

Korea Environmental Policy Bulletin

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Policies on Promoting Environmental Industries and International Cooperation

I. Overview

Due to the seriousness of environmental issues being raised as a result of the effects of rapid industrialization, countries all over the world have been making significant investments in developing technologies related to environmental protection. Consequently, the environmental industry has become a sector of top priority in many countries.

Along with Information Technology (IT) and Biotechnology (BT), Environmental Technology (ET) has also become a promising technology of the 21st century. In fact, demands for ET have rapidly increased the implementation of environmental regulations in a number of countries due to the expansion of green production and consumption, and a closer relationship between the environment and trade. Recognizing these international trends, the Korean government implemented a systematic support policy in order to promote environmental industries as a strategy to improve the domestic environment and bolster economic development.

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To accelerate the development of environmental industries and improve international cooperation, the Korean government established and carried out, in the early 1990's, a policy that has undergone gradual and continuous development. During its early stages, the government placed emphasis on ET development, which served as the basis for environmental industries in the 1990's, and beginning in 2000, enforced a comprehensive environmental industry promotion policy.

Starting in 2005, the government placed significant emphasis on a systematic policy that connected domestic environmental industry promotion policy with international cooperative activities.

Of particular significance, the government established the 「Environmental Industry Development Strategy (2001~2003)」 in close coordination with nine related ministries, including the Ministry of Finance and Economy. The strategy was based on the results of ET developments in the 1990's. It provided strategies to 54 detailed projects divided into five sections, including ET

development and international cooperation. Additionally, in December 2005, the government established the 「Strategy for Promotion of Environmental Industry and Increase of International Cooperation」 and enforced five important policies consisting of promotion of ET development and supply, creation of domestic environmental market demand, scouting and promotion of promising environmental enterprise, establishment of infrastructure for environmental industry development, and expansion of international cooperation in environmental industry. In the same month, the government also established and enforced increasingly concrete and positive enforcement plans for environmental industry promotion to further international cooperation.

Concrete objectives included the promotion of the environmental industry as a future growth engine and contributions to environmental preservation by participating in worldwide environmental industry development and international cooperation through the following strategies :

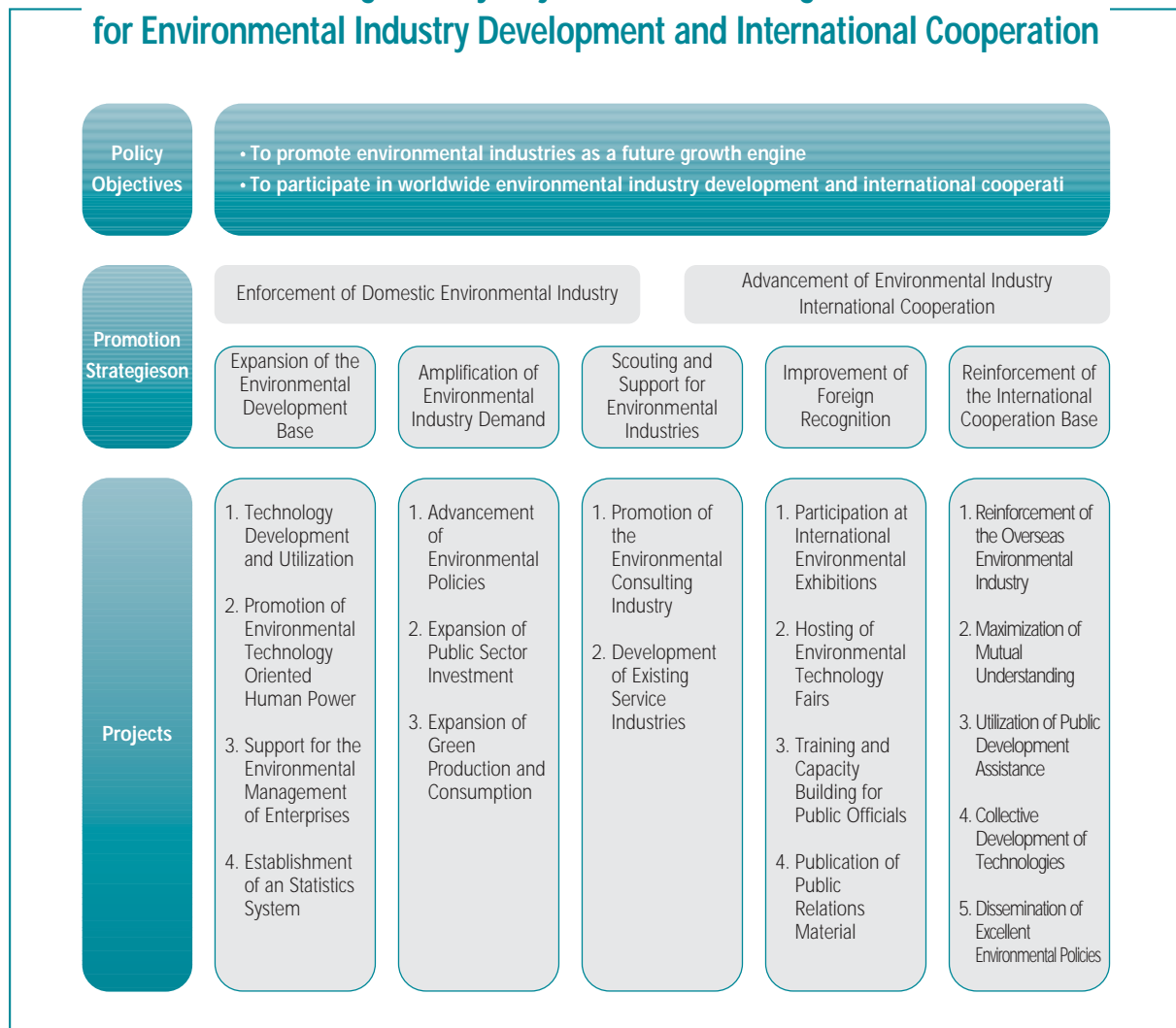
II. Policy on the Promotion of the Domestic Environmental Industry

In order to promote the domestic environmental industry, the government currently implements policies aimed at three fields, including the expansion of the environmental development base, amplification of environmental industry demand, and scouting and support for the environmental industries.

1. Expansion of the Environmental Industry Development Base

In 1992, the 「Environmental Science and Technology Development 10-year Plan」, which was subsequently renamed the 「G-7 Environmental Technology Development Project」 was enforced between 1992 and 2001 and acted as the

Fig.1 Policy Objectives and Strategies for Environmental Industry Development and International Cooperation



government's policy for ET development, utilization, and commercialization.

order to boost Korean ET to the levels of other developed countries by 2010.

Based on the results of 「G-7 Environmental Technology Development Project」, Ministry of Environment drew up and implemented a next generation ET development project which it dubbed the 「Eco-Technopia 21 Project」, or ET 21. Begun in 2001, the ministry planned to invest roughly KRW 1 trillion over a 10-year period in order to promote ET as a strategic national growth industry. The project call for investments into 12 major fields and 30 sub-fields for 10 years in

The objectives of the project are : to secure technology which solves pending environmental problems at Step 1 (2001-2003); to secure extended strategic environmental technology at Step 2 (2004-2007), and; to secure original technology of the future at Step 3 (2008-2010). The next generation core environmental technology development project has carried out a total of 1040 tasks costing KRW778.7 billion since 2007.

Ministry of Environment operates on-the-spot training courses and has enlisted institutes to offer long-and short-term courses in order to boost the capacity of human resources in environmental industry fields. In addition to courses offered by institutes, the ministry, in 2005, selected four universities for each field to nurture experts in specialized fields. By 2014, the ministry plans to add six more universities. In an effort to keep human resources up-to-speed, the ministry also carries out re-education courses and seminars to make information regarding changes to environmental policies and technology. The ministry currently entrusts these tasks to six institutes, but plans to add 15 more by 2014.

In addition, the ministry seeks out demands for ET and provides consultation on environmental management technologies to small and medium sized enterprises through Environment Management Corporation, Local Environmental Technology Center, and the Korean Association of Environment-Friendly Companies. The ministry also provides R&D support for technology innovation and finances selected environmental improvement projects.

2. Continuous Expansion of Environmental Industry Demand

An environmental industry generally has strategy-dependent characteristics that serve as the basis for the creation of related environmental markets. As environmental policies advance, the demand for environmental goods and services increase. In the 2000's, a series of advanced environmental policies stimulated the development of the domestic environment industry. New environmental

policies such as the 「Special Strategy for Metropolitan Atmosphere Improvement」 and 「Total Water Pollution Load Management System」 are but just a few examples.

When the 「Special Strategy for Metropolitan Atmosphere Improvement」 started being enforced in 2005, it resulted in demands for vehicle exhaust emission reduction devices and pollution control apparatus for large factories. With enforcement of the 「Total Water Pollution Load Management System」 in 2000, markets for basic environmental equipment and measuring instruments expanded. The demand for equipment and instruments related to the water policy was made possible due to its implementation in 38 cities and counties near the rivers of Nakdong, Geum, Youngsan and Sumjin.

Moreover, investments into fields related to water, atmosphere, waste, and the monitoring and measurement industry are constantly expanding. Through Build Transfer Lease (BTL) Systems, sewage pipeline facilities were installed, replaced, or repaired between 2005 and 2007. Diffusion of sewage systems in upstream regions of dam areas shall be 75% complete by 2010. Sludge recycling and incineration facilities are being constantly expanded as part of comprehensive measures pertaining to sewage and sludge recycling.

With regard to atmosphere and waste areas, natural gas vehicles are being promoted. There has been an increase in the number of exhaust gas reduction devices for automobiles, an intensification of household waste treatment facilities through incineration and reclamation, unused landfill maintenance projects, provisions and support for food waste recycling facilities, and support for the construction of recycling facilities in

local autonomous entities. In addition, there has also been an increase in demand for monitoring and measuring instruments due to the expansion and installation of smokestack Tele-Monitoring Systems (TMS) and the implementation of TMS to monitor effluent discharge from factories.

Since July 2005, the 「Act on Promotion of the Purchase of Environment-friendly Products」 has made it compulsory for public institutions to purchase green goods through the ‘Korea Eco-Products Institute¹⁾’. In addition, due to a green purchase agreement, industrial and distribution sectors have increased their demand for environment-friendly products. Moreover, in 2000, an Environmental Declaration of Products system²⁾

was introduced in order to expand business-to-business (B2B) of environment-friendly products.

3. Scouting and Supporting Promising Environmental Service Industries

To promote the environmental consulting sector, which has recently grown to become an influential and promising field, a registration system for environmental consulting businesses has been implemented and financial support has been provided through environmental improvement funds.

Tbl.1 Korean ET Fields of Excellence

Fields	Principal Environmental Technologies
Atmosphere	High-efficiency precipitation technology
	Desulfurization and denitrification treatment technology for exhaust gas and fuel
	Vehicle exhaust gas control technology
	Specific air pollutant treatment technology (VOC, dioxins, mephitic material, etc.)
	Measurement equipment and technology for air pollutants
Water Quality	Treatment technology for irresoluble industrial waste water
	High-quality water purification treatment technology
	Denitrification and dephosphorization technology for sewage and waste water
	High-efficiency treatment technology for sewage and waste water
	Treated water recycling technology and gray water facilities
	Automatic waste water treatment systems and comprehensive water quality management technology
	Biological sewage and waste water treatment technology (carrier, aeration/filtration, SBR)
Measurement equipment and technology for water pollutants	
Waste	Incineration technology
	General reclamation technology and leachate treatment technology
	Treatment technology for medical and other harmful waste
	Recycling technology (household waste, demolition waste, plastic, residual products, waste energy, etc.)

1) The institute handles the selection of environment-friendly products, develops certification standards, evaluations, education, and provides information to suppliers and purchasers, etc.

2) A system to stimulate environment-friendly production and consumption by indicating measured environment-friendliness from the process of production through disposal.

In 2008, the government is planning to conduct model projects that will provide environmental consulting education in order to further develop specializations in this field. Thus far, the government has enacted laws and established plans to build up specialized manpower for the purpose of establishing a development base for existing businesses involved in land purification and recycling. Particularly, the government lowered the interest rate for recycling industry promotion funds and, in 2007, created a 「Specialized Complex for Resource Circulation」 to act as an integrated recycling service enterprise. Furthermore, the

government also implements development projects for technology development, soil and ground water protection, pollution detection, pollution purification, and post-management services.

These environmental industry promotion policies greatly contribute to research, elevation of ET, increase of public and private investment in environmental facilities, and the expansion of environmental markets. While Korea entered the ET field late, technological excellence has been achieved in the three fields (see Tbl.1)

III. Advancing Environmental Industries through International Cooperation

The Ministry of Environment initiates overseas penetration and international cooperation as a principal fields of foreign environmental cooperation in association with domestic environmental industry promotion policy.

Mutual cooperation activities include the establishment and reinforcement of exchange cooperation, support for collaborative technology development with developing nations, and cooperative projects and exchanges intended to upgrade domestic environmental policies and systems.

1. Advancing Mutual Understanding through Cooperation Projects

To foster an increased understanding of Korea's environmental policies and industry and to bolster

international cooperation, the government supports the participation of local enterprises at international environmental exhibitions by operating the 'Korea Pavilion'. Between 2001 and 2006, participation was facilitated at 38 exhibitions in 11 Southeast Asian countries and China. Plans are being made to expand participation to exhibitions in the Middle East and the Commonwealth of Independent States (CIS).

In order to reinforce environmental industry cooperation between Korea and China, a Korea-China Environmental Industry Forum is regularly held. The forum, attended by government officials, academics, and business leaders, allows participants to discuss market trends, policies, and ways to enhance mutual exchanges in the environmental industry field. By holding technology fairs and forums with countries including China and Vietnam, the government improves and increases

the amount of mutual exchange. Accompanying such activities, Korea, China, and Japan have alternately hosted the Korea-China-Japan Environmental Industry Round Table Meeting in association with international exhibitors since 2001. Through such efforts, Korea has been able to promote the development of environmental industries within the region and achieve local cooperation and understanding of Korean, Chinese, and Japanese environmental technologies and policies. For example, funds for cooperation were increased by 19% in 2005 from 2004. Further efforts to increase and diversify target regions and countries have increased participation from 27 countries in 2003 to 38 in 2004, and 69 in 2005.

To develop and reinforce human networks and provide information regarding domestic environmental industries and policies, Korea invites environment related public officials and technicians from developing countries such as China and Southeast Asian countries to the International Environmental Initiation Program. By doing so, Korea gains experience in policy development and technical know-how for efforts to overcome the environmental degradation that occurred during Korea's rapid economic development. Between 2005 and 2007, approximately 300 people have participated in the Program.

The government also publishes the 'Korean Excellent Environmental Enterprise' magazine (in both English and Chinese). The magazine is distributed to related institutions, as well as internal and external embassies. Another advance is the co-ownership of advanced environmental policies and systems with countries all over the world. There have also been collaborations in related fields through the publication of 'Green Korea' and the 'Korea Environmental Policy Bulletin (KEPB)', both of which publicize environmental policy.

2. Enhancing Exchanges, Cooperation, and Supporting Cooperation Funds

In recent years, the Korean Government has established overseas environmental industry centers in Beijing and Hanoi in order to advance exchanges and cooperation for the domestic environmental industry.

With regard to China, the 'Korean Environmental Industry Technology Exhibition Permanent Pavilion' was established in Beijing in July 2001 in association with China itself. In 2003, it was expanded and reorganized into the 'Korea-China Environmental Industry Center' and operated by both countries. The Korea Environment and Resources Corporation, Environment Management Corporation, and the Korea Environmental Industry Association, which are affiliated with Ministry of Environment, opened the 'Korea-Vietnam Environmental Industry Center' in June 2005. Both environmental industry centers play important roles increasing bases of environmental industry cooperation.

Since 2005, Ministry of Environment has operated the National Environmental Technology Information Center (www.Konetic.or.kr) in order to enhance cooperation both domestically and internationally. The information center established a database of information regarding ET in a number of fields and makes it available to research institutes and private enterprise. Furthermore, in 2006 the information center established and began operating the Korea-China Environmental Industry and Market Information Network (www.eiskorea.org.cn). The information network provides information in Chinese on Korean environmental laws and policies, as well as information on how to

Fig.2 Homepage of the Korea-China Environmental Industry and Market Information Network



(<http://www.eiskorea.org.cn>)

cooperate with Korean small and medium sized enterprises involved with the environmental industry. The site also offers Chinese purchasers information regarding Korean ET and facilities.

Further efforts toward increasing environmental industry cooperation make use of Official Development Assistance (ODA) such as assistance provided by the Economic Development Cooperation Fund (EDCF) and the Korea International Cooperation Agency (KOICA). Of particular interest, since January 2005, the average interest rate on standard support conditions was lowered by 1.0% in order to increase international cooperation through the EDCF. Up until the end of 2005, environmental support projects for water supply facilities (10), sewage (6), wastes (5), and ecosystem (1) have been conducted.

The government has made efforts to create cooperation with partner countries in the environmental industry sector, facilitating grant aid projects through KOICA such as development studies, expert dispatches, and support through the EDCF. With regard to environmental projects, KOICA has mainly focused on capacity building through the invitation of trainees, dispatches of experts, and forestation projects. Since 1996, a total of 17 environmental projects and two development studies have been implemented.

3. Implementation of International Collaborative Research Projects

Korea and China have reinforced joint research after re-implementation of a joint research project

Tbl.2 List of KOICA's Environment Related Projects

• Projects Currently Being Implemented
- Beijing, China - Regional Forest Comprehensive Management Model Project (2005-2007/US\$1 million)
- Indonesia - Forest Improvement and Tree Nursery Modernization (2005-2007/US\$1.6 million)
- Indonesia - Mangrove Forest Restoration Project (2006-2008/US\$1.8 million)
- Arbil, Iraq - Modernization of Water Supply and Drainage Systems (2005-2007/US\$6 million)
- China - 2nd DSS Joint Monitoring Network (2006-2008/US\$0.724 million)
- Costa Rica - Bio-resources Joint Research Center Construction (2006-2007/US\$1 million)
- Chittagong, Bangladesh - Water Supply and Drainage Management M/P(2007-2008/US\$1.475 million)
- Vietnam - 2nd Forest Preservation (2007-2008/US\$0.9 million)
- Indonesia - Forest Preservation and Eco Tour Project (2007-2009/US\$1 million)
- Tunisia - Cork Oak Tree Forest Restoration and Sustainable Development Project (2007-2010/US\$0.6 million)
• Completed Projects
- China - 1st DSS Collaborative Monitoring Network (2003-2005/US\$0.633 million)
- China - West Region Forestation Project (2001-2005/US\$5 million)
- China - Miyun Forest and Water Preservation Project(2001-2003/US\$1 million)
- China - Tianjin Air Pollution Prevention Project (1996-1997/US\$0.2 million)
- Vietnam - 1st Industrial Environment Preservation Capability Reinforcement (2003-2005/US\$0.6 million)
- Myanmar - 2nd Middle Region Forestation Model Complex(2004-2005/US\$0.3 million)
- Myanmar - 1st Middle Region Forestation Model Complex (1996-1997/US\$0.18 million)
• Development Studies
- Jordan - Waste Water Treatment Facility Expansion (1994-1996/US\$1 million)
- Pakistan - Punjab Solid Waste Management Joint Research Project (KOICA-World Bank) (2006/US\$0.2 million)

was agreed upon during the Environment Ministers Meeting between Korea and China in 2003. The joint research project, the cost of which was covered by the Korean government, implemented five field projects (atmosphere, water purification, sewage and waste water, wastes, measurement and analysis equipment). The objective of the project was to develop localized technology to help China solve pending environmental problems. Custom-made collaborative technology development that accommodated demands in developing countries could help solve pending environmental problems.

Furthermore, in accordance with the agreement made by Korean and Vietnamese Environment Ministers Meeting in 2007, joint projects are

implemented between Korea and Vietnam. Similar cooperative projects are expected to be promoted not only with Southeast Asian countries, but also with African and CIS countries

4. Exchange and Transfer of Environmental Conservation Policies and Systems

Through recent cooperation, there have been requests for experienced initiators, trained benchmarking personnel, and system transfers from regions such as Asia, the Middle East, and Africa.

In order to satisfy these requests and transfer policies and systems while considering external situations, the government conducted an Environmental Policy Knowledge Partnership Project, initiated and held consultations regarding excellent environmental policies and systems, cooperated in drawing up environmental policies and systems, related technology and know-how, and invited specialists to Korea for training.

Ministry of Environment concluded, in 2001, a memorandum of understanding (MOU) with the World Bank regarding a Knowledge Partnership

Project. The Knowledge Partnership Project intended to share Korea's experiences regarding environmental policy to ASEAN members, including China and Vietnam. Following the MOU, Korea contributed to a Consultant Trust Fund (CTF)³⁾, while the World Bank implemented the project, selected a target country, a project, and a cooperation project participant.

Between 2002 and 2004, 11 projects costing roughly US\$1.36 million were implemented as a result of cooperation between partner countries and Korean research institutes. Six projects costing

Tbl.3 Knowledge Partnership Project Results

Cost	Initiated Projects		
	Target Country	Project Title	Duration
US\$0.42 million (10/2002)	China	Environmental Management of SMEs and Industrial Zones in China	10/2003-6/2005
	Philippines	Integrated Watershed Management for Laguna De bay For the Philippines	7/2003-5/2004
	Vietnam	Environmental Management for Traditional Craft Villages in Vietnam	5/2004-6/2005
US\$0.47 million (12/2003)	East Asia	Thailand, Vietnam, China : Livestock Waste Management in East Asia	7/2004-6/2005
	Philippines	Provision of Subordinate Laws and Guiding Principles According to the Enactment of Clean Water Laws	2/2005-7/2005
	Philippines	Introduction of Emission Trading in Water Quality Management Areas	1/2006-7/2006
	Vietnam	Ecological Design Plan Options for Urban Development Areas - A Case Study in Haiphong City, Vietnam	6/2005-5/2006
	Laos	Local Development Strategy (Environmental Side)	5/2004-6/2005
US\$0.47 million (12/2004)	China	Environmental Management for Conversion to Circulating Economy	10/2005-6/2006
	Vietnam	Industrial Pollution Management in Vietnam	7/2005-6/2006
	East Asia	Development of an Environment-friendly City	10/2005-6/2006

3) CTF : Grant-type fund supplied to World Bank, a project participant being restricted to a possessor of the nationality of contribution country, the restriction about the region and field of project being possible

US\$0.95 million were implemented between 2006 and 2007. Domestic policies were collaboratively developed and initiated for the creation of Haiphong, an eco-city in Vietnam and environmental management was offered to small and medium-sized enterprises and industrial complexes in China.

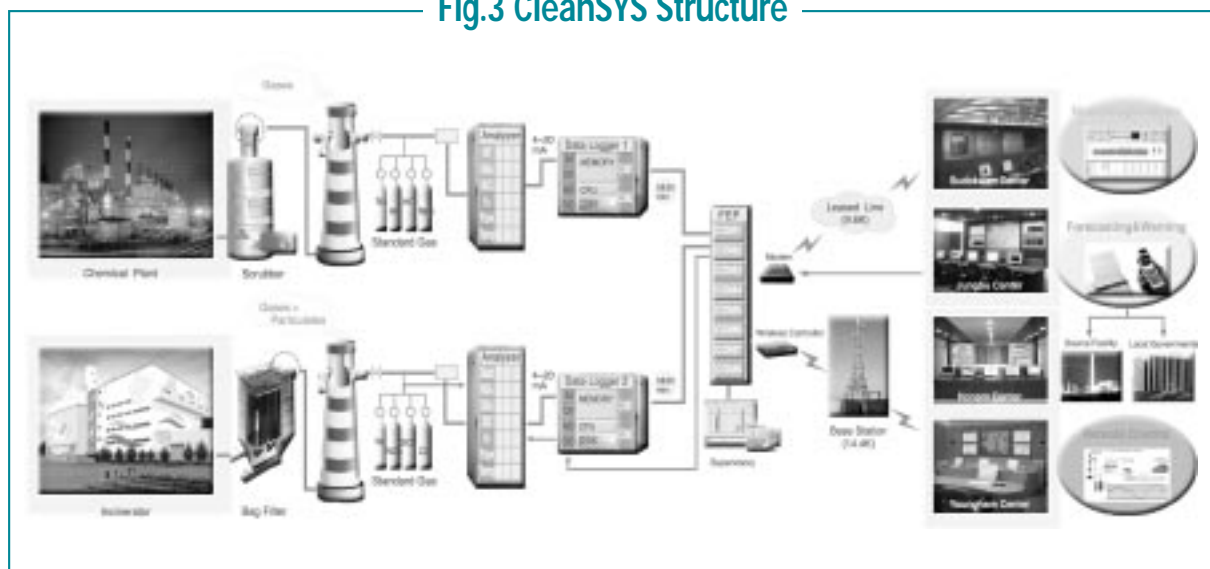
Subsequently, various cooperation projects such as technology cooperation, consulting, and initiation have begun in order to transfer Korea's environmental policies, systems, and environmental management experience and technology.

Presently, excellent environmental policies and systems, for which technical cooperation is conducted with developing countries, include the Smokestack Tele-Monitoring System (TMS, Korean brand name: "CleanSYS"), policy on dissemination

of compressed natural gas (CNG) buses, and the Waste Manifest System (EWM, Korean brand name: "Allbaro"). These world-class technologies are applied to instrumentation and operation of waste reclamation facilities and for the treatment of sewage and wastewater. Recent requests for technology transfers from regions such as Asia and Africa are rapidly increasing.

In particular, CleanSYS, which has been in operation since 1997, is an around-the-clock real-time monitoring and measuring system of environmental pollutants such as SO₂, NO_x, CO, HCL, HF, and O₂. The system works by connecting potentially polluting factories with a control center online. CleanSYS is a combination of advanced domestic Internet and information technologies and is one of the most advanced TMS in the world. Exchanges of these and other environmental technologies with China and Southeast Asian

Fig.3 CleanSYS Structure



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