COUNTRY REPORT

for

IDNDR-ESCAP Regional Meeting for Asia
: Risk Reduction & Society in the 21th Century

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Ministry of Government Administration
and Home Affairs

REPUBLIC OF KOREA

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1. Introduction

1.1 Geographical Conditions of Korea

Mountainous regions cover two third of Korea with high mountains in the east and the low ones in the west. The steep slopes make the water travel fast to downstream. The weathered granite and gneiss in the mountains have thin cover and do not absorb water well. In addition, Korea's coastlines in the west and south are long and known as Rias. The long coastlines and highly populated coastal areas are susceptible to damage from tidal waves when the typhoon hits.

1.2 Hydrological Condition of Korea

Korea is located in a monsoon region. The weather varies by season and region. Siberia anticyclone keeps dry and cold in winter. High atmospheric pressure from the North Pacific Ocean keeps hot and humid in summer. The monsoon that passes through the continent and the Pacific Ocean invites irregular climate pattern that brings typhoon and leads to heavy rainfall during the summer, that is, from mid-June to mid-September. Two thirds of the annual rainfall, about 1,274mm, occurs during the rainy season. Heavy rainfalls usually rush into rivers and plains often be flooded. Two or three typhoons also strike the peninsula every year

1.3 Types of Natural Disasters of Korea

The causees of natural disasters of Korea reveals by meteorological event. Of them, heavy rainfalls account for 32.8%, typhoons 7.6%, and storm 41.7%. They take up 81.7% of the total. Figure 1 shows the types of natural disaster in Korea.

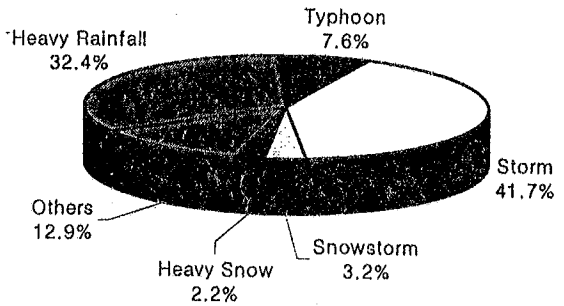

Figure 1 Types of natural disaster in Korea

2. Accomplishments in Disaster Reduction during IDNDR

2.1 Statistics of the Last 20 Years

The government estimated 3801 deaths, 1,300,533 of evacuated persons, 1,557,070 ha of inundated areas, and 5,434 million dollars worth of property loss in the past 20 year from disasters such as storms and floods. Table 1 shows the disaster damages in the past 20 years, and Figure 2 to 3 show the casualties and property damages between 1980 and 1997.

Table 1 Disaster Damages in the past 20 years

year	Casualty (person)	Evacuated Person (person)	Inundated Area (ha)	Property Damage ($ million)					
				Total	Building	Ships	Farm land	Public Facilities	Others
1980	279	53,860	115,762	248.6	12.3	7.9	49.0	156.5	22.9
1981	216	18,306	149,583	150.2	4.6	3.1	15.4	113.7	13.5
1982	121	6,609	37,007	74.0	1.1	1.4	6.0	54.7	10.9
1983	91	1,355	24,851	12.8	2.8	1.4	0.1	5.8	2.8
1984	265	364,236	140,199	247.0	11.9	0.9	24.8	162.5	47.0
1985	250	72,257	126,292	87.6	1.6	7.1	2.1	58.9	17.9
1986	156	99,114	86,701	84.9	2.6	3.2	2.2	53.0	23.9
1987	1,022	272,277	300,453	1,125.4	18.6	26.1	91.3	729.9	259.5
1988	143	5,053	17,987	142.7	0.8	2.0	13.9	109.0	17.1
1989	307	92,593	121,060	415.0	7.7	6.9	19.0	265.0	116.4
1990	257	203,314	124,276	626.7	11.5	3.8	56.0	344.2	211.2
1991	240	29,573	61,173	460.4	5.9	2.6	45.7	354.1	52.2
1992	40	965	13,968	28.0	0.1	1.3	1.6	17.5	7.5
1993	69	13,779	58,488	226.1	1.3	12.2	11.5	176.0	25.1
1994	72	11,852	6,275	171.2	0.6	4.9	12.2	96.8	56.7
1995	158	30,408	79,254	641.3	5.3	7.4	65.1	463.3	100.2
1996	77	18,686	47,968	502.0	15.6	0.9	56.2	347.6	81.7
1997	38	6,296	45,773	190.9	1.9	2.8	11.1	146.3	28.8
Total	3801	1,300,533	1,557,070	5,434.8	106.1	95.6	483.3	3,654.7	1,095.1
Ave.	211	72,252	86,504	301.9	5.9	5.3	26.9	203.0	60.8

* exchange rate : 1 $ = 1,000 won

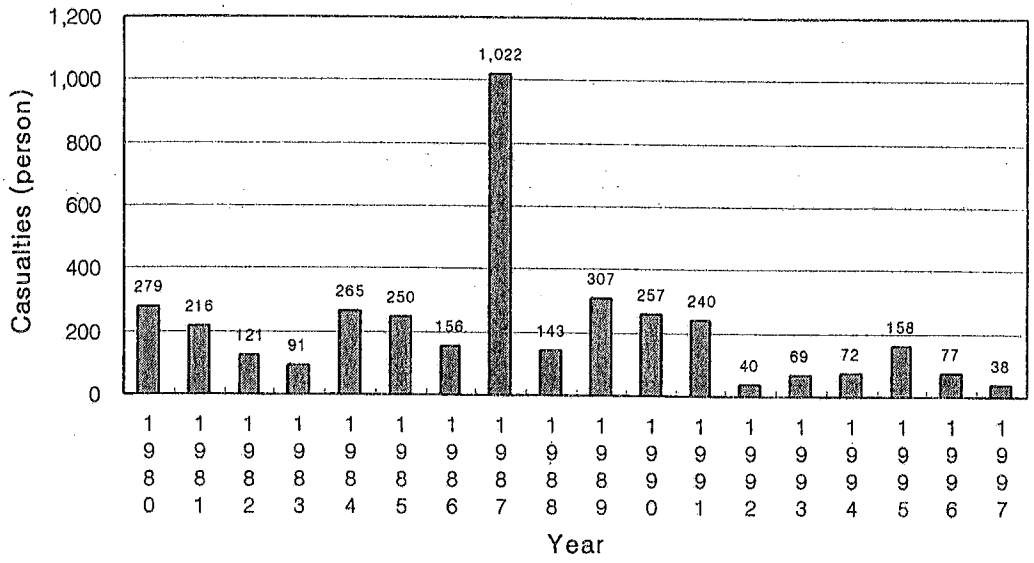

Figure 2 Casualties between 1980 and 1997

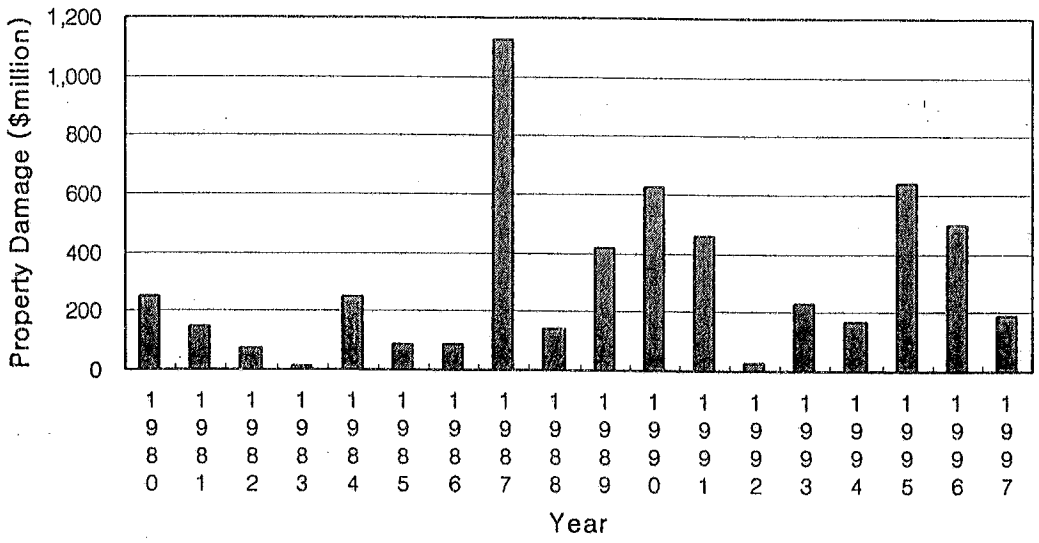

Figure 3 Property Damages between 1980 and 1997

2.2 Trends of Disaster Reduction

The government's prevention plans helps lesson human loss. The death toll decreased remarkably. The property damages, however, continued to increase. In table 2, average values of disaster damages before (1980 to 1991) and during (1992 to 1997) IDNDR are compared.

Table 2 Comparison of Disaster Damages before and during IDNDR

IDNDR	Casualty (person)	Evacuated Person (person)	Inundated Area (ha)	Property Damage ($ million)					
				Total	Building	Ships	Farm land	Public Facilities	Others
Before	279	101,546	108,779	306.3	6.8	5.5	27.1	200.6	66.3
During	76	13,664	41,954	293.3	4.1	4.9	26.3	207.9	50.0

* exchange rate : 1 $ = 1,000 won

2.3 Accomplishments in Disaster Reduction During IDNDR

(1) Institutional Framework

The National Disaster Prevention and Countermeasures Headquarters, which is under the Ministry of Government Administration and Home Affairs (MOGAHA) but under the Ministry of Construction before April 23, 1991, is the central organization tasked for national natural disaster prevention and preparedness. This headquarters has responsibilities for government-level plans and activities against natural disasters, and for international co-operations.

The Disaster Prevention Planning Department was reorganized into the Disaster Prevention and Preparedness Bureau (DPPB) which is made up of Disaster Prevention Planning Division, Disaster Preparedness Division, and Disaster Rehabilitation Division on Dec. 23, 1994. This firmly grounded the Bureau as an independent organization within the central government.

(2) Revision of Natural Disaster Countermeasures Act

The Civil Defence Act of 1975 is the basic legislation for managing disaster. The Act defines war, natural disasters, and man-made disasters as civil defense accidents. Other relevant laws are the Natural Disaster Countermeasures Act (NDCA), the Agriculture and Fishery Disaster Countermeasures Act, and Disaster Relief Act. Because the government decided to alleviate the problems of urbanization, industrialization, and global climate change, and stress preventive measures, it revised and changed the Storm and Flood Disasters Act of 1967 into the NCDA in 1995.

The main points of the revision in Dec. 1995 are as follows

- The provision of the comprehensive disaster prevention measures.
- Addition of earthquakes and drought to the list of main natural disasters such as flood, heavy rainfall, and storm.
- The Presidential Decree on the standard for the relief and rehabilitation,
- Introduction of the Disaster Impact Assessment (DIA) placing importance on the preventive measures.
- The provision of disaster prevention fund at the level of the local governing body
- The establishment of the Korea Disaster Prevention Association (KDPA) to boost private participation

(3) Introduction of Disaster Impact Assessment (DIA)

The DIA is designed to protect the lives and property of people living in the downstream from the impacts of large-scale development on July, 1996. To minimize the financial cost, the DIA is applied only to huge development projects. For efficient operation, the government set up three principles;

1) Evaluate accurately the target development project
2) Reinforce the qualifications for the evaluator of DIA
3) Oversee the implementation of the DIA

(4) Establishment of National Institute for Disaster Prevention (NIDP)

National Institute for Disaster Prevention was established on September 2,. 1997 to conduct systematic and scientific researches in the field of disaster prevention. The function of NIDP is as follows;

- Research on disaster prevention policy for natural and man-made disasters
- Dissemination and development of techniques to cope with disasters, emergency aids, and short-term recovery in disaster-struck areas
- Collection and analysis of data related to all types of disasters
- Improvement of Disaster Impact Assessment Program
- Performing the delegated projects related to disaster prevention
- Exchanging information, cooperate with other research institutes in Korea and abroad, and holding academic symposiums
- Education and training to enhance government official's ability to cope with disaster

(5) The Fourth Basic Disaster Prevention Plans

To cope with the disasters which are getting varied and larger in scale, the government has formulated the Basic Five-Year Disaster Prevention Plan and the Yearly Disaster Prevention Action Plan. During the IDNDR, the Fourth Basic Disaster Prevention Plan (1992-1996) directed investment of 8,686 million dollars to 17 key items including afforestation, flood control, disaster prevention, and technology development. Figure 4 shows the analysis of investment in the Fourth Basic Disaster Prevention Plan.

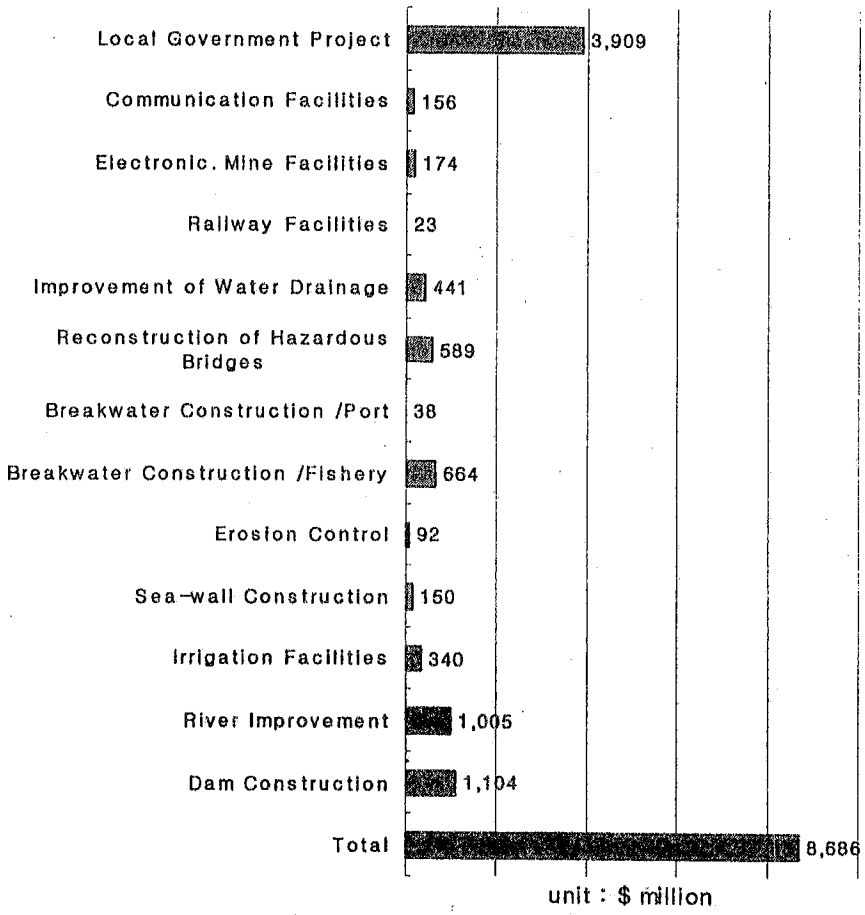

Figure 4 analysis of investment in the Fourth Basic Disaster Prevention Plan. (1992-1996)

(6) Designating Disaster Prevention Day

Korea designated May 25 as "National Disaster Prevention Day" in 1994. It promotes public participation and awareness. The main events are drills for disaster prevention, campaigns, inspection of areas and facilities at risk, photo display of disaster struck areas and recovery process, and promotional posters.

3. Current Activities in the Field of Disaster Reduction

3.1 Structural Preventive Measures

(1) Construction of Multi-Purpose Dams

Since 1960, multi-purpose dams have not only controlled flooding but also water supply for agricultural, industrial, and residential use. By 2001, there will be 17 multi-purpose dams, and their flood control capacity will reach 2.4 billion ton. Table 8 shows the existing dams and dams under construction.

Table 3 Multi-Purpose Dams

Classification	Number	Flood Control Capacity
Total	17	2,408 Million ton
Operating	9	1,791 Million ton
Under Construction	6	397 Million ton
Planned	2	220 Million ton

(2) River Improvement Project

Improving the river system is most important for protecting farmland and inhabited regions from flooding. The government invested 1,405 million dollars in the river improvement work in the last five years, and 20,080 km of the total 30,416 km have been completed, which equals 61% of the total area.

- Total Length of Rivers in Korea : 30,416 km
- Length of river banks requiring improvement : 36,114 km
- Improved rivers : 20,080 km (61%)
- Length to be improved : 14,034 km

(3) Inspection and Maintenance of the Disaster-Prone Areas

Korea has chosen sites most vulnerable to inundation, collapse, and isolation by typhoons and flooding, and labeled them as "Disaster-Prone Areas." They are classified by type, level of risk, responsible authority, and size. A total of 1,713 million dollars will be invested in these areas for full maintenance from 1996 to 2005.

(4) Inspection and Maintenance of Small Rivers

To protect from flooding, pollution and environmental degradation, the government earmarked 740 million dollars for maintaining small rivers. Over the 22 years (1995 to 2016), 27,056 km is earmarked for improvement. The first step is to refurbish 4,450 km from 1995 to 2004 at a cost of 7,375 million dollars. Listed here are the lengths of river improved and to be improved.

- Total length of small rivers : 38,862 km
- Length to be improved : 38,087 km (98% of the total)
- 1994 Maintenance Record : 11,031 km (Maintenance Rate : 29%)
- Length of undeveloped small rivers : 27,056 km

(5) Preventive Measures for Landslides

The government prevents landslides by planting trees, controlling erosion, and inspecting vulnerable areas. Piling bags, establishing retaining walls, and other preventive measures are enforced to prevent landslides in urban and highly populated areas.

3.2 Non-Structural Preventive Measures

(1) The Fifth Basic Disaster Prevention Plans

The Fifth Plan (1997-2001) pursues three goals and ten strategies based on the idea of "Life Free from Disasters."

<Three Main Goals>

- Stress preventive response and instigate comprehensive measures.
- Initiate disaster prevention information network and formulate scientific and rational policies.
- Promote international cooperation and prepare for the unification of two Koreas.

<Ten Strategies>

- Increase investment for disaster prevention activities and strengthen the Disaster Impact Assessment (DIA)
- Establish the module for optimum flood discharge and enhance flood control capacity.
- Initiate prevention measures for drought and earthquake and reinforce the standard for seismically-resistant design.

- Establish and utilize research intitute to mitigae scientifically natural hazards.
- Set up an advanced weather forecasting system
- Encourage technology development for reducing natural disasters as a part of national project
- Modernize the national safety information control and the disaster control systems
- Provide expertise and internationalize personnel in disaster prevention offices, and activate the Korea Disaster Prevention Association
- Research on the status of North Korean disaster management and seek ways to reduce natural disasters
- Participate in international cooperative work and train experts

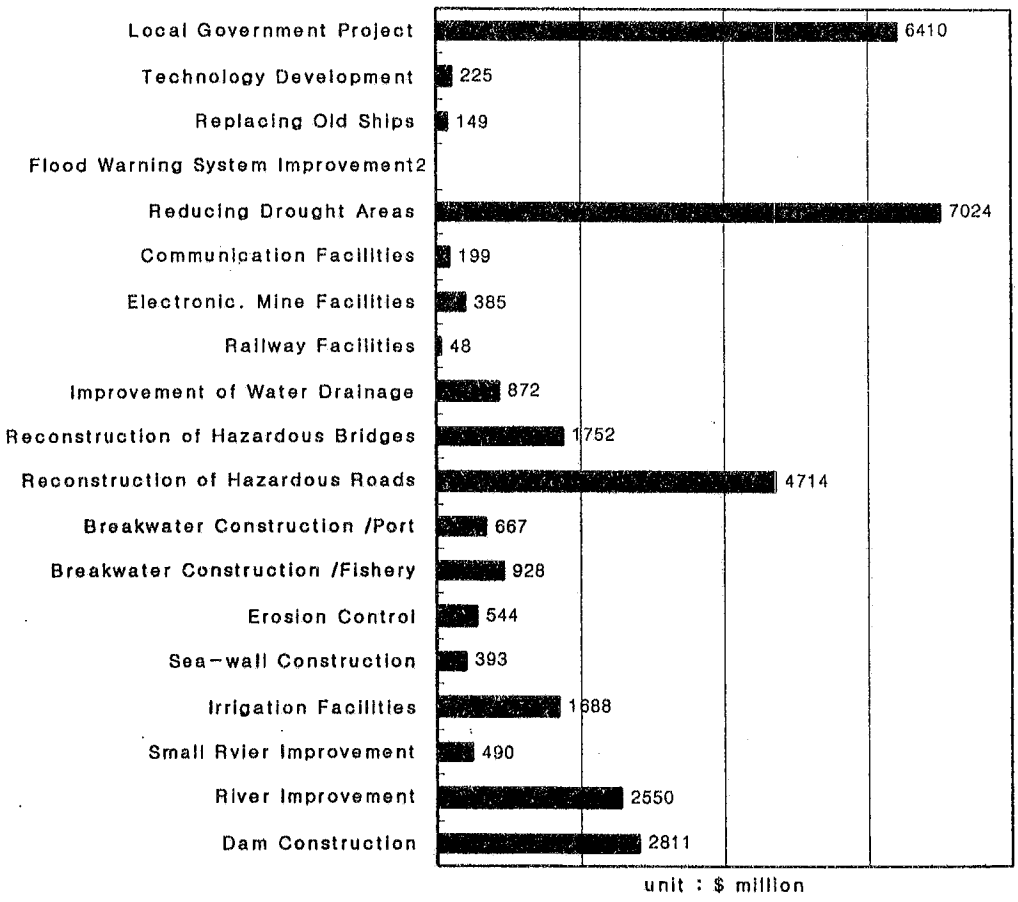

Figure 5 Planned investment in the Fifth Basic Disaster Prevention Plan. (1997-2001)

(2) Disaster Preparedness

Disaster Preparedness Period (March to May) precedes the rainy season. Inspected nationwide are the areas and facilities at risk. Golf courses and subways are given special attention to minimize the impact of disaster. Furthermore, the government anticipates potentially disastrous events by checking the disaster prevention operation, planning residents' emergency evacuation, stockpiling supplies, and establishing relief camps.

(3) Education and Disaster Drills

Korea educates the staff every year from February to April to enhance their ability to deal with natural disasters. The program includes planning, managing critical situations, reporting damage, working on recovery plans, and studying relevant law.

Drills comprise computer-generated simulation and practice emergencies specific to each region. The simulation incorporates past disasters and utilizes graphics. The practice emergencies are carried out on the same day as Civil Defense Exercises on May 15. The practices include saving the injured and delivering timely rehabilitation services. A comprehensive disaster preparedness exercise falls around May 25 at four major river basins. The responsible authorities participate, oversee life-saving and rehabilitation exercises, and display new equipment.

(4) Computer Network for Disaster Prevention

When disaster strikes, city, ward, and district officials immediately write damage reports on computer, and enable the city, province, and the NDPCH to utilize the information from the network and take prompt actions.

For the completion of the Flood Information Network in 1995, the 1077 conventional pluviometry facilities in Eup, Myon, and Dong office are replaced with the auto-pluviometry system. Access to online flood information such as weather report, precipitation rate, and water level in rivers is now available nationwide.

The automatic flood observatories are installed in 111 key flood areas. In addition, computer networks are to be built into the facilities.

4. Future Requirements for Disaster Reduction

4.1 Refinement and Consolidation of Related Regulations

There are currently about 80 different regulations on land development, which are regulated by different authorities and do not routinely consider the disaster impact by land development.

Before any development is carried out, it is desired to consider disaster factors that may cause severe damages. It is planned to study and develop appropriate regulations for removing any potential factors in advance according to the size of development and controlling authorities. For instance, to reduce the surface runoff of rainfall the study may include several topics such as rainfall storage detention facilities of residential area, infiltration wet wells of roads, and retention basin and underground infiltration facilities of public parking lot and/or school ground.

Implementation of flood insurance program will also be considered to reduce the impact of disasters on individual property owners by spreading these losses over a large base.

4.2 Investment on River Side Infrastructures For Disaster Mitigation

The investment for flood control has been inconsequential (0.07% of GNP) compared to that for other SOCs. A balanced investment is required for effective disaster mitigation.

4.3 Systematic and Scientific Researches For Disaster Prevention

The function and the number of personnel of the Korean National Institute for Disaster Prevention need to be increased for systematic and scientific researches for disaster prevention.

4.4 Development of National Disaster Management System

To cope with disasters, the government need to develop National Disaster Management System (NDMS) which is able to support all steps for disaster countermeasures, that is, constructing and analyzing database of hazardous information, prompt managing disaster preparedness and disaster response action, and determining the budget for rehabilitation and recovery.

4.5 Active International Cooperation

The Korean government will actively participate in international conferences, provide joint research projects to various organizations, share the information, and offer accumulated database or technology to other countries when asked.