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REPUBLIC OF KOREA



COUNTRY PROFILE



UNITED NATIONS

INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

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LIST OF COMMONLY USED ACRONYMS

ACS	Association of Caribbean States
AMCEN	Africa Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CARICOM	The Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CIS	Commonwealth of Independent States
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development of the United Nations
DESA	Department for Economic and Social Affairs
ECA	Economic Commission for Africa
ECCAS	Economic Community for Central African States
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIDA	Foundation for International Development Assistance
GATT	General Agreement on Tariffs and Trade
GAW	Global Atmosphere Watch (WMO)
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring System (UNEP)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GLOBE	Global Legislators Organisation for a Balanced Environment
GOS	Global Observing System (WMO/WWW)
GRID	Global Resource Information Database
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IAEA	International Atomic Energy Agency
ICSC	International Civil Service Commission
ICSU	International Council of Scientific Unions
ICT	Information and Communication Technology
ICTSD	International Centre for Trade and Sustainable Development

IEEA	Integrated Environmental and Economic Accounting
IFAD	International Fund for Agricultural Development
IFCS	Intergovernmental Forum on Chemical Safety
IGADD	Intergovernmental Authority on Drought and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPCS	International Programme on Chemical Safety
IPM	Integrated Pest Management
IRPTC	International Register of Potentially Toxic Chemicals
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources
LA21	Local Agenda 21
LDCs	Least Developed Countries
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NSDS	National Sustainable Development Strategies
OAS	Organization of American States
OAU	Organization for African Unity
ODA	Official Development Assistance/Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Papers
SACEP	South Asian Cooperative Environment Programme
SADC	Southern African Development Community
SARD	Sustainable Agriculture and Rural Development
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Coordinator
UNEP	United Nations Environment Programme

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
WFC	World Food Council
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund
WWW	World Weather Watch (WMO)

LIST OF COUNTRY-SPECIFIC ACRONYMS

CARICOM	Caribbean Community
ENACT	Environmental Action Programme
GoJ	Government of Jamaica
JaNEAP	Jamaica National Environmental Action Plan
MLE	Ministry of Land and Environment
NEPA	National Environment and Planning Agency
NIP	National Industrial Policy
NLP	National Land Policy
NPEP	National Poverty Eradication Programme
PIOJ	Planning Institute of Jamaica
ROSE	Reform of Secondary Education
SDC-J	Sustainable Development Council of Jamaica
STATIN	Statistical Institute of Jamaica

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. 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 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. 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 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: provision of financial resources and technical assistance for developing countries; and promotion of environmentally conscious and balanced economic development.

Status: 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. 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 <www.mofat.go.kr>; *Investment-related sites*—Korea Investment Service Center <www.kotra.or.kr> and Bank of Korea <www.bok.or.kr>; *Economy-related sites*—Ministry of Finance and Economy <www.mofe.go.kr>; *Sustainable Development-related sites*—Presidential Commission on Sustainable Development <www.pcsd.go.kr>.

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 programmes for developing countries.

The Republic of Korea provided approximately US\$ 266 million as Official Development Assistance (ODA) in 2001. The Republic of Korea contributed US\$ 5.6 million 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.

Cooperation: Korea's ODA expenditure reached US\$ 266 million during 2001, which amounted to 0.063 % of the GNP. This was 25.5 % of increase compared to the previous year. 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, Cartagena 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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CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

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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.” Participation of major groups such as women and NGOs in decision-making is basically the same as the one described in Chapter 2 of this Profile.

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.

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: 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. 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. 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 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 the 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 environmental 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. To enhance public awareness on consumption patterns, the eco-labeling system was introduced in 1992 and public green procurement in 1994. 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 <www.mofat.go.kr>, Ministry of Commerce, Industry, and Energy <www.mocie.go.kr>, 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 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 to produce analytical reports on trade and environment issues. Some institutes, such as KIEP (Korea Institute for International Economic Policy: <http://www.kiep.go.kr>), KIET (Korea Institute for Industrial Economics and Trade: <http://www.kiet.re.kr>), KEI (Korea Environment Policy: <http://www.kei.re.kr>) provide information on trade issues.

Financing: National budget and private funds are available.

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

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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. 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.

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. 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; and, 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. The so-called Productive Welfare is taken as a guiding principle for establishing the social welfare policies with the ultimate goal of transforming those in needs to become participants of the social growth engine. 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.

Non-governmental parties are active in advisory committees concerning welfare policies. Various anti-poverty programmes 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 programmes 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 programmes, and the participation rate of women is gradually increasing.

Programmes and Projects: The current social welfare system in the Republic of Korea consists of three components: social insurance (National Health Insurance, National Pension, Employment Insurance, Industrial Accident Compensation Insurance); public assistance (livelihood protection, educational aid, housing benefit, medical aid, veterans relief, disaster relief); and, 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); and, 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 % of the total population in 1965; within three decades, it had decreased to 3.9 % in 1995. However, the economic crisis at the end of 1997 has brought a massive unemployment. It caused a great increase in the poor and the number of Livelihood

Protection recipients. Through this crisis, poverty issue has been understood as a huge social problem. Therefore, the expansion and reinforcement of social safety net was necessary for coping with this problem.

Present public assistance programmes include livelihood aid, health care, educational assistance, funeral expense support, small business loans, and job creation projects, among others. 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. After carefully assessing recipient's needs to work, among those who can 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, and then services such as job searching, vocational training, job placement and financing for self-reliance are provided.

Capacity-building, Education, Training and Awareness-Raising: 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 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 Self-support Service is a "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. 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: Some 1.5% of GDP was expended for social security in 2000, which comprised 9.1% of the central government's budget. The proportion of health and welfare in the government budget has been rapidly growing in recent years to implement various social security programmes, such as health insurance plans, the National Pension Scheme, etc.. The budget of the MOHW in 2001 amounted to 7.5 trillion won (approximately US\$ 5.7 billion). Since 1975, the government has sponsored private fund programmes 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 programmes: 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 programmes and designated trust programmes.

Cooperation: The Republic of Korea will make efforts to gradually increase ODA and untied aids, in particular to the Least Developing Countries (LDCs) according to its economic condition and capacity.

With regard to the technical assistance programmes, Korea made a commitment to participate in the DDA global trust fund by contributing US\$ 300,000 and will study various plans to increase its contribution up to US\$ 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 programmes 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 programmes.

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, according 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 US\$ 12.5 billion (as of November 2001), of which Korea's exposure amounts to US\$ 747 million.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS

Decision-Making: The Ministry of Environment, the Ministry of Commerce, Industry and Energy, and the Ministry of Foreign Affairs and Trade, all have responsibility for changing consumption and production patterns. Each ministry formulates and implements policies and programmes 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 (1999); Act Relating to Promotion of Resources Saving and Reutilization (1999); Act Relating to Environmental Technology Support and Development (2000); Act for the Promotion of an Environmentally Friendly Industrial Structure (1999); Air Quality Preservation Act (1999); and, Water Quality Preservation Act (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, and Article 25 of the Waste Management Act.

The National Action Plan for Agenda 21 address such issues as: 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; extending clean energy using; mitigating sulfur content of fuel; and, mitigating wasteful consumption patterns, promoting awareness of sustainable consumption

Programmes and Projects: Programmes in this area are implemented in cooperation with industries, consumer associations and others: designating 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 a newspaper publishing company; and, promoting production and consumption of environmentally friendly products: Activating the Eco-labelling Programme, part of the establishment of a system which promotes markets for and consumption of environmentally-friendly products.

Under *Efficient use of energy and natural resources*, water fees will gradually be raised to reflect the full cost of supplying and preserving the quality of water and maintaining the resource base. Standardization of equipment is now promoted and legal recommendations are used through the amendment of laws related to construction and housing that promotes the installation of water saving equipment. The water reclamation and recycling system has been initiated and preferential taxation is given to such facilities. The government 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. *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. These two major systems will be revised to ensure effectiveness and efficiency, and substantially internalize the cost of environmental pollution.

Environmental Improvement Charges established upon the Polluter-Pays Principle, is imposed on the owners of large buildings and diesel-powered vehicles, as they discharge relatively large quantities of pollutants. *Product Charge System* 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. Through the *Volume-based Collection Fee System*, the volume of household waste is reduced and recycling activities are being promoted.

Emission Charge System: Charges are brought to bear upon companies exceeding established permissible limits of air pollutants and wastewater discharges. 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.

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

<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

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 received 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 that intermediate the trade of used items are effective tools to facilitate the recycling and reuse of products. Other activities such as the 'frugal 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.

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 that 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.

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-labeling programme 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 that meet higher standards. The Korea Environmental Labeling Association, a private body established in 1994, 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 Programme; conducts education and training programmes for managers and technicians on environmental management and clean technology production; and, promotes eco-design for products and service. A media company actively promotes sustainable consumption patterns as part of a Green Energy Family programme. The conservation of resource base is promoted by a national campaign for water conservation.

Information: The National Environmental Technology Information Center was established in 1999 to collect and disseminate environmental technology information. 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.

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. Among the major projects and activities underway are: research programmes to develop Eco-labeling awarding criteria and 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.

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 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 Working Group).

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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), and provides energy technology information and supports energy conservation projects of the local governments through the Korea Energy Management Corporation (KEMCO). 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 MOCIE, 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 Rational Energy Utilization Act adopted in 1997 was revised to incorporate a Pre-notification System of Energy Prices to reduce carbon dioxide emissions for a project of bigger than a specified scale (10 thousand toe/yr.); Demand Side Management is to be encouraged through voluntary energy conservation of energy-intensive industries. Voluntary Agreement Programme shall be introduced for energy efficiency enhancement, the Minister of Commerce, Industry and Energy may order public institutions to use or install energy-efficient facilities; KEMCO may function as Energy Service Company to encourage energy-intensive industries to install energy-efficient facilities and to implement CO₂ emissions reduction programme.

The government has played a central role in price setting process and regulation through 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 programmes such as load management, time-of-use rate system, discount system for voluntary curtailment, and rebate for efficient lighting systems. The government bans the production and sale of appliances and equipment, which cannot 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.

The government established the 10-year National Plan for Energy Technology Development (1997-2006), which incorporates plans for: new and renewable energy, clean energy, and energy efficient technologies. The main goals of the plan are to meet 2% of total energy supply by new and renewable energy by 2003; to reduce 10% of final energy consumption by 2006; to advance clean energy technologies, especially to reduce SO_x, NO_x, dust and CO₂. The National Energy Policy sets the challenging goal as follows: to provide 2% of the total energy consumption with renewable energy by 2003; to build one million energy efficient homes during the next 10 years by providing tax incentives, subsidies, and performance certification; to provide one million households with Combined Heat and power by 2002; and, to sign a Voluntary Agreement with 600 energy intensive industries by 2003.

In 2000, Citizen Coalition for Energy Conservation was established as an NGO 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 Programme, under which MOCIE provides local governments with subsidies to effectively implement the installation of facilities using renewable energy such as photovoltaics, wind power, etc., greatly contributes to the installation of facilities using renewable energy. This programme consists of 2 sub-programmes: the Infrastructure Build-up Programme and 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 70% of capital costs.

< Local Energy Developments Projects: 1996~2001 >

	Number of projects	Subsidy (unit: million won)
Local Energy Infrastructure	157	7,587
Pilot Project for Local Energy	58	38,816
Total	215	46,403

The Combined Heat & Power programme provides mass energy consumers with heat and electricity through cogeneration including municipal waste incineration, industrial waste heat. Its two major areas are: District Heating & Cooling; and Industrial Complex Combined Heat & Power (CHP). For the promotion of the programme, the government enacted Integrated Energy Supply Act in 1991 and has been providing the suppliers and users with tax incentives, environmental regulation relaxation and long-term low interest loan of US\$ 1 million since 1983. Until 2000, 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 14 industrial complexes.

Energy Auditing provided by MOCIE, is an information transfer programme to assist energy consumers in understanding and employing technologies and practices to use energy more efficiently. Depending on the performance, financial supports are provided, if necessary.

Series of projects are developed to support local governments in implementing measures to rationalize energy-use. The government initiated the Energy Saving Performance Contracting Programme to help the public buildings sector to 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.

Through a Voluntary Agreement, an energy-intensive company sets a goal for GHG reduction and concrete action plan, and the government supports the company with various measures.

Status: The share of firewoods and other non-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 programme in the late 1970s and currently supplies 14.2% of its energy needs through nuclear power generation. In 2000, the Republic of Korea paid US\$ 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 10th largest energy consumer in the world as well as the 4th 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

New and renewable energy accounted for 1.24% (2,458 thousand tons of oil equivalent) of total energy supply as of the end of 2001. Municipal and industrial waste represents 93.0% 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 1.0%. 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	Photovoltaic Power System	Wind Power	Total
Amount (1000 ton)	2308.0	82.5	37.2	20.9	5.9	3.1	2457.6
Share (%)	93.0	3.0	1.0	0.8	0.2	0.1	100

Capacity-Building, Education, Training and Awareness-Raising: Green Energy Family (GEF) Movement started in 1995 is a nationwide voluntary partnership movement among citizens, hundreds of companies, NGOs and the press with the aim to enhance energy efficiency and reduce social costs. Through this movement, companies can reduce energy costs, while energy providers can lessen the burden of expanding energy supply capacity. This public movement initiated Green Lighting, Green Motor and Green Energy Design Programme.

MOCIE has produced and distributed VTR cassettes, movies and various PR materials. The government also organizes exhibitions and diverse cultural events on a regional basis to publicize successful cases of energy conservation. November is designated as the “Energy Conservation Month 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 in the Exposition Science Park functions as a living text of all aspects of energy. In 2000, total 201,829 people visited this pavilion. Training Courses are fostered to operate energy-equipments subject to certification inspection, operators of gas boilers and certified energy managers. As authorized by the law, KEMCO is in charge of training programmes for the energy managers and operators of energy equipment and facilities to upgrade their skills as well as enhance their safety control proficiency.

The Ministry of Education designated 16 elementary and 16 middle schools as “Demonstration Energy Conservation Schools” in 2002. In addition to financial assistance of about US\$ 5,385 per each school, the government supports educational aids such as books, videotapes and diskettes for the designated schools. 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. Analyzed and processed information and data is also available for end-users such as universities, industries, research institutes and the general public. 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. Through PC communication network and Internet homepage (www.mocie.go.kr), MOCIE offers the latest energy information. 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. KEMCO publishes and distributes periodicals on useful and diverse new energy conservation technologies and systems, successful cases of energy conservation in some companies, outstanding and effective energy conservation policy programmes 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,” and “Technical Information Pamphlet”.

Research and Technologies: MOCIE is supporting R&D and dissemination of energy-efficient technologies, new and renewable energy technologies and clean energy technologies. The Korea Energy Economics Institute (KEEI), supported by MOCIE, is national principal energy policy research organization that provides a broad range of research works on energy policy options to the government, industry and non-profit organizations faced with energy challenges. 50 programmes are underway. *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 programme. In addition, operation and maintenance technology development has facilitated photovoltaic system deployment. Photovoltaic systems have proven to be 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. 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.

Solar Thermal Energy: 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.

Wind Power: Wind energy resources are available along coasts, on high mountains and in small islands. By the end of 2000, 44 wind plants have been installed with a total capacity of 7.4MW. A wind power project in Jeju Island as a benchmark for renewable energy deployment in 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: The government continues to disseminate municipal solid waste incinerators linked with district heating and industrial waste incinerators. 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 m² are required to install collective industrial incinerators. However, installation of incinerator has brought about complaints for air pollution from local community, requiring significant prevention measures and local promotional campaign. In the future, the government will promote industrial incinerators to

<10-year National Plan for Energy Technology Development>

		High-Priority Programme	General programme
Energy Efficient Technology	1.1.1.1.1.1.1	<u>I</u> <u>n</u> <u>d</u> <u>u</u> <u>s</u> <u>t</u> <u>r</u> <u>y</u>	Chemical Separation Technology Dryer Energy Conversion & Storage HVAC Industrial Energy
	Buildings	Energy Efficient Building Technology	Combustion Dying Machinery Paper Machinery Process Control and Automation Chemical Reaction Process Heat Exchange Structural Materials Functional Materials
	Transportation		Building Energy Management Building Automation System Building Insulation Fuel-Efficient Vehicles

	Electricity	Lighting System Induction Motor Small-Scale Cogeneration	Refrigeration Customer Electricity Management Electric Exchange Energy Storage Electric Heat Superconductivity Power Equipment Demand Side Management
New & Renewable Energy		Solar Thermal Photovoltaics Fuel Cell IGCC	Biomass Wind Power Coal Utilization Technology
Clean Energy		Fluidized Bed Combustion Coal Ash Utilization Technology Combustion Treatment Technology New Catalyst for Oil Refining CO ₂ Separation and Recovery	Coal Preparation Pulverized Coal Combustion Regeneration and Treatment of Used Catalyst Biocatalytic Desulfurization and Process Development for Oil Refining Fixation and Utilization CO ₂

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 but is still relatively at a primitive state of development. Methane gas recovery from agricultural and industrial organic waste is also available, totaling 367 steam ton/day at 96 facilities 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 Korea due to its cost, such as for photovoltaic or wind power, or for the difficulty in finding appropriate sites, as for hydropower projects and nuclear powers.

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 programmes to promote early commercialization and deployment and make R & D programme more effectively taking into consideration: firstly high energy saving potential; secondly environmental friendliness; and lastly high initial capital cost which increases private investment risks.

The high-priority programmes for the government selected on the criteria of having a large potential for energy conservation, energy security, and environmental protection, and with the technology which the private sector finds it difficult to develop due to the lack of economic feasibility, are solar thermal energy, photovoltaic power system, fuel cell, and IGCC.

Financing: Korea's environment-based energy taxation system was revised at the beginning of July 2000 to encourage the conservation 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. 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 will continue to be raised until, by 2006, it will attain a level that is 1.5 or 2 times that of 2001. Gasoline, which was subject to a higher tax rate, will see no change for the same period.

The government has provided long-term and low interest rate loans from the Fund for the Rational Use of Energy along with tax incentives, for energy efficiency and conservation investments. KEMCO funded by the MOCIE is in charge of its management and monitoring. The Fund supports 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. The types of requests eligible for loan include: the purchase of the proper facilities and their incidental facilities and equipment; installation and retrofit works; design and superintendence; and 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. The expenses for the purchase of the building site for installing

facilities are funded for mass energy supply projects and the expenses for feasibility study are funded for regional energy development projects by local governments. Operation costs 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.

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.

The government provides tax incentives for energy efficiency investments. 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.

The 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 an energy conservation company (ESCO). The government has supported ESCO with US\$ 54 million of long-term low-interest rate loan and has triggered the market development by demonstration projects and procurements in the public sector. To encourage the installation of energy efficient equipment and facilities, the government funds US\$ 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 provides ESCOs with initial capital investment.

Cooperation: KEMCO keeps close relationships with other relevant organizations abroad to exchange energy information and staffs, and to develop collaborative programmes such as for training, joint seminar or joint research. The Republic of Korea has actively participated in 11 programmes by established IEA and energy cooperation in APEC.

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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. MOCT's 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 decision-making mechanism 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. 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.

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. 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. 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. To reduce energy consumption in the transportation sector, the government imposes progressive car tax to reduce the demand for motor vehicles and that for large sedans.

Major laws and regulations that address transport and traffic systems 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 construction of transportation infrastructure and management of transport systems in Korea.

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.

Programmes and Projects: 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 is being carried out in accordance with the National Intermodal Transportation Plan, which is a 20-year long-term plan in infrastructure expansions as follows:

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
	Double-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 is trying to adopt new transport concepts, such as light railway.

Major programmes undertaken are for: 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; and, preparing for buses to switch over from diesel fuel to CNG. 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. 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, 410 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. 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, to be completed in 2002. In the sea port sector, the Mega Hub Port development goes ahead according to the plan of the Two 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. There are construction projects of regional base ports underway. The Asan port, for example, will be developed by 2011 for the purpose of serving as an alternate part for the mobilization of material resources and to serve as a trading base with China. In the airport sector, the first phase of the Incheon International Airport development plan has been successfully completed in 2001 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. Regional airport expansion plan is being implemented in a number of locations.

Status: At the end of 1999, the total length of the roads was 87,534 km, of which 74.7% were paved. 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 include buses (express, urban, and shuttle), subways, and taxis. An express bus runs along major corridors of the city, as well as to some 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. Demand for shuttle buses has increased in. Actually, 80 private bus companies operate about 8,374 buses on 363 bus routes. Efforts to reduce motor vehicle emissions 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%). The traffic effects evaluation system is utilized when implementing large-scale road, railway and housing projects to formulate transportation measures.

<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

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; and, 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.

In the public sector, a private car restriction system exists where drivers are restricted from using their cars every 10 days.

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 Database Project involves: the survey of the origins and destinations of passenger movements and commodity flows data, 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; and,

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.go.kr).

Research and Technologies: MOCT plans to strongly recommend the use of the data from the national transportation database 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 researches 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: The "Special Account for Transport Facilities" has been set up at MOCT for construction of the transport infrastructure. 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, 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 proposals 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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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

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

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 socio-economic development, taking into account demographic trends and factors; and, implementing environmental and socio-economic development programmes at the local level.

Status: The Republic of Korea's fertility rate has rapidly declined from 6.0 in 1960 to 1.47 in 2000 as a result of the successful implementation of family planning programmes. The population growth rate declined from 3.0 % in 1960 to 0.71 % in 2000. The population growth rate still continues to decline, and it is expected to stabilize in the year 2023; thus the Republic of Korea has reached the last stage of demographic transition. The drastic fertility rate change below the replacement level since the mid 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 is 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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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 programmes. 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.

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.

Programmes and Projects: Some national public health programmes 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 programmes. 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 programmes; provision of safe water supply; an increase of medical service provisions and planning capacity for regional communities, and expansion of disease prevention activities.

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, workaholicism, 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 programmes that will focus on improving environmental conditions and life-styles.

Capacity-Building, Education, Training and Awareness-Raising: The government has produced 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. Further information is available from the website of MOHW at: www.mohw.go.kr

Information:

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.

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.

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

Financing: The expenditure of the MOHW equaled 4.97% of the general account of the national budget in 1999 fiscal year and public health-related expenditure totaled US\$ 9,651,000,000.

Cooperation: The Republic of Korea cooperates with international institutions in: implementation of health research programmes, seminar, and health worker's training programmes supported by WHO; implementation of a project related to extension of health and medical services affiliation with the United Nations.

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1.1 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. The Ministry of Environment is responsible for environment-related policies and programmes including water and air quality management, waste management, and water supply and sewage treatment. Inter-ministerial reviews and consultation processes are ensured by the law. Local authorities are the bodies mainly involved with urban and provincial programmes in the areas under their jurisdiction. The Commission on National Territory 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 Commission on National Territory Policy.

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. The government responding to meet the increased demands for housing has adopted diverse plans and policies to optimize housing supplies. These plans include the Forth Comprehensive National Territory Development Plan in 2000 and the annual Comprehensive Housing Construction Plans. 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 revolves around resolving housing shortages, improving housing conditions, alleviating traffic congestion in cities, and maintaining a clean environment. The Republic of Korea encourages resource saving and environmentally friendly land development plans, and promotes developing policies that balance development and preservation

Programmes and Projects: The government has introduced public rental housing programmes supported by government's finances for low income groups. From 1989 to 1993 the government initiated Permanent Rental Housing Programme supported by government's finances reached 85 % of the construction cost for the 10 % 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 Programme which provides 10~30 % support in construction costs from government finances. This programme lasts by the year of 2012 when 1,120,000 national rental housing units will be supplied into the Korean rental housing market.

Further information is available from the website of MOCT at: www.moct.go.kr

Status: 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. The national rental houses soothe the hard residential conditions of low income people, because they pay only 40-50 % 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.

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 Programme of Habitat II, the Regional Development Bank, and the World Bank.

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: The Presidential Commission on Sustainable Development (PCSD) was established in 2000 directly under the Presidential office. The Commission 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). 21 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 relating to establishing direction and planning of major policy for development and conservation; matters relating to the formulation and implementation of the plans related to Agenda 21; matters relating to corresponding strategies to major international conventions on the environment including UNFCCC; other matters related to environmentally friendly and sustainable development.

In 1996, the Republic of Korea adopted a National Action Plan for Agenda 21. The MOE is also responsible for the policies relating to Environmental Impact Assessments (EIA). Those who plan to carry out projects that are subject to EIA must prepare draft assessments, which are made public, and hold a public hearing on the proposed project. Along with the governmental Assessment System, the Prior Environmental Review System (PERS), 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 MOE 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 MOE 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 21st 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. 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 programmes 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.

Programmes and Projects: To integrate environmental and economic aspects in decision-making, it is necessary to establish a system of Integrated Environmental and Economic Accounting (IEEA). 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). As part of providing basis for environmental and economic intergration, MOE is implementing programmes for Green Accounting and Corporate Environmental Performance Report.

Major environmental policy instruments utilizing economic incentives include: 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. 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.

Status: 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 also necessary to prevent such disputes in advance.

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 Programme:	YES
3. Ecolabel Regulations:	YES
4. Recycle/Reuse Programmes:	YES
5. Green Accounting Programme:	YES
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. Combating 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: 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. In cooperation with relevant government agencies, schools, and private environmental organizations, MOE is actively implementing various kinds of activities including environmental education and publicity such as giving “environmental class” in schools, and designation and operation of Environmental Preservation Model Schools. Furthermore, the National Institute of Environmental Research offered various courses for government officials and non-government personnel.

Information: Information is available from the websites of the Ministry of Environment and PCSD at: MOE: www.me.go.kr; and PCSD: www.pcsd.go.kr.

Research and Technologies: The MOE is implementing research projects for developing Sustainable Indicators and System of Integrated Environment and Economic Accounts (green GDP). The Eco Labelling and the Green Building certificate System are also in force.

Financing: National budget is available. 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.

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

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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 programmes in the Republic of Korea. Several ministries including 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 are also participating in activities to address air quality conservation. The government established an inter-ministerial 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. The Presidential Commission on Sustainable Development (PCSD) established in 2000 is expected to play a major role in integrating environmental concerns into the design and implementation of development 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 programmes. 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 (AQMR), and monitoring and site inspection of emissions. In order to secure multistakeholder participation and reflect their views in the decision-making process, the MOE holds various regular consultations with business entities, policy dialogues with stakeholders, including the so-called “Environmental Policy Consultation Meetings” with the representatives of leading environmental NGOs. Policy dialogues are held with the general public in order to collect views as well as increase public awareness. Non-governmental parties participate in an advisory committee on air quality preservation.

The Environmental Policy Act and the Air Quality Preservation Act 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.

The Environmental Vision 21 has provided long-term policy direction including air quality management from 1996 to 2005. The State Environmental Vision for a New Millennium was established in 2000. The Vision is aimed at protecting a biosphere in which nature and humans coexist in harmony. According to this vision, the MOE is charged with clarifying the Action Plan for the State Environmental Vision.

Concerning activities on protecting stratospheric ozone, the government is to push forward 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.

Programmes and Projects: 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 MOE has established emission standards for newly manufactured automobiles and automobiles in operation, and quality standards for various types of fuels. In order to reduce motor vehicle emissions from diesel-powered vehicles, the MOE 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 the end of 2008.

For greenhouse gas reduction, the government has been implementing 36 programmes 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.

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.

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 MOE is currently operating an Air Quality Monitoring Network and conducting a joint research with China and Japan to cope with the long-range transport of air pollutants.

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 these problems, 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 the 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.

Capacity-Building, Education, Training and Awareness-Raising: The government is conducting environmental education programmes 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 Environmental Research (NIER), a subsidiary body 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 programmes for environmental managers of private entities. 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 on environmental issues as well as climate change. Brochures and booklets are also considered to be useful tools for public awareness.

Information: Various air pollution control policies and programmes 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 can be 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). The automatic air pollution monitoring network measures seven atmospheric pollutants which includes TSP, SO₂, NO₂, CO, and O₃, among others.

Research and Technologies: The Ministry of Environment has established a nationwide ambient air quality monitoring network which measures six major air pollutants: sulfur dioxide, particulate matter, ozone, nitrogen dioxide, carbon monoxide, and lead. Each station is also equipped to monitor acid rain. The government is carrying out research on greenhouse gas and air pollutant reduction technologies.

Financing: The budget for the MOE for the year 2000 increased 12.9% compared to the previous year, from 1,154 billion won (910 million US\$) in 1999 to 1,302 billion won (1,026.8 million US\$), and now accounts for 2.32% of the government's total budget (125,179 billion won, 98.7 million US\$). About 3.6% (47 billion won, 37 million US\$) of the MOE budget is allocated for air pollution control.

Cooperation: Recently, there is a growing concern about the long-range transport of air pollutants in the East Asian region. Research projects are jointly conducted among the neighboring countries mainly between the Republic of Korea, Japan, and China. Regional cooperation is being promoted in efforts to strengthen joint research and to build an information exchange system in East Asia.

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 Government of Japan along with ten countries in the East Asian region since 1993.

The Republic of Korea has ratified UNFCCC in 1993, and signed the Kyoto Protocol in 1998. The government is ready to constructively join international efforts by fully enforcing the Kyoto Protocol by 2002. 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 researches on the possible measures to reduce the production and emission of such gases. 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, as a requirement of the Convention, the Protocol, and its Amendments, have been successfully taken.

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1.1 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 Framework Act on National Territory, 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 Territory Plans were primarily led by the central government, the Fourth Comprehensive National Territory Plan encourages the active participation of local governments, residents, and NGOs as well as the central government. Whereas the central government introduce guidelines for national land policy and enforce 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 Fourth Comprehensive National Territory Plan 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 National Territory Plans have been implemented since the 1970s. The First Plan (1972-1981) focused on establishing developmental centers 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; and the Third Plan (1992-2001) aimed at improving public welfare and conserving natural environment by dispersing development regionally and nurturing local 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. Despite efforts to implement systematic and environmentally friendly land use plans, however, side effects, such as difficulties in developing suburbs and traffic-related problems, have arisen. Unlike the previous plans, the Fourth Plan (2000-2020) 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 Territory 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 Territory Plan also suggests the enhancement of the power of execution for sustainable development by enacting the “Framework Act on National Territory”.

Status: According to the Act on the Utilization and Management of the National Territory, land use system is divided into 5 categories. (Status of land use(2000) : urban area 15.1%, semi-urban area e1.0%, agricultural ara 51.3%, semi-agricultural ara 25.5%, natural environment presevationl area 7.1%)

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. (See Internet Homepage of the 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) covered the development of topological maps, common thematic maps, and computerized cadastral maps. It also involved 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: MOCT has maintained cooperation and exchange in the field of land resources with Chinese government since 2000, through regular meetings to discuss polices and pending issues on land resources and management.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: The Korea Forest Service 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.

In accordance with the Forest Act enacted in 1961 and amended in 1994 to reflect emerging challenges and opportunities in forest resource management, four 10-year Forest Plans have been formulated. Through the Forest Plans, Korea has successfully reforested the country. In 1973, the first 10-year National Forest Plan was devised to complete the reforestation of bare forestlands and enhance the protection of the existing forests. The implementation of sustainable forest management is embodied in the Fourth 10-year Forest Plan launched in 1998. The Promotion and Advancement Act on Forestry and Mountain Region was formulated to promote the intensive management of private forests which make up 70 % of all forests and to develop the mountain villages in sustainable ways in Korea. The Framework Act on Forest Policy was formulated in 2001 to guide the basic strategy of the forest policy focusing on implementing sustainable forest management by balancing the harmony between conservation and use of forest resources. The Framework Act on Forest Policy and Forest Act will guarantee the public involvement along with the stakeholder groups' participation in the process of forest policy formulation. The Arboretum Establishment and Promotion Act was also formulated in 2001 for conservation and utilization of genetic resources of plants resources.

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.

Programmes and Projects: From 1998 to 2007, the Korea Forest Service implements the Fourth Forest Development Plan. In this plan, Korea Forest Service will complete government-initiated reforestation programme and switch it to forest management programme 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: developing valuable forest resources; fostering competitive forest industry; and promoting healthy and pleasant forest environment for people. In order 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 encourage the national and private forest management, the Korea Forest Service will introduce proxy management system managing private forest by proxy management agencies and multiple management system, and train foresters intensively as a main body of forest management. The Service will also support sustainable management through establishing commercial forests plantations 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 urban living environment, create forest recreation areas based on the special characteristics of the regions, and provide training sites for the youth. Finally, the Korea Forest Service will expand the mountain village development programmes, prepare the unification of Korea, and promote international cooperation for the forestry-related issues and development of the overseas plantation.

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, 0.15 ha, only 20% of the world average. The total stock volume is 407 million m³ and the average stock volume per ha is estimated to be 63 m³. Forestlands are classified into national, public, and private forests by ownership and reserved and semi-reserved forests by utilization. National forests account for 22% of the total forestland and five National Forest Offices cover most of them. Forests owned by local governments

and public organizations such as educational institutions 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.

Capacity-Building, Education, Training and Awareness-Raising: Citizen groups are also being involved more actively in forestry issues by means of National Campaign Forests for Life. The Movement ignited citizen groups' aggressive involvement in forestry issues and gave birth of other citizens groups such as Northeast Asia Forest Forum, Forests for Peace, and School Yard Forest Movement. These forest movements have been established as a movement to reform Korean society.

Over two million people privately own 70% 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 environment 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 to train forestry workers about the professional technical discipline of forestry activities. The center's aim is to train the forestry workers as professional forest technicians qualified for the forest management technique under the National Techniques Qualification Act. These forest experts 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 programmes and forest activities. These programmes will be expanded upon in the near future.

Information: Information is available at: <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 programmes.

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

Cooperation: The Republic of Korea actively participates in the international fora dealing with forest and environmental conservation issues. The Government ratified forest and environmental 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). Furthermore, efforts have been made 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 China, Mongolia, Myanmar, Australia, etc. to enhance forestry fields' cooperation through research collaboration, technology transfer, and education.

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1.1 Chapter 12: Managing fragile ecosystems: Combating desertification

AND DROUGHT

Decision-Making: The Korea Forest Service 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 Korea Forest Service is national coordinating body of the project relating to afforestation and rehabilitation with emphasis on transfer of technology. The 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.

Based on experience and know-how, Korean government plans to increase participation in combating desertification in this region. 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 programmes.

Major policy on the combat desertification focused on investigation of current impact of Yellow Sand (Asian Dust Storm) and its remedy by forest sector in Northeast 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 programmes for forest officers from developing countries which are being suffered by desertification to introduce them the experiences of Korea.

Programmes and Projects: Korea actively increases 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. Northeast Asian Forest Forum also initiated the project of Friendship Forest Establishment in China and Mongolia since 2000.

Status: In the past several decades of socio-economic 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.

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.

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

Since the Yellow Sand widely affects Korean peninsula during spring season, Korean people are well aware of the reason and impact of Yellow Sand from the desert of China and Mongolia. People's awareness is ever increasing the importance of role of forest including afforestation and rehabilitation of degraded area. Korean government plans to increase participation in combating desertification in this region,. Efforts are made to raise the Korean people's awareness regarding this issue through holding the Northeast Asia Forest Forum, campaign of the Global Sharing Movement, etc.

Information: Information is available at: <http://www.foa.go.kr>

Research and Technologies: International cooperative research projects have been implemented 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 projects between Korea and Mongolia emphasize the establishment of tree nursery near Ulanbataar. Those efforts of cooperative project ensure the greening of the degraded and desert area, and consequently the migration of Yellow Sand.

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

Cooperation: The Republic of Korea has accumulated valuable experiences and technology from the past reforestation and erosion control projects in denuded lands. Therefore, its vast experience and modern technology could be used to solve desertification problems in seriously affected countries in Asian countries. 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 reforesting the land. Since 1980s, the Korean government has invited many officials from developing countries in Southeast Asia and other regions to introduce the successfully returned forests to them. Recently international cooperation of this field with neighboring countries, especially China and Mongolia, for the exchange of forestry experts and joint research programmes has been strengthened.

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. The private sector will play a significant role in environmental cooperation and these efforts will also be mobilized to reduce poverty at the regional and international level.

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Chapter 13: Managing fragile ecosystems: sustainable mountain development

Decision-Making: The Korea Forest Service is the primary organization responsible for mountain. In accordance with the Framework Act on Forest policy and the Promotion and Advancement Act of Forestry and Mountain Region, the central and local governments have a right to designate the Region of Mountain-village's Promotion for developing the mountain region and improving environment for its indigenous inhabitants. The Korean government also establishes and implements the integrated policies to develop the new and additional income sources of mountain villagers and better life standard.

The Forestry Cooperatives pursue the improvement of the socio-economic position of the mountain villagers through their collaborative projects for forest protection, reforestation, silvicultural activity, and sale of by-products. The Eco-village Movement, one of NGOs, partially supported by Korea Forest Service is positively 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 objectives of improving living conditions, promoting eco-tourism, and raising the income level by developing new income sources, including forest by-products 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: (1) developing diverse income sources under the consideration of each mountain village's physical, social, and economic characteristics; (2) improving forestry and agricultural production conditions; (3) reforming living environment including transportation, telecommunications, public health, clean water, and sewage systems; and (4) creating the beautiful scenery of villages with forests to promote forest lodgings fitting in. Through these measures it can be possible to obtain a better public awareness for mountain village areas and to contribute to a healthy and comfortable life.

Status: 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. 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.

The Republic of Korea is a typically 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 selective 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.

Capacity-Building, Education, Training and Awareness-Raising: The voluntary participation and self-awareness of the mountain villagers become the base of the project of mountain-region development. There are many opportunities for the local residents to participate in this project such as the mountain village development committee, village meeting, and public hearing. The committee is composed of the representatives of village, government officials, planners, and relevant experts.

Information: Information is available at; <http://www.foa.go.kr>

Research and Technologies: The Korea Forest Research Institute carries out research activities related to mountain-region development within the criteria of sustainable development. The project on the various types of development takes into account each mountain village's unique natural and cultural characteristics.

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

Cooperation: The Republic of Korea participates actively in the international fora including FAO dealing with forest ecosystem and sustainable mountain development issues.

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CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: The Ministry of Agriculture and Forestry (MAF) is responsible for policies on sustainable agriculture and rural development. The Committee for Environment-friendly Agricultural Development was established in 1999, with participation of government officials, experts, NGOs, consumer groups, the National Agricultural Cooperative Federation and the National Forestry Cooperative Federation. Major Groups include farmers' groups, communities, women groups related to agriculture, and even non-agricultural groups. The MAF established the "Environment-friendly Agriculture Act" in 1998 and subsequently revised ordinances and regulations relating to the Act in 2001 to modify the certification system to correspond to international standards of organic farming. The use of farmland for non-agricultural purposes requires approval of the MAF that takes into account the value of farmland conservation.

The Republic of Korea annually reviews national policies related to food security in order to meet the basic goal of the 1996 World Food Summit. "Rural Development Measures and the Agricultural Policy Reform Plan" drawn up by the Presidential Commission on Rural Reconstruction (PCRR) have been a fundamental basis for national policy on food security. All the major stakeholders took part in the formulation of participation-based agricultural and rural policies, particularly for food security. Since the inauguration of the new administration in 1998, a broad-based reform has been undertaken in line with the Rural Development Measures, the Agricultural Policy Reform Plan, and the basic objectives of the World Food Summit as part of the effort to ensure consistent national food security in every aspect of the nation including economic, political and social areas. In 1996, the MAF established the "Environmental Policy in Agriculture, Forestry and Fisheries for the 21st Century," with the emphasis on: reducing pollution and other environmentally harmful effects on agriculture, conserving and improving the agro-environment, and encouraging environment-friendly farming systems such as organic farming and low input sustainable agriculture. The "Five Years Plan for the Promotion of Environment-friendly Agriculture" was set up in 2001. This plan has various goals including the reduction of the use of pesticides and chemical fertilizers by up to 30% of 1999 levels by 2005.

The "Ten Years Rural Water Development Plan" (1995-2004) was adopted to meet the water demand for early or pre-summer droughts 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.

Programmes and Projects: In 1999, the state initiated a direct payment programme for the environment-friendly farming in environment protection areas that exercise environment -friendly farming practices.

The government's major actions relating to the agricultural and fisheries sectors include: 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 to stabilize prices for agricultural and fisheries products; setting up and implementing a "Comprehensive Plan for Rice Industry Development" to ensure self-sufficiency in rice while enacting the Sustainable Agriculture Promotion Act in late 1997; 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 while 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 such as projects for farmland maintenance, developing water resources for agriculture, and improving irrigation and drainage; executing various projects to develop and conserve a variety of animals and plants by collecting and improving various genetic resources for food and agriculture; implementing the commitments under the UR Agreement on Agriculture, while endeavoring to harmonize sanitary and phytosanitary inspection measures with relevant international standards; and striving to protect domestic people, animals and

plants from the unexpected outbreaks and proliferation of exotic animal and plant diseases and food-borne diseases.

Status: The Korean government has adopted various methods to maintain and improve the basic agricultural environment such as soil and water while restricting agricultural land diversion. It has also worked to maximize positive effects of agriculture on the environment and to develop agriculture as a pollution filtering industry.

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 which occur at the peak of water demand for agriculture.

Yet, as a result of the government's continuous efforts to achieve a perfect nationwide irrigation system, a sound production base for rice has been established. A total of 880,000 hectares or 77% of the total paddy rice area is now irrigated by irrigation facilities.

The government has constructed drainage facilities in the areas that are subject to habitual flooding. Approximately 234,560 hectares of agricultural land was prone to flooding, but about 43% of the total area was protected from inundation in 2000. The remainder will be completely protected by 2009.

Statistical information on the Korea's consumption of primary inputs such as seeds, fertilizers and pesticides for the past five years is as follows: *Seed Production in 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: Since 1998, the government has carried out model projects nationwide to promote environment-friendly and sustainable agriculture. For this end, Environment-friendly Agriculture Promotion Zones and Environment-friendly Agriculture Model Villages have been established. Also, the Korean government implemented various programmes to train farmers on IPM (Integrated Pest Management), who are willing to learn organic farming and low-input sustainable agricultural techniques. Soil conditioners are distributed periodically to farmers to improve soil quality. Loans and subsidies are also given to entitled farmers for the projects designed to develop sustainable agriculture.

Public education and mass media measures on sustainable agriculture focus on the importance and modality of environment-friendly farming. Consumer's role in developing sustainable agriculture is also emphasized. Recently, the Korean government developed a new project to strengthen cooperation among farmers, consumers, and policy makers.

In Korea, the government is operating 150 pest forecasting sites and 1403 field observation sites for close observation of pest outbreaks, and periodically educating farmers so that they can abide by pesticide guidelines that contain information on crops, pests, application rates, frequency, and pre-harvest pesticide application period. Through this education, the government aims at to minimizing the misuse of pesticides.

The IPM Programme has provided IPM training for extension service staff members and farmers. Since 1997, through the IPM Programme, the government has offered IPM validation and training in nine provinces on non-rice crops, including greenhouse crops, potatoes, peppers, apples, persimmons, watermelons, pears, and citrus fruits.

In close cooperation with farmer's organizations, the Korean government is conducting a nationwide campaign called the Green Field Movement to encourage the cultivation of winter feed crops and green manure crops.

Information: Agriculture-related information is available on the following web sites; www.maf.go.kr for the Ministry of Agriculture and Forestry, and www.rda.go.kr for the Rural Development Administration.

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. Since 1988, the government has been modeling integrated nutrient management and studying nutrient balance in crop cultivation. The relationship among the farming area, cultivated crops, used fertilizers, and the amount of chemical and organic fertilizers applied is under investigation. The amount of nutrient inputs, plant uptake, remnants in soil, and volatilization are also studied.

Other research areas include: the optimization of effective and efficient use of various nutrition sources through integrated nutritional management skills; effects of ultraviolet radiation on plants, animals, and agricultural activities, researches to study the characteristics of the initial growth of *Tilia Amurensis* Rupr. seedlings; and early warning systems to monitor factors affecting food supply and demand through the establishment of meteorological observatories for traversing observations and agricultural meteorological observation. Also, a joint committee on agricultural meteorology for stable food production has been established and is co-managed by the Rural Development Administration and the Korean Meteorological Administration.

Financing: National budget is available.

Cooperation: In collaboration with UNDP, Korea has implemented Integrated Pest Management (IPM) Programme since 1993. Through the exchange of IPM experts and information, the IPM and INM Programme has strengthened cooperation systems within the Northeast Asian region in order to reduce crop losses caused by migratory pests and pesticide applications. There has been no official relationship between the global IPM Facility and the Korean government/Korean IPM Programme.

For trainees from Asian and African developing countries as well as countries in transition to market economies, the Republic of Korea provides education and training courses on agricultural and rural development. It also cooperates with various cost-sharing agricultural research and development projects with UN agencies, such as FAO, UNDP, IFAD, and CGIAR research centers (CIMMYT, CIP, ILRI, and IRR).

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: The government has prepared various systems to protect and/or sustainably use biodiversity and has been identifying ways to promote participation of local governments and residents in the policy-making process. The Ministry of Environment (MOE) 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 government agencies and research centers associated with natural resource management are addressing biodiversity issues. For this purpose, the Nature Conservation Bureau in the MOE is taking a central role.

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 Biodiversity Strategy” 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 Biodiversity Strategy 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 2003. The identification of valuable and vulnerable ecosystems and species is one of the main objectives of the national survey.

Programmes and Projects: In 1997, the government formulated a long-term National Biodiversity Strategy to ensure the systematic management of nation’s biological diversity. The Strategy includes various programmes for the protection and sustainable use of biological diversity through, for example, designation and management of protected areas, protection of endangered species, and surveys of biodiversity in forests, wetlands and coastal areas.

Status: Various official designation of protected areas (i.e., natural ecosystem protection areas, national parks, bird and mammal protection areas, and natural forest protection areas) allows parcels of conserved land to function as in situ conservation. Such protected areas account for around seven per cent of the total national land area. In addition, the Republic of Korea has adopted special measures for several endangered wild species to protect them.

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 NGO 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 MOE, 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 MOE is also providing information about the status of biodiversity, designation and management of protected areas, and biodiversity-related policies through the Internet.

Research and Technologies: The government plans 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 programmes have been limited. However, as emphasis on biodiversity issues gradually increases, financial resources are expanding.

Cooperation: 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.

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

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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 environmentally sound technology (EST) R&D management, the Korea Institute of Environmental Science & Technology (KIEST), supervised by the Ministry of Environment, has been dedicated to the promotion of ESTs 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 technology database for promoting Korean environmental industry. 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 is the Environmental Technology Verification programme where EMC aids local governments and private companies to select the best available ESTs. Also, EMC provides various kinds of information on ESTs to both domestic and foreign.

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 programme, the Korea Accreditation Board (KAB) was established in 1996. Since then, KAB has been carrying out the Pilot EMS Certification Programme, 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.

A new EST developed 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 one's 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 and disseminate ESTs. The Regional Environmental Technology Centers (RETECs), now located in 16 areas, operate in heavily polluted areas to serve as focal institutions that can address regional environmental issues autonomously.

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; e.g. the establishment of the Evaluation Center for New Environmental Technology. In addition, the Korean government, in conjunction with DESA, UNEP, and UNCTAD, is presently working out a publicly owned environmental technology transfer project as one of the plans indicated in the 1997 Programme for the Further Implementation of Agenda 21.

Biotechnologies: 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 and

commercialized 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 biodiversity and sustainable use of biotechnology; and, 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.

Programmes and Projects:

Technologies: The promotion of innovation in the ESTs is being undertaken through the implementation of the Environmental Engineering Technology Development Project (1992-2001) and the Basic Environmental Technology Development Project as well as through the establishment of the Long-Term Comprehensive Plan for Environmental Technology Development (1998-2007).

The Highly Advanced National Project (HAN Project) is an environmental research project that includes a technology project which covers non-polluting manufacturing technology, clean product development, and clean production methods. In order to systematically and comprehensively develop and cultivate domestic ESTs and promote the development of low-pollution technologies, the Ministry of Environment is annually implementing research projects such as Eco-technopia 21 and encouraging the relevant agencies to use advanced ESTs, to meet the environmental standards. In addition, in order to promote low-pollution technology development and raise consumers’ awareness of environmental preservation, eco-labelling system was adopted.

The 21st Century Frontier R&D Programme is an ambitious long-term programme following up on the HAN Project. The programme was initiated in 1999, and its mission is to develop core technologies to help secure leading-edge technologies in promising areas, including industrial waste recycling, crop functional genomics, sustainable water resources, plant diversity, and so on.

In 1995, the Ministry of Environment decided to introduce the Environment-Friendly Business Operation (EFBO) programme, defined as a proactive environmental management practice while promoting cooperation between industries and the government, and development of innovative technologies and practices by NGOs. Business organizations adopting this method are asked to strictly re-evaluate, manage, and develop new environmentally friendly product designs, production processes, and final treatment processes. The evaluation of environmental impacts includes the entire production and supply chain, from product design to raw material acquisition, input, production and post-treatment of pollutants. The EFBO programme also includes revised environmental protection standards, clearly defined roles and responsibilities, public education and awareness training programme, prevention and clean up procedures, in-door inspection plans, and urgent action plans. The Ministry of Environment expects industries to implement pollution abatement production processes.

Biotechnologies: The Korean government initiated a 14-year national biotechnology development programme, 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 New Functional Biomaterials R&D Project in G7 project 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 programme (NRL programme) 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 focused 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 to 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: 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 EST development 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: Exports increased by 8.6%, which in turn brought 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 RETeCs 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 KIRST 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 programmes, the National Institute of Environmental Research has a programme for government employees working in the environmental fields and technicians working in pollution prevention facilities, companies, and other environment-related businesses. An environmental technology development and commercialization courses will be added to the education curriculum of government employees in the environmental field.

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 (biotechnologies) 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 programmes 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: 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 ESTs 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. Twenty-six organizations in the Republic of Korea are currently registered with UNEP's INFOTERRA. Another way to access information is through DIALOG of the United States, the world's largest information bank, and domestic communications networks such as S&T DB of the Korea Institute of Science and Technology Information, and KOSIS (Korea Statistical Information System) of the National Statistical Office.

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: The Eco-technopia 21 Project launched in 2001, aims 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 G7 Project, which began in 1992 as the first national research development project of the Korean government, made a significant contribution to the upgrading of Korea's environmental technology and the establishment of an environmental research foundation.

Biotechnologies: See under **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 US\$ 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. Examples include an agreement with Japan for environmental protection technology development and management, especially for the marine environments in the region; an agreement with China focuses on the technological development for studying vehicle emission, reducing acid rain, and converting urban solid wastes into fertilizers; and agreement with the Russian Federation aims 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 is providing US\$ 1.5million for thirty-four projects in 2000. It is also supporting the establishment of overseas cooperation centers, joint research centers, and biotechnology special programmes. The same Ministry is providing finance to the Korea-China Bioscience and Biotechnology Cooperation Center and the Korea-Israel Biotechnology Special Programme. 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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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: The Ministry of Maritime Affairs and Fisheries (MOMAF), established in August 1996 has the overall responsibility for conservation and management of oceans and coastal areas. The central government, local governments, fisheries cooperatives, and research institutes share the responsibility of protecting ocean and fisheries.

The existing decision-making mechanisms in this area include: Commission on Protection of the Quality and Supply of Fresh Water Resources (under the Prime Minister), the Committee on the Marine Development (under the Prime Minister), Coastal Central Management Council, the Committee of Maritime Pollution Response of MOFAT, the National Committee for Marine Environment Conservation, the National Committee for Port Policy, the National Committee for Fisheries Management, National Committee on Marine Development, National Committee on the Research & Assessment of Marine Pollution, and Deliberation Council on Total Allowable Catch. Local governments play an important role in decision-making by participating in legislation and policy making processes. 11 marine environment-related Non-Governmental Organizations 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%.

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 Act; Wastes Management Act, Act Relating to the Treatment of Sewage, Fishery Resources Protection Act; Act on Management of Fishing Grounds etc. 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. Total Allowable Catch (TAC), as well as an ongoing restructuring of fishery activities, governs the sustainable use and conservation of marine living resources.

Programmes and Projects: Various national programmes and projects are being progressed. Several major ones include: Comprehensive Management Plan for the Lake Shihwa Special Management Area; Korea Sea Grant Program; Marine Environment Supervision Program; Establishment of the coastal management Information system; Fishing Grounds Clean-up Project.

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. 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.

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 programme 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 are made.

A Special Training Programme for Sustainable Coastal Management is being conducted by the Institute of 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; and 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 government 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 as follows: 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: Various researches have been performed and are being conducted by ocean-related research institutes. These include; establishment of the national integrated coastal management plan; studies for the sustainable use of tidal flats in Korea: studies on the status of socio-economic utilization; measurement of the conservation value for Korean coastal wetlands; establishment of comprehensive management system on marine debris in Korea; studies on the environmental improvement around the Shiwaha Lake; building the trilateral partnership among South Korea, North Korea, and China for environmental management of the Yellow Sea, etc.

Financing: All activities are financed by the national budget.

Cooperation: The UN Convention on the Law of the Sea was signed in 1993 and ratified in 1996. The government is strengthening regional and international cooperation for the protection of the marine environment and living marine resources. The Republic of Korea is actively participating in international programmes such as the Study of Climate Variability and Predictability, and the Global Ocean Observing.

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 various oceans-related international agreements such as as IMO(International Maritime Organization), IOC(International Oceanographic Commission), 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) etc.. 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) such as IWC(International Whaling Commission), NAFO(Northwest Atlantic Fisheries Organization), ICCAT(International Commission for the Conservation of Atlantic Tuna) etc.

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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 (MOCT) has the overall responsibility for management of freshwater and water supply security. The Comprehensive Water Resources Management and Development Plan defines the national water resources approach in the Republic of Korea. At the performance level, the MOCT is responsible for securing water supply while the Ministry of Environment (MOE) is responsible for nationwide policies to protect water quality. Coordination and integration of water management policy and water quality improvement between the ministries and between the central and local governments are undertaken by the Commission on Protection of the Quality and Supply of Freshwater Resources under the Office of the Prime Minister. In addition there are bodies at the sub-national level dealing with water management such as the Local Environment Management Offices and the Local 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 formulating environmental protection policies and managing water resources in the area under jurisdiction and other activities delegated to them by the MOE and the MOCT. Especially in this field, NGOs play an important intermediary role between the government and the public and promote environmental awareness and voluntary participation of the people to protect freshwater, while conveying demands and concerns of the public to the government.

The River Act (1961) defines the basic principles on water resources management in the Republic of Korea. In addition, the Water Quality Preservation Act (1990), the Ground Water Act (1993), and the Dam Construction and Support Act (1999) comprise the general legal and regulatory framework for water resource management and development in the Republic of Korea. The Agriculture and Fishery Improvement Act (1997) covers the agricultural use of water; the Water Supply and Waterworks Installation Act (1961) and the Sewerage Act (1966) cover domestic and industrial use of water, and the Management of Drinking Water Act (1995) covers potable use of water. 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 Nakdong River (1999), Geum River (2000), and Yeongsan River (2000).

The Central River Management Committee, the Central Environment Preservation Consultative Committee and the Consultative Committee for Water Policy Adjustment play a major role in providing opportunities for all major stakeholders to participate in the decision-making process. Major environmental policies are also discussed in the Policy Council of Private Environmental Organization that consists of sixteen private environmental organizations. Private sectors can also participate in the decision-making process from establishment to implementation of policies related to freshwater resources through councils or committees. Various measures are being taken to increase women's participation in these groups.

Programmes and Projects: The Long Term Comprehensive Water Resources Plan is formulated and implemented in order to promote the efficient allocation of water. The water supply plan for distant rivers and plan for the use of groundwater have been formulated and implemented. In 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 preserve the quality of water resources, in view of the rapid industrialization and urbanization, the Republic of Korea is formulating and implementing the Water Environment Plan. This plan includes measures to

prevent the pollution of freshwater supplies such as EIA requirements, environmental and emissions standards and basic environmental facilities. In order to protect and conserve freshwater, the government designated and has managed the Water Resources Protection Areas and Special Zones. Also water quality has been continuously monitored and the selection of sites for industrial facilities is being regulated.

For the comprehensive water resource development and establishment of an efficient management system, the Ministry of Construction and Transportation will establish a long-term Dam Construction plan. As part of the plan, various actions will be implemented by 2011 to secure additional 1.2 billion tons of water supply.

MOE is implementing various kinds of measures to prevent water source pollution as follows: Designating buffer strips along the riversides of upstream water dam; Restricting the use of fertilizers and pesticides in the river area; Establishing non-point pollution reduction facilities, such as grassland, green space and artificial wetland, when building new cities, industrial complexes or tourism sites in the areas close to the river; Introducing a direct authority system for mayors and governors in the water source protection area; Making the total load management system mandatory; Purchase of land around the water source; Setting up undercurrent buffer facilities to prevent water contamination

MOE will also drive following policy tasks as part of the comprehensive water conservation measures: Introduction of demand management goal system by water suppliers and public institutions; Installation of water-saving devices in homes and businesses; A new water pricing system; Increased installation of intermediate water facilities; Replacement of deteriorated water pipes and improving water provision; Sewage and wastewater reuse; Utilization of rainwater and subway pumping wells; Water conservation and supply measures for habitually drought areas; Introduction of the water conservation investment specialty agency system; Promotion of water-saving technology development; Development of a water-saving education program; Operation of a water-saving campaign web site; Evaluation of water management and provision of incentives by local governments; Launching a nationwide water conservation campaign

As of 2002, one multi-purpose dam is being constructed. MOCT has a plan to build 12 environmentally sustainable multi-purpose dams by 2011 to increase water supply capacity up to 1.2 billion tons per year. Also 6 existing agricultural and hydropower dams will be redeveloped to increase water supply capacity and utilize existing water resources more efficiently. 9 small dams will be constructed to mitigate repeated water shortage in small areas. To transport the existing water resources efficiently, 11 strategic local waterworks and 5 industrial waterworks are being constructed. Additionally, 27 strategic local 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 total supply of annual water resources in the Republic of Korea is estimated to be 127.6 billion tons, while about 54.5 billion tons are lost and about 49.3 billion tons are discharged or lost during floods. The overall shortage of freshwater supply in the Republic of Korea will be 1.8 billion tons in 2011. Industry is responsible for only 9.2% of total freshwater use, and water supply is not a constraint to industrial development. The government is, however, implementing strict regulations on industrial wastewater discharge. 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 effluents. The government is introducing the effluent charge tariff, which assess a discharge fee according to the quantity of actual discharge. Furthermore, inspection, development, and management of groundwater resources are under way as well as the development of water conservation measures.

The capacity of wastewater treatment facilities in the Republic of Korea is 18.4 million tons per day; 70.5% of sewerage is treated as of 2000. Sanitation coverage will be increased from 53% in 1996 to 80% in 2005.

To effectively preserve water resources and secure reliable water supply, the government will reinforce demand-side, water-saving management strategies; for the area of water shortage, 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. About 41.8 million, 87.1% of the total population are served by 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 hold a joint water conservation campaign and the government supports a variety of activities to remind people of the importance of water on March 22 (World Water Day). Also, the government extensively promotes water saving through media outreach. A variety of educational programmes such as water-saving facility study tours, are also being developed to help and encourage people to save water.

Information: An information network for water resources management is being sought. The Ministry of Agriculture and Forestry collects information from the agricultural sector and the Ministry of Environment and the Ministry of Construction and Transportation collect information for the household and industrial sectors. 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, etc.. MOCT will invest about US\$ 23 million to River Basin Investigation Programmes.

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 conducted 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 US\$ 77 million will be invested to the research project by 2010.

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

About US\$ 27 million is being input annually to research and technology development on water resources. Examples of research projects include: promoting efficiency of water treatment facilities and developing advanced water treatment process as part of G7 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 water treatment 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 research on developing devices and systems for water conservation and recycling, to help rationalize demand management.

The current needs for wastewater treatment are reduction of nitrogen and phosphorus and removal of insoluble materials; for water treatment it is needed to develop technology to reduce algae. Some of these technologies are being developed in the research institutions. Industries are trying to develop wastewater reuse technologies and are vigorously expanding investment to wastewater treatment facilities in industrial complexes.

Financing: The Korean government will invest about US\$ 30 billion by 2005 in water supply and water quality improvement. 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.

There are no external resources invested in this sector which is funded by the National Treasury.

Cooperation: MOCT has maintained policy and technology cooperation on water resources with Japanese and Chinese governments since 1978 and 1995 respectively, through regular meetings to discuss policies and pending issues on water resources and management.

Under direction of MOCT, Korea Water Resources Corporation has provided 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 administrative 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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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 is the main legal instrument for sound management of toxic industrial chemicals. Laws for management of agrochemicals, and food and food additives are also in force. In the process of formulating laws and regulations, participation of the general public, NGOs, affected industries, and related government bodies is warranted through the public comment and review process and inter-ministerial consultation requirements before national assembly's review. The Prime Minister's office also plays a major role for policy coordination. The Committee for Toxic Chemicals Management has been instituted under Ministry of Environment (MOE); one of its major functions is to coordinate chemicals management programmes of different ministries.

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 management of scientific facts, the establishment of the information system from manufacturing to disposal, the harmonization of a variety of management tools with international standards, the burden sharing between industry, government, and the strengthening of national and international cooperation.

Programmes and Projects: Diverse chemicals management programmes are being formulated and implemented to meet both domestic policy objectives and international obligations. The Toxic Chemicals Management Plan (Currently Plan for 2001 to 2005 in effect) was developed to provide policies and direction. The major components are as follows: Existing Chemicals Evaluation Programme and Participation in OECD SIDS project; New Chemicals Notification Systems and its harmonization with OECD's minimum pre-market set data requirements; Endocrine Disrupting Chemicals (EDCs) and POPs Monitoring and Assessment Programme; implementation of PRTR Programme; participation of OECD Chemicals programme and IFCS activities; and, preparation of Stockholm Convention and Rotterdam Convention Implementation.

Status: In accordance with a 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 the 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 covers virtually all industries producing or using toxic chemicals. The results will be available in early 2002. Korea's chemicals management programme is in full compliance with OECD decisions including the GLP system and MAD (Mutual Acceptance of Data) requirements. The Korea Responsible Care Council was also formed in 1999, to develop detailed guidelines and a checklist for the safe management of chemicals in the industrial sector.

Capacity-Building, Education, Training and Awareness-Raising: The internet plays a major role in awareness raising and educating both the general public and professionals in the area of chemicals management. A wide array of private and public institutions operates websites related to chemicals management and safety, such as the Ministry of Environment and the National Institute for Environmental Research (NIER), NGOs, and private research institutes and universities. In 2002 the Korea Center for Chemicals Safety and Information was established under the NIER to disseminate information on chemicals. Many universities and professional schools offer degree programmes related to chemicals management in the Republic of Korea.

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

Research and Technologies: The MOE, Ministry of Science and Technology, and Korea Food and Drug Administration fund research on chemicals risk analysis according to their policy objectives. In particular, EDCs and risk assessment using bio-assay techniques are currently major research topics. The government initiated a research project on the development of release estimation methods for diffuse sources, with the intention of expanding PRTR in future.

Financing: The annual budget for the Industrial Chemical Programme administered by the MOE is US\$ 4 million, excluding staff salaries.

Cooperation: The Republic of Korea signed the Rotterdam Convention in 1999 and the Stockholm Convention in 2001; an MOU on the establishment of a cooperative framework exists on endocrine disrupting chemicals research between the Korean Ministry of Environment and the Japanese Ministry of Environment in April 2001; and, it has participated in the OECD Chemicals Programmes since 1996.

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

DECISION-MAKING:

Hazardous Wastes: The Ministry of Environment (MOE) is in charge of legislation and policy-making regarding hazardous waste management including the “Act on the Control of Transboundary Movement of Hazardous Wastes and their Disposal” Non-governmental parties participate in establishing major national waste management policies, through such platforms as a civic environmental policy committee consisting of 23 NGOs and an interfaith environmental policy committee incorporating 7 different religious groups. Meanwhile, the Presidential Commission on Sustainable Development (PCSD), consisting of representatives from government, industry and civic groups, also plays a critical role in waste policy formulation.

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 MOE 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 policies and to secure the national budget. See also above, under *Hazardous 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: There are programmes to limit waste generation at the production level; conduct operation analysis, and apply waste reduction goal and implementation tools to minimize volume of waste released at production level, depending on the characteristics of each industry. Five specified waste facilities in operation to deal with hazardous waste such as waste oil and PCBs generated in industries properly and safely, were privatized, in order to help lay a foundation for a cost-effective and efficient waste management industry. Management of hazardous waste producers include: 1) since 1999, specified hazardous waste management has been required to secure/demonstrate official authorization at each stage of handling, from disposal to transport and treatment, as well as annual accounting; 2) “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; 3) “Certificate system for legal treatment of waste” was established in 2001 to execute real-time monitor of waste generation and its treatment path; and 4) infectious wastes generated in hospitals have been regulated under Waste Management Programme since August 2000, to maintain strict control over them.

Solid Waste: The Ministry of Environment established and executed the 2nd nationwide policies for solid waste management (2002-2011). With regard to waste reduction policies, the volume-based waste fee 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. Programmes to promote environmentally friendly food culture include: providing practical guidelines in home and restaurant, designating model restaurant, building food bank network and expanding resource recycling facilities. Packing material and design are restricted, and use of refillable product is encouraged. Free provision of disposable products has been limited and regulated in restaurants, public bath, and lodging facilities since 1994. Since 1999, disposable bags cannot be distributed free of charge.

Resource recycling programme: A deposit system has been implemented for easy-to-recycle products since 1992. This promotes waste recycling by requiring deposits from product producers; the money is returned in proportion to producer’s performance in recycling. Since 1995, a waste release charge system, which requires advance payment for waste treatment cost, has been executed for products such as hazardous material containers, batteries, antifreezer, and fluorescent lamps. Voluntary recovery and recycling system by producers has been implemented since 2000. Since 1994, public institutions have been strongly encouraged to procure 13 designated recycled items -

- expanded to 181 items in 2001. 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 construction materials.

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 specified waste released is 2,779 thousand tons per year, as of 2000, which 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 US\$, respectively.

Solid Wastes: The expansion of waste facilities as of the end of 2000 is as follows: 78 landfill facilities with a total capacity of 67,844 thousand m³ are in operation, and 59 facilities are under construction, with a funding of 2,987 hundred million won; 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; 80 food waste recycling facilities are in operation, and 51 facilities are under construction, with a budget of 2,129 hundred million won; and, 15 waste recycling facilities are operational including four storage facilities and eleven temporary collection sites. Municipal and industrial waste totaling 234,282 tons were generated each day as of 2000. The amount of household waste generated has decreased by 44.6% and separate collection of recyclable wastes in turn has increased by 114% compared to 1994 by implementing the volume-based waste fee 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.

Notably, the volume-based waste fee system has resulted in a profit of 3,940 billion won in social and economic fields 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 are 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 for all three types of wastes is available at the Ministry of Environment website: www.me.go.kr.

Information:

Hazardous Wastes: The MOE 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 MOE 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 is 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 MOE has been cooperating since 2000 with the Ministry of Science and Technology on the 21st Century Frontier Project.

Solid Wastes: See above, under *Hazardous Wastes*.

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: Development of hazardous waste treatment technologies is partly funded by the national treasury.

Solid Wastes: Up to 30-50% of the total installation costs 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 30 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. Economic incentives in the form of preferential tax treatments are given to recycling companies to encourage this emerging industry. 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.

Radioactive Wastes: Information is 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, etc.

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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1.1 Chapters 24 to 32: Strengthening the Role of Major Groups

Women: Decision-Making: The Ministry of Political Affairs was established in 1988. The Presidential Commission on Women's Affairs along with so-called women's focal points in 6 key ministries were set up in 1998. The Ministry of Gender Equality was established in 2001 to replace the former Presidential Commission, with affiliated bureaux 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", enacted in 1987, provides the equality among men and women in terms of employment opportunities, treatment, as well as maternity protection. "The Women's Development Act" enacted in 1995, 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", enacted in 1999, has the purpose to ensure non-existence of 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. The second Basic Plan on Women for the years 2003-2007 is currently being coordinated in accordance to the assessment of the first program. 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; and, 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. Programmes

and Projects: As of 2000, various programmes have been implemented to provide research fund for distinguished women scientists and increase job opportunities for women scientists. From 2002, the Women into Science & Engineering (WISE) program will be implemented to promote the entry of female students into science and engineering majors through mentoring by women scientists. **Status:** Among public servants with decision-making positions, the rate of women's representation has risen from 1.9% in 1992 to 4.4% in 2001. In addition to this promising outcome, the number of women members of congress has increased from 1% in 1992 to 5.9% in 2001. The number of women representatives in local government assemblies has risen from 0.9% in 1992 to 2.1% in 2001. Also, the number of women appointees to governmental committees has increased dramatically from 5.5% in 1992 to 27.7% in 2001. Capacity-Building, Education, Training and Awareness-Raising: Information is available from the website at: www.most.go.kr.

Information: Information available from the website at: www.most.go.kr. Research and Technologies: Information is available from the website at: www.most.go.kr. Financing: Between 1997 and the end of 2001 the government has allocated some 291 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 for the WSSD. 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: The Youth Bureau of the Ministry of Culture & Tourism (MCT) is most directly involved in the issues related to the roles of children & youth for sustainable development at the national level. There are also youth departments at local government which are responsible for them at the local level. In order to increase healthy activities and promote environment-friendly life style of children and youth, the government enacted Youth Development Act in 1988. The national and local governments are supposed to undertake and implement appropriate strategies successfully. Based on the Youth Development Act enacted in 1988, the Ministry of Culture & Tourism has established two institutions, the Korea Institute for Youth Development (KIYD) in 1989 and Korea Youth Counseling Institute (KYCI) in 1990. The main objective of KIYD is to develop policies and programs improving quality of life of youth. In 1993, the government reformed Youth Development Act to provide the national and local government with social and political foundation for healthy adolescent development. In order to promote coordinated and systematic approach to youth policy, a 10-year National Youth Development Plan (1992-2001), which is currently being implemented, was established in consultation with all ministries. The first 5-year mid-term Youth Development Plan (1993-1997) and the second 5-year mid-term Youth Development Plan (1998-2002) were also been drawn up for more efficient implementation of the long-term plan. The main objectives of these long-term and mid-term Youth Development Plans are to increase healthy activities and environment-friendly life style for children and youth, to improve welfare assistance for disadvantaged youth and supporting their environment protection efforts, to expand adolescents' social participation and information exchange network on environmental issues, and to increase the chances of international exchange programs for the environmental consciousness of youth. **Programmes and Projects:** For the information about programs and projects, see the Bureau of Office section of the MCT website(www.mct.go.kr). **Status:** In the Republic of Korea, a number of youth organizations and youth activity facilities, such as Green Family Movement, Boy Scouts of Korea, Girl Scouts of Korea, Sea Explorers of Korea, are increasingly providing children and youth with programs to participate in healthy activities and environment-friendly life style of children and youth. For more detailed data, see the MCT website (www.mct.go.kr). **Capacity-building, Education, Training and Awareness-Raising:** The government, universities and NGOs provide various youth leader training programs which help them to have professional knowledge and techniques needed to guide youth programs. To become officially recognized youth leader, they are supposed to be taken the national examination for youth leaders and only those who pass the examination will be granted the license to lead youths. With the license, they may lead, teach, or train youths in various areas such as physical training, experience in nature, courtesy, social service, traditional cultural activities etc.. As of 2001, 7,144 youth leaders acquired the license. **Information:** Information is available at the Bureau of Office section of the MCT website (www.mct.go.kr) and KIYD website (www.youthnet.re.kr). **Research and Technologies:** Various studies on youth activity programs and environment-friendly life style are undertaken by KIYD and KYCI. **Financing:** The central government's budget on youth development was 33.4 billion won in 2001. And the local government's budget on youth development was 32.9 billion won in 2001. In addition, the Youth Fostering Fund was established under the Youth Bureau of the MCT in 1989 to ensure financial resources supporting youth programs by stable investment for youths. According to the Youth Fostering Fund Plan, the fund is to be raised up to 207.7 billion won by the year 2002. The major sources of the fund are the government contribution and the National Sports Promotive Fund. The amount of funds was about 159.1 billion won at the end of 2000. **Cooperation:** The National Council of Youth Organizations in Korea (NCYOK), which was comprised of 15 youth organizations, was established in December 1965. The NCYOK was established to contribute to the national youth development in cooperation with exchanges between youth organizations at domestic and international levels. As of June 2000, 62 of youth organizations joined the corporation. In addition, the government has been providing exchange & cooperative projects with international youth organizations such as World Assembly of Youth (WAY) and Asian Youth Council (AYC). To provide

youths with opportunities to obtain professional knowledge and a sense of internationalism, the government advocates for the participation of youths in major international youth conferences and international youth events.

Indigenous People: 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.

Non-governmental Organizations: Decision-making: For information on the participation of NGOs in decision-making, see the various chapters of this Profile, including chapters 2, 3, 4, 7, 8, 13, 17, 18, 19, 20 through 22, 39 and “Sustainable Tourism.” 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. Capacity-Building, Education, Training and Awareness-Raising: See chapters 4, 13, 15 and 19 of this Profile. 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 of this Profile. Financing: The government including the Ministry of Environment does provide financial support for NGOs on a broad basis through various projects initiated by the government. Cooperation: See Chapter 36 of this Profile for information on sub-regional cooperation.

Local Authorities: Decision-Making: See the various chapters of this Profile, including chapters 3, 4, 7-10, 13, 20-22, 35, 36, 40 and “Sustainable Tourism”; Programmes and Projects: See chapters 9 and 10 of this Profile. 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. Financing: A brief information on involvement of local governments in this area is described in Chapter on Sustainable Tourism.

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. See chapters 2 and 39 of this Profile. 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. 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. Based on the 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 through such activities as cleaner production technology development, transfer and dissemination, cleaner production assessment, development and implementation of LCA and DFE tools. Programmes and Projects: MOCIE lately launched projects aiming at developing and implementing cleaner production index, sustainability index, and environmental management accounting to business and industrial sectors. 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. Capacity-Building, Education, Training and Awareness-Raising: MOCIE initiated a project developing and implementing environmental management education programme for business schools in the Republic of Korea. Information: 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. 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 in 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 science and technologies 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 Programme Facilitation Law (1998). See Chapter 35 of this Profile in relation to Strategies/Policies/Plans and coordination bodies. 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 1980, KCAST adopted the creeds of scientists and engineers, including the creed of dedication to the general welfare of society.

Farmers: Decision making: The National Agricultural Cooperative Federation (NACF), consisting of over 90% of Korean farmers, is eagerly participating in the government's five-year project for environment-friendly agriculture. The NACF has also executed other environment-friendly projects for more than two decades. Status: The National Agricultural Cooperative Federation (NACF), the apex organization having 1,300 member cooperatives, has organized 2,405 groups for environment-friendly farming, and gives loans to farmers at low interest rates. The total

outstanding loans from 1993 to 2001 was about 100 million US dollars. Capacity building, Education, Training and Awareness-raising : The NACF educates farmers year-round by offering field training through its county offices located in rural areas. In 2001, the total number of trainees was over 3,500. The NACF also established a training center. By training 7,500 farmers every year, the center promotes to spread technologies for environment-friendly farming. To raise public awareness on environment-friendly agriculture, the NACF invites public to member farms in cooperation with major citizen groups. Over the last three years, about 3,000 people have participated in this program. Information, Research and Technologies : The NACF established a research project for environment-friendly farming with the support of the Rural Development Administration. Up to 2001, 128 research projects related to environmental-friendly agriculture had been conducted. While implementing such tasks, the NACF is also encouraging use of environment-friendly farm inputs. Financing : No information available

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

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, for financing 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 ones 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.

Programmes and Projects: 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: The Korean economy has been on the right track since financial crisis in 1997. After a 6.7 percent contraction in 1998, GDP growth leapt to 10.9 percent in 1999 and 9.3 percent in 2000.

Capacity-Building, Education, Training and Awareness-Raising: Korean environment-based energy taxation system was revised at the beginning of July 2000 to encourage to save energy consumption and promote protection of 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 at www.mofe.go.kr and Ministry of Environment at www.me.go.kr.

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 Chapter 3 of this Profile.

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: Many governmental agencies related to science and technology (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 biotechnologies, information technologies, 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.

The law for environmental technology development and support is playing 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 environmentally friendly industries.

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 plans emphasize the need for promoting basic scientific research, improving the technological infrastructure, training scientific technicians and developing technology for the public welfare.

The efficiency of environmental impact assessment has been promoted in the Environmental Impact Assessment (EIA) 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.

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.

The Korea Environment Institute and the Korea Institute of S&T Evaluation and Planning 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.

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

Also, the Korean government plans 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.

Status: Scientific technology development should meet the needs of the times, such as solving global problems in harmony with promoting the socio-economic 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 socio-economic needs and contributing to the common prosperity of the planet earth and human beings, a long term development programme 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 through the research institutions and later work for the industries. The 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 both by the government and private industry. The results of the research are mostly utilized by these sponsors. The government is also improving the quality of scientific knowledge by supporting international exchange programmes such as post doctorate programmes 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 curriculums 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. Relevant information is available from the website at the National Research and Development Integrated Information System (<http://www.kistep.re.kr>).

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, BT, NT, CT, ST, ET) and is expected to invest about 12 trillion won on these technologies during the year of S&T basic plan(2002~2006). 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.

<Investment Plan on Emerging Technology : 2002~2006>

(unit : one hundred million won)

CLASSIFICATION	BUDGET FOR YEAR '02~'06	Ratio(%)
Information Technology(IT)	60,141	46.8
Biotechnology(BT)	23,186	18.1
Nanotechnology(NT)	9,611	7.5
Space Technology(ST)	18,453	14.4
Environment Technology(ET)	13,040	10.2
Culture Technology(CT)	3,950	3.1
TOTAL	128,380	100.0

Including R&D budget(special accounts+general accounts) and a contribution of R&D project in information promoting fund

Cooperation: International Joint Research Programme has funded US\$ 69.3 million for 1,590 projects including development of environmentally sound technology since 1985(Size of the fund: US\$ 60,000/project in recent years). The programme 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 programme 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 programmes (post-doc programme). 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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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 supposed to enter school]

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.

The public middle school education will be free for all students by year 2004. 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. Besides, the government has made all levels of education (except higher education) free for physically disadvantaged students to ensure that all students can have an equal opportunity to receive public education. 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.

The number of teachers specialized in environment subjects is 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.

The heightened public interest has led to media-led environmental campaigns such as 'Save Our Streams' and 'Green Life Movement'. Moreover, the consumer protection movement has been sensitizing consumers since 1970 regarding damage that can be done by poor quality goods. 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 consumption-related concerns.

Information: The websites of Education in the Republic of Korea are as follows: *educational policies and programmes*: 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>).

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 2002 education budget was 22.3 trillion won, which is 19.9% of the central government's total budget, 112.0 trillion won, and the greatest share among the ministries. Of the 22.3 trillion won annual educational expenditure of the central government in 2002, 83.7%, or 18.6 trillion won, was transferred to the metropolitan and local offices of education for funding primary and secondary education; the remaining 16.3%, 3.62 trillion won, was directly managed as national funds by the MOEHRD. Below the table shows the national funds granted to different projects of the MOEHRD for the year 2002.

<Finances of MOEHRD for the year 2002>

CLASSIFICATION	BUDGET FOR YEAR 2002	RATIO
	(0.1 billion won)	(%)

Qualitative improvement of public education	4,135	12
Human resources development	1,939	5
Qualitative improvement of higher education	14,304	40
Qualitative improvement of vocational education	2,246	6
Insuring educational opportunity of the alienated populace	739	2
Personnel cost, basic projects, and support for affiliated institutions	12,671	35
Total	36,234	100.0

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 promote sustainable development through diverse educational programmes.

According to Joint Communique of the Second Tripartite Environment Ministers Meeting among Korea, China and Japan (February 2000), Tripartite Environmental Education Network (TEEN) was 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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**CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR
CAPACITY-BUILDING IN DEVELOPING COUNTRIES.**

This issue has been covered either under Chapter 2 or under the headings **Capacity-Building, Education, Training and Awareness-Raising** and **Cooperation** in the various chapters of this Profile.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

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

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1.1 Chapter 39: International legal instruments and mechanisms

1.1

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. 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: See information under the same heading the various other chapters of this Profile.

Status: A listing of major international agreements and conventions joined by Republic of Korea is as follows:

- 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 Antarctic 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 implementing environmental agreements such as the UN Framework Convention on Climate Change, the Convention of Biological Diversity, Cartagena Biosafety Protocol, etc.

Capacity-Building, Education, Training and Awareness-Raising: See under the headings *Capacity-Building, Education, Training and Awareness-Raising* and *Cooperation* in the various chapters of this Profile.

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

Financing: National Budget is available.

Cooperation: See under **Status**. 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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CHAPTER 40: INFORMATION FOR DECISION-MAKING

Decision-Making: Each segment 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.

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). Because of the issue of protecting business confidentiality, the Ministry of Environment is reviewing whether or not to open the information to stakeholders concerned, including local residents.

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 policies and programmes are consistent with sustainable development and also used to inform policy makers and the general public of progress made toward sustainable development.

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, with a few large corporations taking the lead, enterprises are working to enhance public awareness by publishing their own environmental reports.

Programmes and Projects: Although there is no way to include all of the information relating to sustainable development, the National Statistical Office publishes a yearbook with a core set of information gathered from each part of the government.

The OECD requires that various environmental 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 to 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.

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.

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 programmes 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 US\$) 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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1.1 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 (MOE). The objectives of the Action Plan are: promoting the greening of production and consumption; constructing basic environmental facilities; and planning environmentally friendly industrial development.

Programmes and Projects: Information is available at the websites of: the 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 programmes for the promotion of cleaner technology R&D; Programmes to promote the recycling of raw materials, including the introduction of the Good Recycled Mark, which is given to excellent recycled products; and programmes 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 Chapter 36 of this Profile.

Information: Information is available from the websites at: the Ministry of Commerce, Industry and Energy (MOCIE) <www.mocie.go.kr>; and the MOE <www.me.go.kr>.

Research and Technologies: Information is available at the websites of: the Ministry of Commerce, Industry and Energy (MOCIE) <www.mocie.go.kr>; and the MOE <www.me.go.kr>.

Financing: Information is available at the websites of: the Ministry of Commerce, Industry and Energy (MOCIE) <www.mocie.go.kr>; and the MOE <www.me.go.kr>.

Cooperation: Information is available at the websites of: the Ministry of Commerce, Industry and Energy (MOCIE) <www.mocie.go.kr>; and the MOE <www.me.go.kr>.

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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 tourism at the local level. Besides, NGOs, tourism agencies, industry associations, and experts participate in policy making process and cooperate to make more desirable policies.

Legislations which seek to ensure sustainable tourism include: Article 46 (Promotion of Eco-tourism) of the Natural Environment Conservation Act; and, Environmental Impact Assessment Act on Environment, Transportation and Natural Disaster.

Specific areas designated for eco-tourism and nature tourism are: National Parks across the nation (20, 6,473 km²); and, ecosystem Conservation Areas (11).

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 large-scale government: tourism development sites, park districts (within natural parks) or amusement parks to undertake specific assessments.

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 were included at a National Report, “National Strategy for Biological Diversity (1997).” Annual Action Plan for eco-tourism was 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; and, development of eco-tourism activities which are held in National Parks and nature-based recreation areas.

Several tourism destinations which are modeled for sustainable tourism (eco-tourism) are: Kanghwa-Do (Kyunggi Province); Jindo (Chon-nam Province); Joonam Reservoir (Changwon City); Jaeboo-Do (Kyunggi Province).

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 US\$ 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 US\$ 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; and, 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; and, 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 showing in detail all nature zones in the country 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 provided through various ways, such as government budget, government funds, public-private partnership funds, etc.

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.

Cooperation: 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; and, enhancement of regional cooperation for the development of environmentally sound tourism in the Tumen River area.

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