual governmental agency to help establish policies, and develop basic and advanced biotechnology.
- The Ministry of Commerce, Industry and Energy should develop biotechnology-related production technology, while facilitating the industrialization of the biotechnology.
- The Ministry of Agriculture and Forestry, Ministry of Health and Welfare, and Ministry of Maritime Affairs and Fisheries should provide support for the research of applications, while securing useful genes.
- The Ministry of Environment should prevent environmental pollution, through the preservation and sustainable use of biological diversity and biotechnology.
- The Ministry of Education should foster specialists/experts and provide support for the research of basic biotechnology.

As bioethics and biosafety recently emerged as pending issues due to the rapid development of biotechnology, the Republic of Korea is seeking to enact and/or revise related laws and regulations.

The Ministry of Science and Technology is leading the efforts to enact a law tentatively titled as "Basic Bioethics Law," in order to reach social agreement on bioethics.

As part of an effort to secure biosafety, the Republic of Korea signed the Cartagena Protocol on Biosafety to the CBD in September 2000 and promulgated the Law on the Transboundary Movement of Living Modified Organisms in March 2001. It is currently in the process of enacting detailed enforcement regulations of the Law.

**Programmes and Projects:**

***Technologies***: The promotion of innovation in the area of 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 Developmen t (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. Its budget in 1995 amounted to USD 3.14 million which were financed by the government and private sector.

The 21st Century Frontier R&D Program 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, functional genomics for crops, water resources development & management, plant diversity, and so on.

In 1995, the Ministry of Environment decided to introduce the Environment-Friendly Business Operation (EFBO) program which seeks to revise current environmental policy foundation to a more environmentally friendly program. The EFBO program is defined as a proactive environmental management practice. 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 impacts 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, public education and an awareness training program, prevention and clean up procedures, in-house inspection plans, and urgent action plans. The Ministry of Environment expects industries to implement pollution abatement production processes. The EFBO program encourages a proactive role from industries as well as cooperation between industries and the government, and urges NGOs to develop innovative technologies and practices.

***Biotechnologies***: The Korean government initiated a 14-year national biotechnology development program, called Biotech 2000, in 1994, involving seven different government ministries. A total of 41 projects are underway. The major projects are as follows:

<Ministry of Science and Technology>

The 21st Century Frontier R&D Project aims at providing intensive support to core biotechnology areas to help them secure international competitiveness.

The G7 New Functional Biomaterials R&D Project is focused on identification and application of new biomaterials, development of production processes, product development, joint development of new technologies, etc.

The Creative Research Initiative was launched in 1997, symbolizing Korea's policy shift in science and technology "from imitation to innovation", towards the knowledge-based economy. It aims to strengthen the national potential for technological competitiveness through creative basic research.

Launched in 1999, the National Research Laboratory program aims to explore and foster research centers of excellence, which will play a pivotal role in improving technological competitiveness.

<Ministry of Commerce, Industry and Energy>

The Industrial Basic Technology Development Project focuses on developing industrial platform technologies, mid-term technologies, and next-generation technologies.

<Ministry of Health and Welfare>

Projects for the advancement of public health and medical biotechnology are to strengthen infrastructure for medical biotechnology development, to improve R&D powers and international competitiveness of the Korean biotech industry, and to develop preventive, diagnostic, and treatment methods for diseases as well as develop new medicine.

<Ministry of Agriculture and Forestry>

Projects for the development of agricultural and forestry technologies aim to advance the development of breeding technologies through animal and plant genome research, to develop and use agricultural and forestry resources more efficiently and improve agricultural and forestry productivity.

**Status:**

***Technologies***: The government is planning to connect foreign information networks such as JOIS, Internet, Europa Net, and STN and overseas information networks such as JICST, NTIS, TIB, BL, and INIST with domestic networks to allow domestic consumers of environmental technologies to have access to environmental technology available in foreign countries. To establish an information network that can collect, process, and distribute information on environmental technologies, the government will add the existing information network to a new field for information on environmental technologies and establish a computer information network for collecting, processing and disseminating environmental technologies. In addition, in order to facilitate the transfer of environmental technologies, the Republic of Korea will hold various international environmental conferences, send delegates to participate in international events and soften regulations and provide economic incentives to encourage the transfer of environmental technologies by private enterprises. The government is working on details for the development of environmental technology in the areas of air, water, ocean, clean technology, ecosystems and global environment. The National Institute of Environmental Research is in charge of these projects. In addition, the

operational plan for the Center for Evaluating New Environmental Technology to expedite the distribution of newly developed environmental technology has been established.

***Biotechnologies***: In a country like the Republic of Korea, with a large population and scarce resources, trade can be a critical policy tool for creating jobs and earning hard currency. The economy of the Republic of Korea went through unprecedented hardship and placed itself under IMF assistance in 1998. However, with the successful implementation of structural reforms, the economy has been able to overcome the foreign exchange liquidity crisis at a rapid pace. In 1999, annual GDP rate rebounded from -5.7% in 1998 to 10.7%, while domestic consumption and investment increased 8.5 and 4.1%, respectively.

Exports increased by 8.6%, which in turn brought about job-creation and production increases in the export industries. The usable foreign exchange reserves have also expanded, thereby greatly increasing the national confidence level.

As trade and investment increase and the economy improves, the government actively encourages companies to manage their operations in an environmentally friendly manner and to voluntarily strengthen environmental management as a whole.

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

***Technologies***: The RETDCs manage a project on corporate environmental management. This project aims to assist the pollution reduction effort of businesses and set up pollution prevention systems. It provides counseling on the environmental difficulties faced by small businesses with insufficient technical capabilities and offers them education and technological assistance. Consistent technological support will be provided by setting up a unit of environmental support on corporate in the Center and forming the Environmental Home Doctor system, under which environmental specialists are assigned to a particular business -- like a family doctor helps people.

A new environmental technology presentation for developers and users is held each year to exchange technical information and disseminate outstanding environmental technologies both by KIEST and EMC. Seminars on achievements and exhibitions will be opened to share successful technology development cases. At the same time, to encourage the development of first-class environmental technologies, Environmental Technology Awards are given out every other year to those who have made significant contributions to environmental improvements and growth of the environmental industry.

As for professional education programs, the National Institute of Environmental Research (under the Ministry of Environment) has a program for government employees working in the environmental fields and technicians working in pollution prevention facilities, companies, and other environment-related businesses. The program participants gain expertise and foster their competence in the field of environmental protection.

An environmental technology development and commercialization courses will be added to the education curriculum of government employees in the environmental field to heighten their awareness of the need for environmental technology development and the validity of new technology dissemination.

See under Chapter 35.

***Biotechnologies***: As of 2000, a total of about 10,000 people were engaged in biotechnology R&D, which accounted for only 6% of the total human resource in science and technology. It can be broken down into industries (2,701), academia (5,224), and research institutions (1,467). In order to train sufficient personnel, the Plan for Training BT Specialists was established in November 2001. Efforts are being made to train personnel in such areas of advanced technologies as genomics, proteomics, nano-biotechnology, and bioinformatics. The government is promoting short-term re-education programs and changes in university curricula. Also the government put considerable effort into raising the general public's awareness of biotechnology, declaring the year of 2001 as the "Year of Biotechnology."

**Information:**

***Technologies***: Twenty-six organizations in the Republic of Korea are currently registered with UNEP's INFOTERRA, an international information exchange system which promotes international exchange of environmental information worldwide. INFOTERRA is designed to meet the demands of countries for the prompt exchange of information on environmental planning, policies, research, and technology development. Another way to access information is through DIALOG of the United States, the world's largest information bank, and domestic communications networks such as KINITI-IR of the Korean Institute of Industrial Technology and Information, and KOSIS (Korea Statistical Information System) of the National Statistical Office.

메모 [u7]: This is just a plain-old telecom company. Delete.

***Biotechnologies***:

- Korea Research Institute of Bioscience and Biotechnology (http://www.kribb.re.kr)
- National Genome Information Center (http://www.ncgi.re.kr)
- Korea Bioventure Association (http://www.kobioven.or.kr)
- Korean Biosafety Information (http://kbch.kribb.re.kr/index_eng.htm)

**Research and Technologies:**

***Technologies***: Capitalizing on the know-how and competence gained from G-7 Project conducted from 1992 to 2001, the Eco-technopia 21 project, mentioned above, was launched in 2001. Its aims are to improve the quality of domestic environment by resolving new environmental issues and to enhance the competitiveness of the environmental industry through focused development of Korea's specialty technology. Joined by private research institutes and businesses, this project will receive 1 trillion won in government subsidy alone for 10 years from 2001 to 2010.

In addition, the Ministry will successfully conclude the G-7 Project, which began in 1992 as the first national research development project of the Korean government. The G-7 Project made a significant contribution to the upgrading of Korea's environmental technology and the establishment of an environmental research foundation.

Moreover, as environmental technology covers a variety of fields, such as end-of-pipe technology, clean technology and environment-friendly agriculture, it is currently being driven by not only the Ministry of Environment, but also the Ministry of Commerce, Industry and Energy and the Ministry of Science and Technology. However, a comprehensive and systematic environmental technology development plan will be designed at the government level to enhance its efficiency and the synergy effect.

메모 [u8]: Which project?

***Biotechnologies***: See also Programmes and Projects.

**Financing:**

***Technologies***: To boost environmental industries, benefits and financial supports are used as a major tactic to facilitate the transfer of EST to small and medium enterprises. In various tax benefits, deductions are given for investment in anti-pollution facilities and waste recycling, while environmental equipment imports qualify for tariff reductions, and environmental companies qualify for special tax rates in accordance with the Basic Small- and Medium-sized Company Act. At the same time, the government has extended long-term, low-interest loans to companies through the Industrial Development Fund and the Environmental Pollution Prevention Fund, among others, for the establishment of facilities to treat, prevent, or recycle pollutants.

***Biotechnologies***: The Korean government funneled USD 294 million in 2001 into biotechnology R&D. The annual growth rate of the investment was more than 30% during the period from 1998 to 2001. The government plans to increase the proportion of biotechnology R&D in the total national R&D budget to 8% by 2010.

## Cooperation:

***Technologies***: The Republic of Korea has established a regional environmental cooperation agreement. For example, it concluded an agreement with Japan for environmental protection technology development and management, especially for the marine environments in the region. An agreement with China, signed in 1996, focuses on the technological development for studying vehicle emission, reducing acid rain, and converting urban solid wastes into fertilizers. With the Russian Federation, an agreement was signed to promote the exchange of information and experiences in environmental protection.

***Biotechnologies***: As part of an effort to secure biosafety, the Republic of Korea signed the Cartagena Protocol on Biosafety to the CBD in September 2000.

The Korean government is supporting international R&D projects through several government ministries and foundations. The Ministry of Science and Technology took the lion's share, providing USD 1.5million for thirty-four projects in 2000.

It is also supporting the establishment of overseas cooperation centers, joint research centers, and biotechnology special programs. The Ministry of Science and Technology is providing finance to the Korea-China Bioscience and Biotechnology Cooperation Center (KRIBB and the Shanghai Institutes for Biological Sciences, CAS), and the Korea-Israel Biotechnology Special Program (KRIBB and the Weizmann Institute of Science). The Ministry of Commerce, Industry, and Energy plans to set up a bioventure support center, called Korea BioValley, in San Diego, USA.

The Korea-ASEAN biotechnology information network was successfully established in 2000 (http://asean.kribb.re.kr).

The Republic of Korea is also actively participating in the activities of the OECD's Working Party on Biotechnology, as coordinated by the Korea Research Institute of Bioscience and Biotechnology (http://www.kribb.re.kr ).

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**REPUBLIC OF KOREA**

## CHAPTER 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, AND COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

**Decision-Making:** To effectively implement oceans and marine policies, the government established a new government organization, the Ministry of Maritime Affairs and Fisheries (MOMAF), in August 1996. This ministry combined all the ocean-related functions, including port and shipping, fisheries, marine environment, coastal management and marine science and technology, of ten different government authorities, in order to ensure consistent and effective marine policy, especially it enforces policies designed to protect ocean and marine ecosystem and sustainable use of marine living resources. The central government, local governments, fisheries cooperatives, and research institutes share the responsibility of protecting ocean and fisheries. However, the role of the government is still most important.

In addition, four mechanisms have been established to facilitate coordination among all responsible organizations. These are the commission on Protection of the Quality and Supply of Fresh Water Resources, under the office of the Prime Minister, the Committee on the Marine Development, under the office of the Prime Minister, Coastal Central Management Council, MOMAF, and the Committee of Maritime Pollution Response of MOMAF.

The UN Convention on the Law of the Sea was signed in 1993 and ratified in 1996. Other legislations and regulations that pertain to oceans and seas include the following:

- Framework Act on Marine Development
- Marine Pollution Prevention Act
- Natural Environment Conservation Act
- Wetland Conservation Act
- Water Quality Conservation Act
- Environmental Impact Assessment Act
- Public Waters Management Act
- Public Waters Reclamation Act
- Coastal Zone Management
- Wastes Management Act, Act Relating to the Treatment of Sewage, Night Soil and Livestock Wastewater
- Fisheries Act
- Fishery Resources Protection Act
- Act on Management of Fishing Grounds
- Marine Scientific Research Act
- Sea Traffic Safety Act

In addition, codes of practice, standards and guidelines have been established by the government, and these are mandatory in nature.

Action is envisaged through various strategies, including the following: the National Action Plan for Agenda 21, National Marine Strategy (Ocean Korea 21), the Five-Year Action Plan for Marine Pollution Prevention and National Major Tasks of People's government, Integrated Coastal Zone Management Plan. and policy of Total Allowable Catch (TAC), as well as an ongoing restructuring of fishery activities, governs the sustainable use and conservation of marine living resources.

Among the Major Groups involved in decision-making in this area are the National Committee for Marine Environment Conservation, the National Committee for Port Policy, the National Committee for Fisheries Management, National Committee on Marine Development, Central Coastal Management Council, National Committee on the Research & Assessment of Marine Pollution, and Deliberation Council on TAC. Local governments play a important role in decision-making by legislation process and policy making process. 11 marine environment-related NGOs are also participating in decision-making. Meanwhile women are taking an active part as members of committees mentioned above. Currently the percentage of women in these committees is 29.5%, very close to target rate, 30% by 2002.

**Programmes and Projects**: Various Programmes and Projects have been performed and are being conducted by ocean-related research institutes. Major programmes and projects include the following :

- Establishment of the national integrated coastal management plan
- Studies for the sustainable use of tidal flats in the Republic of Korea: Status of socio-economic utilization
- The measurement of the conservation value for Korean coastal wetlands
- Establishing a comprehensive management system on marine debris in the Republic of Korea
- A study on the environmental improvement around the Shiwha Lake : focused on the establishment of eco-friendly leisure space
- Building the trilateral partnership among South Korea, North Korea, and China for environmental management of the Yellow Sea
- A study on maritime disaster management in the Republic of Korea

**Status:** The major current uses of the coastal areas in the Republic of Korea are as follows: 25 cities and 22 industrial complexes exist in coastal areas; 33% of the total population lives in these areas. 28 trade ports and twenty-two coastal ports are also established in coastal areas. The percentage of the economy contributed by fishing was 0.5 % of GNP in 1999. Since the 1980s, there has been a decline in the deep-sea fishing industry and a rise in production of marine aquaculture. As the public demand for high quality protein sources increases, this trend is expected to continue. However, the disruption of the coastal fishing industry by land reclamation projects, industrial water effluents, waste disposal, and oil spills has had significant effects on the sustainable development of coastal fisheries. The ecosystem surrounding the Republic of Korea is very vulnerable to the coastal activities of adjacent nations, such as the Russian Federation, China, the Republic of Korea, and Japan. Under such circumstances, regional and international cooperation is required to effectively protect and preserve the marine ecosystem and resources in the sea. The impact of other coastal-and marine-based industries (including tourism) on sustainable development of coastal areas include:

- An adverse impact on the ecological character due to coastal-utilization
- A worsening of coastal and marine pollution
- A rapid decrease of tidal flats by indiscernible reclamation

The primary sources of land-based pollution of the marine environment are sewage, industrial effluents, dumping, etc. The primary sources of sea-based pollution of the marine environment are oil spills, and aquaculture.

**Capacity-Building, Education, Training and Awareness-Raising:** 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 land-based activities and sea-based activities. The government conducts a long-term research program to monitor and assess changes in the marine ecosystem caused by marine pollution. Based on the results of the research, ecosystem distribution status is reported and an environmental sensitivity map and a map of the wetlands is made.

A Special Training Programme for Sustainable Coastal Management is being conducted by MOMAF, and several awareness-raising campaigns are organized, including:

- Ceremony and Activities of The Day of Ocean every year
- Adoption of Ocean Chart
- Conducting symposiums, seminars and workshops related to marine environment conservation
- Establishing and Operating Ocean Culture Foundation
- Initiating a new curriculum in school on marine environment

In addition to activities carried out through the various strategies and plans enumerated above, support is given to NGO activities related to the conservation of wetlands, etc.

**Information:** The govenment has established a Network for Marine Pollution Monitoring and continuously observes sea-level variations at the twenty-three tidal stations on the coast. There is also a research programme to develop various criteria on the marine environment, such as water, sediment and living resources, etc. The information collected is used to study sea-level variations, protect coastal areas and support leisure activities. Part of the data can be accessed through the Internet at the Web sites referenced below.

- Ministry of the Maritime Affairs and Fisheries: http://www.momaf.go.kr
- National Fisheries Research and Development Institute : http://nfrda.re.kr

**Research and Technologies:** Information available from the website at: www.momaf.go.kr

**Financing:** All activities are financed by the national budget.

**Cooperation:** The government is strengthening regional and international cooperation for the protection of the marine environment and living marine resources. The North-East Pacific Region has abundant biological and mineral resources. It accounts for the production of over 33% of the global annual fish-catch, and its seaways are used for over 33% of global transportation activities. The region is one of the most rapidly developing areas in the world. Korean government places a high priority on regional and international cooperation and actively participates in cooperative international marine activities.

The Republic of Korea is actively participating in international programs such as the World Ocean Circulation Experiment, the Study of Climate Variability and Predictability, the Joint Global Ocean Flux Study, and the Global Ocean Observing System under the auspices of the IOC and the WMO. The Republic of Korea also participate in Tropical Ocean and Global Atmosphere, Global Marine Ecosystem Dynamics Program, and especially is playing a leading role in establishing NEAR-GOOS, sub-branch monitoring system of GOOS. The Republic of Korea has bilateral fishing agreements with 13 nations and is a contracting party to 12 international fishing organizations. The government is promoting regional and international cooperative research efforts of the International Oceanographic Committee in order to exchange relevant information and data.

The Republic of Korea is a Party to the following oceans-related international agreements:

- IMO, International Maritime Organization
- IHO, International Hydrographic Organization
- IOPC FUND, International Oil Pollution Fund
- UN Convention on the Law Of the Sea
- IOC, International Oceanographic Commission
- ISA, International Seabed Authority
- AT, Antarctic Treaty
- CITES, Convention on International Trade in Endangered Species of Wild Fauna and Flora
- CBD, Convention on Biological Diversity
- PICES, Pacific International Commission for the Exploration of the Sea
- NOWPAP, Northwest Pacific Action Plan
- International Convention/Protocol of 1978 relating to the International Convention for the Prevention of Pollution from ships
- Convention on Wetlands of International Importance, Especially Waterfowl Habitat (Ramsar Convention)
- Convention on the Prevention of the Marine Pollution by Dumping of wastes and other matter
- EAS, United Nations Environment Programme For East Asian Seas
- UNEP, UN Environment Programme

In addition, the government is a member of the OECD (Fisheries Committee) Resources Conservation Working Group and is a Party to several Fishery Conventions (Organizations), as follows:

- IWC, International Whaling Commission
- NAFO, Northwest Atlantic Fisheries Organization
- ICCAT, International Commission for the Conservation of Atlantic Tuna
- IOTC, Indian Ocean Fishery Commission
- CCAMLR, Commission for the Conservation of Antarctic Marine Living Resources
- CECAF, Committee for the Eastern Central Atlantic
- COFI, Committee on Fisheries
- IOFC, Indian Ocean Fishery Commission
- APFIC, Asia Pacific Fishery Commission
- WECAFC, Western Central Atlantic Fishery Commission
- COPCBS, Convention on the Conservation and Management of - Pollock Resources in the Central Bering Sea
- APEC/F & MRC WG, Asia Pacific Economic Cooperation/Fisheries & Marine

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## REPUBLIC OF KOREA

## CHAPTER 18: PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES

**Decision-Making:** The Ministry of Construction and Transportation has overall responsibility for management of fresh water and water supply security. The Comprehensive Water Resources Management and Development Plan defines the national water resources approach in the Republic of Korea. In the performance level, the Ministry of Construction and Transportation is responsible for securing water supply while the Ministry of Environment is responsible for nationwide policies to protect water quality. When the Ministries' opinions differ considerably, policy coordination becomes the responsibility of the Commission on Protection of the Quality and Supply of Freshwater Resources under the Office of the Prime Minister. This Commission is also charged with integrating and coordinating water management policy and water quality improvement between the central and local governments. In addition there are bodies at the sub-national level dealing with water management such as the Regional Environment Management Offices and the Regional Land Management Offices. At the river basin level, there are Committees on River Management and Committees on Water Management Countermeasures. These offices and committees are entrusted with clarifying local policies related to water resources management and environmental issues, performing EIAs, and operating the water quality measurement network. They are also in charge of consulting on the management and development of water resources, including the maintenance and management of local water quality in cooperation with the local government and related agencies.

Local authorities are responsible for creating environmental prrotection policies and managing water resources in the area under jurisdiction and other activities delegated to them by MOE and MOCT. Especially in this field, NGOs play an important intermediary role between the government and the people. NGOs promote environmental awareness and voluntary participation of the people to prrotect freshwater, while conveying demands and concerns of the public to the government. It is noteworthy that women's participation in NGO activities is steadily increasing.

The River Act (1961) defines the basic principles on water resources management in Korea. In addition to that, the Water Quality Preservation Act (1990), Ground Water Act (1993), and Dam Construction and Support Act (1999) comprise the general legal and regulatory framework for water resource management and development in Korea. The Agriculture and Fishery Improvement Act (1997) covers the use of water by agriculture; the Water Supply and Waterworks Installation Act (1961) and the Sewerage Act (1966) cover water use by industry, and the Potable Water Act (1997) and Management of Drinking Water Act (1965) address municipal water use. Lastly, in accordance with the Water Quality Preservation Act (1997), the government established the Special Comprehensive Measures for Han River Water Quality (1998), followed by similar measures for the Nakdong River (1999), Geum River (2000), and Yeongsan River (2000), respectively.

Freshwater is essential to the maintenance of economic and cultural activities as well as to the survival of living species and ecosystem. Although the supply of water seems infinite, freshwater is limited. Of the total supply of annual water resources in the Republic of Korea, which is estimated to be 127.6 billion tons, about 54.5 billion tons are lost and about 49.3 billion tons are discharged or lost during floods. Because the country has limited water resources, it is imperative that it secures the required amount of water resources to sustain its future economic development. The Long Term Comprehensive Water Resources Plan is being formulated and implemented in order to promote the efficient allocation of water. To prevent drought, a water supply plan for distant rivers and the development of a plan for the use of ground water has been formulated and implemented. In March 2000, the Ministry of Environment developed the Comprehensive Water-saving Plans to address future water scarcity, saving approximately 0.3 billion tons of water by the end of 2001. The government also intends to launch full-scale demand-side water management through such measures as installation of water-saving devices and designation of water demand management target for each local government.

In order to secure high quality water resources, in view of the rapid industrialization and urbanization, the Republic of Korea is formulating and implementing a Water Environment Plan. This plan includes measures to prevent the pollution of freshwater supplies such as EIA requirements which have been promulgated, environmental and emissions standards that have been established and basic environmental facilities which have been expanded. The designation and management of Water Resources Protection Areas and Special Zones has been undertaken in order to protect and conserve freshwater. Also there is the continuous measurement of water quality and limitations placed on the location of industrial facilities.

For comprehensive water resource development and establishment of an efficient management system, the Ministry of Construction and Transportation, setting the year 2011 as the target year, will establish a long-term Dam Construction plan. By the plan, various actions will be done by 2011 to secure additional 1.2 billion tons of water supply capacity.

The Central River Management Committee, the Central Environment Preservation Consultative Committee and the Consultative Committee for Water Policy Adjustment are the mechanisms which provide for participation of all major stakeholders in the decision-making process. Major environmental policies are discussed with the Policy Council of Private Environmental Organization that consists of sixteen private environmental organizations. The private sector participates in the establishment and implementation of policies related to freshwater resources through councils or committees, and various measures are being taken to increase women's participation in these groups.

**Programmes and Projects:** As of 2002, 1 multi-purpose dam is being constructed. MOCT has a plan to build 12 environmentally sustainable multi-purpose dams by 2011 to expand water supply capacity by 1.2 billion tons per year. Also 6 existing agricultural and hydropower dams will be redeveloped to strengthen water supply capacity and utilize developed water resources more efficiently. 9 small dams will be made to mitigate repeated water shortage in small areas.

To transport the developed water resources efficiently, 11 strategic regional waterworks and 5 industrial waterworks are being constructed. Additionally, 27 strategic regional waterworks and industrial waterworks are planned to be built by 2011. Then, the ratio of water resources supplied by strategic waterworks becomes 65%(54% at the end of 2001).

**Status:** The overall shortage of fresh water supply in the Republic of Korea will be 1.8 billion tons in 2011.

Industry is responsible for only 9.2% of total fresh water use, and water supply is not a constraint to industrial development. The government is, however, implementing strict regulations on industrial wastewater discharge, including the designation of 29 water polluting substances and standards for the discharge of each of them. Industries are trying to develop waste water reuse technologies and are vigorously expanding investment to wastewater treatment facilities in industrial complexes.

Since the Republic of Korea is heavily dependent on its surface water resources, the government places a high priority on the recovery and improvement of water quality of the surface water resources. For this purpose, the government is strengthening standards for the permitted level of emission of industrial water effluents and the discharge of effluents by public waste disposal facilities. The government has induced reduction of pollutant emissions by public waste disposal facilities and is introducing the effluent charge tariff which assess a discharge fee according to the quantity of actual discharge. Furthermore, inspection, development, and management of underground water resources is under way as well as the development of water conservation measures.

The capacity for treating wastewater in the Republic of Korea is 18,400 thousand $m^3$ per day; 70.5% of sewerage is 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 2005; sanitation coverage is intended to be increased from 53% in 1996 to 80% in 2005.

The technological needs for wastewater treatment are the elimination of nitrogen and phosphorus and treatment of inssoluble materials; for water purification it is technology to assist in the elimination of algae. Some of these technologies are being developed in the research institutions in domestic research institutions.

To effectively manage water resources and secure the necessary water supply, the government has constructed many dams including 13 multi-purpose dams. To effectively manage water resources and secure reliable water supply, the government will reinforce demand-side, water-saving management strategies; for those areas that are found lacking, a blueprint for sustainable dam construction should be drawn up, incorporating a range of public opinions. About 40.1% of the 33.1 billion tons of annual water consumed is supplied from these dams. 22% of total water consumed is used for municipal purposes, 48% for agricultural purposes, 9% for industrial purposes, and 21% for maintenance of river function including preservation of ecosystem. Of the total population of 48 million people, about 41.8 million, or 87.1% of the total population are beneficiaries of the public water supply system. As of 2000, daily per capita water consumption has been about 380 liters. About 75.2% of the total water costs are recovered through pricing and the government will raise water prices gradually.

**Capacity-Building, Education, Training and Awareness-Raising:** The Republic of Korea residents have become more aware of the importance of water resources and efforts are being made to increase such awareness following a series of droughts and floods. For example, the Ministry of Environment, MOCT and the Korea Water Resources Corporation has a joint water conservation campaign, and each year on March 22 (World Water Day), the government sponsors a variety of activities to remind people of the importance of water. Also, the government extensively promotes extensively water saving through media out reach. A variety of educational programmes such as water-saving facility study tours, are also being developed to help and encourage people practice water-saving.

**Information:** An information network for water resources management is being sought. The Ministry of Agriculture and Forestry and the Ministry of Construction and Transportation collect information from the agricultural sector and the Ministry of Environment and the Ministry of Construction and Transportation collect it for the household and industrial sectors.

The information on water resources is being managed, updated and provided through web pages and other digital data formats through "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 the general public. Foreign distribution is accomplished through a World Wide Web Site.

**Research and Technologies:** Sustainable Water Resources Research is being carried out to expand and secure available and sustainable water resources by 3 billion tons, which is about 10% of water consumption in the Republic of Korea as of 1998. About USD 77 million will be invested to the research project by 2010.

MOCT has participated and carried out IHP(International Hydrology Programmes) with UNESCO since 1975. Various research projects have been done. Valuable results are made and applied to water resources development and river management. The 6$^{th}$ stage of IHP and will be completed by 2007.

River Basin Investigation Programmes are being performed to review basic data related to water use and river basin management including rainfall, water use trend, flood data and so on. MOCT will invest about USD 23 million to River Basin Investigation Programmes.

About USD 27 million is being input annually to research and technology development on water resources. The government has pushed ahead with several researches such as promoting efficiency of purification facilities and developing highly-purifying treatment process as part of G-7 project. Based on the results of these researches, the government will promote developing a new treatment technology for drinking water such as the 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 through managing purification facilities in a science/information-oriented way to reinforce the management of the existing facilities, systematizing the management of pipelines network and establishing a leakage prevention system. Also, the government is pushing forward with researches such as developing devices and systems for water consevation and reclycling, to help rationalize demand management.

**Financing:** The Korean government will invest about USD 30 billion by 2005 for water supply and water quality improvement. There are no external resources invested in this sector which is funded totality by the National Treasury.

**Cooperation:** MOCT has maintained the relationship for cooperation of policy and technology on water resources with Japanese and Chinese governments since 1978 and 1995 respectively. The regular meeting has been held every year. Policies and pending issues on water resources and management are discussed and exchanged through those meetings.

Korea Water Resources Corporation has provided under direction of MOCT technical support for water resources development and management in the underdeveloped countries such as Nepal, Vietnam and Cambodia. Korea International Cooperation Agency has been playing an important role through financial and administrational assistant. Korea Water Resources Corporation is operating educational and training programmes for government officials and technical staffs of developing countries working in the field of water resources development and management: these programmes are planned to be strengthened and expanded in the near future..

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS, INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN TOXIC AND DANGEROUS PRODUCTS

**Decision-Making:** The Toxic Chemicals Control Act (enacted in 1990, and revised two times in 1996 and 1999) is the main legal instrument for sound management of toxic industrial chemicals. Laws for management of agrochemicals, worker's safety drugs, and food and its additives are also in force. In the process of making and formulation laws and regulations, participation of the general public, NOGs affected industries and related government bodies is warranted through pubic comment and review process and inter-ministerial consultation requirements before national assembly's review. Prime Minister's office also play a major role for policy coordination. The Committee for Toxic Chemicals Management has been instituted under Ministry of Environment and one of its major functions is the coordination of chemicals management programs of different ministries.

**Programmes and Projects:** Diverse chemicals management programs are being formulated and implemented to meet both domestic policy objectives and international obligations. Toxic Chemicals Management Plan (Currently Plan for 2001 to 2005 in effect) is developed to provide policy and direction for futrue policy formation. The major components are as follows:

- Existing Chemicals Evaluation Program and Participation in OECD SIDS project;
- New Chemicals Notification Systems and its harmonization with OECD minimum pre-market set data requirements;
- Endocrine Disrupting Chemicals and POPs Monitoring and Assessment Program
- Implementation of PRTR Program;
- Participation of OECD Chemicals program and IFCS activities;
- Preparation of Stockholm Convention and Rotterdam Convention Implementation.

The main goal of chemicals management is to establish the receptor-oriented chemicals management policy for the protection of human health and environment from the use of chemicals. The major strategies are the following; the pursuit of scientific based management, the establishment of the information flow system from manufacturing to disposal, the harmonization of a variety of management tools with international standards, the burden share between industry, NGO and government, and the strengthening of national and international cooperation.

**Status:** In accordance with national chemical survey conducted in 1998, 2.34 million tons of chemicals are circulated in the Republic of Korea. A new national survey will be conducted in 2002

Annually 200～300 new chemicals are being introduced into Korean market and about 30 existing chemicals are tested and evaluated.

During 2000, 1999 PRTR data for petroleum refining and chemical industries was collected for 80 chemicals as required by the Toxic Chemical Control Act. The results were released through the mass media in April 2001. PRTR data for 2000 is being collected for 23 industries according to Korea Standard Industrial Classification Code which cover virtually all industries producing or using toxic chemicals. The results will be available in early 2002.

The government also initiated a research project on the development of release estimation methods for diffuse sources, with the intention of expanding PRTR in future.

Korea's chemicals management program is in full compliance with OECD decisions including GLP system and MAD (Mutual Acceptance of Data) requirement.

The Korea Responsible Care Council was also formed in 1999, developing the detailed guidelines and checklist for the safe management of chemicals in industrial sector.

**Capacity-Building, Education, Training and Awareness-Raising:** Internet plays a major role for the awareness raising and education both the general public and professionals in the area of chemicals management. A wide array of private and public institutions operate websites related to chemicals management and safety, such as Ministry of Environment and National Institute for Environmental Research, NGOs, private research institutes and universities. In 2002 Korea Center for Chemicals

Safety and Information was established under National Institute for Environmental Research to disseminate the chemicals information. Many universities and professional schools offer degree programs related to chemicals management in the Republic of Korea.

**Information:** Chemicals Information Center provides the information on chemicals such as hazard/risk, chemical poisoning, and emergency measures. The information on relevant legislation and regulation is available on the Ministry of Environment website (www.me.go.kr)

**Research and Technologies:** Ministry of Environment, Ministry of Science and Technology and Korea Food and Drug Administration fund researches for chemicals risk analysis according to their policy objectives. In particular, EDCs and risk assessment using bio-assay techniques are currently major reseach topics.

**Financing:** The annual budget for Industrial Chemical program administered by Ministry of Environment amounts to USD 4 million which excludes staff salary.

**Cooperation:**

- Signed Rotterdam Convention in 1999 and Stockholm Convention in 2001
- MOU on the establishment of a cooperative framework regarding endocrine disrupting chemicals research between the Korean Ministry of Environment and the Japanese Ministry of Environment in April 2001
- OECD Chemicals Programs Participation since 1996

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTERS 20 TO 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID, AND RADIOACTIVE WASTES

**Decision-Making:**

***Hazardous wastes***: The Ministry of Environment is in charge of law and policies regarding hazardous waste management including the "Law on the Control of Transboundary Movement of Hazardous Wastes and their Disposal," which is co-administered with the Ministry of Commerce, Industry, and Energy as the law is closely related to export and import.

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.

***Solid wastes***: The government is in charge of making and amending policies and regulations related to waste management, and established the "Comprehensive Waste Management Plan". Local authorities are responsible for formulating and executing waste management policies, which reflect specific local conditions based on general national plans.

The Ministry of Environment is cooperating with other ministries including the Ministry of Finance and Economy, the Ministry of Budget and Planning, the Ministry of Commerce, Industry and Energy, the Ministry of Health and Welfare, the Ministry of Construction and Transportation, and the Ministry of Justice, so as to formulate and amend polices and to secure the national budget.

See also Solid wastes.

***Radioactive wastes***: The Ministry of Science and Technology is responsible for establishing and implementing nuclear regulatory guidelines for the control of transport, handling, and disposal of radioactive wastes.

**Programmes and Projects:**

***Hazardous wastes***:

<Development of clean manufacturing technology and waste reduction >

- Development of clean manufacturing technology was encouraged to constrain waste generation at the production level.
- Operation analysis, waste reduction goal and implementation tools were investigated to minimize volume of waste released at production level, depending on the characteristics of each industry, and waste reduction guideline in industry has been set in force since 1996, to promote designated waste reduction.

<Expansion and privatization of designated waste facilities>

- Five designated waste facilities are in operation to deal with hazardous waste such as metals generated in industries properly and safely.
- The privatization process for 5 existing facilities is underway, in order to help lay a foundation for a cost-effective and efficient waste management industry.

<Management of hazardous waste producers>

- Since 1999 designated hazardous waste management should secure/demonstrate official authorization at each stage of handling, from disposal to transport and treatment, as well as annual accounting.
- "Certificate system of long-range transboundary waste" has been mandatory for wastes transported over 100 km from disposal sites, to trace and check the treatment path. since 1999.
- "Certificate system for legal treatment of waste" was established in 2001 to execute real-time monitor of waste generation and its treatment path.

- Insfectious wastes generated in hospitals have been regulated under Waste Management Program since August 2000, to maintain strict control over them.

***Solid wastes***: The Ministry of Environment 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.

<Waste reductin policies>

- The volume-based waste system has been implemented since January 1995, charging waste treatment cost based on produced volume of waste, while the preceding method to charge was based on property and building size.
- The comprehensive provision for food waste reduction was established in December 1996, to solve the problems cased by enormous amount of food waste released. Various kinds of programmes were adopted to promote environmentally friendly food culture, including providing practical guidelines in home and restaurant, adopting environment restaurant model system, building food bank network and expanding resource recycling facilities.
- To constrain use of packaging materials, packing material and design are restricted, and use of refillable product is encouraged.
- To constrain the amount of disposable products released, their use has been constrained and regulated in restaurants, public bath, and lodging facilities since 1994. Use of disposable bags also has been regulated and cannot be distributed free of charge, in department stores, shopping centers and shops with more than 33㎡ size since 1999.

메모 [u9]: This was already written one page above.

<Resource recycling>

- 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; the money is returned in proportion to a given producer's performance in recycling. Since 1995, a waste release charge system, which requires waste treatment cost in advance, has been executed for products that are considered to recycle such as hazardous material containers, batteries, antifreeze, and fluorescent lamps.
- Voluntary recovery and recycling system for producers: voluntary agreements 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 181 items in 2001 -- 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 that compete with better-known brands that may be more environmentally damaging.

<Expansion of waste facilities>

- As of the end of 2000, 78 landfill facilities with a total capacity of 67,844 thousand $m^3$ are in operation, and 59 facilities are under construction, with a funding of 2,987 hundred million won.
- As of the end of 2000, 19 incineration facilities with a total capacity of 6,550 tons per day are in operation and fourteen facilities are under construction, funded by a 3,303 hundred million won budget.
- As of the end of 2000, 80 food waste recycling facilities are in operation, and 51 facilities are under construction, with a budget of 2,129 hundred million won.
- As of 2000, fifteen waste recycling facilities are operational including four storage facilities (for a total of 30 thousand ㎡) and eleven temporary collection sites.

***Radioactive wastes****:* The Republic of Korea has a construction plan for a national radioactive waste management complex in the LILW repository. The plan is to have the LILW repository in operation from 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:**

***Hazardous wastes***: The amount of designated waste released is 2,779 thousand tons every year, as of 2000.

- The 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 113 and 14,365 tons respectively, amounts equivalent to 689 thousand and 3,045 thousand USD, respectively.

***Solid wastes***: Municipal and industrial waste totaling 234,282 tons were generated each day as of 2000.

- The amount of waste has decreased by 44.6% and use of recycling products in turn has increased by 114% compared to 1994 by implementing the volume-based waste system, and constraints applied to the use of heavily packaged and disposable products. This trend indicates that user pays principle leads to voluntary reductions in waste generation.

메모 [u10]: increased to / increased by are VERY different. Which one do you mean?

Notably, the volume-based waste system has resulted in a profit of 3,940 billion won has been achieved in social and economic fileds during 5 years; the system offers a clear economic incentive to reduce and recycle waste.

***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 wastes which are temporarily stored at nuclear power plants, a permanent repository for LILW and an interim storage facility for radioactive wastes and spent fuels is required. With respect to spent nuclear fuel, the Korean government has not yet decided whether to directly dispose, or to recycle the fuel. Because of the increase in the number of operating nuclear power plants and radioisotope users, the volume of low- and intermediate-level radioactive waste (LILW) and spent fuel continues to rise. Therefore, much effort is being exerted to reduce the radioactive waste volume.

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

Information available at the Ministry of Environment website: www.me.go.kr

**Information:**

***Hazardous wastes***: The Ministry of Environment website (www.me.go.kr) provides information including laws, polices, regulations, and statistics related to hazardous waste management.

The Environmental Management Corporation Website (www.emc.or.kr) provides information related to designated waste treatment facilities.

***Solid wastes:*** The Ministry of Environment website (www.me.go.kr) provides information including policies, regulations and statistics related to waste management.

- Korea Resources Recovery & Reutilization Cooperation Website (www.koreco.or.kr), Sudokwon Landfill Site Management Corporation Website (www.slc.or.kr), and Environmental Management Corporation Website (www.emc.or.kr) deal with information related to waste recycling, municipal waste landfill facilities, and designated waste treatment facilities respectively.

***Radioactive wastes:*** Information available from the Ministry of Science and Technology website at: www.most.go.kr

**Research and Technologies:**

***Hazardous wastes:***

- Funding of 85.9 billion won was invested in the waste management field to encourage development of environmental technologies including resource recycling and treatment of hazardous waste under G-7 projects.
- The Ministry of Environment has been cooperating since 2000 with the Ministry of Science and Technology on the 21st Century Frontier Project.

***Solid wastes:*** See also Hazardous waste

***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 on long-term safety associated with spent fuel management.

**Financing:**

***Hazardous wastes***: Financial support is allowed for designated waste treatment facilities operated and maintained by the

Environmental Management Corporation. Development of hazardous waste treatment technologies is partly funded through the national treasury.

***Solid wastes***:

- Up to 30-50% of the total installation cost of municipal waste landfill facilities built by local authorities are funded by the national treasury.
- 1.5 billion won is granted for each general waste treatment facility sited in a rural area.
- From 20 to 50% of the total installation cost of waste incinerators will be provided to local authorities through funding from the national treasury.
- 50 billion won is provided as a loan for recycling companies to promote development of recycling technologies each year.

메모 [u11]: 1,500,000,000? If so, write: 1.5 billion. (or in the beginning of a sentence: "One-and-a-half billion won…."

Economic incentives in the form of preferential tax treatments are given to recycling companies to encourage this emerging industry.

***Radioactive wastes***: Information available from the Ministry of Science and Technology website at: www.most.go.kr

**Cooperation:**

***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 red and yellow waste as designated in the OECD guidelines.

Export and import of hazardous waste is under tight control according to the Basel Convention and OECD guidelines.

International cooperation is promoted through participating in international conferences such as the Basel Convention, COP, Working Level Meeting, *et al.*

***Solid wastes***: To cope with the Climate Change Convention 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 Basel Convention and OECD guidelines, and is willing to participate in international conferences related to waste management, in order to promote international cooperation.

***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.

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTERS 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

**Women:**

Decision-making**:** The Ministry of Political Affairs Ⅱ was established in 1988. The Presidential Commission on Women's Affairs along with so-called women's focal points in 6 key ministries (Ministry of Justice, Ministry of Government Administration and Home Affairs, Ministry of Education and Human Resources Development, Ministry of Agriculture and Forestry, Ministry of Health and Welfare, and Ministry of Labor) were set up in 1998.

The Ministry of Gender Equality was established in 2001 to replace the former Presidential Commission, with affiliated bureaus being both restructured and expanded. The main function of the Ministry is to plan and coordinate women-related policies in order to enhance their effective development and implementation.

Legal measures:

- "The Equal Employment Act" was enacted in 1987, which provids for equality among men and women in terms of employment opportunities, treatment, as well as maternity protection.
- "The Women's Development Act" was enacted in 1995, which provides a concrete basis for the realization of gender equality and an improvement in women's status in all spheres of activities including politics, economics, society and culture. It is the responsibility of both the national and local governments to undertake appropriate legal and systematic reforms to improve women's welfare, as well as to provide adequate financial resources.
- "The Gender Discrimination Prevention and Relief Act" was enacted in 1999, the purpose of which is to ensure that men and women do not face gender-based discrimination in terms of employment, education, the supply and use of goods, facilities and services etc as well as in the implementation of laws and policies. According to the Act, victims of the alleged discrimination cases can file an appeal to the Committee on Gender Equality Promotion which will then investigate the case and take respective relief measures when/if necessary.

In order to promote a coordinated and systematic approach to women's policies, the first Basic Plan on Women (1998-2002), which is currently being implemented, was developed in consultation with all ministries.

Measures to expand women's representation in policy decision-making positions are as follows

- The party law was reformed to introduce a quota for women in terms of nominations to party seats in 2000.
- A women's employment target system has been introduced to improve the representation of women public servants in high positions since 1996.

In order to expand women's participation in government committees, each ministry has been urged to reach a target rate of 30% of women in all committees.

The participation of women in decision-making is also covered in various Chapters including Chapters 2, 3, 18 and 39 of this Profile.

Programmes and Projects: Information available from the website at: www.most.go.kr.

Status: Among public servants with decision-making positions, the rate of women's representation has risen from 1.9% in 1992 to 3.7% in 2000. The number of women members of congress has increased from 1% in 1992 to 5.9% in 2000. The number of women representatives in local government assemblies has risen from 0.9% in 1992 to 2.2% in 2000. The number of women appointees to governmental committees has increased dramatically from 5.5% in 1992 to 23.6% in 2000.

Current activities by women's association is also briefly described in Chapter 4 of this Profile.

Capacity-Building, Education, Training and Awareness-Raising: Information available from the website at: www.most.go.kr

Information: Information available from the website at: www.most.go.kr

Research and Technologies: Information available from the website at: www.most.go.kr

Financing: Between 1997 and the end of 2001 the government has to date allocated some 294 billion won to women-related policies through Women's Development Fund. Since 1998, these funds have been used to promote women's rights, support women's organizations and NGO-run gender-related facilities, as well as support for women's international cooperation and women's development activities.

Cooperation: The Republic of Korea signed "the Convention on the Elimination of All Forms of Discrimination against Women" in May 1983 and ratified it in December 1984. The Republic of Korea has been reelected as a member of the Commission on the Status of Women (CSW) for a period of four years in three consecutive terms.

Also KWEN (Korea Women's Environment Network) was organized to unite women grass-root environmental activists in 1999. Annual nationwide training seminars and workshops to educate and network women environmental leaders and evaluation of the environmental policy of the Ministry of Environment, etc. are part of KWENs activities. KWEN also started to link with Northeast Asian Women's Network by organizing the first Northeast Asian Women's Environment Conference on September 13-15, 2001. Seoul Declaration was produced along with the official network of NEAWEN (Northeast Asian Women's Network). This network is a part of WEDO organized Women Caucus to prepare WSSD 2002 in Johannesburg.

Three local cities (Suwon, Pucheon, and Anyang) established women committee and Anyang Women's Committee developed women agenda to promote local agenda 21.

**Children and youth:**

Decision-making: Since 1960, the Republic of Korea has pursued the national tasks of expanding educational opportunities and creating employment opportunities for adolescents. Therefore, in 1988, the Youth Development Act was promulgated. This act provides a social and political foundation for healthy adolescent development. The following four program areas were established in order to ensure a brighter and healthier future for the youth and children:

- Increase in healthy activities for children, youth, and environmentally-friendly life style;
- Improvement of welfare assistance to disadvantaged youth and support of their environment protection efforts;
- Expanding adolescents' social participation and establishing an information exchange network on environmental issues;
- Increase in the international exchange programs for the environmental consciousness of youth.

The role of youth in the national process is advisory, and the most important fora for them to present their views on sustainable development are:

- Green Family;
- Seoul Youth Committee (with Korean Institute for Youth Development);
- Boy Scouts of Korea;
- Girl Scouts of Korea.

Programmes and Projects: Some of the programmes that are carried out with the participation of youth are described in the Chapter on Sustainable Tourism. No further information about the programmes and projects specific to youth are available.

Status: Youth unemployment has been reduced from 16.0% in 1998 to 10.2% in 2000. The goal of ensuring that by year 2000 more than 50% of youth -- gender balanced -- has access to appropriate secondary education or vocational training has been reached.

Capacity-Building, Education, Training and Awareness-Raising: No information available

Information: No information available

Research and Technologies: No information available

Financing: No information available

Cooperation: No information available

**Indigenous people:**

Decision-making: No information available

Programmes and Projects: No information available

Status: In the Republic of Korea, there are no groups classified as indigenous people as defined in Agenda 21. Thus, it is unnecessary to establish a national policy. However, the government participates in the international efforts to protect the indigenous populations.

Capacity-Building: No information available

Education, Training and Awareness-Raising: No information available

Information: No information available

Research and Technologies: No information available

Financing: No information available

Cooperation: No information available

**Non-governmental organizations:**

Decision-making: The participation of NGOs in decision-making is covered in various Chapters including Chapters 2, 3, 4, 7, 8, 13, 17, 18, 19, 20 thruogh 22, 39 and the Chapter on Sustainable Tourism of this Profile**.**

Programmes and Projects: No information available

Status: The role of NGOs is critical in promoting environmentally sound and sustainable development. Accordingly, through the National Declaration for Environmental Protection of 1992, the government expressed its commitment to support activities of NGOs. As of 1995, there have been approximately 200 active NGOs working on environmental issues in the Republic of Korea. These NGOs have made significant contributions by raising public awareness on environment conservation issues. Some further information is also described in Chapters 3, 4, and 8 of this Profile.

Capacity-Building, Education, Training and Awareness-Raising: The issue is also covered in Chapters 4, 13, 15 and 19.

Information: Although no information is provided under this subsection, some specific details can be found in websites as mentioned under the heading "Information" in Chapters 3 and 4.

Research and Technologies: No information available

Financing: No information could be obtained during the preparation of this Profile. However, the government including the Ministry of Environment does provide indirect financial support for NGOs on a broad basis through various projects that are initiated by the government**.**

Cooperation: One subregional cooperation case is presented in Chapter 36. No further information could be obtained at the time of preparation of this Profile.

**Local authorities:**

Decision-making: The issue is covered in many Chapters including Chapters 3, 4, 7-10, 13, 20-22, 35, 36, 40 and the Chapter on Sustainable Tourism.

Programmes and Projects: Further information is described in Chapters 9 and 10.

Status: The Republic of Korea has 16 large communities (1 capital metropolitan city, 6 metropolitan cities and 9 provinces) and 232 local governments (smaller cities, city districts, and counties).

The government is actively promoting Local Agenda 21 initiatives through such measures as the formulation of "Local Agenda 21 Guidelines" and the steady administration of education and publicity. Approximately 90% of the local governments (223 out of 248) have adopted the Agenda as of March 2002. For the comprehensive evaluation of implementation of Agenda 21 since the Rio Conference, the Ministry of Environment has conducted nationwide analyses of the implementation of Local Agenda 21, developed and disseminated assessment indicators and relevant manuals with a view to enhance self assessment of the progress and to having the results reflected in the relevant process. In 2002, the Ministry of Environment plans to award an

honor, give an incentive to some selected number of institutions based on the evaluation of progress in implementing Agenda 21, and to publicize good practices widely by disseminating relevant information in publications. Furthermore, in June 2000, the "Korea Council for Local Agenda 21" was established to foster exchange of information and cooperation between local governments.

In addition, more information can also be found in Chapters 4, 7 and 8.

Capacity-Building, Education, Training and Awareness-Raising: No information available

Information: A brief information can be found in Chapters 4 and 7.

Research and Technologies: No specific information could be obtained during the preparation of this Profile.

Financing: A brief information Involvement of local governments in this area is described in Chapter on Sustainable Tourism.

Cooperation: No information available

**Workers and trade unions:**

Decision-making: Participation of labour unions in dealing with labour policies and other related matters has been actively promoted, in particular, with the enactment of Act on Establishment and Operation of the Tripartite- Labour, Management and Government- Commission on May 24, 1999. The Act is to seek industrial peace by enhancing the efforts to build new labour-management relations through mature labour movements, while at the same time ensuring active cooperation for the improvement of productivity and quality. Further general information can be found in Chapters 2 and 39.

Programmes and Projects: No information available

Status: Workers already take some part in National Agenda 21 discussions and implementation. Labor and management discuss and decide together the matters of industrial safety and health through participation of workers' representatives in the industrial safety and health committee. In order to strengthen the role of workers and their trade union, chemical plants with major harmful and hazardous facilities will periodically submit the process safety management reports to the Ministry of Labor, and companies handling chemical substances will instruct the employees by using material safety data sheets.

Capacity-Building, Education, Training and Awareness-Raising: No information available

Information: No information available

Research and Technologies: No information available

Financing: No information available

Cooperation: Further information can be found in the website, www.lmg.go.kr.

**Business and industry:**

Decision-making: The government has developed and implemented various sustainable business and industrial policies to encourage efficient use of resources, pollution prevention activities, and to facilitate recycling. To build sustainable industrial system through promotion of cleaner production, the government has established Korean National Cleaner Production Center (KNCPC) to assist industries, especially SMEs, implementing cleaner production activities to transform industries into sustainable production system.

In order to transform the industry into sustainable industrial system and to facilitate environmentally friendly production system, the government enacted Environmentally Friendly Industry Promotion Act in 1995.

Futher details are provided in Chapters 2, 4, 8, 10, 16, 35, 39 and on Sustainable Tourism, and Industry.

Programmes and Projects: Relevant information can be found in Chapters 4, 9, 16, 34 and on Industry.

Status: In the Republic of Korea, industry and business communities are increasingly taking voluntary initiatives for implementation of environmental management system, including environmental declarations recently announced by some

enterprises. Most big companies and some SMEs have adopted sustainable development policies. Many companies are now gradually aware of that integration of environmental management strategies into traditional business strategies is important to sustainability of the company, and regard it as one of the highest priorities.

Based on the law, Environmentally Friendly Industry Promotion Act enacted in 1995, the Ministry of Commerce, Industry, and Energy (MOCIE) has established two institutions, Korean National Cleaner Production Center (KNCPC) in 1999 and Korean Accreditation Board (KAB) in 1995, in order to promote industries' voluntary efforts to implement cleaner production practices and environmental management system.

The main objective of KNCPC is to assist industries to implement cleaner production. KNCPC's activities include cleaner production technology development, cleaner production technology transfer and dissemination, cleaner production assessment, development and implementation of LCA and DFE tools, development of cleaner production implementation tools, and so on.

MOCIE lately launched projects aiming at developing and implementing cleaner production index, sustainability index, and environmental management accounting to business and industrial sectors. It also initiated a project developing and implementing environmental management education program for business schools in the Republic of Korea.

The Korean Chamber of Commerce (KCC) and the Korean Federation of Industry (KFI) have been closely working with government to disseminate various activities related to sustainable development.

To disseminate the environmental performance evaluation system, the government established the Korean Accreditation Board (KAB) in 1995. The KAB is in charge of designating ISO 14000 certification approval organizations. As of October 1996, 31 organizations were designated as certified organizations.

Some more information is described in Chapters 4, 18 and the section on Industry.

Capacity-Building, Education, Training and Awareness-Raising: Information is provided in Chapters 4, 16 and 34**.**

Information: No information available

Research and Technologies: Some description can be found in Chapters 16 and 34.

Financing: No information available

Cooperation: Government is encouraging joint work amongst industries, academia, and research institutes. It also encourages international joint research projects on sustainable development. As a part of the international cooperation activities, the government signed with UNIDO in May 21, 2001 to join UNIDO/UNEP NCPCs network. Korean National Cleaner Production Center is now government and UNIDO designated member organization of UNIDO/UNEP NCPCs. One of the activities included in this cooperation is international cleaner production technologies and techniques transfer.

**Scientific and technological community:**

Decision-making: The legal framework, in which sustainable S&T and its community-related issues are included partly, is composed of the following laws:

· The Science and Technology Framework Law (2001)

· The Technology Development Promotion Law (1972)

· The Promotion of Engineering Services Law (1973)

· The Promotion of Basic Science Research Law (1989)

· The Atomic Energy Law (1959)

· The Dual-use Technology Program Facilitation Law (1998)

See under Chapter 35 in relation to Strategies/Policies/Plans and coordination bodies.

Programmes and Projects: See under Chapter 35

Status: There is an effort toward improving exchange of knowledge and concerns between the science and technology community and the general public. The Korean Comprehensive Association of Science and Technology (KCAST), an aggregation of Korean academic organizations, adopted the ethical principles of scientists and engineers in 1972. In April 21, 1980, KCAST adopted the creeds of scientists and engineers, including the creed of dedication to the general welfare of society.

Capacity-Building, Education, Training and Awareness-Raising: See under SCIENCE

Information: See under Chapter 35

Research and Technologies: See under Chapter 35

Financing: See under Chapter 35

Cooperation: See under Chapter 35

**Farmers:**

Decision-making: No information available

Programmes and Projects: No information available

Status: No information available

Capacity-Building, Education, Training and Awareness-Raising: No information available

Information: No information available

Research and Technologies: No information available

Financing: No information available

Cooperation: No information available

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

The issue of Korean contributions to financial resources and mechanisms in developing countries, including ODA, has been covered under Chapter 2 or under the heading Cooperation in the various chapters of this Profile. Below, the use of financial resources and mechanisms in a domestic context is outlined.

**Decision-Making:** To mobilize financial resources and to address domestic environmental problems, the Republic of Korea endeavors to achieve a balanced fiscal operation. In January 1995, the government established the Special Account for Environmental Improvement. The Account is used to finance environmental improvement projects, environmental infrastructure construction projects, and environmental technology development projects by the national and local governments. The Special Account acts as a mechanism for the comprehensive management of environmental financial resources. The objective is to establish an efficient and integrated management system of financial resources, which allows for clear linkages between mobilization and expenditure of resources. In order to make foreign direct investment (FDI) more environmentally friendly, the government has incorporated in the Foreign Investment Promotion Act, Korea's general law regarding FDI, the following statement : "FDI which threatens environmental preservation is restricted." Additionally, foreign invested companies which want the designation of Foreign Investment Zone and receive incentives, should submit relevant documents proving adherence to Korean environmental regulations.

To improve the efficiency of environmental management and finance the cost of environmental protection, the Republic of Korea has introduced economic measures, such as the Emission Charge System, the Environmental Improvement Charges, the Deposit-Refund System, and the Waste Treatment Charge System. Foreign invested companies are treated equally as domestic in terms of environmental standards and are subject to the same environmental regulations. Since the revision of the OECD Guidelines for the Multinational Enterprises on June 2000, the Korean government set up a National Contact Point which undertakes promotional activities and facilitates discussions with parties with concerning matters covered by the guidelines. According to the new Guidelines, enterprises should, within the framework of the laws, follow the regulations and administrative practices of the countries in which they operate. In objectives, and standards, they should take full account of the need to protect the environment, public health and safety of their host nation, and conduct their activities in a manner contributing to the wider goal of sustainable development.

The government guarantees a minimal living standard (food and clothing, medical care, housing, primary and higher education for children, etc.) for low-income citizens in order to eradicate poverty. It is establishing a social safety net to expand public assistance for the low-income unemployed, the elderly, the handicapped, etc.

**Programmes and Projects:** The Republic of Korea is promoting waste treatment policies based on market functions, aiming to minimize wastes beforehand and to recycle wastes through the application of the waste deposit and charge system. The government introduced the water quality improvement charge system in 1995 in order to protect public groundwater resources and to contribute to drinking water quality.

Since the Republic of Korea introduced the emission charge system, imposing fines on businesses that discharge pollutants in excess of permitted standards of 1983, the government has operated other economic incentive measures that encourage reduction of pollutant discharges, such as the environmental improvement charge system, the waste deposit system, and the waste charge system. The environmental improvement charge system offered a good opportunity to establish the Polluter Pays Principle, which imposes the pollutant treatment costs at the consumption and distribution level, and to extend coverage to the newly incorporated diesel vehicles.

**Status:** Korea's environment-based energy taxation system was revised at the beginning of July 2000 to encourage the conserving of energy consumption and promote protection of the environment. The essence of the revision was the tax levy on heavy oil which had been exempted from taxation. Heavy oil is considered a major cause of global warming by generating a relatively large amount of carbon emission. This system aims to further improve the competitiveness of natural gas in the fuel market for industry or power generation. The tax rate on light oil and kerosene was raised considerably compared to the earlier level. It will continue to be raised until, by July 2006, it will attain a level that is 1.5 or 2 times that of 2001. Instead, gasoline, which was subject to a higher tax rate even though it caused the emission of fewer pollutants, will see no change for the same period.

**Capacity-Building, Education, Training and Awareness-Raising:** Korean environment-based energy taxation system was revised at the beginning of July 2000 to encourage the conserving of energy consumption and promote protection of the environment. The essence of the revision was the tax levy on heavy oil which had been exempted from taxation. Heavy oil is considered a major cause of global warming by generating a relatively large amount of carbon emission. This system aims to further improve the competitiveness of natural gas in the fuel market for industry or power generation. The tax rate on light oil and kerosene was raised considerably compared to the earlier level. It will continue to be raised until, by July 2006, it will attain a level that is 1.5 or 2 times that of 2001. Instead, gasoline, which was subject to a higher tax rate even though it caused the emission of fewer pollutants, will see no change for the same period.

**Information:** Information related to financing sustainable development is made available to the public through the Internet website of the Ministry of Finance and Economy, Ministry of Environemnt.

**Research and Technologies:** In implementing the Agreement on Subsidies and Countervailing Measures, the Republic of Korea has been organizing and consolidating its subsidies, but the environmental impacts of individual subsidies have not been analyzed yet. However, the Republic of Korea has an Environmental Impact Assessment (EIA) system in place, under which environmental impact is assessed to ensure sound and sustainable practices on project-by-project basis.

**Cooperation:** See under Chapter 3

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*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

**Decision-Making**: The efficiency of environmental impact assessment has been promoted in the Environmental Impact Assessment Act by strengthening the links between the process of assessment and project approval by enhancing management and supervision of projects after assessment and also by reinforcing the role of projects approval authorities.

The law for environmental technology development and support is playing the a role in the development of environmentally sound technologies, of which the main goals are efficiently developing environmental technology, enhancing the diffusion of those technologies, and facilitating environmental industries, which would make for the sustainable development of the national economy.

Many governmental agencies related to S&T (e.g., the Ministry of Science and Technology, the Ministry of Commerce, Industry and Energy, the Ministry of Agriculture and Forestry, the Ministry of Health and Welfare, and the Ministry of Environment) carry out S&T policy. The National S&T Council, the Presidential Advisory Council on S&T, and the other research councils such as Basic, Industrial, and Public Research Council form the administrative system for S&T policy-making. Local authorities (sixteen large communities and 232 local governments) participate in making the action plan of the National Science and Technology Basic Plan, which include such areas as BT, NT, and public welfare related R&D, This has led to the reactivation of the R&D activities of local governments. Government-supported research institutes such as korea institute of S&T evaluation and planning (KISTEP), the S&T Policy Institution (STEPI) and so on also take part in the S&T policy-making process.

Both the Long-Term Integrated Environmental Science and Technology Development Plan and the National Science and Technology Basic Plan serve as the base for strategic planning and manpower development in environmental science and technology. These long-term development plan emphasizes the need for promoting basic scientific research, improving the technological infrastructure, training scientific technicians and developing technology for the public well-being. These needs will be met by optimizing existing projects such as the Five-Year New Economy Plan (1993-1997) and the Ten-Year Environmental Science and Technology Development Plan (1992-2001).

**Programmes and Projects:** National research and development programs in environmental science and technology and HAN's G-7 Projects was planned and evaluated by the National Science and Technology Council, in which private sector experts participate; and the 21st Century Frontier R&D Program was launched in 1999, which covers industrial waste recycling, functional genomics for crops, water resources development & management, plant diverity, and so on.

Also, the Korean government plan to develop technologies that concentrated on improving public welfare. These included technologies that would extend life expectancy of the disabled and eco-agricultural technology.

In addition, national and international workshops and symposiums on sustainable development are being organized by scientific bodies, such as the Korean Science and Technology Association.

Science and technology development projects in the individual ministries are coordinated through the Ministerial Meetings of the National Science and Technology Council, and information on science and technology is being systematically incorporated into the policy-making processes. In addition, development projects are evaluated scientifically and quantitatively through the development of mitigation technologies and EIA.

It is the Korea Environment Institute and the Korea Science and Technology Policy Institute conduct prior- and post- project evaluation. Large scale development projects are not only now subject to Environment Impact Assessment (EIA) but they are reviewed at public hearings at the planning and implementation stages.

**Status:** Scientific technology development should meet the needs of the times, such as solving global problems in harmony with promoting the socioeconomic system, as well as pursuing the goal of improving scientific technology itself. To achieve the framework of national development and to make a contribution to the improvement of the quality of life, while satisfying socioeconomic needs and contributing to the common prosperity of the planet earth and human beings, a long term development program in the field of scientific technology will soon be established and carried out.

**Capacity-Building, Education, Training and Awareness-Raising:** To build capacity and capability, the government is selecting a strategic field of technology at the national level and training qualified scientific and technological personnel by strengthening the scientific infrastructure in universities with expanded financial support and an increase in the number of college students in science and engineering classes. The government is building alliances between industries and research institutions so that people can be trained by the institutions and later work for the industries. Government supported research institutes and national and civilian research institutes carry out environmental science and technology development projects with the participation of the private sector. Research funds are provided by the government and private industry and the results of the research is utilized mostly by them. The government is also improving the quality of scientific knowledge by supporting international exchange programs such as postdoctorate programs abroad.

High quality engineers are trained at both the Korea Advanced Institute of Science and Technology (KAIST) and the Graduate School of Environment, and high quality technicians are trained at junior technical colleges and the Environmental Officials Training Institute. New curriculum for both theoretical environmental engineering and environmental management and practical, field- oriented courses of study have been added to the college to meet industrial needs.

Prior to the commencement of national projects, assessment and monitoring of research capabilities (specialists, equipment and facilities) for each government-supported research institute is conducted in order to improve capacity-building measures and achieve the highest standards; and after the completion of national projects, research results are evaluated in terms of their own scientific merits and their contribution to industrial technology.

**Information:** To enhance scientific understanding, standardization of environmental monitoring methods for air, water, soil, wastes, and vehicle emissions will be pursued through increased investments in new technology in order to understand its current condition. An information network will be developed in cooperation with KETRI, KINITI and KORDIC.

**Research and Technologies:** In order to maintain sustainable production and sustainable consumer spending habits, technologies for clean production processes and conversion of wastes into resources are being studied, and the research results are commercialized after industrial testing under real conditions. In addition, by fostering the supply and demand for reusable products and the Eco-Mark System, government guides sustainable production and sustainable consumer spending habits. Life Cycle Assessment(LCA) projects have also recently begun.

**Financing:** Financial support is given to companies, universities, government-supported institutes and other R&D-related organizations in the form of contribution or subsidy**.** The government is emphasizing emerging technologies in the 6T's (IT, NT, NT, CT, ST, ET) and is concentrating R&D funds on these areas. Tax deductions are given for investment in R&D including building of anti-pollution facilities and waste recycling systems. At the same time, the government has extended loans to companies, especially small-and-medium sized enterprises, through the S&T Fund, which supports the development of environmentally sound technologies.

**Cooperation:** International Joint Research Program has funded USD 69.3 million for 1,590 projects including development of environmentally sound technology since 1985(Size of the fund: USD 60,000/project in recent years). The program supports two categories of international collaboration: Bilateral Collaborative Research Projects based on inter-governmental or inter-institutional agreements, arrangements, or MOUs and Multilateral Collaborative Research Projects which involve more than three countries. The program concentrates on areas in which the partner countries possess a competitive advantage. The Republic of Korea has bilateral ministerial meetings on S&T with sixteen countries including the USA, the UK, Japan, China, and Russia and has concluded science and technology cooperation agreements with forty-one countries. It also makes the most of international R&D manpower exchange programs (post-doc program). In addition, the Republic of Korea cooperates with international organizations such as APEC, EU, OECD, ISTC, etc., to play an active role in the S&T community.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

**Decision-Making:** The Ministry of Education & Human Resources Development (MOEHRD) has the overall responsibility for decision-making regarding basic learning needs, environmental education, and girl's education (addressed in Agenda 21) in the Republic of Korea. The implementation of the decision-making, however, is carried out by the Local Offices of Education because the educational administration of Korea is decentralized. Besides, parents, teachers, and professionals are given a lot of opportunities to participate in forming educational policies through various committee activities. The school council, for instance, is a decision-making body where various stakeholders such as parents and local citizens can show their opinions in school-related matters.

In planning and implementing policies related to the areas mentioned above, the government and the local offices of education must obey the Education Law and the Primary and Secondary Education Law which address the authorities and responsibilities of the central government and local offices of education. Both the Education Reform Plans (1995-1997), which is proposed by the Presidential Commission on Education Reform in 1995 and the National Human Resources Development Plan (2002-2006) address the over-arching themes of recent educational policies of the Republic of Korea.

The government is currently establishing the Strategy of Environmental Education and Public Awareness for Sustainable Development reflecting the long term(20～30 years) trends and perspectives of social, cultural and educational aspects, as a part of National Strategies of Sustainable Development which will be set up by the end of August 2002. In addition, Mid-Term Comprehensive Plan for Environmental Education and Public Awareness is also being prepared to realize the goal of the environmental education of "Green Vision 21".

Major Groups actively participate in the National Council of Environmental Organizations to reflect citizen's concerns and demands regarding promoting environmental education, public awareness and training.

**Programmes and Projects:** In an attempt to fully meet basic learning needs, the government has implemented several polices. First of all, the government is going to make public middle school education free for all students by year 2004. Currently, the first-year students at middle schools are getting free public education. The government has also subsidized the tuition and fees of high school students from low-income families. In addition, the government has begun subsidizing the kindergarten's fees of children at age 5 from impoverished families from year 2002. At least 20% of children at age 5 will enjoy free early childhood education in year 2002. Besides, the government has made all levels of education (except higher education) free for disadvantaged students to ensure that all students can have an equal opportunity to receive public education regardless of their physical conditions.

To promote environmental education, the government has included a subject related to environmental education as one of electives at schools. Recently, the major contents of the United Nations Framework Convention on Climate Changes are included in the textbook for environmental education. In the classroom, students learn about the importance of preserving environment by participating in various programs such as "Environmental School Program," which provides students with opportunities to learn how to do recycling and saving waters. There is also a program called 'Saving Energy Program," which helps students learn how to reduce the amount of energy used for daily life.

The Environmental Conservation Model Schools have played an important role in developing efficient pedagogical methods for better environmental education and disseminating the excellent cases of environmental education in preschools, grade schools, middle schools and high schools, since it was launched in 1985.

Site Participation Environmental Education programmes have been financially supported each year by the government since 2000, which are usually carried out by schools, NGOs and local governments.

To reduce gender disparity in school, the government has changed school curriculum in a way that the student can have an equal opportunity to choose courses regardless of his/her gender. For instance, girls used to take the Home-Management subject, while boys used to take the Mechanics subject. Furthermore, the government has recently introduced a policy that helps increase the number of female principals and vice principals at schools. By the year 2002, the percentage of female

school managers equals 10% of all school ones. Also, there will be a noticeable increase in the number of female professors at universities. The government aims to raise the percentage of females out of all professors up to 20% by the year 2016.

**Status:** The Republic of Korea has shown a remarkable achievement in educational attainment. For instance, the percentage of middle school graduates who entered high school out of those is 99.6% in 2000. Eight out of ten students who were enrolled in academic high schools entered a two-year college or a four-year university in 2000. Even the percentage of students in vocational high schools who entered a two-year college or a four-year university is 42.0%. These statistics show that the government has been successful at meeting basic learning needs. In addition, there seems to be little gender disparity in educational attainment. As shown in Table 1, girls and boys tend to equal educational opportunities at all levels of schooling.

**<School Enrollment Rates by Gender (Unit: %)>**

| YEAR | KINDERGARTEN | | PRIMARY SCHOOL | | MIDDLE SCHOOL | | HIGH SCHOOL | |
|---|---|---|---|---|---|---|---|---|
| | Female | Male | Female | Male | Female | Male | Female | Male |
| 1995 | 40.2 | 40.0 | 100.6 | 101.9 | 100.9 | 100.3 | 89.4 | 90.3 |
| 1998 | 37.5 | 40.0 | 98.8 | 97.9 | 99.9 | 99.9 | 95.3 | 95.9 |
| 2001 | 38.6 | 37.7 | 97.3 | 95.9 | 98.1 | 98.0 | 95.0 | 95.6 |

* School Enrollment Rates: [number of students enrolled in school / number of population who is supposed to enter school] $\times 100$

About 18% of total middle and high schools took Environment Subject as their optional course in 2001 since the subject was introduced in 1994 (in middle schools) and 1995 (in case of high schools). As a whole, 89 schools have been designated as Environmental Conservation Model Schools as of 2000, and 9th Model Schools (26 schools) are operated from 2001 to 2002.

About two hundred Site Participation Environmental Education programmes have been supported each year, composed of various activities from field trips at facilities to research trips such as riverine ecosystem surveys. The Environmental Lecturer program was utilized a total of 864 times in 2001.

Meanwhile, there seem to be some challenges in providing students with more opportunities to learn about the importance of environment as most students and parents put more emphasis on academic activities than others. More public awareness projects associated with environmental education should be initiated.

**Capacity-Building, Education, Training and Awareness:** Since there seems to be little challenge for the government to meet basic learning needs and achieve gender equality in educational attainment in the Republic of Korea, the focus of capacity-building should be on promoting environmental education.

The number of teachers who will specialized in environment subjects in being increased to provide students with opportunities of systemic environmental education. As environmental consciousness rises, environmental-related subjects are increasing in agricultural and vocational high schools and in colleges specializing in training technology experts.

Annual workshops for teachers in charge of Site Participation Environmental Education are held to share the information regarding environmental education and to communicate ideas about teaching methods and educational materials.

Specifically, the government has taken initiatives on environmental protection movements by increasing public awareness of environmental issues through the sponsoring of events such as the "Water Day" and "Environment Day". The government has also carried out multiple programs to inform the public on environmental issues and to encourage environmentally friendly lifestyles through the distribution of leaflets, brochures, and audiovisual information. In cooperation with national TV stations, cable TV networks, and local networks, the government has began broadcasting a regular program on environmental issues to promote public awareness of the global environment, and encouraged government public relations work, private business advertisements, and other media campaigns to incorporate the environmental agenda. In addition, the government established an effective educational and training system for government employees and technical experts working on environmental issues.

With the increase of GDP, the public demand for a safe and healthy environment has increased significantly. The heightened public interest has led to media-led environmental campaigns such as 'Save Our Streams' and 'Green Life Movement' by the media. Moreover, the consumer protection movement started to sensitize consumers regarding damage that can be done by poor quality goods in 1970. This movement has now extended its activity to cover the effective usage of goods and the

encouragement of the use of recycled goods, which is closely affiliated with environmental and consumptional concerns.

**Information:**

The websites of Education in the Republic of Korea are as follows:

- Educational policies and programs: Ministry of Education & Human Resources Development (http://www.moe.go.kr)
- Educational achievement & evaluation: Korea Institute of Curriculum & Evaluation (http://www.kice.re.kr)
- Statistics on education: Korean Educational Development Institute (http://www.kedi.re.kr)
- Vocational education & training: Korea Research Institute for Vocational Education and Training (http://www.krivet.re.kr)
- Education and research information service on education in the Republic of Korea: Korean and Research Information Service (http://www.keris.or.kr)
- Education related environment: the Ministry of Environment (http://www.me.go.kr), National Institute of Environmental Research (http://nier.go.kr) and Korean Environmental Preservation Association (http://www.epa.or.kr)

The government also submits reports related to education to the Organization for Economic Cooperation and Development (OECD) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO), addressing issues such as progress on educational achievements, and ways to help children from low-income families succeed in school, and changes in post-secondary education.

**Research and Technologies:** Various studies on educational issues are undertaken by non-profit institutes such as the Korean Educational Development Institute, the Korea Institute of Curriculum & Evaluation, and the Korea Research Institute for Vocational Education and Training.

**Financing:** The central government's 2001 education budget is 20.2 trillion won, which is 20.0% of the central government's total budget, 100.2 trillion won, and the greatest share among the ministries. Of the 20 trillion won annual educational expenditure of the central government in 2001, 83.1%, or 16.6 trillion won, was transferred to the metropolitan and local offices of education for funding primary and secondary education; the remaining 16.9%, 3.37 trillion won, was directly managed as national funds by the MOEHRD. Below table tiltled "Finances of MOEHRD for the year 2001" shows the national funds granted to different projects of the MOEHRD for the year 2001 and table titled "Local Education Budge, 2001" shows the local education budget for the year, 2001.

**<Finances of MOEHRD for the year 2001>**

| CLASSIFICATION | BUDGET FOR YEAR 2001 (0.1 billion won) | RATIO (%) |
|---|---|---|
| Qualitative improvement of public education | 4,627 | 13.7 |
| Human resources development | 292 | 0.9 |
| Qualitative improvement of higher education | 13,049 | 38.8 |
| Qualitative improvement of vocational education | 2,335 | 6.9 |
| Insuring educational opportunity of the alienated populace | 1,233 | 3.7 |
| Personnel cost, basic projects, and support for affiliated institutions | 12,133 | 36.0 |
| Total | 33,669 | 100.0 |

**<Local Education Budge, 2001 (unit: million won)>**

| PERSONAL EXPENSES | MANAGEMENT EXPENSES | FACILITIES EXPENSES | SUBSIDIARY FUND FOR PRIVATE SCHOOL | OTHERS | TOTAL |
|---|---|---|---|---|---|
| 12,643,342 (56.9%) | 3,233,369 (14.6%) | 3,763,817 (17.0%) | 2,311,653 (10.4%) | 250,373 (1.1%) | 22,202,554 (100%) |

**Cooperation:** The government is participating in the projects of international organizations such as the UNESCO, OECD, the World Bank, and the Asia-Pacific Economic Cooperation to improve the quality of education and further to promote sustainable development through diverse educational programs. By working with these international organizations, the government will not only improve its own educational system, but also contribute to the educational development of under-developed and developing countries.

According to Joint Communique of the Second Tripartite Environment Ministers Meeting among Korea, China and Japan (February, 2000), Tripartite Environmental Education Network (TEEN) launched in 2000, as one of nine TEMM (Tripartite Environment Ministers Meeting) projects. As a part of TEEN project, tripartite workshops/symposia regarding environmental education were held and database listing environmental activities of NGOs of China, Japan and Korea were established.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR CAPACITY-BUILDING IN DEVELOPING COUNTRIES

**This issue has been covered under the heading Capacity-Building, Education, Training and Awareness-Raising in the various chapters of this Profile.**

*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

**This issue deals mainly with activities undertaken by the UN System.**

*Last update: April 2002*

## REPUBLIC OF KOREA

## CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

**Decision-Making:** The Ministry of Foreign Affairs and Trade is mainly responsible for decision-making regarding international cooperation. The Ministries concerned can also participate in the decision-making process. Moreover, the Office of Prime Minister provides coordination between Ministers concerned on inter-ministerial issues.

International laws and regulations need to be developed in order to harmonize environmental protection and economic development. Specifically, the technical capacity-building of developing countries is necessary to increase law-making capabilities in the field of sustainable development. The efficiency of international conventions is crucial and should be promoted for the purpose of integrating environment and development. International cooperation should be facilitated in order to create international standards for environmental protection. Such international cooperation will further enhance the effectiveness of institutions, mechanisms and procedures dealing with the implementation of international conventions. Measures should be developed to avoid and settle international conflicts and disputes between environmental conventions and conventions in the socio-economic arena by taking into account the dispute settlement procedures set forth in existing international agreements.

Major groups, such as women, NGOs, trade unions, farmers, and business and industry can also express their concerns through various means, including mass media, and Members of Parliament can represent their interest. The Presidential Commission on Sustainable Development, composed of 13 related Ministers and 20 private sector's representatives, is also an important mechanism for reflecting major groups' view on international cooperation. In addition, ministries are maintaining several advisory groups which provide and transfer public opinions.

**Programmes and Projects:** No information is available

**Status:** The government is implementing environmental agreements such as the UN Framework Convention on Climate Change, the Convention of Biological Diversity, Cartegena Biosafety Protocol, etc.

A listing of major international agreements and conventions joined by Republic of Korea include;

- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter;
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat;
- The Antartic Treaty System with related Conventions and Protocols;
- Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea;
- Vienna Convention for the Protection of the Ozone Layer;
- Montreal Protocol on Substances that Deplete the Ozone Layer;
- United nations Conventions to Combat Desertification in the Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa;
- International Tropical Timber Agreement;
- Convention on Biological diversity;
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal;
- United Nations Framework Convention on Climate Change, etc.

**Capacity-Building, Education, Training and Awareness-Raising:** No information is available.

**Information:** Various kinds of information related to international law can be accessed through the Internet.

- Trade-related site: Ministry of Foreign Affairs and Trade
- Investment-related sites : Korea Investment Service Center, Bank of Korea
- Economy-related sites: Ministry of Finance and Economy
- Sustainable Development-related sites: Presidential Commission on Sustainable Development

**Research and Technologies:** No information is available.

**Financing:** National Budget is available.

**Cooperation:** The government is actively participating in the negotiation of new or revised international environmental rules, including follow-up meetings for the implementation of existing international agreements. The government is implementing environmental agreements such as the UN Framework Convention on Climate Change, the Convention of Biological Diversity, Cartegena Biosafety Protocol, etc.

A listing of major international agreements and conventions joined by Republic of Korea include;

- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter;
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat;
- The Antartic Treaty System with related Conventions and Protocols;
- Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea;
- Vienna Convention for the Protection of the Ozone Layer;
- Montreal Protocol on Substances that Deplete the Ozone Layer;
- United nations Conventions to Combat Desertification in the Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa;
- International Tropical Timber Agreement;
- Convention on Biological diversity;
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal;
- United Nations Framework Convention on Climate Change, etc.

The government is also implementing bilateral environmental cooperation agreements with Japan, China, and the Russian Federation, and maintaining environmental cooperation with Australia, Canada, Mongolia, the United States, and Member countries of the European Union. In addition, the government has introduced and amended its laws and regulations in accordance with international agreements.

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*Last update: April 2002*

# REPUBLIC OF KOREA

## CHAPTER 40: INFORMATION FOR DECISION-MAKING

**Decision-Making:** Each part of the government produces information used for policy making and assessment. The Ministry of Finance and Economy and the Bank of Korea provide information on economic policy, and the Ministry of Health and Welfare provides information on health and social issues. The Ministry of Environment (MOE) generates and disseminates environmental information.

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.

After the Rio Conference in 1992, the importance of sustainable development, the harmonization of economic development and environmental protection, became evident. The Presidential Commission on Sustainable Development (PCSD), established in September 2000 as an advisory group, is expected to manage and track statistics relating to sustainable development.

Local governments also collect and produce data for policy-making and administrative purposes. However, this information does not necessarily relate to sustainable development.

The Open Information Promotion Act of 1996 calls for publications or on-line information to be made available to the public. The Ministry of Environment, for instance, requires enterprises discharging toxic chemicals to provide the ministry with the quantity and kinds of pollutants produced periodically -- according to the Toxic Chemicals Control Act (revised 1996). But, because of the matter of protecting business confidentiality, the Ministry of Environment is reviewing whether or not to open the information to stakeholders concerned, including local residents.

The government composed the National Action Plan for Agenda 21, designed to help make progress toward sustainability. A sustainable development indicator set was developed by 2001 to help gauge the success of these and other domestic measures.

The indicator set was used to assess whether major national polices and programs are consistent with sustainable development and also used to inform policy makers and the general public of progress made toward sustainable development.

The government is establishing a state computer network to connect central and local governments in hopes to facilitate exchange of information between different levels of the government.

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.

Central and local governments collect, analyze, and disseminate most of the information necessary for decision-making regarding sustainable development. Until now, it has often been insufficient for enterprises to participate in the field of environmental information. Recently though, with a few large corporations taking the lead, enterprises are working to enhance public awareness by publishing their own environmental reports.

**Programmes and Projects:** The OECD requires that various environmental data and documents be published for the OECD every other year.

The Republic of Korea has yet to provide all the data required by the OECD. The Ministry of Environment has a long term environmental statistics development plan in order satisfy this requirement. The plan also improves the methods of evaluating and analyzing data and enhances comparability among the OECD countries.

The government has been providing personal computers and internet access to the central government and plans to extend this service to the local government.

The government is also supplying elementary schools with computers and internet access in order to bridge the information gap between rural and urban areas.

**Status:** Any data related to sustainable development in the Republic of Korea is not managed collectively, especially at the government level. Rather, the authorities concerned produce and manage the information independently. However, according to the Open Information Promotion Act, all the information must be published and made available to the public. The government will be the only body which will be allowed to add to this specific publication.

The Ministry of Environment is developing a set of sustainable development indicators which will be used to evaluate the success of governmental policies regarding sustainable development.

**Capacity-Building, Education, Training and Awareness-Raising:** The government offers computer training programs to civil servants and officials of central and local governments in the fields of data collection, analysis, and management.

**Information**: All central and autonomous government websites are all cross-linked. The Ministry of Environment annually publishes the Environmental Statistics Yearbook to disseminate environmental information in fields concerning the environment, such as energy and transportation. The yearbook is also published online at the Ministry of Environment website (www.me.go.kr).

**Research and Technologies:** The Ministry of Environment applies remote sensing techniques in the field of natural ecosystem conservation. For example, Biotop Map and Land Cover Map are basic tools used in the formulation of environmental policies. GIS is also employed in water conservation efforts in major river basins.

**Financing:** The Republic of Korea does not have specific data on how much money is spent on the collection, management, and conservation of information related to sustainable development. However, the Ministry of Environment spent 3,086 million won (about 2.6 million USD) in 2000 to manage its website; however, this figure includes costs for the establishment and operation of an environmental information system and the establishment of infrastructure for collecting environmental data.

**Cooperation:** In 1999, the Republic of Korea established the Northeast Asian Information Center for the Environment in order to accelerate data collection and promote exchanges among countries concerned with long distance transboundary air pollution in Northeast Asia. An Environment Information Network will also be established among interested countries to prepare conservation strategies for the Tumen River basin. Additionally, the ROK is participating in UNEP/GRID activities.

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER: SUSTAINABLE TOURISM

**Decision-Making**: In the Republic of Korea, the Tourism Bureau of Ministry of Culture and Tourism(MCT), and the Nature Conservation Bureau of Ministry of Environment(MOE) are responsible for sustainable tourism issues at the national level. There are also Tourism Departments of local governments which are responsible for them at the local level. Besides, NGOs, tourism agencies, industry associations, and experts participate in policy making process and cooperate to make more desirable polices.

Legislations which seek to ensure sustainable tourism include:

- Article 46 (Promotion of Eco-tourism) of the Natural Environment Conservation Act
- Environmental Impact Assessment Act on Environment, Transportation and Natural Disaster

Specific areas designater for eco-tourism and nature tourism are:

- National Parks across the nation (twenty, 6,473 ㎢)
- Ecosystem Conservation Areas (eleven)

There are, in addition, Tourist Guidelines for bird watching (1998). Eco-tourism Guidelines have been established with cooperation of the relevant government bodies, tourism-related organizations, environmental organizations, and experts (1999).

For the purpose of facilitating sustainable tourism development the government introduced Environmental Impact Assessment system. The system required any one who planned to develop the sites as the following to take specific assessment by the government;

- Tourism development sites, exceeding 300,000 ㎡,
- Park districts (within natural parks) exceeding 100,000 ㎡
- Amusement parks exceeding 1000,000 ㎡

Sustainable tourism is included as part of the Ten-Year Project for Tourism Promotion and the National Tourism Resources Development Plan (1992~2001). In addition, Strategies for developing eco-tourism and tourism resources wewe included at a National Report, "National Strategy for Biological Diversity (1997)". Annual Action Plan for eco-tourism were also established in the National Nature Environment Conservation Plan in 1999. The Strategies address issues such as harmonization between environment and tourism development, possibilities for commercialization, local governments' concerns income allocation to residents, establishment of eco-tourism, and the pursuit of sustainable use of natural resources.

**Programmes and Projects:** A few of major programmes to promote sustainable tourism are Environmental Impact Assessment, which is mandatory, prior to developing and operating any tourism development projects, and the designation of National Parks and Ecosystem Conservation Areas to preserve ecosystems.

Eco-tourism and nature-based tourism are being promoted through the following policies;

- Development of a mechanisms which return the profits from eco-tourism to the local communities
- Financial and administrative support to natural environment education and nature-related activities carried out by private environmental organizations
- Development of eco-tourism-related products, such as the publication of eco-tourism guide books and pamphlets
- Development of eco-tourism activities which are held in National Parks and nature-based recreation areas

**Status:** Tourism industry currently comprises 4.72% of GDP and employment in the tourism industries is 9.3% of the population (1998, K-TSA). Tourism is also one of three highest value-added industries.

The number of the foreign visitors to Korea for tourism purposes has increased from 2,340,000 to 5,321,000(1988～2000), an increase of 127.4%. Tourism profits have increased, from USD 3,265 billion to 6,609 billion, a 102.4% increase.

Foreign tourists visiting Korea totaled 5,321 thousands in 2000, with an increase of 14.2% over the preceding year. This broke

the record of 5 million persons for the first time in history of the Republic and showed the highest growth rate in 1990s. The Asian market occupies 74.9% of all inbound tourists. Achieving USD 7.3 billion of surplus up to 2000 from 1998 in the balance of payment from tourism industry is evaluated as a great contributor in overcoming the economic crisis.

A number of private organizations, with the participation of youth and the public, are carrying out a lot of nature-based programmes. A few of them are the following;

- The Korea National Tourism Organization develops tourist products on the basis of Korea's unique natural resources.
- The National Park Management Organization is developing nature study routes in national parks.
- The Forestry Administration building nature routes in nature-based forest resorts and installing explanatory boards regarding wildlife living in those areas.

**Capacity-Building, Education, Training and Awareness-Raising:** Private environmental organizations conduct many education programmes for students and youth on the state of fauna and flora of specific regions. The Korea National Tourism Organization carried out researches to seek the ways and means to promote sustainable tourism. Two publications of those researches are: Environmentally Sustainable Tourism (1997), and Directions and Prospects of Eco-Tourism Development (1996).

**Information:** Information available to assist both decision-makers and the tourist industry in promoting sustainable tourism includes the following:

- Information on population, national income, average working hours
- Visitors to national parks, amusement parks, tourist sites
- Contributions for natural environment conservation
- Current status of natural resources
- Current status of cultural assets

In addition, Natural Environmental Surveys have been conducted since 1986. An inventory of natural resources has been established. A map which shows all nature zones in the country in detail was developed (1990). An eco-system map is under development (2002). The result of the Natural Environmental Survey was published and distributed to regional environmental administrations and local governments. Materials on the current status of the natural environment can be obtained through the Internet at the addresses given below.

Research on an Eco-system Index Development for Sustainable Development is being carried out. It is to be completed in 2001.

**Research and Technologies:** Technology-related issues that need to be addressed include disposal of wastes, illegal capture of wild fauna and flora, destruction of habitats, and land degradation around hiking areas.

**Financing:** Financing is provide through tvarious ways, such as government budget, government funds, public-private partnership funds, etc.

Several tourism destinations which are modeled for sustainable tourism (esp, eco-tourism) are;

- Kanghwa-Do (Kyunggi Province)
- Jindo (Chon-nam Province)
- Joonam Reservoir (Changwon City)
- Jaeboo-Do (Kyunggi Province)

Local government bodies cooperate for financial support to sustainable tourism activities. They also endeavor to simplify administrative procedures for fostering the construction of the basic eco-tourism facilities. Besides, they cooperate with the private sector for investments in the development of tourist products, marketing, and advertising. They also cooperate and with private environmental organizations for information exchange and funding.

At the bilateral and international level, cooperation takes place in the following areas;

- Participation in the tourism working group for the Tumen River Area Development Programme supported by the UNDP

Enhancement of regional cooperation for the development of environmentally sound tourism in the Tumen River area.

**Cooperation:** No information available

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*Last update: April 2002*

**REPUBLIC OF KOREA**

## CHAPTER: INDUSTRY

**Decision-Making:** The "Presidential Vision for Environmental Welfare" is the national policy or strategy for ecologically sustainable industrial development. From that "Strategy/vision the Action Plan for a Green Environmental Country" has been developed and is being implemented by the Ministry of the Environment. The objectives of the Action Plan are:

- Promotion the greening of production and consumption;
- Construction of basic environmental facilities; and
- Planning of environmentally friendly industrial development.

**Programmes and Projects:** Information available from the websites at:

- MOE : www.me.go.kr
- The Ministry of Commerce, Industry and Energy (MOCIE): www.mocie.go.kr

**Status:** The principal threats to human health or the sustainable use of natural resources associated with industrial activity in the Republic of Korea relate to heavy metals from industries, especially from the metal industry and hazardous air pollutants from industries, especially from the chemical industry.

In an effort to promote the greening of industry the measures mandated by 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 LCA (Life Cycle Assessment).

**Capacity-Building, Education, Training and Awareness-Raising:** See under chapter 36

**Information:** Information available from the websites at:

- The Ministry of Commerce, Industry and Energy (MOCIE): www.mocie.go.kr
- MOE : www.me.go.kr

**Research and Technologies:** Information available from the websites at:

- The Ministry of Commerce, Industry and Energy (MOCIE): www.mocie.go.kr
- MOE : www.me.go.kr

**Financing:** Information available from the websites at:

- The Ministry of Commerce, Industry and Energy (MOCIE): www.mocie.go.kr
- MOE : www.me.go.kr

**Cooperation:** Information available from the websites at:

- The Ministry of Commerce, Industry and Energy (MOCIE): www.mocie.go.kr
- MOE : www.me.go.kr

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