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The Korea Research Institute for Human Settlements is a non-profit research institution established in 1978. It specializes in the field of national planning, housing and land policies, transportation, regional development, urban design, environment, and construction economy.

KRIHS seeks to improve knowledge and understanding of the conditions and problems of the nation's resources and their interaction with people, to assist the government in formulating long-range development plans and make policy recommendations on related matters, to collaborate with the international research community in solving theoretical and practical problems concerning human settlement issues and planning, and to provide research expertise and consulting services as well as training programs for foreign governments and institutions.

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SPACE and ENVIRONMENT

Distribution Center Development Lowering High Logistics Costs

With the rapid growth of Korean economy, the volume of freight transportation has been dramatically increased over the last thirty years. Logistics costs in national total was just 11 trillion won in 1984 and now amounted 48 trillion won in 1994. The share of the costs to the firm's sale volume reached 17% in 1994, where as 11% in Japan and 7% in the USA. The reduction of logistics costs, therefore, becomes one of the most curcial policy concern for the national government as well as most firms in Korea.

Among the related strategies, the development and proper utilization of distribution centers such as multimodal freight terminals, container terminals, wholesale and retail centers can expedite the decrease of logistics costs by improving the distribution system.

Furthermore, it is expected that the opening of domestic distribution market to the world in 1996 will increase the demand for the distribution centers, especially with wholesale and retail function by multinational as well as domestic distribution firms.

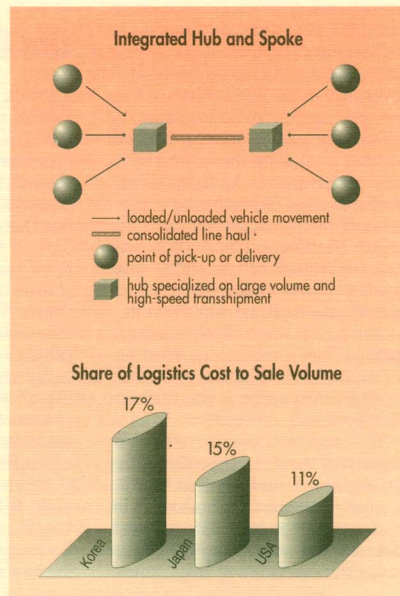
In order to meet the demand and encourage the development of distribution centers, the Korean government recently announced the Promotion Act for Distribution Centers Development. According to this act, financial and nonfinancial incentives will be provided and administrative and legal procedures be simplified. There will be the support of infrastructure provision such as access transportation and public utilities related to the development of distribution centers.

For the initial step, two main

distribution centers with freight terminals are under construction now in the Seoul Metropolitan Region and Pusan. By 1999, three more centers will be developed at major provinces mostly with private sector financing.

In the context of the allocation of the centers, a recent study of KRIHS suggested the national freight distribution system employing a hub and spoke concept. In this hierarchical distribution system, multimodal freight terminals with inland container depots (ICDs) will be located at major provinces or large metropolitan areas as the major centers of the national freight distribution. With the functional linkage of this

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Emphasis Placed on Private Sector Participation in SOC Investment

In order to strengthen the international competitiveness of the national economy and become a member of the advanced industrial country group of the 21st century, investment of social overhead capital(SOC) is now to be top priority concern in Korea. Especially, the enactment of the Private Capital Inducement Law for SOC investment in 1994 revitalizes the supply of SOC by the private sector.

According to this law, there are three categories of items for private sector participation. The first category includes roads and road related facilities, port, airport, multipurpose dams, water supply services and so on. The second category includes electric power services, gas supply, group energy supply, distribution complexes, freight and passenger terminals, urban parks, libraries and so forth. And the third category which is the subsidiary facility includes housing complex construction projects, housing land development projects, industrial complex development projects.

There are also three types of private sector participation in capital investment of SOC. First is the simple participation in management only, such as management of resting area along the expressway. The second type is the participation from the stage of purchasing equipment to the operation and management. The frequent example is private operation of intraurban bus system. There is also the type of participation all the way from the construction stage. Typical examples in Korea are the construction of expressway and rail system connected to newtowns or new international airport.

It is expected that privatization improves the overall productivity by reducing such cost as traffic congestion and distribution. It is also hoped that more user-oriented services will be provided at a lower price through more efficient man-

agement by the private sector.

To make the privatization work and to further facilitate it, several conditions have to be met.

Detailed contents of privatization packages should be clearly articulated and open to the public. Administrative procedures has to

be transparent and uncertainties be reduced. Various legal documents and contract papers are needed in the process of privatization. Legally technical know-how should be accumulated and related legal professions be instituted and properly trained.

Investment Plan for SOC, 1996-2011

(unit : 100 million won)

	1996~1997		1998~2001		2002~2011	
	total	national fund	total	national fund	total	national fund
arterial road in metropolis	116,905	98,200	275,649	203,978	696,915	515,717
urban railroad	-	-	66,930	46,851	402,000	281,400
railroad	56,625	17,159	120,000	60,000	500,000	250,000
port	36,254	26,517	147,435	91,063	531,795	462,290
airport	26,547	14,501	74,362	39,183	202,707	107,092
logistics	24,231	11,632	48,977	29,386	177,759	126,269
total	6,704	1,663	12,853	2,831	100,000	20,000
ratio of GNP	267,266	169,672	746,536	473,292	2,611,176	1,762,768
	3.8	-	4.4	-	4.2	-

New Zoning System for the Better Management of Urban Parks

Urban park is a public facility that is to be developed through the stipulation of city planning decision. Over the last 50 years, about 8,500 urban parks have been designated in urban areas throughout the country. But, more than 75% of these planned urban parks have not been developed and remain just as planning on the shelf. The reason is that most urban parks are designated on the private land and that local government can not afford to acquire them for lack of financial resources. As a consequence, landowners of the designated area are suffering from strict land use controls, their private property right infringed, and the price of land thereafter freed with almost no transaction in the market. The landowners are appealing to the

government for either the cancellation of the designation of urban park or the ease of the land use control on their property.

Recently, KRIHS proposed a new method of developing urban parks to resolve the appeals from landowners as well as to facilitate the development of urban parks. The key concept of the proposed scheme is to introduce a new zoning system within the park. According to this scheme, the local government is supposed to designate four zones within the park : facility zone, settlement zone, green zone, and preservation zone.

Settlement zone is designated mainly on the existing settlement village and its aim is to improve the quality of residential environment for the existing inhabitants in

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Improving Housing Condition for the Urban Poor

The housing conditions of the urban households in Korea have improved recently mainly due to the policy efforts since late 1980s emphasizing massive increases in housing supply. However, there are still many low-income households living in the substandard housing. Though the new housing construction and lease programs are being actively implemented, the improvement of housing conditions of the urban poor has not come to our expectation.

The floor area per household of the urban poor is only 15.6 pyong(51.6m²). The proportion of the urban poor who reside in leases account for 74.7 percent. This proportion may not be necessarily important in most western countries, but it reflects a relative inequality in Korea where rents are extremely high. The rent to income ratio (RIR) for urban poor is about 47.3 percent and that of the average income group is 33.9 percent. The situation with leased houses is more serious. The floor area per household is only 10.6 pyong(35.0m²) which is less than a half of that of owners.

In order to improve housing welfare of the urban poor, public lease housing including permanent lease program should be strengthened. The demand for public rental housing continues to be increased since the purchasing power of housing for the urban poor is very low. The demand side policies, such as housing allowances and vouchers should also be enforced with the expanded rental housing supply program.

The success of housing policy for the urban poor depends on adequate funding. Issuing local government bonds, imputed rent taxation and various funds, such as national housing fund, can be utilized for the sources of finance. Funds may also be mobilized in the capital market. Imputed rent taxation can not only serve as a good source of funding but be effective to discourage excessive housing consumption.

Finally, it should be pointed out that national housing fund be specifically earmarked to the program for the housing poor. Saving of low income group need to be tied with loan programs for them in order to rectify their disadvantageous position in the financial market, where money collected through savings from low income group tends to be used to make loans for higher income group.

Net Floor Area Per Household by Income Decile Group



New Zoning System from page 2

the park. In this zone, the land use restrictions are going to be substantially relaxed to allow the landowners to build single-detached housing under certain size, low rise multi-family houses and the basic neighborhood facilities such as supermarket and drugstores.

It is recommended that land readjustment method be an appropriate development tool to provide basic infrastructures and the building sites for housing and public facilities.

In green zone and preservation zone, land use is going to be more strictly controlled than before to preserve the natural resources and landscape of the park. The existing old buildings scattered around these zones will be cleared and relocated to settlement zone. The local government has to acquire land within the settlement zone to provide building sites to the relocatees.

Facility zone is the area where recreational, cultural and other convenience facilities are built. The local government is again supposed to acquire the land within the zone for the development of these facilities. The park facilities are divided into two types. The first type is non-profitable facility which is to be developed basically by the local government. Profitable facility is planned for the private development in green zone and preservation zone as means to compensate for the restriction on the private development.

The effect of the introducing zoning system to urban park development is expected to be threefold. First, it will facilitate the development of urban parks without heavy burden on the local government. The local government has to purchase only the land within facility zone. Second, it can relieve the appeals from the private landowners by the acquisition of their lands, giving them the compensation for the land use restriction and the improvement of residential environment. Finally, it can improve the overall quality of urban environment through the provision of open green space with now well planned recreational and cultural facilities.

Housing Quality Condition by Income Decile Group

(unit: pyong)

Income group	I	II-III	IV and over	average
Indices				
Net floor area per household	15.6	16.9	25.7	23.3
Net floor area per person	5.0	5.3	6.3	6.0
Ratio of renting household(%)	74.7	73.9	38.2	46.2
Rent to income ratio(%)	47.3	35.6	31.9	33.9

Multi-level Road Development System

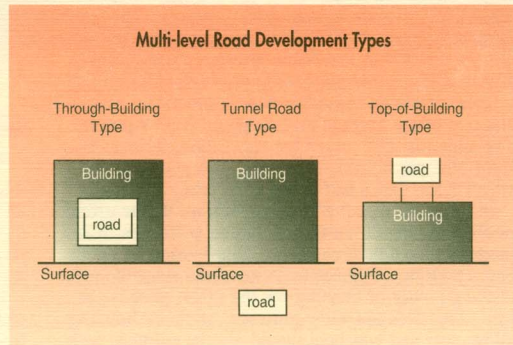
One method of alleviating transportation problem in urban area is to supply arterial highways. There are problems however such as difficulties in acquiring land, high cost of obtaining rights of way and relocating local residents. Choon Yong Yi of Road Transportation Division suggests Multi-level Road Development System(MRDS) as one of possible solutions for these problems.

MRDS can be categorized into three types on the basis of the spatial location of roads as well as the ownership right of land and buildings ; through-building type, tunnel type and top-of-building type.

To promote MRDS, a number of legal as well as non-legal factors have to be reviewed. Legal factors include approvals of possession or use right of road, designation of MRDS applied areas, provision of related urban planning facility, and regulation on buildings involved. Non-legal factors refer to environmental issues, resolution of conflicts for the ownership right of land and building, technologies and economics of MRDS, maintenance of road function and so on.

The employment of MRDS method is recommended to use exclusively automobile roads such as inner and inter city expressway and intraurban arterial road.

In addition, successful implementation of MRDS must be preceded by the following conditions. First, relevant legal system of air rights must be properly delineated considering both users and developers. Second, exemptions and reductions of related taxes should be considered especially in the initial stages. Third, the concept of MRDS must be properly propagated to reach agreement with land owners. Finally, structural as well as facility standards have to be clearly articulated.



Shortage in Developable Land in Major Metropolitan Areas

A recent KRIHS study reveals that there will be a serious shortage in developable land resources in Seoul and five other major metropolitan areas in Korea.

For the case of Seoul, about 392km² of new land is projected to be needed by the year 2011 and less than 10 percent of these will be supplied if there is no substantial zoning change. The situation will be more or less the same in Pusan, Taegu, Incheon, Kwangju and Taejon. In small and medium-size cities, however, there is enough

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Estimated Demand for Urban Land by Use Type, 1996-2011
(unit : km²)

types	area
total	3,726.0
residential & commercial land	2,928.1
industrial land	443.6
commodity logistics	28.1
tourism	301.6
silver town	24.6

Estimated Demand and Affordability for Urban Land, 1996-2011
(unit : km²)

city/province	projected demand (A)	available land (B)	B - A
total	3,726	9,953~26,107	6,228~22,382
Seoul	391.5	27~51	-365~-341
Pusan	117.8	27~131	-92~ 13
Taegu	124.7	36~67	-89~-57
Incheon	124.2	56~122	-68~-2
Kwangju	84.8	55~105	-30~20
Taejon	121.1	37~104	-84~-17
Kyonggi	799.3	654~1,780	-145~981
Kangwon	147.4	959~4,001	812~3,854
Chungbuk	209.2	822~1,895	613~1,686
Chungnam	251.8	1,128~3,194	876~2,942
Chonbuk	235.0	1,090~2,099	855~1,864
Chonnam	270.3	1,471~3,691	1200~3,420
Kyongbuk	318.4	1,817~4,749	1499~4,431
Kyongnam	438.3	1,162~2,877	724~2,439
Cheju	90.8	615~1,241	524~1,150

A New Methodology of Economic Analysis for Dam Construction

A multi-purpose dam serves the national welfare in many ways, by providing piped water, flood control, hydroelectric power and forestation. Nevertheless dam construction is difficult these days because of strong opposition from the local residents, particularly from those who may have to be relocated. Increase in land price and scarcity of dam site are also equally important factors which make dam construction difficult.

Economic analysis of what to get and what to lose by multipurpose dam construction is necessary in persuading both local residents and government officials at the central and local level. Various efforts have been made to better articulate the methodologies for economic analysis of dam construction, but most of them have failed to convince the urgency of the need for dam construction. The reason has to do with poor specification of benefit measures. Most evaluation studies take only four types of benefits into account; flood control, domestic and industrial water supply, irrigation and hydroelectric power generation. Other benefits such as inter alia navigation, recreation, and improvement of water quality are not considered. Dam construction provides inland water transportation routes and also recreation resources as it forms reservoir. It also helps improve water quality.

A recent study of KRIHS measured these benefits. The result strongly suggested that the new method contributed to the monetary benefits of dam construction by 40 to 70 percent more than the conventional measure. It should be reminded that water is now no longer free and the value of water, particularly that of clean water, is rapidly increasing. And this must be somehow reflected into the evaluative study of the dam construction. This study demonstrated the need for broader conception of water benefits and the ways to consider them in cost/benefit framework.

Conventional and New Improved Method in Benefits Calculation

Types of benefits	Conventional method	New improved method
Flood control	<ul style="list-style-type: none"> • reduction of floor damage • effective use of land <p>benefit = cost of damage before dam construction - after construction + other benefits</p>	<ul style="list-style-type: none"> • apply constant ratio to effective use of land and damage of commercial pursuits <p>excess benefit = reduction cost of flood control $\times 2.72$</p>
Domestic & Industrial water supply	<ul style="list-style-type: none"> • apply the cost of water supply system alternated establishment <p>benefit = construction cost + personnel expenses + operation cost</p>	<ul style="list-style-type: none"> • include compensation money of land of alternated establishment and regional support activity cost • include intake and clean water cost <p>excess benefit = compensation money of land of alternated establishment</p>
Hydro-electronic power generation	<ul style="list-style-type: none"> • apply construction cost of alternated thermal power plant <p>benefit = capacity cost(Kw) + energy cost(Kwh)</p>	<ul style="list-style-type: none"> • add cost of pollution prevention <p>excess benefit = construction cost of desulfur system + operation cost(cost : \$150/Kw & 4W/Kwh)</p>
Irrigation	<ul style="list-style-type: none"> • increased amount of engaging in agricultural profit due to agricultural production increase <p>benefit = agricultural production after irrigation - before irrigation</p>	<ul style="list-style-type: none"> • add agricultural personnel expense to excess production • subtract benefit reduction of agricultural labor <p>excess benefit = excess production cost after irrigation $\times 25.7\%$</p>

Shortage in Developable Land from page 4

space left for future development.

The study suggests that metropolitan-wide planning, instead land use planning at a single city basis, is imperative to cope with the mismatch problem between the growing demand for urban land and limited urban land resources available. Secondly, the quasi-agricultural zone, which is one of five national land use classifications, should be allowed to be converted for urban purposes in a more orderly manner with solid and clear planning

in advance. This quasi-agricultural zone was first introduced in 1993 aiming to provide more developable land for urban purpose but has produced a great deal of disorder in development with high density, unmatched rural atmosphere and without proper infrastructure facilities sustaining the development. Finally it is recommended that more effective decentralization policy be pursued nationally to make better use of scared land resource more efficiently.

Master Plan for Information Super Highway Infrastructure : Construction-Transportation Sector

The Information Super Highway Infrastructure (ISHI) initiative seeks to ensure that everyone can take advantage of the opportunities brought about by advanced information technologies and services. The ISHI identified five projects to be accomplished between 1995 to 2010. First is to construct High Performance Information Network for the Government (HPING) and High Performance Information Network for the Public (HPINP). Then to build Leading High Performance Information Network (LHPIN) from Seoul to Taejon and to support in developing Public Application Information Service System (PAISS) by public sector. The last project is to test advanced information technology through pilot projects.

In 1995, The Ministry of Construction and Transportation (MOCT) in collaboration with KRIHS to establish master plan for Information Super Highway Infrastructure for the Construction-Transportation sector (ISHICT) which summarized the status of the use for information technology in MOCT and steered for MOCT to construct information application system. This plan is established in close relation with the Public Application Information Service System (PAISS) in ISHI. The following projects will be implemented in three phases from 1995 to 2010 : (i) computerize MOCT's work, 1995-2002 (ii) develop Geographical Databases and Statistics Databases from MOCT, 1995-2002 (iii) develop Decision Support System (DSS) for MOCT's work as an application system of ISHI, 1997-2005 (iv) develop the public construction and transportation information service system, 1998-2010 (v) execute the pilot project in relation to the main project for minimizing the problem and reducing project cost, 1996-2002.

To promote these projects, KRIHS recommended a framework for the MOCT and related organizations to interact and plan their activities, that are the Information Infrastructure

Task Force (IITF) and the advisory Council on the ISHICT. Vice minister of MOCT chairs IITF, including director of each department in MOCT and independent public agencies such as KRIHS. IITF plays

a role in determining the range of information and technology, project execution, budget mobilization, and coordinating with other levels of government.

The Information Super Highway Infrastructure (ISHI) Projects

projects	goals
Computerize MOCT's works (1995-2002)	<ul style="list-style-type: none"> • computerization and automation of licence and permit issuance • computerization and automation of MOCT administration • build up ISHICT environment
Develop MOCT Database (1995-2002)	<ul style="list-style-type: none"> • computerization of survey/analysis/ maintenance works • build-up construction and transportation database • build-up digital map database
Develop application systems of ISHI (1997 - 2005)	<ul style="list-style-type: none"> • increase productivity of MOCT works • rationalize MOCT decision process • computerize planning process
Develop information service systems (1998 -2010)	<ul style="list-style-type: none"> • introduce one-stop public service • increase public understanding of MOCT policy • provide various information produced during implementation of MOCT policy
Execute the pilot projects (1996-2002)	<ul style="list-style-type: none"> • utilize ISHI • minimize problems associated of establishing and develop informatization technology • develop housing and urban information system • develop GIS projects using the information network • construct information cities

Distribution Center Development from page 1

hubs, transport terminals and wholesale and retail centers work as regional freight distribution and retail centers. Compared to a point-to-point system connecting each origin and destination of freight transportation, this system can offer better quality of distribution services with high degree of distribution efficiencies.

For the efficient utilization of distribution centers, the study also emphasized informatization, auto-

mation, and standardization of logistics system along with the development of the centers. Putting together related distribution functions such as manufacturing, sales, and communication in the place can increase the efficiencies of distribution system. It is also recommended that current land use regulation system needs to be further streamlined for the ease of the development of distribution centers.

Land Bubbles Controlled, Discrepancies Still Remaining

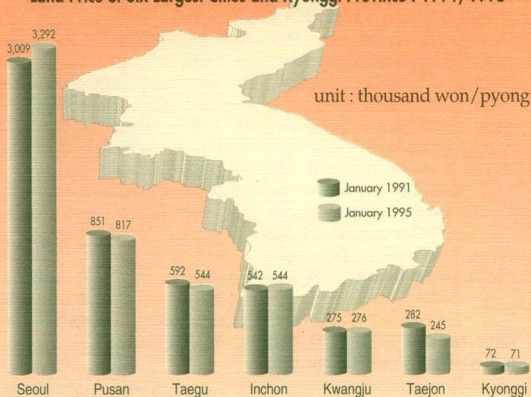
According to the recent land price survey of Ministry of Construction and Transportation, the overall land price in 1995 showed only 1.47 percent increase since 1991. Total land price was estimated to be 9.1 times the GNP in 1991 and now dropped to 5.4 times in 1995.

Despite the fact that the bubbles in the land market seem to have been controlled, land price in Korea is still considered very high compared to other countries. In the United States total land price is estimated to be about 0.8 times the GNP and it is about three times the GNP in Japan.

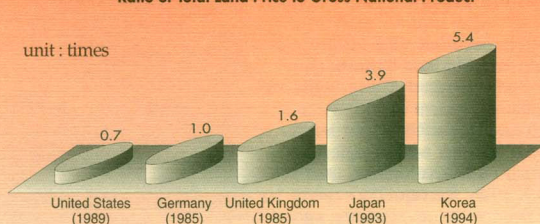
There are many economic and non-economic factors explaining this high land price profile in Korea. One of the less frequently debated but more crucial structural factors is the lack of appropriate policies for a balanced development of the nation.

There is still acute regional discrepancy in terms of land prices between the large metropolitan region and the remaining areas of the country. The total land price of Seoul, Incheon and Kyonggi province, though they cover only 11.7% of the national territory, accounts for 54.7% of the total land price of the country. The land price for the six metropolitan region, including Seoul and the five other largest cities, account for 57% of the total national land price. Moreover, the average land price in Seoul increased by 9.8% during the last four years while the price dropped by 2.8% for the rest of the country.

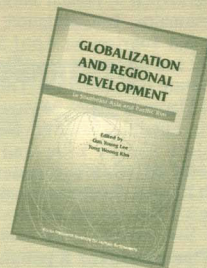
Land Price of Six Largest Cities and Kyonggi Province : 1991, 1995



Ratio of Total Land Price to Gross National Product



NEW BOOK



Globalization and Regional Development in Southeast Asia and Pacific Rim (edited by Gun Young Lee and Yong Woong Kim) was published in January, 1996. This book presents the proceedings of an International Conference on Urban and Regional Development Strategies in an Era of Global Competition jointly organized by KRIHS and the British Council of Korea. It was aimed to review the effects of globalization trends on urban and regional development and to explore appropriate spatial policies and strategies in an era of globalization, particularly for expanding economies in Southeast Asia and Pacific Rim.

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KRIHS President Gun Young Lee and two research fellows were invited to French Ministry of construction, Transportation, Housing and Tourism on April 22-27, 1996 and discussed possible areas of future collaboration. They visited Marne-la-Vallee newtown near Paris, Euralille station development project site at Lille and were briefed on sewerage system and CDG airport development area project.

Vice president Kyubang Lee and Director of Housing Research Division of KRIHS, Chul Koh, were among fifteen members of government delegation of Korea to the HABITAT II conference which was held in Istanbul, Turkey, June 4-14, 1996. The delegation was headed by Minister of Construction and Transportation who delivered a speech on Global Housing Problems and Policy Directions in Korea at the Ministerial meeting. The conference was attended by more than fifteen thousand people representing 170 countries. Together with the government delegation, 60 NGO representatives and 70 local government officials participated from Korea. "Habitat Agenda" which is the global action plan was proclaimed and our government made a formal declaration to honor the spirit of Habitat Agenda in implementing related policies.

Myamandelog Lhagva, Construction Bureau Director of Ministry of Infrastructure Development, the Mongolian People's Republic, visited KRIHS and shared information on newtown development experiences and infrastructure investment strategies of both countries on June 29, 1996.

Vice Minister of Construction of People's Republic of China, Rubai Mao came to KRIHS on June 7, 1996 and discussed housing policy issues of Korea and recent



reform movement of real estate market in PRC.

Professor Vincent Renard of Ecole Polytechnique of France was announced as 1996 International Visiting Scholar to KRIHS. He will stay in Korea for one month from October 7, 1996 and work on the project of Urban Development and Public Land Acquisition in France.

Singaporean Ambassador to Korea His Excellency Pang Eng Fong visited KRIHS on April 12, 1996 to give a lecture on "21C Vision for Singapore and Development Strategy". Ambassador Fong who served as member of Singapore City Development Committee exhibited the profound knowledge and experience on national and regional planning issues as he insightfully gave case comparisons between Singapore and Korea, the two countries that will play leading roles in East Asia in coming century.

Under the auspices of Hanns Seidel Stiftung of Germany, KRIHS will be hosting an international conference on National Development Strategies of Unified Germany and Korea from September 17 to 19, 1996.

In collaboration with Ministry of Construction and Transportation and National Geographic Information System (NGIS) Steering Committee, KRIHS held International Seminar on Strategies for National GIS Development, April 18-19, 1996. Eleven GIS experts from five foreign governments, uni-

versities, and private sectors along with two Korean speakers were invited and gave presentation on the current status of their own national GIS projects. More than a thousand people participated in two-day seminar, reflecting growing awareness of the importance of GIS. The seminar focused mainly on two subjects. Strategies for national GIS development and for spatial data clearing house. Among the participants were Eric Anderson (USGS, USA), Ian Masser (University of Sheffield, UK), Kunio Nonomura (GSI, Japan) and Young-Pyo Kim (KRIHS, Korea) who discussed the strategic perspective on national GIS development. Graham Baker (ANZLIC, Australia), Mosaad Allam (Geomatics, Canada), Nick Land (Ordnance Survey, UK), and Hugh O'Donnell (VISION, Canada) addressed the strategies of national spatial data infrastructure. On the second day a number of practical issues were debated by Tony Hart (GENASYS, Australia), John Scaife (multi-VIEW Geoservices, Canada), David Collison (INTERGRAPH, USA), Sheila Sullivan (ESRI, USA) from private sectors and Il-Dong Kang (NGI, Korea). The seminar brought the new perspective of National GIS Development Project into GIS community in Korea and it laid a foundation on international collaboration in the field of GIS.

Contact us with a response or a question, or comment on ideas we cover in the Gazette.

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