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Mega-Economic Region Development of Korea in the Era of Globalization

With the progress of globalization, national borders are losing their significance, and as more importance is being placed on regions, mega-economic regions that span broad regions are emerging as a competitive spatial unit. Their role is increasing both at home and abroad, serving as growth poles, and major countries are nurturing them strategically, linking them with economic development.

Countries such as the U.K., France, Japan, and China are seeking to achieve economies of scale by establishing mega-economic regions, and are endorsing strategies that utilize the strength of each region, e.g., infrastructure or industries, in response to globalization. They are especially seeking to adopt future measures that take into account, for example, challenges of climate change or sustainable growth.

Under such circumstances, Korea has set the delimitation of 5+2 mega-economic regions as its core regional development strategy and is trying to improve its growth potential through economies of scale.

New Paradigm of Korea's Regional Policy

In 2008, the Korean Government changed its keynote policy paradigm from one focusing on balance, innovation, and diffusion to one concentrating on mutual cooperation, competition, and devolution, and established a vision of "creating competitive regions that ensure the supply of jobs and quality of life." Under this new paradigm, the government took a three-tiered approach in dividing the country into 4+α supra-economic regions, 163 daily living spheres, and 7 (5+2) mega-economic regions to promote customized regional development.

Among policies, the mega-economic region policy is a new regional development strategy based on the economies of scale and network. It has been employed to overcome overlaps and inefficiencies of metropolitan city, province, and administrative unit-centered regional development policies. Currently, Korea is spurring such core projects as the nurturing of leading industries, the

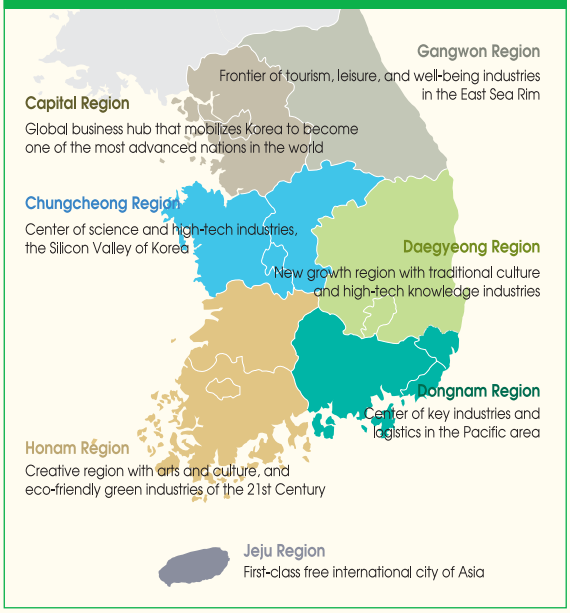
Table 1: Three-Tiered Regional Development Policy			
Dimension	**Purpose**	**Strategy**	**Plan & system**
Supra-economic region	Improve national competitiveness	4+α belt	Basic framework for Supra-economic region development
Mega-economic region	Improve regional competitiveness	5+2 mega-economic regions	Mega-economic region development plan
Daily living sphere	Satisfy basic demands of citizens	163 cities and counties	Daily living sphere plan

Source: Presidential Committee on Regional Development , 2009

Figure 1: Strategic Development Framework of Korea

Source: Presidential Committee on Regional Development, 2009

Figure 2: Vision of Each Mega-Economic Region



Source: Presidential Committee on Regional Development, 2009

expansion of infrastructures, and the development of hub universities to accelerate the development of mega-economic regions, and is garnering more financial support through the Regional Development Special Account. Economic Region Development Committees chaired by metropolitan city mayors and province governors have been formed and a secretariat established in each region to facilitate the cooperation among multiple cities and provinces.

Different policy aims are applied for each region: turning the Capital Region into a global business hub, the Chungcheong region into a mecca of science, technology, and high-tech industries—the Silicon Valley of Korea, the Honam region into a region of arts and culture and environment-friendly green industries of the 21st Century, the Daegyeong region into a new area of growth of traditional culture and high-tech knowledge industries, the Dongnam region into the focal point of key industries and logistics in the era of the Pacific Rim, the Gangwon region into the frontier for tourism, leisure, and well-being industries of the East Sea Rim, and Jeju into a top-notch free international city in Asia.

Competitiveness of Mega-Regions in Korea

The competitiveness of 122 mega-regions (Large Region, Territory Level 2) of OECD member countries with a population of over three million including five mega-economic regions of Korea are analyzed in terms of population, economies,

industries, human capital, R&D and innovation, spatial structure, and quality of life. The population size and concentricity of spatial structures of five mega-economic regions of Korea ranked relatively high compared to Gross Regional Domestic Product (GRDP) and ratio of business service industries.

An analysis of mega-economic regions reveals that the factors which determined the competitiveness of regions differed by population size. In regions where the population was below five million, the manpower factor (the proportion of labor in the mid- and high-tech manufacturing industries) played an important role in improving regional competitiveness; in regions with a population of between five and eight million, manpower (the proportion of knowledge-based service industries) and innovation (R&D investment) played an important role in improving regional competitiveness; and in regions with over eight million people, the regions' spatial structures and quality of life played important roles in improving regional competitiveness.

In terms of income level, the result showed the following to be effective strategies: nurturing mid- and high-tech manufacturing industries in regions with a per capita income of $10,000 to $20,000; developing business service industries and knowledge-based service industries in those regions with a per capita income of $20,000 to $30,000; and expanding the proportion of business service industries and R&D investment at universities and research centers in regions with a per capita income of $30,000 to $40,000. A survey of experts also demonstrated similar findings, signifying that it is necessary to establish and push differentiated policies for each mega-economic regions.

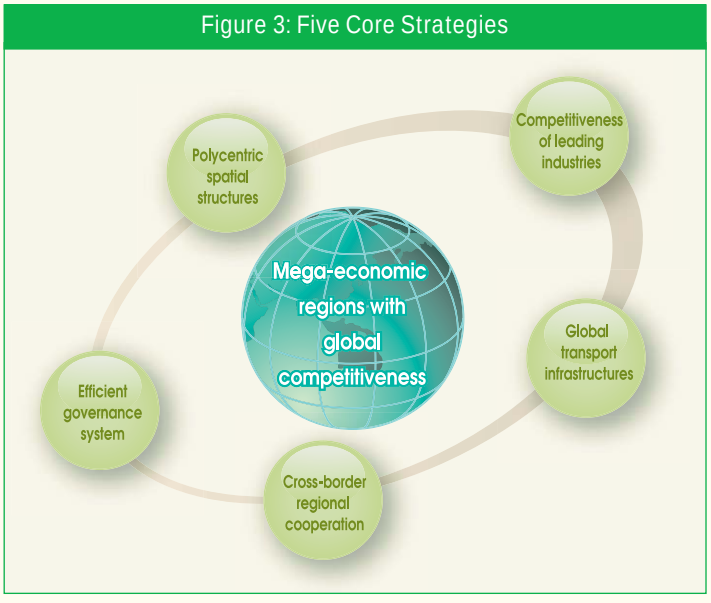
In summary, major strategies for improving competitiveness were as follows: for the Capital Region, it is important to enhance the quality of life and build efficient spatial structures; in the Chungcheong, Honam, Daegyeong, and Dongnam regions it is necessary to develop high-tech manufacturing industries and promote R&D investment; in the Gangwon region, the aim should be to build infrastructures and secure a sizable population; and for the Jeju region, nurturing high-quality service industries and improving the quality of life were suggested.

Five Core Strategies for the Development of Korea's Mega-Economic Regions

The following is a summary of the five strategies necessary for making 5+2 mega-economic regions competitive in the future: First, regions should be made efficient in terms of their spatial structure. To accomplish this, instead of a single-core structure with excessive population concentration, multiple cores should be built by promoting inter-core linkages and differentiating development patterns by cities. In particular, city regions centered on hub cities, i.e., metropolitan cities, should be developed to drive mega-economic regions development.

Second, there needs to be an enhancement in the global competitiveness of leading industries, which are the growth engines of mega-economic regions. To realize this, it is important to build a cluster comprising companies and universities in relevant industries. Note that it is especially important to build partnerships between conglomerates and mid-sized enterprises, providing different levels of support and development according to the nature of the leading industry, and building open clusters through close ties with regions outside mega-economic regions.

Figure 3: Five Core Strategies



Third, high-speed transport infrastructures should be built to facilitate exchanges within mega-economic regions and between mega-economic regions and other major regions both at home and abroad. Accessibility to global airports and harbors should be strengthened, and the transport network should be expanded to connect major hubs within mega-economic regions with industrial complexes through such means as roads and railroads. In connection with this, it is necessary to establish a basic transport plan for mega-economic regions and based on this, build an efficient system for improving, operating, and managing the transportation system.

Fourth, in order to globalize mega-economic regions and propel mutual development of relevant countries, there needs to be cooperation and exchanges among various sectors across borders. Cross-border cooperation should go beyond friendly exchanges, as has been the case previously and expand into a practical cooperation that includes collaboration in the field of economy, industry, and infrastructures, ahead of which, administrative, financial, and legal systems and a task force should be set in place.

Finally, it is very important to build an effective governance and implementation system where local entities such as local governments, industries, and academia work together for the development of mega-economic regions. The core tasks involved in implementing a partnership system are adopting protocols to reinforce cooperation among local self-governments, bringing expertise and status to the Presidential Committee on Regional Development, the main organization that drives the development of mega-economic regions, and soliciting increased financial and institutional support from the central government.

By establishing and driving development strategies tailored to each 5+2 mega-economic region based on the aforementioned five strategies, the structure of the national territory could be changed from a Capital Region-centered structure to a multi-cored structure, paving the way for the national territory of Korea and each region to become competitive in this era of globalization.

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New Visions and Strategies for Establishing the Territorial Development Model of Korea

Korea has shown a phenomenal rate of economic growth during the past 60 years of modernization thanks to its citizens' enthusiasm and dauntless courage in stepping up to the challenges. As demonstrated by the international community's assessment of Korea as "the miracle of Han River," and "a global success case of forestation," the national territory of Korea assumes a somewhat different kaleidoscope from its previous days.

The national territory is a place that integrates time and place, reflecting its own unique history, culture, and community. It is a common base for the livelihood of its citizens today and for the future. In particular, it serves as a venue for citizens' economic activity and a storehouse of years of history and life styles of the nation. Naturally, the national territory undergoes changes, but basically, the changes include not only changes in quantity, i.e., population size, but also changes in quality that go with economic and scientific progress. Furthermore, the changes very strongly depend on the commitment and capability of its citizens to nurture and develop the national territory. Korea will be transformed into a global power only when it maximizes the added value of its territory and makes good use of its territorial conditions while it tries to augment its national wealth and improve the quality of life of its citizens. Advanced countries are those that have wisely utilized their territorial conditions and succeeded in generating added values. They made practical use of the unique characteristics of their national territory such as

geo-economic conditions, coastal areas, rivers and lakes, mountains and forests, and endowed resources to nurture industries, improve citizens' quality of life, and become globally competitive.

Natural Characteristics and Paradigm of the National Territory

Korea is in the monsoon climate zone and has four distinct seasons. The country is a peninsula surrounded on three sides by seas, i.e., the East Sea, West Sea, and South Sea, and has many lakes and different geographic features by region. At the same time, it is also a nation of many mountains, rivers, and islands, the so called "national territory of three manies." Sixty-five percent of the national territory consists of mountains, and in many parts there are tens of thousands of big and small rivers and some 3,300 islands. Korea is unique in that the country is located at a strategic cross road, serving as a geo-economic gateway to the West Sea Rim that includes China, the East Sea Rim that includes Japan, Eurasia in the North, and the Pacific in the South.

The condition of our national territory is perpetually changing because it is situated in a monsoon climate zone. This resulted some time ago in the formation of a national territorial philosophy that emphasizes adaptation to nature. National territorial philosophy is a philosophy of utilizing the national territory. According to our national territorial philosophy, people are part of nature, or people and nature are one. The feng shui philosophy of the Joseon Dynasty, and ancient documents such as the San-soo-go (topography of Korea) of Yeoam Shin Kyung-joon, San-gyung-pyo (map of the distribution of mountains in Korea), Do-ro-go (road map of Korea), Dae-dong-soo-gyung (ancient map of the mountains and rivers of Korea), and Gyung-se-yoo-pyo (A book detailing the principles of reforming various systems such as the land system or tax system) of Dasan Jung Yak-yong, and the Taek-ri-ji (Book of Geography) of Cheongdam Lee Joong-hwan, all illustrate feng shui philosophy in the traditional geographical aspect and an understanding of the national territory from mountains to rivers, i.e., nature perspective, cultural, and ecological perspective, and the understanding of social changes from a spatial perspective. However, the territorial philosophy changed as the nation went through 36 years of Japanese occupation, the Korean War, and modernization.

Trends and Changes in the Territorial Development Policies

During the 60 years of modernization since the 1950s, the national territory went through a "pre-modernization, modernization, and post-modernization" development period and transformed itself into a land of various geographical features. During the 1950s to 1960s, the need arose to restore the national territory from the damage caused by the Japanese occupation and by the Korean War. The

Figure 1: The National Territory Abounding in Rivers, Mountains, and Islands

3,892 rivers, with a total length of 30,233km(Based on national rivers and local rivers)	11,859 mountains	11,352 km, 3,173 islands

Source: Water Resources Management Information System of the Ministry of Land, Transport and Maritime Affairs: National Geography Institute (unpublished), nationwide mountain height adjustment work: National Geographic Information Institute of the Ministry of Land, Transport and Maritime Affairs (2008). Entire volume of the Geography of Korea.

1960s witnessed the construction and expansion of infrastructures, the establishment of goals for industrial and balanced development of the national territory, and economic progress, which brought about the formulation of a Comprehensive National Territorial Plan and relevant regulatory measures. In 1968, a vision for the national territory for the ensuing 20 years was established, and the foundation set for economic growth and regional development. Their aims were to restore the nation from the war damages and combat the economic crisis of low growth and high unemployment. From 1972 to 2008, four Comprehensive National Territorial Plans were established consecutively, each one planned with the next 10 to 20 years in view. These plans incorporated visions for the national territory and contributed to economic growth and regional development. Major policies for the first comprehensive plan were firstly to develop hub regions, second to develop a comprehensive plan to curb concentration in the Capital Region, third to develop a comprehensive plan for a new industrial zone on the west coast, and fourth, to promote balanced regional development, which continues to this day. Looking at the feats accomplished by the Comprehensive National Territorial Plan over the past 60 years of modernization, there has been astonishing progress that has impacted the population, economy, land, city, and base infrastructures.

During the rapid urbanization and concentration of the population in the metropolitan cities, large apartment complexes sprouted in the semi-farmlands around these cities. This resulted in an alteration of the settlement system and the utilization of the characteristics of the national territory such as mountains and rivers. Also, side effects arose in the process: industrial complexes centered on administrative districts burgeoned, and industrial complexes situated at mid and upper rivers generated water pollution, incurring high costs in environmental management.

There needs to be a reshaping of territorial development paradigms and models to showcase the unique intrinsic characteristics of the national territory. Formulation of vision and strategies that improve citizens' quality of life by maximizing the added value of the national territory and that boosts the standing and competitiveness of the national territory are in order.

Looking at the internal and external circumstances, our national territory is facing a new turning point with the advent of a global era of energy climate, aging population, and FTA. In addition, as the structure for economic and commodity exchanges became more open with the arrival of the era of globalization and informatization, dramatic changes swept across economic and industrial structures, population structures, the natural environment, and the demand and value system of Korea's citizens, which called for a new type of territorial development.

Figure 2: Survey Result
- Image Associated With the National Territory -

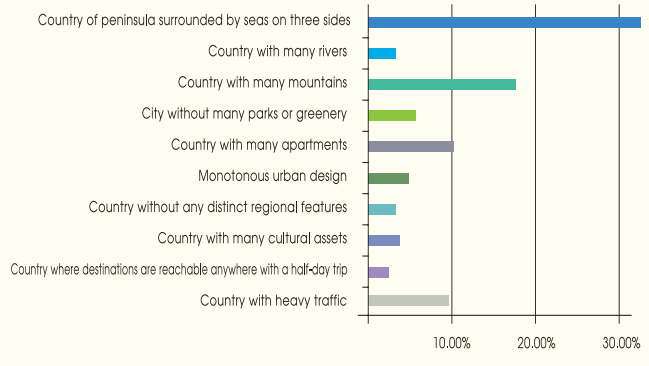
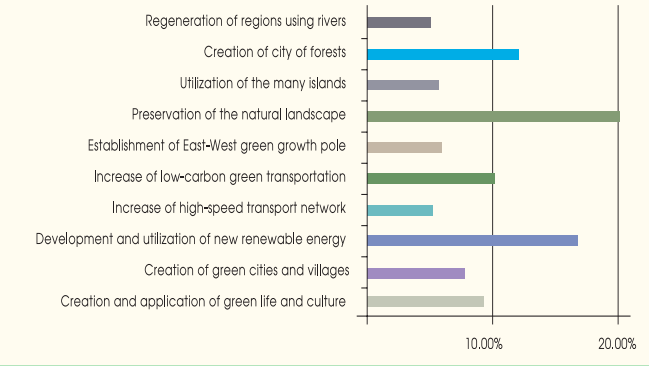


Figure 3: Survey Result
- Future Tasks -



Citizen Survey and Specialist Interview

To provide impetus for this new model of territorial development, in 2009, the Korea Research Institute of Human Settlements (KRIHS) conducted a survey of citizens and specialists based on an analysis of the natural characteristics of the Korean territory, national territorial philosophy, change of territorial development policies, and territorial features. According to the survey, many people associated the national territory of Korea with an image of a peninsula surrounded by seas on three sides or a country with many mountains. Also, many selected the preservation of the natural landscape, development and utilization of new renewable natural energy, and the creation of cities within forests as future tasks for the progress of the national territory. After interviewing experts, the survey and interview results were compiled to identify factors that need to be eliminated, reduced, increased, or created to promote a Korean-style development of the national territory.

Paradigm Shift

During the past decades of modernization, the aim of the territorial policy was to promote economic growth and a dichotomous and single-level concept of either "development or preservation." In other words, in the past, only the physical dimension of the national territory was taken into account. However, from now on, there needs to be a paradigm shift in territorial development, and strategies should be sought to promote multi-level development of the national territory, blending in with the economic, social, and cultural aspects to generate an efficient "mother earth." In other words, a Korean-style territorial development model and a new territorial strategy for the future are needed, not the conventional land- and labor-centered development model, but one that seeks to explore development potentials and incorporate factors other than land, such as water, mountains, wind, sunlight, environment, and culture. This is different from the previous physical and individual territorial development model; it is a creative model in which there is a fusion of natural, cultural, social, and physical aspects of the country. This new model creates added value for the development of the national territory in the future.

New Visions and Strategies

The three keynote directions of the Korean-style territorial development model are as follows: i) handing down the unique features and natural characteristics of the national territory, ii) regenerating the national territory to be eco-friendly and in harmony with nature, and iii) creating an advanced national territory through the fusion and integration of future technology and culture. Under these directions, three goals are suggested: first is the succession of an eco-friendly and nature-harmonious national territory. Second is renewing spaces so they are conducive to green growth and energy saving. Third is building happy, healthy, and cultural settlements.

First, for the succession of an eco-friendly, nature-harmonious national territory, various models were suggested. They include: a river network utilizing a regional regeneration model, a forest utilization and forest city creation model, and a model for the

Figure 4: Basic Direction of a Korean-Style New Territorial Development Model

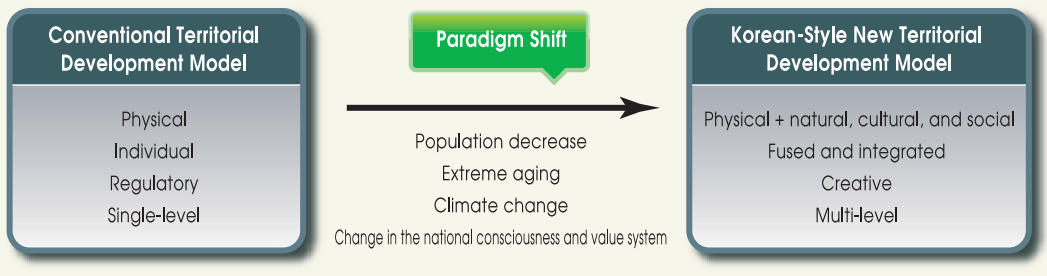


Figure 5: Territorial Development Model Scheme

creation and utilization of added value of its many islands. Second, for the renewal of spaces for green growth and energy saving, suggested models include: a zoning model specifying low-carbon, green traffic time ranges, a natural energy corridor creation model, and an east-west green growth axis model. Third, for the establishment of happy, healthy, and cultural settlements, such models as high quality, green city and village model, amenity creation model, and green life and culture models were suggested. These models will be applied once specific strategies are established.

In the 21st Century, our national territory needs to be developed anew in ways that focus more on its value as an area its citizens can share and appreciate rather than its value of functional convenience. Such an initiative seeks to focus on: natural landscapes and cultural factors instead of uniformity; the inherent beauty of the national territory and its natural, environmental, and ecological health instead of convenience; and, above all, the pursuit of a national territory of "unshakable harmony and balance," where each region's unique sentiments and lifestyles can be savored, instead of the zoning of facilities and spaces. The monsoon climate, geo-economic and natural characteristics, and features of our national territory should be utilized to prepare for climate change, our aging population, and the mega trends of the future, for which long-term and creative schemes should be made. This would boost the stance and added value of the national territory and contribute to earth and mankind in the 21st Century.

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Transborder Regional Development and Urban Strategy in East Asia

The most important change in overall economic relations in East Asia in the past two decades has been the shift in the relative position of Japan and China. Transborder flows of trade, investment and technology have facilitated the shift from a Japan-led economic development to a China-oriented economic development in East Asia. China's rise does not necessarily mean the resurgence of China-centered regional economic order. Instead, we observe the formation of transborder economic spaces along the coastal areas of China, whereby cities and firms compete against, and cooperate with, each other. The formation of transborder regions along coastal China is a notable

phenomenon, which is differentiated from either the past China-centered tributary system or the center-periphery pattern of world systems theory.

Conventional Theories are Losing Their Relevance in Explaining the Emergence of Maritime East Asia

The product cycle theory and the flying geese model assume an industrial shift among countries during the stages of production or industrial development, i.e., from labor-intensive to knowledge-intensive industries through capital-intensive industries. If the theory works, we can expect a division of labor leading into industrial specialization among nations and subnational regions. The industrial specialization hypothesis was examined by using the manufacturing employment data of coastal China, Hong Kong, Taiwan, Korea, and Japan (which is defined as maritime East Asia). The result does not support the hypothesis. The same analysis using both manufacturing and services employment data, however, suggests that a tendency of specialization exists. It is further speculated that advanced city regions of East Asia will further specialize in service industries, as manufacturing gravitates towards coastal China in the next few decades.

Trade linkages, the movement of people and networks of services are key elements constituting the complex web of interdependence among city regions in East Asia. The findings are interesting in two respects: i) five major city-regions of both Japan and Korea have developed very close trade linkages with China's coastal provinces; and ii) unlike China as a whole, the country's coastal provinces have symmetrical trade linkages with key city regions of East Asia, namely, the Kanto region of Japan, the Seoul capital region of Korea, Taiwan, and Hong Kong. This confirms an observation that inter-city trade structure and firms' production networks have a complex web of interdependence rather than a hierarchical dependency, at least in the scale of transborder regions.

The least integrated aspect of transborder regions in East Asia is labor mobility. High barriers still exist with respect to labor migration. Conversely, it suggests that labor migration would be a key policy variable in the reconfiguration of the urban and national economies of East Asia, especially in the advanced economies of Japan, Korea, and Taiwan in the future.

Four Case Studies of Transborder Interactions

Hong Kong, which is now closely integrated with the Pearl River Delta, has been transformed into a service center. The model of "front shop and back factory" was known as the most typical in transborder cooperation utilizing economic complementarity across the border. The Closer Economic Partnership Agreement between Hong Kong and China helps accelerate the economic integration of Hong Kong into the Pearl River Delta region, while creating a few problems of transborder governance. Hong Kong's policy-making process is now inseparable from Mainland China, which tends to limit possible policy choices for the future of Hong Kong.

The Taipei region is undergoing significant transformation processes due to the economic pull of Mainland China. Taiwanese enterprises that sought cheap labor and land on the mainland for export production in the 1990s are now shifting their strategies to secure the Chinese market. Localization of components, procurement of manpower and even joint R&D with mainland firms is the trend. Taiwanese firms even go further to help develop localities where they are located. All these imply a further exodus of Taiwanese manufacturing, leaving Taiwan and Taipei to make the hard choice of restructuring the economic structure from a manufacturing- to a service-centered economy, even with a greater dependence on mainland investors and visitors.

The Incheon-Qingdao or more accurately the Seoul capital region and the Shandong peninsula, including Qingdao, resemble the division of labor in the early period of Hong Kong-Shenzhen and Taipei-Donguan, which utilized factor cost differentials. The situation changed drastically in 2005 after the Chinese Government introduced more stringent regulations with respect to foreign direct investment into China's coastal areas. The division of labor based on factor cost differentials is coming to an end between Korea and coastal China. Accordingly, Incheon has to reposition itself to have more sustainable and collaborative relations with China's coastal cities, including Qingdao. The success of the current efforts to transform Incheon as a center of international business, logistics, and R&D from a manufacturing center remains to be seen.

The Busan-Fukuoka case is substantially different

Figure 1: Cities Included in the Case Studies

from the previous cases of Hong Kong, Taipei, and Incheon. Big incentives do not exist for the two cities to cooperate in the Korea-Japan strait. Factor cost differentials between the two cities and broadly between Korea and Japan are much smaller than those between China and Japan or between China and Korea. Inter-city cooperation between Busan and Fukuoka is operated primarily by the public sector and partly by the residents of both cities to exploit price differentials and the advantage of short distance. The two cities and the whole transborder region of the Korean-Japan strait need to find an alternative path other than the "low road" of transborder cooperation, which takes advantage mainly of factor cost differentials. Making a combined market and utilizing a larger pool of labor and knowledge resources can be an alternative path but there are many roadblocks, including strict regulations on labor mobility by both countries.

Case studies suggest the following:

- Political economy variables still play a big role in transborder regions and inter-city relations in East Asia.
- The positioning of cities in fluid transborder spaces is not only difficult but also varies according to the city's status. For example, city states such as Singapore have much greater freedom in policy design, whereas cities within a centralized political system such as Japan and Korea have limited freedom to respond to external changes. In between, we can find cities within a more decentralized political system or cities with a quasi city-state status like Hong Kong.
- All the cases indicate the big issue of transborder regional governance. The most troublesome aspects of governance are related to redundant infrastructure investment and labor mobility. Even the most advanced transborder region of East Asia, namely the Hong Kong-Pearl River Delta, poses a serious question of the extent to which labor mobility should be allowed and how to avoid redundant infrastructure building in the larger region.

Policy Implications for Promoting Transborder Regions

A few policy implications are offered. First, large cities need to seriously entertain ways and means of expediting the transition of cities into a service-oriented economy. Second, the critical policy arena for advanced cities in East Asia is labor importation. This is not simply a matter of labor augmentation but talents, who help make innovations and a multi-cultural society, which provides an opportunity for foreign-born citizens. Third, the key task for

Figure 2: Possible Trajectory of Inter-regional Networks

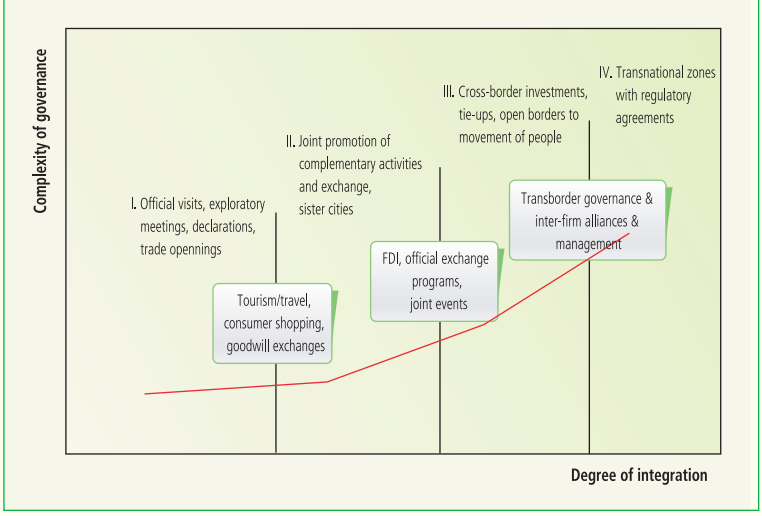

Table 1: City Types and Strategy Capacity

Types of City		Strategy Capacity	Examples
	City state or semi-city state	Independent or partially independent	Singapore, Hong Kong
	Opening, cities in a decentralized state	Independent in areas where state does not intervene	Cities in European countries
	Partial opening, cities in a centralized state	Subordinated to state unless the cities have special status	Taipei, Seoul

national and city policymakers in the coming decades is upgrading industrial clusters and promoting inter-cluster linkages across borders. This is not an easy task since benefits are distant and the private sector is unlikely to pay the costs.

For Korean policymakers at both the central and local level, the following points are suggested. First, it is necessary to establish anchor cities to expand transborder linkages beyond the simple trading of commodities. Local initiatives should be encouraged by awarding funds for transborder inter-city cooperation in knowledge sharing and joint R&D. Second, current industrial linkages based on the vertical division of labor across the border need to be changed so as to lead to a more horizontal division of labor. These linkages need to be formulated into cluster-to-cluster linkages instead of linkages between or within individual firms. Third, the concept of industrial clusters should be expanded to include services. For example, the Busan-Fukuoka transborder region has a much greater potential in building up the agglomeration economies of services. Fourth, policymakers in Korea should keep in mind that transborder economic cooperation that depends on factor cost differentials is coming to an end in the maritime zone of East Asia. Strategic thinking is required in transborder cooperation, whether it is between nations or cities. Pooling the resources of a wider region (e.g., the transborder region), establishing a common labor market, and developing new growth industries together between cities and nations across the border are major areas on which policymakers need to pay serious attention.

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A Strategy for Constructing Spatial Information of the National Territory for the Disabled

The quality of life and social participation of socially weak persons have attracted much attention recently. With the effectuation of "the UN Convention on the Right of Persons with Disability" on January 10, 2009, the Korean Government adopted "improvement of life quality for socially weak persons" as one of the government's agendas and constructed various plans to realize this agenda. Even though the legal basis for social participation of socially weak persons has already been prepared, concrete ways for realizing social participation, such as rights of access or rights of mobility, are insufficient. Based on this current situation, the research will suggest plans to secure rights of access and rights of mobility.

Current Utilization and Problems of National Territory Spatial Data for Socially Weak Persons

National territory spatial data for the disabled are tactile maps, braille maps, and Web sites to

introduce locations of convenient facilities for the disabled. Current technology of national territory spatial data application for the disabled includes smart phones, Differential Global Position System(DGPS), smart canes, indoor location awareness services, and so on.

Analysis of problems in utilizing national territory spatial data by disability types focuses on the rights of the disabled. Disability types include the physically disabled, the blind, the deaf, and the mentally retarded. Rights for the disabled in this research are restricted to rights of access and rights of movement because these two rights are directly affected by the provision of national territory spatial data.

Analysis results show the physically disabled and blind are the groups most discriminated against. There is less discrimination against deaf persons because national territory spatial data are visual data. The data utilization effects of mentally retarded persons are difficult to estimate. Therefore, this research limits the target as the physically disabled and the blind. This research also limits the "rights of the disabled" to "rights to access" and "rights of movement."

Survey on National Territory Spatial Data Contents

The contents of national territory spatial data for the disabled include artificial and natural objects, which are again about locations and shapes of objects and attributes of the objects. These objects are from different fields, including the fields of medicine, education, jobs, transportation, convenience fields, information and communication technologies, and so on. National territory spatial data for the disabled are classified by convenient facilities and moving convenient facilities based on the law. Following these contents and classifications, the scope of national territory spatial data will be adding attribute data to current national territory spatial data, and constructing new shape and attribute data.

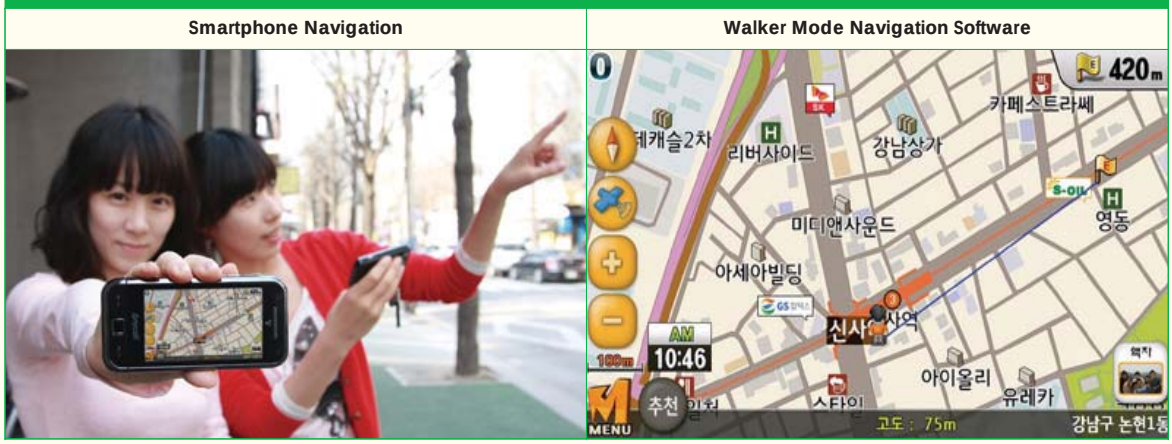
The research includes the current situation with regards to the use and application of the national territory spatial data. After analysis of the current situation, the national territory spatial data necessary for the disabled are selected. Finally, other specialists are consulted to confirm the necessary data.

Two different research directions are used for the construction of necessary national territory spatial data for the disabled. The first direction is to examine the provision and application of spatial data. The second direction is to examine the experience of using spatial data and necessary data for the future. In the case of necessary data selection for the future, interviews with specialists are included. The research finally selects 17 national territory spatial data after the confirmation process with specialists.

Construction of National Territory Spatial Data Experimental Site for the Disabled

Terrain code systems of previously selected data are defined after the reclassification process based on the standard of "the digital mapping 2.0 terrain feature code list" from the National Geographic

Figure 1: Navigation Function of a Smart Phone



Source : Techtimes, May 2009, Retrieved from //tech.sbc.or.kr/enewspaper

Table 1: National Territory Spatial Data After the Confirmation Process			
National Territory Spatial Data			
Mapping Part	**Attribute Part**	**Mapping Part**	**Attribute Part**
Handicapped parking lot	Presence of handicapped parking lot	**Stairs**	Presence of stair railing
Zebra crossing	Presence of zebra crossing	**Handicapped restroom**	Presence and location of handicapped restroom
Audio guiding device for zebra	Presence of audio guiding device for zebra crossing	**Elevator**	Presence and location of elevator
Slope way	Presence of slope-way railing	**Public office**	Location of public office
Underground passage	Location of underground passage entrance/presence of facility	**Educational and cultural facility**	Location of educational and cultural facility
Road	Shortest walking path	**Administration office**	Location of administration office
Road Traffic condition	Construction information, etc.	**Medical facility**	Location of medical facility
Alternate route during construction	-	**Social welfare facility**	Location of social welfare facility

Information Institute.

Symbols of the national territory spatial data for the disabled are cited from different official sources, including Korean Standards Service Network (KSSN), the Seoul Metropolitan City and Incheon City Web sites for the disabled, and so on. This research also creates symbols by adapting previous symbols if symbols are not found from official sources.

Attribute data definition of the terrain feature for national territory spatial data for the disabled is

Table 2: Potential Standard Symbol for the Disabled		
Name of terrain	**Symbol**	**Source of symbol**
Audio guiding device		Seoul Metropolitan City Web site for the disabled
Electronic character-based information board		Combining “guiding symbol standard of convenience facility” from the law with “character-based guiding” from electronic information board
Braille block		Seoul Metropolitan City Web site for the disabled
Dangerous sector		Combining symbol for the disabled from KSSN with “dangerous” character. Oblique lines mean “No Passing”
Handicapped restroom		Incheon City Web sites for the disabled
Elevator		KSSN
Video phone		Combining handicapped phone symbol from KSSN with “guiding symbol standard of convenience facility” from the law
Handicapped parking lot		Incheon City Web sites for the disabled

Figure 2: Path Obstructed by Construction

Figure 3: Entrance Difficult for Wheelchair Users to Access

applied by the standard of "manual for the approval of a barrier-free environment" and "the standard of convenient facilities."

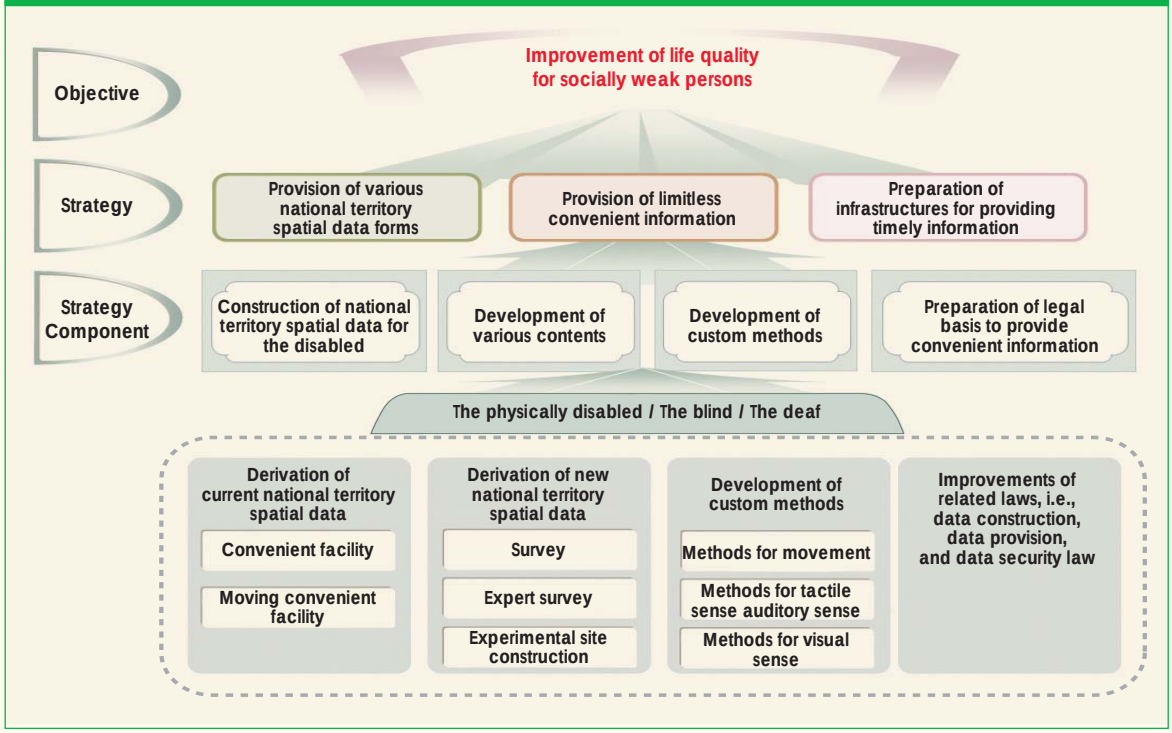
The area around the Beomgye subway station at Anyang-City, and the area around Paju City Hall, Gyeonggi-do are selected as experimental sites for the national territory spatial data.

For the construction and management of national territory spatial data for the disabled, a definition of the role of the management body and a DB management plan are necessary.

The effect of constructing national territory spatial data for the disabled will be a change from growth-oriented economic policy to welfare state policy, improvement of quality of life for the disabled, and supporting various rights and laws for the disabled.

Shin Dong-bin (dbshin@krihs.re.kr)

Figure 4: Potential Strategic Plan for Constructing National Territory Spatial Data for the Disabled



INTERNATIONAL COOPERATION

Korea's Geospatial Interoperability Day

KRIHS and the Open Geospatial Consortium (OGC®) Korea Forum co-hosted an OGC Interoperability Day event on November 18. The aim of the workshop was to facilitate the sharing of geographic information to government, academic, research and industry organizations in Korea. The day-long program included presentations on experiences with developing geospatial standardization and interoperability in the context of ubiquitous information services. The OGC® is an international consortium of more than 385 companies, government agencies, research organizations, and universities aiming to develop publicly available geospatial standards that "geo-enable" the Web, wireless and location-based services, and mainstream IT.

Meeting With a Specialist From Germany

On November 18, 2009, KRIHS hosted Dr. Rupert Kawka of the Federal Office for Building and Regional Planning in Germany. The goal was to learn about the metropolitan city strategies of Europe, particularly Germany. Presentations and discussions focused on the development strategies of the metropolitan cities in Europe and German case studies. Dr. Kawka discussed various policies adopted to improve the competitiveness of metropolitan cities in Europe and Germany. He especially emphasized strategies for promoting urban competitiveness by forming networks with small- and medium-sized cities.

MOU With the College of Built Environments, University of Washington

On December 15, 2009, KRIHS signed an MOU with the College of Built Environments of the University of Washington. Previously, KRIHS signed an MOU with the Department of Urban Design and Planning. This particular MOU is an

agreement for educational, scientific, and research exchanges at the higher education level. The College of Built Environments has 700 students and 130 faculty members. Its name was changed from the College of Architecture to better represent the four departments. The MOU ceremony was preceded by a joint seminar on green growth and urban development. Professor Christine Bae of the College of Built Environments gave a presentation on "Green Growth and the Washington's Growth Management Act: Preliminary Findings."

Visit by Vietnam's Minister of Construction

Mr. Nguyen Hong Quan and a delegation from Vietnam's Ministry of Construction visited KRIHS on January 28, 2010. The purpose of the visit was to discuss new town and public housing development and management methods, high-rise building management, underground space development policies and laws, and matters related to the construction of the National Assembly building in Vietnam. The delegation plans to use the information as a reference in constructing the National Assembly building in Vietnam. The team met with researchers of KRIHS and listened to various presentations. The minister expressed particular interest in the use of underground spaces and said he wishes to promote research collaboration between the land research institutes of both nations.

NEWS & ANNOUNCEMENTS

Inaugural Seminar for Green Territorial Forum

The inaugural seminar of the Green Territorial Forum titled "Strategy for Green Territory in the Era of Green Growth" was held in the KRIHS auditorium on November 11, 2009. The seminar consisted of three sessions: inaugural meeting, opening ceremony, and thematic presentations and discussions. In his opening remarks, KRIHS president Dr. Park Yang-ho announced his commitment to turn the forum into a venue for industry professionals to discuss green growth and policy directions. Mr. Kwon Do-youp, the vice-minister of the Ministry of Land, Transport and Maritime Affairs, followed with laudatory remarks. Thematic presentations were given by professionals and ensuing discussions centered around how to build Korean-style green spaces and cities of the future, how to promote farming and fishing villages for green growth, and spatial designs for green territory.

U-City World Forum Preparation Meeting

On December 10, 2009, KRIHS conducted a meeting with industry professionals regarding strategies for the U-City World Forum (UWF). The aim is to standardize and export U-City globally. Professors, industry experts and members of the Korea Ubiquitous City Association were among the participants. At the meeting, Dr. Cho Chun-man suggested a basic direction and strategies for the first UWF. Currently, the Ministry of Land, Transport, and Maritime Affairs is seeking to hold the first UWF in October, 2010. The goal will be to export cities as part of a U-Eco City R&D project, and to implement and publicize the forum by obtaining cooperation from relevant organizations. The UWF is expected to be held periodically and generate positive results in domestic and overseas markets.

Fourth Breakfast Meeting With Constructors

This breakfast meeting, held four times annually, is a venue for professionals in the construction industry to exchange the latest information and ideas. On December 18th, 2009, KRIHS organized the Fourth Breakfast Meeting with Constructors with the theme: "The 2010 Forecast and Tasks of the Construction Industry." The purpose was to discuss current challenges in the construction industry and exchange opinions on ways to address them. Attendees included Mr. Kim Jae-young, head of Korea Construction Infonet; Mr. Chang Se-jun, director of Samsung C&T Corporation; and Mr. Yoo Joo-hyun, CEO of Shinhan Engineering & Construction Co., LTD. Korea's 2010 projected economic growth is 4%; construction investment is expected to increase by 1.5% and employment conditions are expected to improve. However, construction professionals noted that despite this positive outlook, actual economic conditions still remain stagnant — as demonstrated by overheated competition in the capital region redevelopment market.

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Korea Research Institute for Human Settlements (KRIHS) is committed to improving knowledge and understanding of the conditions and problems of the nation's resources and their interactions with people. It assists the government in formulating long-range development plans and makes policy recommendations on related matters.

KRIHS carries out various activities to collaborate with the international research community in solving theoretical and practical problems concerning human settlement issues and planning. Also, it provides research expertise and consulting services along with training programs for foreign governments and institutions.

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