# KRIHS - Tsukuba University

# Joint Workshop on Urban and Regional Planning

# Proceedings

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Korea Research Institute for Human Settlements,

Anyang, Korea

KRIHS 筑波大学 University of Tsukuba

## Programme

13:00-13:30 General Registration

13:30-13:40 Welcome Address,
Kyu-Bang Lee(President of KRIHS)

### Session I : Land Use Management

13:40-14:20

- Agriculture in the city: An alternative perspective on the order/disorder of land use in Asian Mega-Cities

*Makoto Yokohari (Associate Professor, Tsukuba University)*

- Planned development system in the urban fringe area

*Jae-Gil Park (Research Fellow, KRIHS)*

### Session II : Housing Land Development

14:20-15:00

- Emerging problems of housing land developments in Tokyo Metropolitan Area

*Tomohiko Yosida (Assistant Professor, Tsukuba University)*

- Institutional changes in urban land development in Korea and it's current issues

*Ki-Seok Kye (Research Fellow, KRIHS)*

## Programme

### Session III : Metropolitan Policy

15:00-15:40

- Commuting and spatial structure in Japanese metropolises

*Tsutomu Suzuki (Associate Professor, Tsukuba University)*

- Regulatory Policy Measures in the Capital Region of Korea: Problems and Proposals

*Dong-Woo Lee (Research Fellow, KRIHS)*

15:40-16:00 Coffee Break

### Session Ⅳ : Discussion

16:00-18:00

- Moderator

*Hyun-Sik Kim (KRIHS)*

- Panelists

*Eui-June Kim (Yonsei University)*
*Sung-Jae Choo (Kyunghee University)*
*Myung-Hoon Lee (Hanyang University)*
*Cheol-Hong Kim (Suwon University)*
*Je-Kook Kim (Kyonggi Research Institute)*
*Jeong-Hoon Lee (Seoul Development Institute)*
*Beum-Sik Min (KRIHS)*

# Session I

# Land Use Management

# Agriculture in the City:
# An alternative perspective on the order/disorder of land use in Asian Mega-cites

Makoto Yokohari
Associate Professor
Institute of Policy and Planning Sciences, University of Tsukuba

## Abstract

Most Asian cities have a history of applying modern urban planning concepts which originated in Europe and North America. Some cities did succeed in applying the concepts, but in many cases in Asia the results were generally perceived to be chaotic landscapes. Urban landscapes with segmented agricultural lands, which were seen to result from the incomplete application of these concepts, have been regarded as a symbol of disordered Asian urban areas.

However, agriculture in the city is not a modern invention of Asian cities but is found in their history. Almost half of the land area of Edo, the former Tokyo, was in agricultural use even at the end of Edo era, when Edo, at the same time, was already one of the largest cities in the

world with over one million population. Urban agriculture is still alive in many Asian mega-cities including Jakarta, Indonesia, Bangkok, Thailand and Metro Manila, Philippines. Recent studies on agricultural lands in the city have revealed their functions in maintaining the ecological integrity of the area. .

These facts suggest that the order of land use in Asian mega-cities should not be achieved by a simple application of western urban planning concepts, but by an application of the new planning concept which regards agriculture as a part of their urban fabric. The order in the land use of Asian mega-cities should be achieved by realizing urban agriculture as an indispensable element of the city.

## 1. Characteristics of suburban land use in Asian mega-cities and the implementation of modern urban planning concepts

As referred in many precedent publications the growth of major Asian cities during the 20th century was enormous both in speed and scale. The population of London, UK, gradually increased during the 19th century and reached 8 million people at the beginning of the 20th century, while Tokyo, Shanghai and Seoul grew to 8 million people within the 25 years since the end of World War II. Today 15 out of 28 of cities in the world of more than 8 million people are to be found in Asia (Chen and Heligman, 1999).

Such rapid growth inevitably resulted in many social and environmental problems including overpopulation and environmental degradation in urban cores and the depopulation and degradation of rural areas. Hayashi, *et.al.* (1993) report on the immense urbanization in Bangkok, initiated in early 1970s, that resulted in insufficient urban infrastructures including disordered transportation systems and poor

sewage and drainage systems, causing serious air and water pollution problems. Today, the traffic congestion in the Bangkok Metropolis is regarded as one of the worst in the world (Kidokoro, *et.al*, 1993).

Among the problems caused by rapid growth, one of the most frequently observed serious problems in Asian cities is the disordered suburban land use. Micro-scaled juxtaposition of urban and rural land uses, as the result of uncontrolled urban developments scattering into surrounding rural areas, has been regarded as a cause of insufficient urban infrastructures and degraded agricultural environment of the area (Ishida, 1992).

Of course such disordered land use has been one of the most frequently and substantially tackled problems in Asian cities. Successive implementations of modern urban planning concepts which originated in Europe and North America, i.e. the designation of green belts and zoning plans, have been to control the disordered growth of the cities (Yokohari, *et.al*, 2000). Seoul, Korea, can be nominated as one of the successful cities in Asia which, so far, kept the urban growth under control by the installation of a greenbelt surrounding the city (Figure 1).

Plans were also drawn up for Tokyo, Japan, to implement a greenbelt on the administrative boundary of the city. The first plan was officially announced in 1939 as a part of the comprehensive parks and open space plan of the Greater Tokyo Region (Figure 2). Succeeding this plan two plans, one during the Second World War (1943) and the other after the war (1948), were announced. However, as present Tokyo clearly shows these plans have been poorly implemented. Today, only several parks in the suburbs of Tokyo can be found as remnants of these plans.

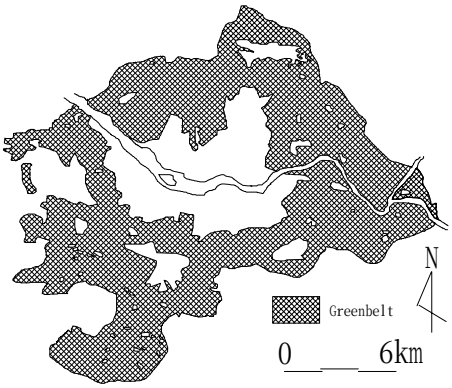


**Figure 1** Greenbelt of Seoul, Korea
Massive circular green of 1567km$^2$, 29% of the whole region, located on a 15km radius

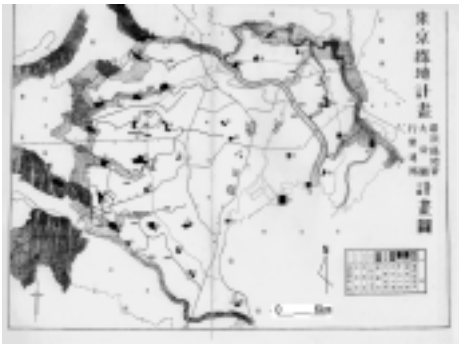

**Figure 2** Greenbelt of Tokyo in the Parks and Open Space Plan 1939
A green corridor, mostly consists of farmland and woodland, located on a 15km radius

Another western measure frequently applied to Asian cities is zoning. In Japan the zoning system was first introduced by the City Planning and Zoning Act enacted in 1968. Traditional European cities, where urban areas are sharply separated from surrounding rural areas by a clear boundary line, was the target image of the act. Two types of areas were promoted in the planning district; urbanization-promotion areas and urbanization-control areas. Urbanization-promotion areas are zones that include existing urban areas, and areas that should be urbanized within approximately ten years time. Urbanization-control areas are

areas that include rural areas without urban developments, except for public facilities including hospitals and schools. However, even more than 30 years have past since the installation of the act, a landscape with a small agricultural landsurrounded by micro-housing developments can easily be found in the suburbs of major Japanese cities. Similar trials and realities can not only be found in Japan but in most cities throughout Asia.

## 2. Agriculture in Edo

However, is the landscape with micro-scaled mixture of agricultural lands and urban fabrics only a symbol of the absence of an adequate control on urban growth? It may be true that such a landscape represents insufficient implementation of the modern urban planning methods originating in Europe and North America. But, as reported by Yokohari, *et.al.* (2000) a mixed landscape with agricultural lands in the urban area can be regarded as a historic and vernacular landscape of Asian cities.

A good example may be Edo, the former Tokyo. The city of Edo was established as the practical capital city of Japan in 1603 by Ieyasu Tokugawa, and the shogunate government by Tokugawa family, commonly known as Edo era, has lasted for over 250 years until the Meiji Restoration in 1868. Before the establishment of Edo by Tokugawa family Edo was merely a maritime village, but the population of Edo sharply increased during Edo era. It already reached 850,000 at the end of 17$^{th}$ century, and has reached approximately 1.3 million in early 19$^{th}$ century, which made Edo one of the largest cities in the world at the time. The population density at the time, estimated to be around 40,000 per1km$^2$, is far higher than that of Tokyo today (approx. 14,000 per 1km$^2$).

Despite such enormous accumulation of population Edo was a city with agriculture. A number of varieties in vegetable on market today are given their name by the area in Edo where they were grown during Edo era, e.g. Komatsu-na (variety of Chinese cabbage), Nerima-daikon (variety of radish), and Yanaka-shoga (variety of ginger). Fujii, *et.al.* (2002) estimated the land use of Edo in 1850s by using various documents and maps, and achieved the results as Figure 3. In the figure the number of cells identified as agricultural exceeds 40%. Fujii, *et.al.* (2002) also discuss that the actual coverage of agricultural lands may have been even higher than 50%, as it is well known that vacant lands in the residence of shogun families were commonly loaned to neighboring farmers for agricultural uses.

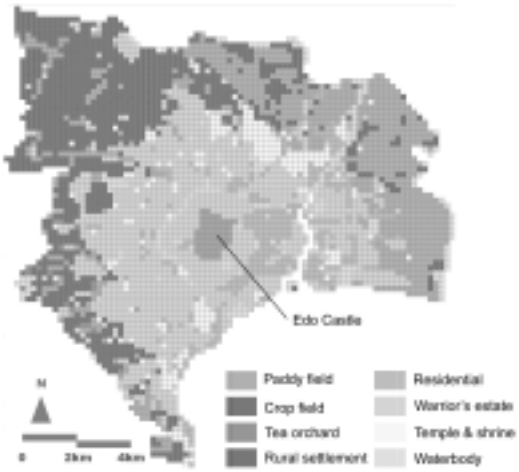


**Figure 3** Land use of Edo in mid 19th century (Fujii, *et.al*, 2002)

Another feature which characterizes the land use of Edo is the mixture of urban and agricultural land uses in its fringe areas. By calculating the join value of agricultural land patches Fujii, *et.al.* (2002) estimated that the area between 4km to 6km from the core of Edo was the area where series of small and segmented patches of agricultural lands remaining inside residential neighborhoods were identified. Figure 4 is

a typical example of such residential areas accommodating small and segmented agricultural lands. The area illustrated in Figure 4 is approximately 4km away from Edo Castle, the urban core.

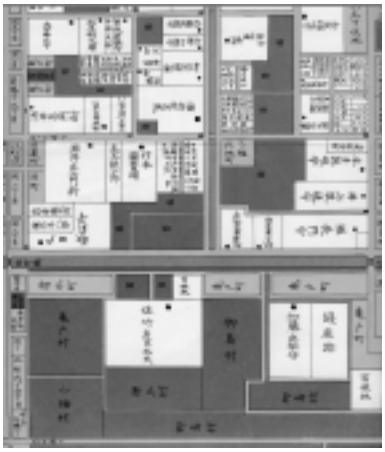

**Figure 4** Segmented paddy fields remaining in a residential neighborhood, approx. 3km east of Edo castle

**Figure 5** Spatial system in Indonesia (McGee, 1991)

Such mixture of urban and agricultural land uses can also be identified in Indonesia. McGee (1991) reports that a zone called "desakota (desa = rural, kota = urban)", where urban and agricultural land uses are intentionally mixed, can be found not only in the history but in contemporary fringes of major cities in Indonesia (Figure 5). The studies of Fujii, et.al. (2002) and McGee (1991) clearly show that

agriculture in the city is not a modern invention by Asian mega-cities but is a part of the vernacular landscape of the cities.

## 3. Ecological functions of agriculture in the city: A case study of microclimate control effect of paddy fields

Ecological functions of green open space have long been discussed, especially for urban parks and forests. It was late 1980s when the functions of agricultural lands have started to be discussed in Japan (Yokohari, *et.al*, 1994, Kato, *et.al.*, 1997). Then during the 1990s became an issue of public concern both internationally and domestically (Soule and Piper, 1992, Bryant and Johnston, 1992). Among the many ecological functions of vegetated open spaces, the effects on the micro-climate of urban areas are indispensable and have been well-documented (e.g. Geiger 1965, Oke 1987). Urban areas in summer tend to have drier and hotter air, lower wind speeds, and hotter surfaces relative to vegetated open spaces.

When observing agricultural lands in the suburbs of Asian cities they are often rice paddies of various sizes. These paddy fields are expected to provide a comfortable living environment for surrounding urban areas by controlling their microclimate. However, the potential of paddy fields to control microclimate may not be equal to all fields but be determined by their distribution patterns. Describing the ideal distribution pattern to control the microclimate of surrounding urban areas may provide one of answers to the question; How should we control, conserve and plan mixed land-use in the suburbs of Asian cities?

### (1) A case study of microclimate control effect of paddy fields

By focusing exclusively on air temperature, Yokohari, et.al, (1997) have identified the microclimate control effect of paddy fields remaining in the fringe of urban fabrics by having an area in Kasukabe City, Japan, a city of 250,000 residents, located on an alluvial plain 30 km from the centre of Tokyo, Japan. Land use in this area was traditionally dominated by paddy fields, but since the mid-1960's urban development has expanded into agricultural areas. Today the north part of the city is dominated by urban land-uses with only small fragmented patches of paddy fields remaining, while the southern part is still dominated by large patches of paddy fields. An area of 6 km (North to South) by 3 km (East to West) was chosen so as to provide a range of urban/rural mix from very segmented paddy fields in an urban matrix, to contiguous paddy fields.

Data were collected during a period of hot, sunny, summer weather when daytime temperature differences between urban and rural areas would be expected to be maximized. An aspirated mercury-in-glass thermometer was used to measure air temperatures at a series of 24 predetermined locations.

**(2) Effect of Paddy Field Coverage on Air Temperature**

To determine the effects of paddy field patterns on measured air temperatures the study area was divided using the Japanese National Standard Grid Cell System into cells of approximately 50m by 50m. This resulted in 119 cells north to south, and 54 cells east to west, a total of 6426 cells. Land use in each cell was identified through use of topographical maps (1:25,000) and aerial photographs. Each cell was mapped as a single land-use type.

In order to determine the mixture of land use types that were effecting each sampling location in this study, a 'zone of influence' was determined. An area of 81 cells (9 by 9 cells; 450m by 450m) around each observation point was taken as a unit for calculating the coverage

ratio of paddy fields of each observation point. It was possible to identify a zone of influence as an approximate square as the wind speeds during the observation period were very light.

Coverage ratio was identified as the percentage of paddy field cells within the zone of influence. This value was plotted against the temperature difference between each point and the reference temperature at Kasukabe Station. Figure 6 illustrates the strong relationship (r=0.8) between the coverage ratio of paddy fields and the air temperature difference. It is clear that the higher the coverage ratio, the larger the temperature difference.

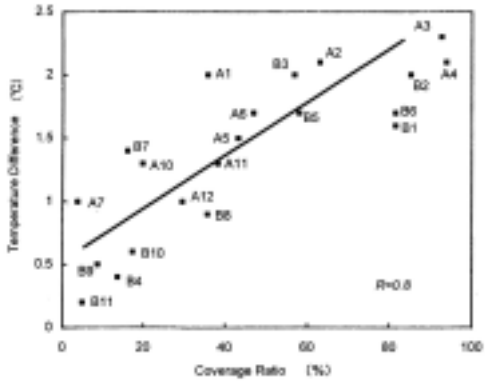


**Figure 6** The relationship between Coverage Ratio of paddy fields and difference in temperature between each station and the reference point

### (3) Effect of Paddy Field Segmentation on Air Temperature

Although coverage ratio explains much of the variation in air temperature differences, the segmentation level of paddy fields was investigated to determine if the relative sizes and patterns of urban and paddy field lands had an influence on the temperature amelioration.

Segmentation was determined based on the length of the boundary between paddy fields and urban areas. The more total length, the more segmented the landscape. The total boundary length (TBL) between

paddy fields and urban lands can be determined through the use of grid cell analysis. By considering the area of the zone of influence (81 cells), the segmentation level of paddy fields in each observation point was calculated as follows.

$$\text{Segmentation Level} = (x/144)X100$$

where $x$ = TBL in each unit, and

144 = Maximum TBL in 9 by 9 cells unit

The coverage ratio has been plotted against the segmentation level of observation points in the study area (see Figure 7). Each point is noted by number and temperature difference. The cluster of observation points in areas of high coverage ratio (>70%) had a uniformly high temperature difference, varying only from 1.6C to 2.3C. The cluster of observation points in areas of low coverage ratio (<30%) had uniformly low temperature differences, ranging only from 0.2C to 1.4C. The three remaining clusters of observation points were all located between 30% and 70% coverage ratio and they varied in terms of segmentation level. They can be identified as: High, Moderate, and Low Segmentation Levels. Points in the High Segmentation Level group are highly urbanized, those in the Low Segmentation Level group are very rural in character, and the Moderate are in between.

The average temperature differences of each group were: 2.0C for Low, 1.6C for Moderate, and 1.1C for High Segmentation Levels. It is clear that when the coverage ratio of paddy fields was intermediate (between 30% and 70%), the segmentation level of paddy fields strongly influenced the air temperature. Above 70% and below 30% the segmentation level was not identified as a factor in affecting air temperature.

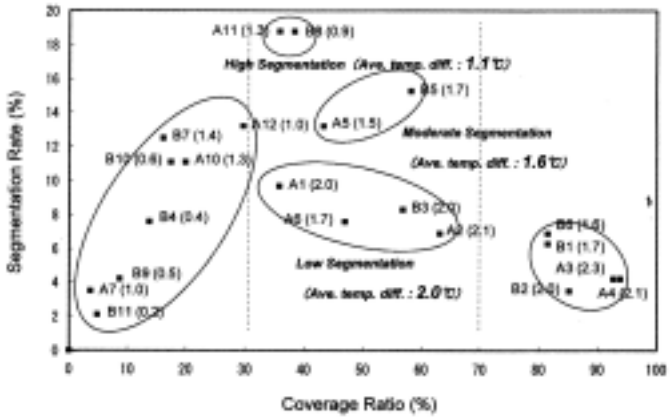


**Figure 7** Scatter diagram of coverage ratio of paddy fields versus segmentation rate Data with similar characteristics have been circled.

### (4) Single Large or Series of Smalls?

The data analysis suggested that; (a) Paddy fields in the suburb have a measurable effect on maximum mid-summer air temperature relative to surrounding urban areas, (b) There was a strong relationship between coverage ratio of paddy fields and temperature differences, with areas of high coverage ratio having the largest effect on air temperatures, and (c) In areas of medium coverage ratio, the segmentation level of paddy fields also influenced the effect on air temperature. In these areas, the higher the segmentation level the less the effect on air temperature and the lower the segmentation the more effect on air temperature. For optimum effect these results would suggest that the coverage ratio should exceed 30%, and in areas up to 70% coverage the segmentation rate should be kept low.

These results indicated that urban areas should be separated from paddy fields to maintain a maximum cooling effect on air temperatures. However, when considering the effect on people, it would be desirable to maintain as much contact between urban areas and paddy fields in order to mix the cooler paddy field air with the warmer urban air. For urban areas to benefit from the cooling effect of paddy fields, the two areas

must be mixed. The longer the boundary line between urban areas and paddy fields, the more the urban areas can benefit from the effect. This means that there is no clear answer to the question 'what is an appropriate mix of urban and rural lands?' to maximize the microclimatic effect of paddy fields. To maximize the cooling effect on the air requires large, unsegmented patches of paddy fields, while providing maximum benefit to people living in urban areas requires contact with paddy fields, thus smaller, more segmented fields.

## 4. Conclusion

The concept of clearly separating urban fabrics from the surrounding rural areas, which is one of the fundamental concepts of modern urban planning theory, is rooted in medieval European cities where the densely populated urban area was clearly separated from surrounding rural areas by a moat (Spirn, 198*). Greenbelts, installed around many cities in the world during the 20th century to restrict disordered urban expansion, can be understood as "green moats" in the modern world for the clear separation of urban areas from the surrounding rurals. The concept of zoning, which aims to realize a mosaic of homogeneous zones, has dialectical materialism as one of its theoretical bases.

However, when we investigate the history of Asian cities what we commonly find is not a clear separation of urban and agricultural land uses, but a mixture of agricultural lands and urban fabrics even in the central core of the cities (Yokohari, *et.al.*, 2000). The modern urban planning theory may describe such mixture as chaotic disorder, but as Ashihara (1986) describes a "hidden" order may be found behind the chaotic appearance of Asian cities. The mixture of urban and agricultural land uses should not be interpreted as a disordered situation which reflects the absence of sufficient controls, but as a condition rooted

in the Asian way of understanding and planning space.

Asian cities repeatedly applied urban planning measures originating in Europe and North America during the 20th century, and were in many cases judged to be incomplete and poorly executed attempts. It is true that not all of mixed land use in Asian cities should be positively understood. There are indeed disordered mixtures which cannot be accepted from any perspective. However, it may also be true that the modern urban planning concept, which we tend to regard as an universal concept, is in fact one of local concepts rooted in European context and may not necessarily be suitable in an Asian context. Respecting ecological functions of agricultural lands in urban areas and including them as an essential element for realizing "mixed land use without disorder" (Takeuchi and Matsuki, 1987) may be regarded as one of the key perspectives for the successful future of Asian cities.

What is now needed for the successful control of urban growth in Asian cities is not to keep applying "western" planning concepts to Asian cities and to judge the results from a western perspective, but to develop a new planning concept rooted in the Asian context which may regard agriculture as an indispensable element of Asian urban fabrics.

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# Planned Development System in the Urban Fringe Area

Jae-Gil Park
Research Fellow
Korea Research Institute for Human Settlements

## 1. Introduction

### 1) Background

◦ In the year of 1993, the Semi-Agriculture-Forestry Zone was introduced and it caused disorderly development around all over the urban fringe area. Social efforts were done to stop the movement of disorderly development including the amendment of the related laws, and finally arrived to make the Law of National Land Planning and Management newly.

◦ Among the articles of the law, it was stated that the urban master plans should be prepared to be able to cover the whole area of the municipalities. It means that rezoning of the Semi-Agriculture-Forestry Zone should be also conformed to the urban master plan.

◦ Nevertheless if we would like to prohibit the disorderly development perfectly, we need to have planned development system as social technology. In this respect we doubt the existing statutory urban planning and development system could do well for planned development in the urban fringe area. It will be needed to solve the problems within the existing urban planning and development system.

**2) Objectives**

◦ This study aims to answer the following two questions:

- what kinds of problems do we have in the existing Korean urban planning and development system?
- How can we renovate and advance the existing system to solve problems within in the middle or short term periods?

**3) Research method**

◦ It was designed that we make a conceptual framework about planned development system and diagnose the existing system by using this framework, and also propose the alternatives to make the existing one good through the case study of the City Cheon An.

## 2. conceptual framework of types of urban planning and development system

### 1) the elements of urban planning and development system

◦ It is assumed that the Korean urban planning and development system is composed of urban master planning system, the urban planning and land development management system, urban development project system.

◦ Urban master planning is consumed to propose the long term objectives and policies for spatial and physical urban growth and welfare covering several subject planning including the land use planning.

◦ The urban planning and land development management system contains all the control measures from the personal land use activity to rezoning

◦ urban development project will be started on the conditioned that it should be conformed to the urban planning and land development management system.

### 2) Types of urban planning and development system.

◦ From the urban master planning-through the urban planning and through the land development management system-to urban development project, all kinds of urban development will be top down type and bottom up type.

◦ The top down type of urban planning and development system is

assumed to regard the urban planning and management hierarchy as 「urban master planning→ The urban planning and land development management system→ urban development project」(Ⅰ Type ), and the second type of 「urban master planning→ (The urban planning and land development management system=urban development project)」 could be the large scale or very important project as the variation of type especially needed to social consensus building .

◦ And the bottom up type could be project propelled urban planning and development system in which urban master plan and the urban planning and land development management plan will be decided almost at the same time, This type will be the third type of 「urban master planning=the urban planning and land development management system=urban development project」.

**3) the relationships among the elements of urban planning and development system**

*① 「urban master planning system」 and 「the urban planning and land development management system」*

◦ The role of urban master plans ranges from projecting the long term direction of city and county development besides its role of guide to the urban planning and development management system, and zoning, urban facilities, and special district plan.

◦ Urban master planning system could be classified to 3 categories. The first one will found in U.S.A. or England, which will focus on the bundles of policies of spatial and physical affairs. And besides that, Germany and Korea will focus on the land use plan especially. And there are also Japanese Style which focus on the mixed type of Type Ⅰ and Ⅱ.

◦ In Korea, if the urban master plan propose the land use change of some certain area , differently from Japan, the rezoning without development project could be executed, and differently from Germany with no lawful restriction, all kinds of development projects might be possible. .

- The urban master plan has a great influences on the preparing of land use zoning plan because of its role of guidance to the 「the urban planning and land development management system」

*② 「the urban planning and land development management system」 and urban development project*

◦ In America, the traditional Eucladian zoning system has been complemented by the non Eucladian methods of district plan, PUD, incentive zoning, etc.

- The Eucladian zoning should be considered and complemented to be able to conform to the existing condition.

- Even if all the activity were to be controlled by the zoning system, it would be desirable to be considered for the development project.

◦ Each development activity should not be allowed if it were not to be conformed to the existing zoning. If the most desirable project for the urban development were not conformed, rezoning should be made.

- Nevertheless, all the development gain should be returned to the government by the law, and it should not be allowed to make windfalls to some certain people by up- zoning.

## 3. diagnosis of the existing Korean urban planning and development system and some problems to be solved

### 1) history of the change in Korean urban planning and development system

◦ From the year of 1962, all the development activity has been controlled by the zoning system in the era of the first Urban Planning Law.

◦ In the year of 1981, the Urban Master Planning system was introduced by the amendment and also was considered to influence on the zoning plan .

- In 1980s, in non-urban zoned area national land rezoning had been done independently from urban planning side decision, and the development project executed by the Land Development Law or Industrial Park Development Law were considered to be included in the Urban Master Planning .

◦ Because of the strict inspection by the national government and the local government's dependent administrative action for that, the tendency of urban master plans use for blue print plan has been deepened and it becomes more difficult to distinguish the function of the Urban master Plan from the zoning plan.

- The decision power of the secretary of Construction and Transportation Department were shifted of the Governor in 1990s, but nowadays, by the approval power of the secretary' to the Urban Master Plan, the Secretary can control the municipalities.

◦ In Jan. in the year of 2000, the amendment of the Urban Planning Law were announced. At that time, the related several articles were annexed to contain the related articles of the Building Law. And we can choose the alternatives for the better development system. And

also the consolidation of the National Land Law and the Urban Planning Law were done and all the national land were to be managed through the National Land Planning and Use Law in the year of 2003.

**2) the diagnosis and problems of Korean Urban Planning and Development System.**

◦ We diagnose the urban planning and development focusing on the relationship among 3 factors.

**Table 1** diagnosis of Korean urban planning and development system

| Classification | type Ⅰ | type Ⅱ | type Ⅲ |
|---|---|---|---|
| cases | proto- and general type | exceptional case (ex.Pangyo New Town )) | rare case (the 5 New towns including Bundang etc. Cheonggye river Project |
| urban master plan/Urban Management Law | • developed area or developable area: the necessity review of rezoning | • proposed developed area in urban master plan urban with figures or written statement | • 8the New Town Project Industrial Park Development in 1980s |
| Urban management Law/development project | • leap-frog development by the high price of land<br>• rezoning time before project consumed | • urban development execution Plan | • urban development execution Plan |
| problems of system | • the long term planing function of urban master plan were disappeared<br>• In fact , the national government use the approval power as controlling the local governments | • the conception of the developable area as decision of development project and high land prices | • very urgent and important project but negative effect to be caused (Paju, kimpo New Town Project etc.)<br>• municipalities try to do amendment of urban master plan and project launching |

◦ problems related with system

- Type Ⅰ could not be applied to the New town Project, and that to be lame duck system

- The same reason could be also found in another types, and the fundamental reason was thought to be the fact that it has been overlooked that it is important to discern the zoning plan from the land use plan. And secondly, the absurdity of land use activity management system found in windfall with no development activity.

◦ no public action against the windfalls

- development needs derived within metropolitan area should be thought that those are brought out by the metropolitan community wide, and its values would be floated before its locations are decide.. And finally the governments decide its location on certain places.(this action is called shifting values) . Therefore, floating and shifting values should be taken by municipalities and governments.

- With these points of view, it should be tried to make related system to prohibit the windfall rising and public engagement to take the profit made by the windfall.

**3) the case of urban fringe development in Cheon An Si**

*① the history of Cheon An Siurban planning*

◦ In the year of 1995, Cheon- An Si and Cheon- An Kun were consolidated and became the regional center city with population of 420,000.


**Figure 1** Cheon-An Si and the Northern Area within Cheon-An Si

◦ urban master plan

- The first Cheon-An uban master plan were approved in 1983 with targeting year of 2001 for 84 ㎢ , and the 2nd urban master plan were approved in 1990 with targeting year of 2011 for same region.

- the third Cheon-An uban master plan, the latest one was approved in 1997 with targeting year of 2016 for enlarged 277.95 ㎢, and planned 25.16 ㎢ for residential land use, 2.81 ㎢ for commercial, 11.14 ㎢ for Industrial, and 238.4 ㎢ for etc. use.

**Figure 2** Urban area within Cheon-An Si

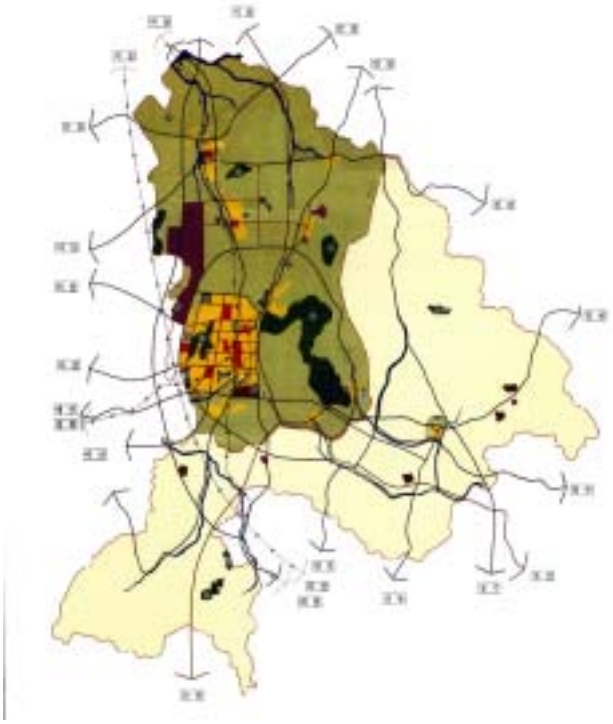


**Figure 3** Cheon-An uban master plan(the 3rd)

◦ the history of land management planning

- Accepting the guidance of the 3rd urban master plan, the existing zones of in the year of 1999 were rezoned greatly in Jan.,of 2001.

- Urban Planning Zone were expanded from 74.11 ㎢ in the year of 1999 to 135.60 ㎢ 2 times in the year of 2001, and residential zone from 16.93 ㎢ to 20.88 ㎢, commercial zone from 2.1 ㎢ to 2.39 ㎢, Industrial zone from 3.91 ㎢ to 8.08 ㎢

**Table 2** the area change of land use zone in Cheon-An Si

(Area:㎢)

| Classification | urban zone | residential | commercial | Industrial | Holding |
|---|---|---|---|---|---|
| 1999(4 zones) | 74.11 | 17.50 | 2.10 | 3.92 | 50.59 |
| 2001(3 zones) | 135.6 | 20.88 | 2.39 | 8.08 | 104.26 |

(sources : Urban Planning in the year of 1999 and 2001, Min. of Construction and Transportation)

*② the land management planning about the Northern Area within Cheon-An Si*

◦ The land use zones by the land management planning about the Northern Area in the year of 2002 are shown as <table -3 >

**Table 3** the land use zones in Cheon An land management planning

| Classification | Urban Z. | Semi Urban Z. | Agricultural Forestal Z. | Semi-Agricultural Forestry Z. | Natural Environment Preservation Z. | Total |
|---|---|---|---|---|---|---|
| Sunghwan | 8,987<br>(15.8) | 0.077<br>(0.1) | 22.878<br>(40.3) | 22.885<br>(40.3) | 1.955<br>(3.4) | 56.782<br>(100.0) |
| Sangmu | 17.835<br>(56.4) | -<br>(0.0) | 8.053<br>(25.5) | 5.725<br>(18.1) | -<br>(0.0) | 31.611<br>(100.0) |
| Jiksan | 20.134<br>(65.4) | 0.021<br>(0.1) | 5.945<br>(19.4) | 4.516<br>(15.0) | -<br>(0.0) | 30.756<br>(100.0) |
| Ibjang | 4.329<br>(10.1) | 0.103<br>(0.2) | 23.572<br>(55.2) | 14.685<br>(34.4) | -<br>(0.0) | 42.689<br>(100.0) |
| Total | 51.285<br>(31.7) | 0.201<br>(0.1) | 60.448<br>(37.4) | 47.909<br>(29.6) | 1.935<br>(1.2) | 161.778<br>(100.0) |

- Urban zone of Sunghwan was expanded from 4.8 ㎢ in the year of 1999 to 9.0 ㎢ in the year of 2001 , and Jiksan was also expanded from 4.84 ㎢ in the year of 1999 to 20.13 ㎢ in the year of 2001.

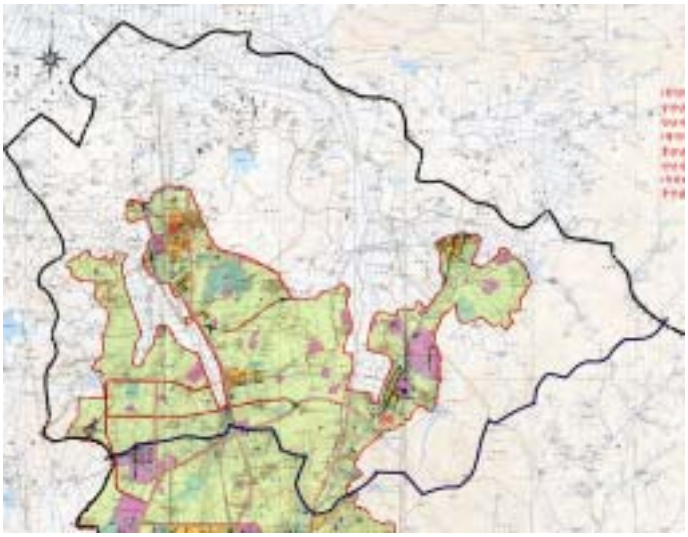


**Figure 4** urban master plan of the northern area within Cheon-An Si

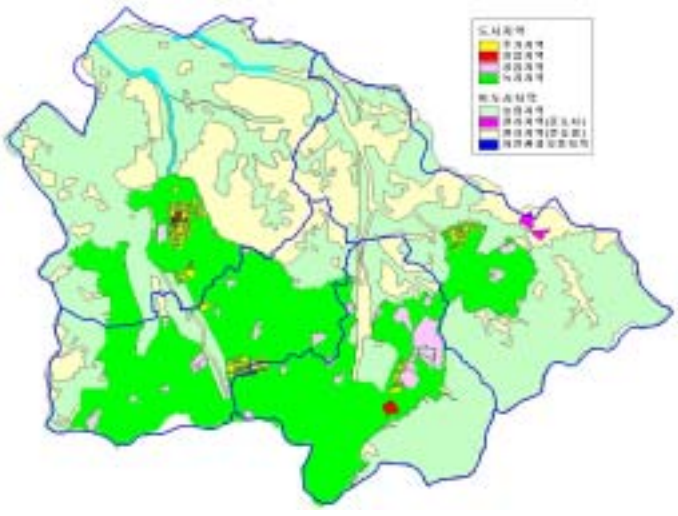


**Figure 5** national land use plan of the northern area within Cheon-An Si

◦ About Jiksan area, it was consumed to approve the land of each industrial factory designated as Semi Urban Zone as Industrial Zone, and the Agricultural Forestry Zone and Semi-Agricultural Forestry Zone were altered to Holding Zone to prohibit disorderly development.

- By the Urban Development Law, those development projects within Holding Zone of Urban Zone could be allowed above 10,000 ㎡, but those outer Urban Zone should not be allowed below 330,000 ㎡.

- Building within Semi Agricultural Forestry Zone ( now called as Management Zone) could be permitted as 100% of floor area ratio only in the case of those area classified as Planned Management Zone.

※ The land of 67% (10,588 ㎢) within Urban Zone (15,806 ㎢) is designated as Holding Zone.

◦ The commercial and residential area near Jiksan station proposed in the 3rd Cheon An Urban Mater Plan was not rezoned to developable land because of aggregated agricultural land. But the land prices rises high above average because of it expectation to be developed.

- The presentation of developable land in the Urban Master Plan Documents might effect the land bubbled prices.

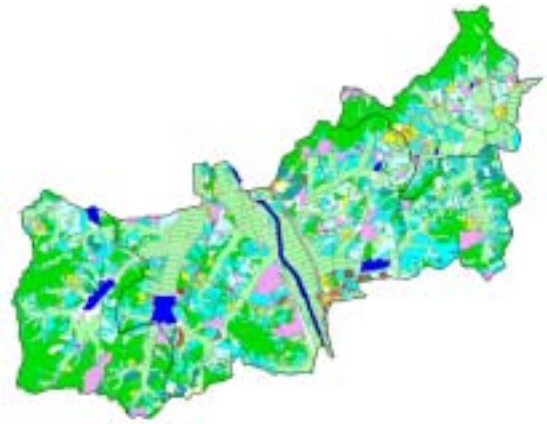


**Figure 6** land use condition

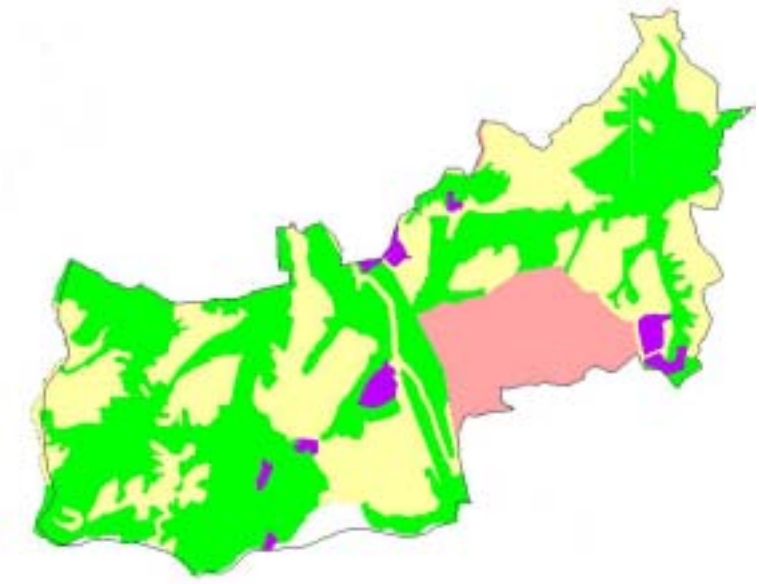


**Figure 7** national land use plan before rezoneing

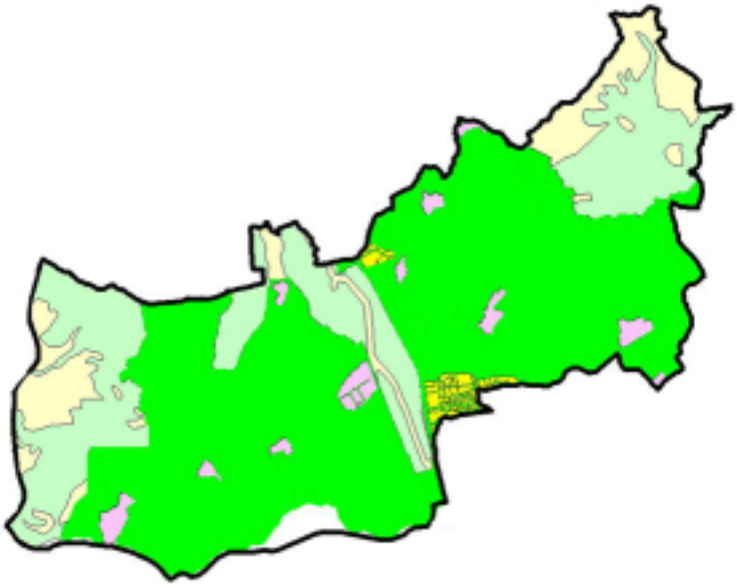


**Figure 8** land use zone

## 4. the suggestion about planned development system around urban area.

### 1) prepositions

◦ It could not be expected that the exiting land use management system be changed within several year in the near future.

◦ The suggestion for the effective idea for the manipulation of the existing planning and development should be proposed focusing on the elements of that system.

### 2) the urban master planning system

◦ Functional relationship between the land management planning system and the urban master planning system should be made clearly understood.

- The Urban Master Plan should not be formulated focusing on the land use map almost the same with zoning map.

- It should be focused on preparing bundles of the principles, criteria and condition related with preservation, development and renewal of urban and urban fringe area.

◦ The statutory planning documents for the Urban Master Plan approval should be changed from the plan map oriented to written statement of policies.

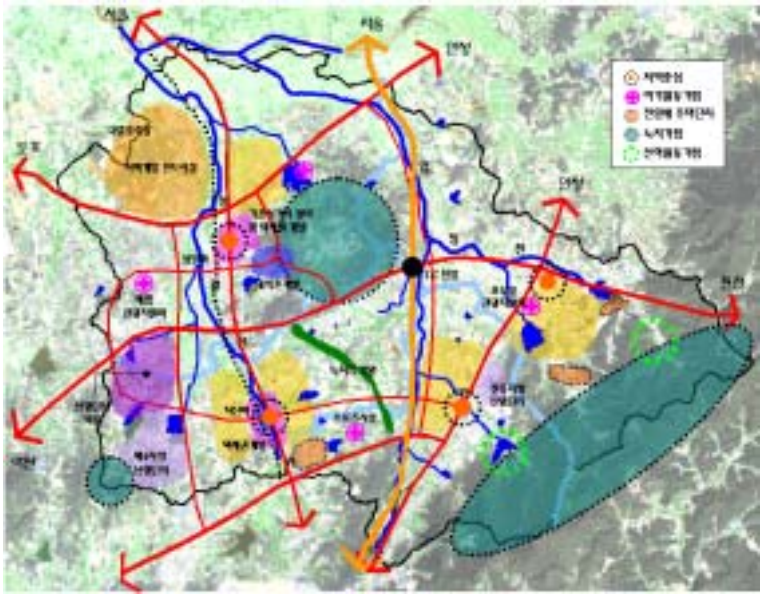


**Figure 9** Strategy guideline map

**3) The land management planning system**

◦ The zoning system should be maintained principally as managing the existing land use activity, and should not be allowed to rezone without actual development or renewal project

◦ The zoning system should be complemented with diverse non Eucladian system.

**4) urban development project system**

◦ Those planned units that could accomodate land development

demand might be arranged with the location criteria, selection process before the formulation of urban master plan.

- Through the planned unit, people including planners, officers, inhabitants, developers, etc. could debate and make concensus about the directions or method s of planned unit development.

- Private sector can participate from the initial stage by reviewing the planned units.

◦ The development profit caused by public decision could be taken in public domain by the linkage of rezoning with development project.

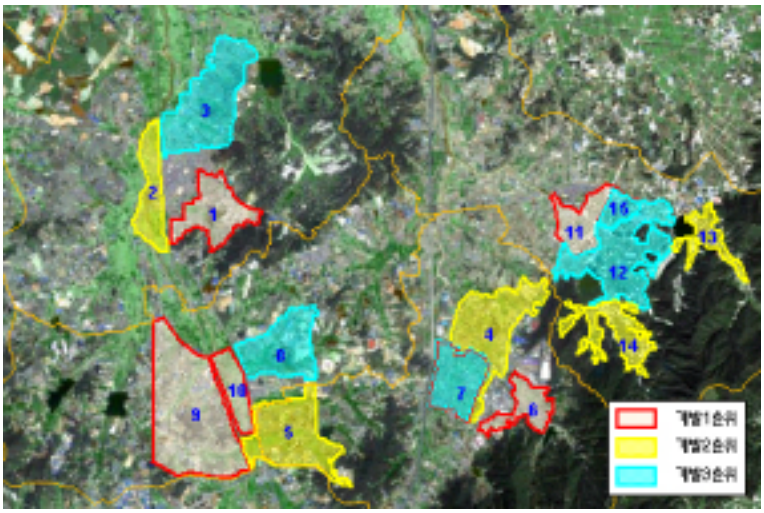



**Figure 10** planned unit

## 5. Conclusion

◦ Problems in the Korean planning and development system

- The long term planning function of the Urban Master Planning has

been drifted for 20years.

- The irrational rezoning procedures has caused windfalls and windouts, and harmed the social equity .

- It is very difficult to include the large scale projects on the Urban Master Plan because of land speculation etc., and abrupt proposals of such projects might also disrupt urban development context.

◦ endeavor to prepare the planned development system

- It is needed to build consensus about the situations related with existing planning and development system, and to lessen the rigidness of planning guidelines managed by the central government

- It is desirable to recover the long term planning function of the Urban Master Planning, and to advance the planning theory.

- It is recommended to accumulate survey and research outputs in ordinary times , that might be used as valuable data and proposals to prepare the statutory urban master plan and development plan.

# Session II

# Housing Land Development

# Emerging Problems of Housing Land Development in Tokyo Metropolitan Area
# - Based on Comparative Analysis between Japan and South Korea -

Tomohiko Yoshida
Assistant Professor
Institute of Policy and Planning Sciences, University of Tsukuba

## 1.Comparison of Basic Data between Korea and Japan: Population, Land Use and Housing

In discussions about poor housing conditions and the extremely high price of land in Japan, it is often said that "This is because we are in an Asian city," although most of us are not always clearly conscious of the definition of "Asia." Undoubtedly, there are some characteristics common to Japan and Korea in terms of housing situation and land development.

For example, both Japan and Korea possess large North South extension and are surrounded by bodies of water. In contrast to China that has an extremely large land area, we attempt to compare some

common physical aspects of human habitation between Japan and Korea.

Both Japan and Korea have less habitable land as mountainous areas account for approximately 70% of their total land areas.

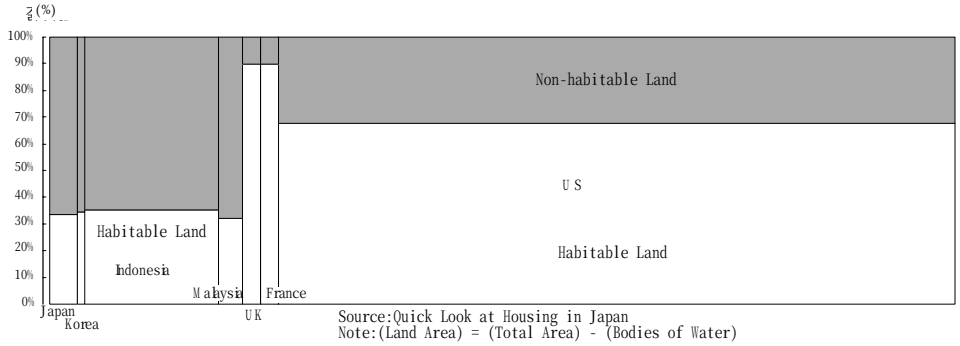



**Figure 1** Comparison of Habitable Areas among Selected Countries 1994

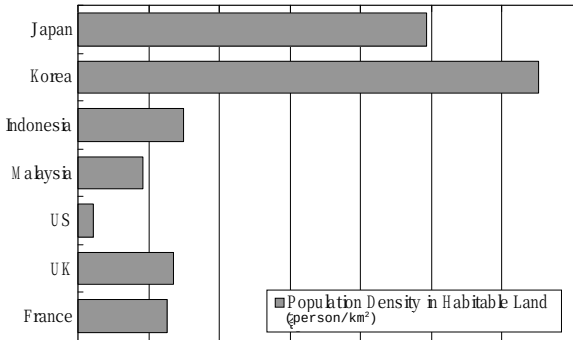



**Figure 2** Population Density in Habitable Land of Selected

Figures 1 and 2 show characteristics common to the two nations: high population density and less habitable land.

The figures show that Asian countries including Malaysia and Indonesia have much higher percentages of non-habitable land in relation to their total land areas and higher population densities than western countries such as the US, UK and France. Japan and Korea, in

particular, have higher population densities than the countries compared.

**Table 1** Percentage of Urban Population : 1950 2030

| Country | 1950 | 1970 | 1995 | 2030 |
|---|---|---|---|---|
| Singapore | 100.0 | 100.0 | 100.0 | 100.0 |
| **Korea** | **21.4** | **40.7** | **81.3** | **93.6** |
| UK | 84.2 | 88.5 | 89.2 | 92.4 |
| Germany | 71.9 | 79.6 | 86.5 | 91.7 |
| Australia | 75.1 | 85.2 | 84.7 | 88.5 |
| Japan | 50.3 | 71.2 | 78.1 | 85.3 |
| US | 64.2 | 73.6 | 76.2 | 84.5 |
| Canada | 60.8 | 75.7 | 76.7 | 83.5 |
| France | 56.2 | 71.0 | 74.7 | 83.2 |
| Italy | 54.3 | 64.3 | 66.6 | 76.2 |
| Philippine | 27.1 | 33.0 | 54.0 | 73.8 |
| Indonesia | 12.4 | 17.1 | 35.4 | 61.0 |
| Pakistan | 17.5 | 24.9 | 34.3 | 55.9 |
| China | 12.5 | 17.4 | 30.2 | 55.2 |
| India | 17.3 | 19.8 | 26.8 | 45.8 |
| SriLanka | 14.4 | 21.9 | 22.1 | 41.9 |
| Bangladesh | 4.3 | 7.6 | 18.3 | 40.6 |
| Thailand | 10.5 | 13.3 | 20.0 | 39.1 |

*sorted by the rate in 2030

Source: National Institute of Population & Social Security Research

Table 1 shows changes in the percentage of urban population from 1950 to 2030. Next to Singapore, Korea is expected to have the second highest percentage of urban population by 2030. Indonesia, the Philippines and Korea are predicted to show rapid urbanization from 1970 to 2030. Thus, it can be said that Korea is more similar to Singapore than to Japan. In particular, the increase in percentage from 1970 to 1995 is 40.6%, which is not seen in the other countries. In the same period, the Philippines showed an increase that is half that of Korea.

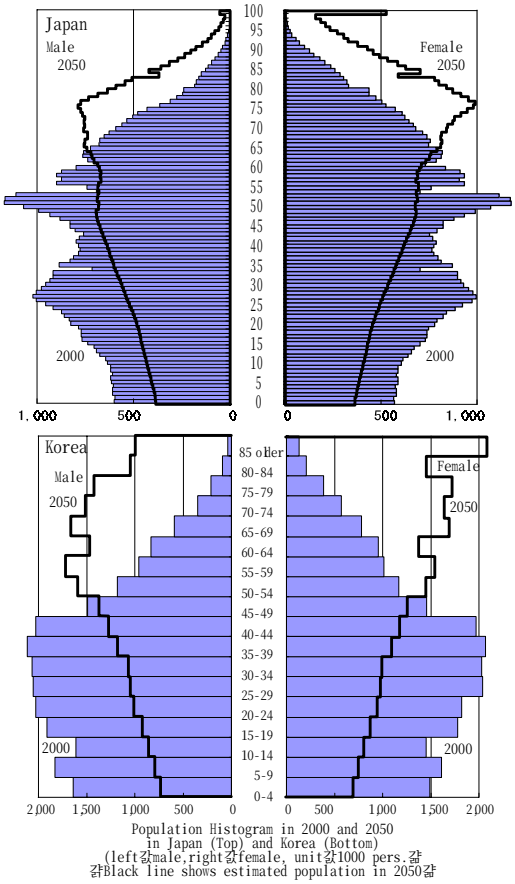



**Figure 3** Population Histograms in 2000 and 2050 (Japan and Korea)

Figure 3 shows the population histograms in 2000 and 2050 of Japan (top) and Korea (bottom). There are two big waves of birth, the so-called "baby boom" in Japan. The number of Japanese ages 50 and 25 peaked in 2000. The former is called "primary baby boom" and latter, "secondary baby boom." In contrast, there is only one wave of birth in Korea from which we predict a marked generation change in 2050: a decrease in the number of people ages 20 to 40 and an increase in the number of elderly ages 60 to 80 or above, the extent of both of which is much greater than that in Japan. This means that the change in housing demand will be much greater in Korea than in Japan. In particular, young householders ages 25 to 40, having an infant or one or two children, will be living in

tenements, rented houses or other types of rented houses, and their number is expected to decrease rapidly in the next thirty years.

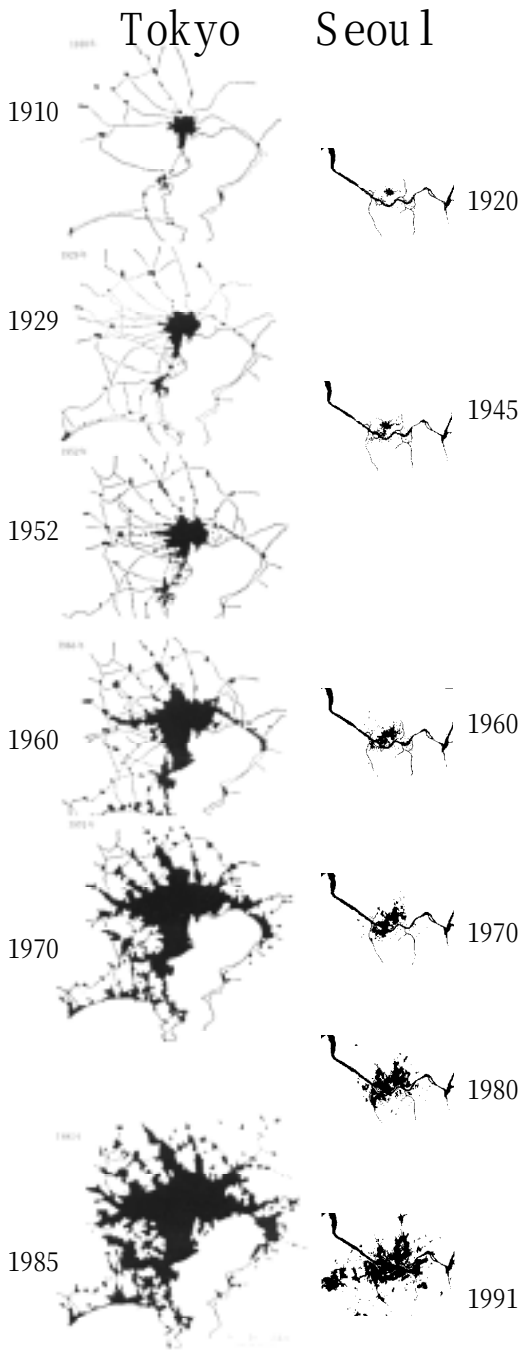
Figure 4 shows urbanization change in Tokyo and Seoul on the same scale. The years differ for the two countries. In Japan, urbanized areas from 1960 to 1985 are classified as DIDs (densely inhabited districts) as defined by the Ministry of Public Management, Home Affairs, Posts and Telecommunications. According to the definition, there are more than 40 persons living in one DID per hectare.

In other years in Japan (1910, 1929 and 1952), the urbanized areas were drawn based on maps of the Geographical Survey Institute (on a scale of 1 to 25,000). The maps merely indicate the areas in which buildings were constructed.

On the other hand, in the case of Seoul, there is no definition of urbanized areas in the reference (1). If the areas were drawn as those in which buildings were constructed in the same way as that in the earlier years in Japan, the figure 4 of Seoul would likely be smaller than that of Tokyo because it is not based on population factor. This must be taken into consideration when the two times series maps are compared.

In Chiba, Kanagawa and Saitama Prefectures and the Tokyo Metropolis including western Tokyo, the total population amounts to 31 million. In Seoul, the total population amounts to 10 million. Thus, as far as population is concerned, the scale of Seoul is one-third that of Tokyo.

In Tokyo, there is a huge plain called “Kanto Heiya” that has enabled the development of housing land endlessly along so many railways. It can be said that the population density in Seoul is slightly higher than that in Tokyo because the percentage of total urbanized area in Seoul shown in Figure 4 seems to be less than one-third of that in Tokyo. The ratio of urbanized areas in Seoul to that in Tokyo is much smaller than one-third. It may be one-fifth or one-sixth, although this is not an exact analysis.




Source: City Planning Institute of Japan Edit.(1992):Tokyo Daitoshi-ken, Shokoku-sha & Jinai KIM Edit.(1991):Seoul, With All Her Beaties, Seoul Forum Inc.

**Figure 4** Comparison of Urbanization Change between Tokyo and Seoul

Therefore, we can easily understand the high percentage of urban population and rapid urbanization in Korea, as shown in Table 1. Most of the areas in Tokyo may be more densely inhabited if we choose the living conditions of Seoul, namely, the construction of many high-rise apartments exceeding 15 floors.

Haga (1990) analyzed the differences in land use among mega cities in Japan and Korea and reached the following conclusions. His findings are of interest to us in order to know the basic differences among human settlements.

(1) Characteristic common to Japan and Korea: a large number of people settle down in narrow habitable land

(2) Urbanization level in total land area (not only in major cities) is almost the same.

(3) Urban concentration in a major city, namely, Seoul in Korea, is more eminent than in Tokyo Japan.

(4) Population decrease is greater in rural areas of Korea than in those of Japan.

(5) The total population of several big cities in Korea is larger than that of the same number of cities in Japan.

(6) Local cities in Japan have a larger population than those in Korea.

## 2. Comparison of Housing Situation

When discussing about housing types in Japan, the basic categories of housing tenure and building type must be taken into consideration. Tenure consists of "owned" and "rented." Building type consists of "detached," "terrace (or tenement in some cases)" and "collective," etc. Fortunately, Japan and Korea have the same kind of housing type; thus, we can compare them in relation to the housing situation.

**Table 2** Housing Units by Tenures in Tokyo and Seoul

| Japan*1<br>Tenures | Tokyo Metropolis<br>1998 | | Korea*2<br>Tenures | City of Seoul<br>1995 | |
|---|---|---|---|---|---|
| Owned | 1,782,500 | *43.3%* | Owned | 1,1781,893 | *39.7%* |
| Privately Rented | 1,723,400 | *41.9%* | Tenement | 1,300,169 | *43.8%* |
| Public Rented (Public Housing) | 227,200 | *5.5%* | Monthly Rent with Deposit | 401,735 | *13.5%* |
| Public Rented (Corporation Housing) | 183,000 | *4.4%* | Monthly Rent without Deposit | 42,987 | *1.4%* |
| Issued Houses | 197,500 | *4.8%* | Freehold | 42,010 | *1.4%* |
| Total | 4,113,600 | *100.0%* | Total | 2,965,794 | *100.0%* |

*1 MPMHAPT (1998) : Housing and Land Survey
*2 City of Seoul (2000) : The Seoul Satistical Yearbook

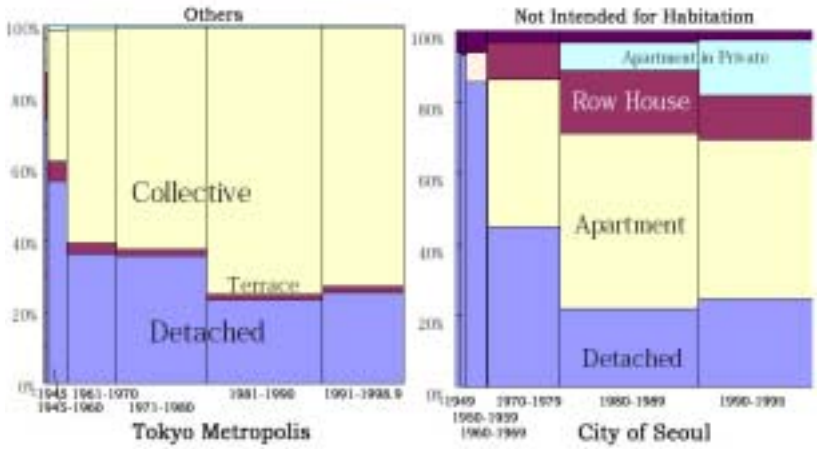



**Figure 5** Percentage of Housing Units by Year of Construction and by Building Type in Tokyo and Seoul (Stock)

Table 2 shows the percentage of housing units by tenure in Japan and Korea. The percentage of owned tenure is approximately 40% in both countries. Categories other than owned tenure are grouped into rented tenure; thus, the percentage of housing units is 40% for owned tenure and 60% for rented tenure. This characteristic is common to the two countries.

Figure 5 shows building types in Tokyo and Seoul as housing stock. Whereas "row house" in Seoul is defined by the number of floors, there is no such definition in Japan. Therefore, it is slightly difficult to compare the building types. Nevertheless, the number of detached houses is available for comparison between the two major cities.

When discussing the number of housing units by year of construction in the two major cities, it can be said that comparative analysis is possible.

In Korea, more than 90% of the housing units were built after 1950, that is, after the Korean War. In Seoul, more housing units were built after 1980 than in Tokyo. After 1980, approximately 70% of the housing units were built in Seoul; in contrast, only 60% or less of the housing units were built in Tokyo. It can be said that houses in the major city of Korea are more newly built than those in Tokyo, probably because of differences in the industrialization period and in the start of reconstruction after the war.

In the 1980s, the major trend in building houses in Seoul was changed from detached houses to apartments. After 1980, the number of detached houses was decreased whereas the number of apartments that exceeded 15 floors was rapidly increased. The percentage of detached houses was lower in Seoul than in Tokyo in this period, even though most houses built in the 1960s in Seoul were detached houses. There seemed to be a big change in housing policy after 1970, and particularly after 1980.

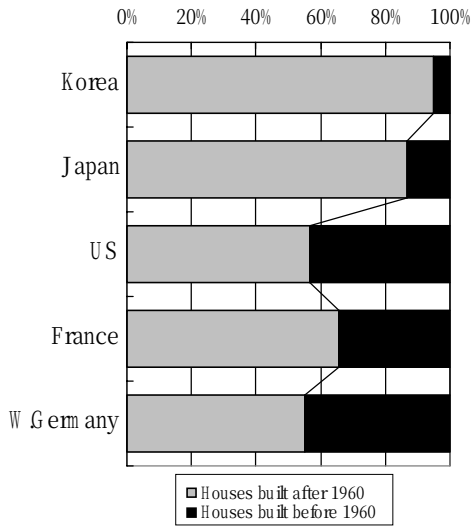



**Figure 6** Percentage of Housing Units
in Five Countries by Year of Construction (Stock)

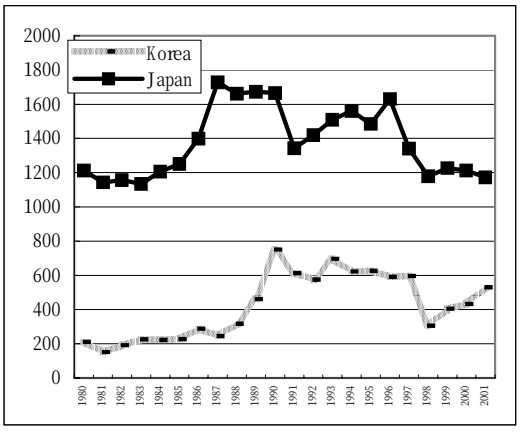



**Figure 7** Change of Housing Units
by Year of Construction in Japan and Korea (Flow)

Figure 6 shows differences in the percentage of housing units among five countries. Black bars show the number of housing units built before 1960. Compared to western countries, both Japan and Korea have a small number of old houses. Thus, they are considered to be younger and

newer cities than the older cities in western countries.

Figure 7 shows changes in the number of houses built in the last two decades in Korea and Japan. In Japan, there are 1,200 to 1,600 thousand housing units built annually over the last two decades. The average is likely to be 1,400 thousand units; to be exact, it is 1,378. In Korea, 200 to 600 thousand units are built annually. The average is approximately 400 thousand units; to be exact, it is 422.

According to census data, the number of families in Japan is 47 million in 2000. In Korea, there are 13 million families in 1995. The number of annually constructed housing units per one thousand families is 29 (units/1000 families) for Japan and 32 for Korea. Therefore, it can be said that the number of housing provisions is almost the same for the two countries.

Changes in housing flow in Korea are delayed by several years compared to those in Japan. For example, a clear increase of housing provision can be seen in Japan from 1986. On the other hand, the same trend can be seen in Korea from 1989. The decrease that started in 1996 in Japan corresponds to that in 1997 in Korea. This may be because of the economic trend

We summarize the above-mentioned analyses as follows.

(1) The percentage of owned houses in Tokyo and Seoul is approximately 40%.

(2) The focus of house building in Seoul has changed from detached houses to apartments after 1970.

(3) The housing stock in both cities seems to be quite newer than that in western countries.

(4) The change in housing flow in Korea is delayed by several years

compared to that in Japan. The number of annually built houses per one thousand families is almost the same for the two countries.

## 3. Housing Land Development Type in Japan

We define some types of residential districts or housing land development using names based on the history of the city or names of administrative projects implemented in urban areas. Although the following categories are not always rational and exclusively defined, they may help us in discussing the differences in housing land development type in Japan.

(1) City Planning Area: Urbanization Promotion Area（ ）

(2) City Planning Area: Urbanization Coordination Area（ ）

(3) Land Readjustment（ ）

(4) Development Permission（ ）

(5) Development Permission according to Old Housing Land Development Law（ ）

(6) Land Improvement Project（ ）

(7) Arable Land Readjustment（ ）

(8) Existing Housing Land（ ）

(9) Sprawling Area（ ）

(10) Mini Development ( )

(11) Historical Central District ( )

(12) Farm Village ( )

(13) Miscellaneous ( )

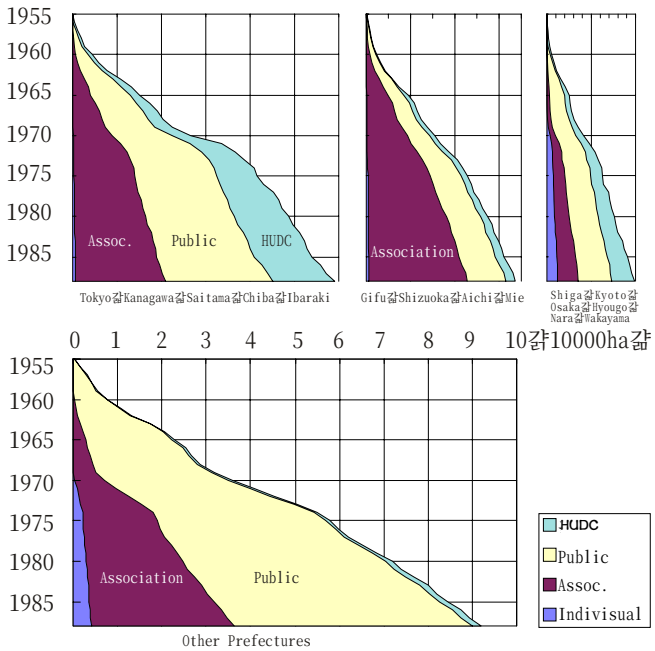



**Figure 8** Change in Area of LR (Land Readjustment) Projects by Implementing Body (stock)

**Table 3** Percentage of Non-built-up Land Area in LR Districts by Metropolitan Areas (1962-1984) in Japan

| | Total LR Area (NET for Housing Land :ha) | Non-built-up Housing Land Area(NET:ha) | Percentage of Non-builtup Area (%) |
|---|---|---|---|
| Tokyo | 19,374 | 5,833 | 30.1 |
| Chubu | 9,550 | 3,079 | 32.2 |
| Kinki | 6,834 | 1,907 | 27.9 |
| Others | 39,402 | 11,373 | 28.9 |
| Total | 75,159 | 22,191 | 29.5 |

Source:Ministry of Construction (1990):Tochi Kukaku Seirijigyo Shiko Chiku no Takuchi Riyo Sokushin ni Kansuru Chousa
Tokyo:Tokyo Metropolis, Kanagawa, Chiba, Saitama and Ibaraki
Chubu:Aichi and Mie
Kinki:Osaka, Kyoto, Nara and Hyougo

Figure 8 shows changes in the areas of land readjustment (LR) projects by region in urbanization promotion areas, which were implemented as city planning projects from 1955 to 1987. It can be said that from 1970 to 1975, housing land provision was promoted by LR projects. HUDC (Housing and Urban Development Corporation) actively implemented many LR projects in the Tokyo metropolitan area (top left) after 1970. In the Chubu region, which consists of Aichi, Mie, Gifu and Shizuoka Prefectures, LR projects were most actively implemented by landowners' association.

Unlike the Chubu region, in local prefectures other than the metropolitan areas, many LR projects were implemented by the public sector such as prefectural governments and other cities, towns and villages.

We can see how intensively those projects have been implemented in the last three decades. Twenty-five percent of Urban Promotion Areas are being developed by LR projects at present.

Table 3 shows total land area of LR projects by metropolitan area, and areas of vacant land within the LR-implemented districts. The percentage of vacant land areas on which no houses were built in relation to the total project site is approximately 30% in the regions investigated.

We find that many lots for land development are not always built up by LR projects.

## 4. Emerging Problems?

Small land area, high population density, new urban housing stock, rapid development after World War Ⅱ, endless urbanization…

Considering the "era of population decrease" in Japan in the future, there are several problems that need to be solved by and paradigm change required of city planning .

In some housing land development projects, residents are burdened with the tasks of maintaining their environment, such as cutting weeds that grow rapidly on vacant lands in LR project districts, holding community meetings with a small number of residents, repairing cracks on roads, and preventing crimes, etc.

How we can decrease the number of maintenance tasks of the residents in such districts?

I am confident that the revelation of vacant land for housing development has exposed to problems to be faced by city planning in the future era of population decrease. We have just started to seek the solution to those problems.


**Picture** Typical Spatial Structure of LR District

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# Institutional Changes in Urban Land Development in Korea and Its Current Issues : From the "Housing Site Development Project" to the "Urban Development Project"

Ki-Seok Kye
Research Fellow
Korea Research Institute for Human Settlements

## 1. Introduction

During the past decades, Korea accomplished a remarkable economic growth and this brought rapid changes in socio-economic structure, especially in many urban areas. A heavy migration from rural to urban areas was the main force and generated many urban externalities such as the short of housing, traffic congestions and environmental pollution, etc.

With the effects of rural migration, changes in household structure such as the emergence of a nuclear family evolved rapidly and accelerated the short of houses. In this circumstance, there is some urgency that the imbalance between demand and supply in housing market has to be resolved and "Housing Site Development Project(HDP)"

implemented as a necessary measures to cope with such problems in the housing market.

As a much restricted measure ever, the HDP played an important role in supplying lands for residential development under the effect of the Housing Site Development Promotion Law that was effective in Dec 31, 1980. In other words, based on the social consensus that land supply is an urgent issue to address, the HDP helped increase the availability of lands for housing.

However, things were changed dramatically in late 1990s as the level of supply of housing is getting higher. At this point, the supply of infrastructure becomes important and the concerns about the lands transferred how the land policy can be coordinated with the existing master plan for a city. Also localization made it clear that the roles of municipal governments are critical in terms of both authority and responsibility on lands, and the importance of the participation of the private sector was emphasized as the financial capability in the public sector was getting limited . Based on this circumstance, "Urban Development operation (UDP)" has been established as of Jan. 28, 2000 under the effects of urban development law.

In fact, such a story of Korea associated with the emergence of the UDP is similar with that of France in 1960s. In 1950s, the demands for land for housing were explosive and the Priority Development Zone (Zone à Urbaniser en Priorité : ZUP) was evolved according to it. But, the operation for Comprehensive Development (Zone d'Aménagement Concerté : ZAC), which is flexible and various developers can participate in, was institutionalized later in 1960s.

With this brief introductory, this study explores the Korean case in terms of the institutionalization of the UDP and its characteristics and suggests directions and issues for developing the method of urban development in Korea with the lessons available from the France case.

## 2. Urban situations in 1970s

1970s were a period where both urban population and demands for housing were dramatically increased, and urban service facilities and infrastructures were significantly lack. For example, the share of urban population in 1970s was 50.1% in the whole country, but this increased by 68.7% in 1980 indicating 1.37 times increase. The share of the number of house for the total number of households was down to 71.2% from 78.2% during the same time span. The short of housing was particularly significant in urban area because this caused serious socioeconomic problems due to increases in housing and land prices and prevalent speculation activities.

In this circumstances, policy measures to provide sufficient lands and houses, which balances demands for housing and supply for the lands, considered important. This was expected to mitigate speculations on real estate either.

**Table 1** Population and Housing in Korea

| | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|
| population (thousand) | 32,241 | 38,124 | 42,869 | 46,858 |
| an increase rate of population (%) | 2.21 | 1.57 | 0.99 | 0.92 |
| share of urban population (%) | 50.1 | 68.7 | 81.9 | 87.6 |
| number of households (thousand) | 5,575 | 7,470 | 10,168 | 11,984 |
| number of housing (thousand) | 4,360 | 5,319 | 7,357 | 11,181 |
| number of housing / number of households (%) | 78.2 | 71.2 | 72.4 | 93.3 |
| housing per thousand population | 135.2 | 139.5 | 171.6 | 238.6 |

source: MOCT, Annual report on the utilization of national territory, 2001

## 3. The Emergence of HDP

### 3.1 HDP

Until 1970s, the supply of lands for housing and the provision of houses have primarily been done in small scale by the private sector and through "Land Subdivision Operation". However, with the introduction of the Housing Site Development Promotion Law in Dec 31, 1980, it has primarily been done in large scale by the public sector.

The HDP means a sort of operation implemented in lands designated as a zone scheduled to develop in the future as a site for housing. In this particular project, land is designated based upon a nationwide plan for demand and supply for the lands. In this case, national government, regional and municipal governments, and some of the public sectors including Korea Land Corporation and Korea National Housing Corporation become a developer who involves in all the procedures associated with land developments. This includes the acquisition of the land either through consultation or through expropriation, a site construction, and the installation and supply of infrastructure, etc.

Basically, the HDP was institutionalized in order to stabilize housing expenses for the low income people and to share the development benefits so that it concerned the provision of many cheap residential areas and the prevention of an increase in housing price and real estate speculation. Since an existing way to develop lands for housing has been fallen in 1981, the HDP played a significant role in providing lands for housing.

### 3.2 The Outcomes and Issues of the HDP

#### 3.2.1 The Outcomes

Since after January 1981, 582 zones were designated as the lands for the HDP. Among them, 427 zones completed their own operations and remaining 145 zones were undergoing the operations. Total size of the zones designated was 439 square-km, and the average size of the one zone reached almost 727,000 square-m and total of 3,200,000 houses were constructed or were subject to be constructed.

In terms of the importance of the extent of the participation of the developers in this operation, the Korea Land Corporation and the Korea National Housing Corporation were the major forces that led the projects. The Korea Land Corporation took 53% of the total area, the Korea National Housing Corporation 21%, and local governments 26%. By the region, the Capital Region took 51%, metropolitan area 21%, and other regions 28%.

As a result, by 2002, the size of the zones designated equaled to 2.97% of the entire urban areas in nationwide has been developed through the HDP.

**Table 2** Areas of the HDP

(unit: ㎢)

| developer / area | Total | KLC | KNHC | Regional governments |
|---|---|---|---|---|
| Nationwide | 439.0 | 233.1 | 90.1 | 115.8 |
| Captial Region | 223.2 | 127.6 | 55.0 | 40.6 |

source : MOCT

### 3.2.2. Issues in the HDP

Because the HDP was intended to extend the provision of the cheap lands, the development operation was proceeding in either suburban areas or undeveloped areas where the land price is relatively cheap. Therefore, the spread of urban areas were inevitable with the distortion of the existing urban spatial structure. Land development by the private sector was shrinked and relied on the HDP by the public sector.

The HDP was only limited in the area of the supply of the lands for the residence. Comprehensive urban development was not accomplished, that includes the functions of entertainment, business, manufacturing and culture, and the operation was inadequate to realize the principle of "work-housing spatial proximity".

Because the public sector purchases the designated lands at low compensation price, the land owners are often ruled out completely in the development process and this becomes one of the reasons that cause the public dispute.

## 4. An Example of France : from ZUP to ZAC

Given conditions of urban development in France is different from those of Korea, but both countries followed a similar path according to the changes in the conditions. One of the similarities is the fact that the public sector led the urban development when the demands for the site developments were increased. Also it is similar that a way in which urban development is proceeded transferred into a flexible way after the demands for the lands were constant.

## 4.1 The Creation of ZUP

In France, Lotissement was implementing since the end of nineteen century as a means to subdivide lands. In Lotissement, an individual could manage the bargaining of the lots and the construction of housing for the purpose of making his or her own profits. However, after the World War II, the demands for the lots for housing were dramatically increased in urban areas as the economy recovered and population increased. In order to manage such a demand increase, ZUP and urban renovation(renovation urbaine) were operated in 1958.

ZUP allowed the public sectors to purchase lands in a certain area and to work on the improvements of some of the public facilities within there. After that, they sell the land to the constructor. In this process, the public sector involved kept the preemption and expropriation. If there is a housing construction over 100 houses and a need to improve infrastructure, it must be done within the ZUP.

The purpose of the ZUP is (1) to attract construction activities in particular areas; (2) to facilitate development activities of the public sectors; and (3) to control speculation on real estate. The ZUP influenced to foster residential areas in suburb Paris including Sarcelles, Grande Borne, and Massy Anthony, etc.

However, the ZUP was criticized in terms of the heavy financial burdens on the public sectors, exclusive profit concentration on the private sectors, and social disparities of the local people, etc. Therefore, the ZUP was completely abolished in 1975 after having a coexistence period with ZAC from 1967.

## 4.2 ZAC

### 4.2.1 Scope and Types of the ZAC

The ZAC is a procedure that allows a public authority to build on lands in order to realize an urban development operation(housing, shops, services, activities...). The public authority is the project initiator. It may carry it out either under its direct supervision; or through a concession to a semi-public corporation or a public establishment, in this case, it retains financial responsibility for the operation; or through a convention with a private developer, in this case, it gives up its financial responsibility.

The scope of ZAC covers not only redevelopment of existing urban areas but also development of new towns, and its activities are limited in the areas such as purchase of real estate, the improvements of infrastructure, and the sale of lots by the core constructor within the designated zones. Yet the construction of buildings and their improvements are not included.

In order to limit the disordered designation of the ZAC and prevent spread of urban areas, the ZAC is only possible in urban zone(U zone) including future urbanization zone(NA zone) designated by the land occupation plan(plan d'occupation des sols : POS).

### 4.2.2. The Effects of the ZAC Designation

The ZAC must be compatible with the city plan if there is one and take the local accommodation program(programme locaux d'habitat : PLH) into account. If a area development plan(plan d'am?agement de Zone : PAZ) is drawn up, it supersedes the POS. The initiation of a POS and significant progress on it are needed for the creation of a ZAC.

The ZAC may be excluded from the field of application of the local development tax(taxe locale d'?uipement : TLE). In this case, the cost of the public infrastructures required by the area is supported by builders. When the public authority does not have land control a delayed decision may be delivered for building licence applications; landlord can give the authority formal notice to acquire under the same conditions than for the reserves sites of the POS; the community may implement a pubic purposes declaration for land acquisition.

The heads of local municipal governments may defer until 2 years about the decisions made on the permission of construction appeal in order to restrain construction activities that are not appropriate for the purpose of the ZAC.

### 4.3 Significance and Suggestions of the Institutional Changes

There are similarities between Korea during the 1970s and France in 1950s with respect to the urban development aspects. In both countries, the public sectors had to promote the construction activities so as to respond increasing demands for urban development. In this process, they also had to prevent speculation on real estate and attract the construction activities in particular areas. In those circumstance, HDP was institutionalized in Korea as the ZUP in France does so.

Meanwhile, here some similarities between the HDP in Korea and the ZUP in France. First, in both cases, the private sectors are eliminated. Second, the government designates the operation areas and focuses on the development of cheap lots for the low income people. Third, both cases were successful in terms of quantitative concern, but the connection between existing urban planning is insufficient because the operation areas were designated based on the land prices.

Also there are some differences between the HDP in Korea and the

ZAC in France. They are: (1) the application to the operation zones is done by the public sectors, but it is different from the decision-makers perspectives about zones and that of the developers; (2) although the central government has authorities about the designation of the HDP, the designation of the ZAC depends on the establishments of POS by the local municipal governments; (3) the central government can designate the ZAC if the local municipal governments do not have POS, otherwise they have authorities to designate; (4) the HDP is implemented by the public sectors who have initiatives of the designation of zones, but the ZAC can be done with flexibility that allows the direct implementations from the central and the local municipal governments, mandate to other public sectors, and entrust to the private sectors, etc; and (5) the ZAC allows negotiations between developers and the local municipal governments and can control expenses and the extent of risks.

## 5. Coexistence of HDP and UDP

### 5.1 Housing and Land Markets at the End of 1990s

Housing markets in Korea during the 1990s were improved compared to that of 1970s. The provision rate of house to the total number of households in 1999 was 93.3%, and the number of house per 1,000 population was 238.6. This number improved compared to that of 1980s by 31% and 71%, respectively. With the improvements of the housing qualities, speculation on real estate was weakened, but scattered housing constructions and land developments resulted in urban sprawl and several significant problems associated with it.

In 1990, localization was resumed. So, urban planning and development authorities were handed over from the central government

to the local governments, and the roles of local governments, local public and private entrepreneurs were signified as localization is extended. Therefore, in this circumstance, there was a demand for a flexible development approach which is appropriate to prevent scattered developments. This includes comprehensive land use also.

## 5.2 The Contents and Implications of UDP

### 5.2.1 UDP

Established in Jan 28, 2000 and implemented in Aug 2, 2000, the UDP is to foster a city that has such functions as residence, commerce, industry, telecommunication, culture, ecology, health, and welfare.

The major of big city(gwangyeksi) or province governor designates the urban development zones and the participants are local public corporation, land owners, association of the land owners, and private construction entrepreneurs including land developers. The development alternatives are that developers (1) purchase or expropriate the lands in urban development zones; (2) land substitution(*hwanji* ; This is a compensation method to the original land owners, that is, for example, the land owners can get 70% of the original land as a compensation after the land is developed); or (3) mix both methods.

The UDP allows urban areas to be developed as a city having comprehensive functions such as new towns. This also activates the participation of the private sectors into the area and enables to induce various types of urban developments.

### 5.2.2 The Results of UDP

As of January 2003, the number of the UDP is 15 and the size of them is just around 4.5 square-km. Average size per zones is 345,000 square-m. This includes 10 zones by expropriation, 2 by land substitution, 3 by mixted method(expropriation + land substitution). 3 UDP are realized by association, 9 by regional and local governments, 1 by the Korea Land Corporation, and 2 by the land owner.

**Table 3** Designation of Urban Development Zones (as of Jan, 2003)

| | Total | local government | Association | Land Owner | KLC |
|---|---|---|---|---|---|
| Total | 15 | 9 | 3 | 2 | 1 |
| Expropriation | 10 | 6 | 1 | 2 | 1 |
| *hwanji* | 2 | 0 | 2 | 0 | 0 |
| Mixed | 3 | 3 | 0 | 0 | 0 |

Source: Ministry of Construction and Transportation

### 5.3 The Meaning of the Establishments of UDP

Variousness of the Purposes : The purpose of the HDP is to supply lands for residence, but the UDP can attract various urban functions including residence so that it has an advantage in forming systematical and comprehensive urban space.

Variousness of the Developers : The HDP is dependent on the government because it has to be authorized by the Minister of Construction and Transportation. However, the UDP can proceed urban development that is based on given conditions of the region because it is authorized by either major or governor. Unlike the HDP, the UDP

facilitates creative urban development conditions by utilizing capital and technology from the private sectors. This is because some private entrepreneurs can suggest the designation of urban development areas while they become a developer.

Applications of Project Method : Unlike the HDP, the UDP can choose the implementation method according to the character among purchase, expropriation, land substitution or mixed so that the operation can be implemented with flexibility.

Clearness of the Installation of Infrastructure : In the UDP, there are various principle for the development expense burden and this facilitates the installation of infrastructure. For example, developers can bear the expense burden of other regional governments when they got indirect benefits from the UDP. Also developers can bear the expense burden when there is installation burden about infrastructure located outside the boundary of the urban development area due to the UDP.

Connection with Urban Planning : When there is a need to establish the development plan into the region where master plan is already designed, the content of the development should correspond to the existing plan.

**Table 4** Comparison of the HDP and the UDP

| | HDP | UDP |
|---|---|---|
| Purposes | Coping with short of housing | Fostering planned and systematic urban development and pleasant urban environments |
| Law | Site development facilitation law | Urban development law |
| Zones and operation | Scheduled zones for residential development | Urban development zones |
| Designator | Principle: Minister of Construction and Transportation<br>Exception: major or province governor (less than 200,000 ㎡) | Principle: major or province governor (over 1,000,000 square-m: approval by the Minister of Construction and Transportation) |
| Designation method | Developer → Designator | Developer → Major or municipal governor → Designator |
| Deliberation | Housing policy committee | Urban planning committee |
| Developer | Nation, regional government<br>Korea Land Corporation<br>Korea National Housing Corporation<br>Local government investment institute | Nation, regional government<br>Government investment institute<br>Land owner or Association of land owner<br>A corporation that moves from the Capital Region to the other region<br>private company licensed in civil engineering and architecture |
| Development Plan | Within 2 years after the designation of scheduled zones | Designation of development zones |
| Operation Method | purchase, expropriation | Select among purchase, expropriation, land substitution and mixed operations |
| Installation of Infrastructure | Installation basis: none<br>* Providing connection roads beyond the zones designated based on urban planning law, etc<br>Mitigation of installation burden: none | Installation base: existing<br>Mitigation of installation burden: inclusion of expense burden plan in advance, state burden on additional installation to cause |
| Financial Support | | Urban special finance<br>Issue of Urban development bonds |

## 5.4 Issues of the UDP

Lands for the UDP are relatively limited compared to those for the

HDP. This is because the latter designates zones and proceeds the operation before master plan is formulated, but the former is implemented after having several necessary steps of the planning. Particularly, because the lands which have development demands and profitability are already designated by the public sectors, it is not easy for the private sectors to secure the lands to be designated.

The UDP encourages the participation of the private sectors, but pure private development is often limited because it is not practically easy for them to satisfy the terms of participation. Therefore, for the effective urban developments, it is necessary for both the public and private sectors to share their roles. Also various kinds of restrictions that limit the participation of the private sectors must be mitigated.

In addition, the urban development system which still has diversified must be changed so as to connect each other within a single framework. It is eventually desirable for the HDP to be merged with the UDP because they have many overlapping aspects. Because the merge into the UDP means the enlargements of the relative role for local governments or the private sectors, the enlargements of the capability of urban development of the local governments is inevitable. It is desirable to maximize the effects of the operation through the joint developments of the public and private sectors.

## 6. Conclusions

The way in which urban area is developed has to be modified appropriately as its socio-economic conditions are changed. Until 1990s, urban development in Korea was focused on the extension of quantity of the lands for residence. However, the progress of local autonomy system and the extension of a desire about the improvements of urban

development in terms of the level of quality it provides demand for conversion towards a way in which urban is developed.

Like the case of France, it is positive for Korea to be institutionalized the UDP. In fact, this change results in (1) comprehensiveness of urban developments; (2) a remarkable increase in opportunities to participate for local governments and the private sectors; and (3) flexibility of the way in which the operation is proceeded with respect to the character of zones.

As a result, the UDP and the HDP need to be merged in a framework of comprehensive legislation. In addition, urban redevelopment law can be merged in a long-term perspective and it is desirable to have a complete form of urban development system.

# Session III

# Metropolitan Policy

# Commuting and Spatial Structure in Japanese Metropolises

Tsutomu Suzuki
Associate Professor
Institute of Policy and Planning Sciences, University of Tsukuba

## 1. Introduction

The Tokyo Metropolitan area (TMA) is the largest metropolitan area in the industrialized world with about 30 million residents, 16 million jobs and over 200 independent units of local government. This vast region is highly integrated with significant numbers of workers commuting from residential rings 40 kilometers away to work in central Tokyo. For some workers, commuting times are extraordinarily lengthy and the congestion at peak commuting hours is legendary worldwide.

More than 20 years ago, Hamilton (1982) noted that the most widely used model of the urban economy, the monocentric city model, "yield(s) specific predictions of the volume of commuting which will occur from houses to jobs." Hamilton's work suggested that the monocentric city model greatly under-predicted actual commuting and therefore cast doubt on the usefulness of this model for analyzing urban economic

phenomena. White (1988) empirically demonstrated that, given the distribution of jobs and residences, households (and workers) locate to minimize commuting. Small and Song (1992) show that Hamilton (1982) and White (1988) measure quite different things. Hamilton rejects only the monocentric city model while White tests the hypothesis of commute minimization given available residence and work locations.

Research on Los Angeles (LA) by Small and Song (1992) confirms Hamilton's (1982) rejection of the monocentric city model as a predictor of aggregate commuting. More importantly, Small and Song (1992) demonstrate that White's (1988) results are dependent on the degree of disaggregation of origin and destination zones. When zones are finely disaggregated, they show that about two-thirds of all commuting is 'excess' (measured by time).

Merriman, et al. (1995) examine whether these results extend to Tokyo. They examine Tokyo commuting patterns to determine to what extent the volume of commuting is an inevitable result of the functioning of such a vast interconnected economic system and to what extent it is the result of inefficient matching of workers and jobs. Their methodology is similar to Small and Song's (1992) but, using data from the TMA, they obtain quite different results: they find little evidence of excess commuting and only minor effects from aggregation of data. They discuss whether differences in results are the product of differences in methodology or differences in spatial commuting patterns.

Merriman, et al. (1995) show significant difference in excess commuting between US and Japanese cities, but measurement of excess commuting is conducted only for Tokyo and only for 1985. Perhaps even more important than point-of-time estimates of unnecessary commuting are estimates of the change in commuting that might result from decentralization of Tokyo area employment. Policy makers have discussed a number of options for reducing the size of Tokyo, these include zoning regulations to limit new development in congested areas of Tokyo and even movement of national government offices from the 23

wards of central Tokyo. Proponents claim that a major benefit of these initiatives would be a reduction in congestion and long distance commutes. Merriman, et al. (1995) have simulated employment decentralization ideally and have estimated the amount of commuting time saved. However, no empirical study on dynamics in excess commuting is executed.

Estimates in commuting in other metropolitan areas in Japan are also important. Mega-city like Tokyo has decentralized structure with sub-centers in surrounding regions and even within central wards, while smaller metropolises usually have a unique strong center. However, comparing with another mega-city Osaka (including Kyoto and Kobe), Tokyo has monocentric characteristics with its stronger center. Those differences in urban structures might produce differences in spatial commuting patterns. However, no empirical study on comparison between metropolises is examined.

In this paper we extend an approach by Merriman, et al. (1995) to time-series data of commuting flow in Tokyo, and 1990 commuting data in other Japanese metropolises. We find that spatial structure of Tokyo Metropolitan Area is going toward US cities like LA, but smaller Japanese metropolises still have concentrated spatial structures and less excess commuting than four major metropolises.

## 2. Model Specification

Our analyses use detailed data from the Japanese Census of the Population on the observed volume of commuting among origin and destination jurisdictions. For instance, commuting in Tokyo Metropolitan Area (TMA) generates from and concentrates on 211 jurisdictions within about 60 kilometers of the center of Tokyo (see Merriman, et al., 1995).

Only for TMA, we are able to use estimates of the time required for all trips in our flow matrix, which was developed by Merriman, et al (1995). Because public transit is the fastest and most popular mode choice in the Tokyo area our estimates made use of a government census of Tokyo area transit users (Transportation Census of Metropolises) to measure travel time.

Our approach is same as White's (1988) methodology– test of commute minimization. As Small and Song (1992) point out Hamilton's method is, strictly speaking, a test only of monocentricity rather than of commute minimization and, as White (1988) shows it may not be a valid measure of excess commuting in an actual metropolitan area. Using the travel flow and time data matrices described above we reallocated commuters to residence and employment jurisdictions to minimize total commuting time and distance. Our modeling and problem solving strategy basically follow the procedures used by White (1988), Small and Song (1992), and Merriman, et al. (1995). Like White (1988), we exclude workers who live outside our sample but work in it, or who live inside our sample but work outside it. Our data set excludes a larger share of residents and job in some smaller jurisdictions near the fringe. We believe the share of residents who originate outside or workers or terminate outside is sufficiently small that it will not greatly influence the results.

Excess commuting is defined by the following formula:

Excess = (observed commute – minimum commute)/(observed commute).

Additionally, we adopt the following two indices. Black and Katakos (1987) introduced Urban Consolidation Index (UCI) that is defined by:

UCI = (minimum commute)/(maximum commute).

If UCI is close to one, it means that workplace in the metropolis concentrates at one place and therefore we have no room to decrease

commuting. Masuya, et al. (2001) developed another index, Travel Flow Ratio (TFR), defined by:

TFR = (observed commute – minimum commute)/(maximum commute – minimum commute).

TFR means relative position of observed commute in possible range of commute. If TFR is close to zero, observed commute is almost minimized. As TFR becomes larger, excess commute grows until maximum commute brings about TFR = 1.

## 3. Empirical Results

Table 1 shows average one-way commuting distance or time in the travel minimizing solution for the entire TMA in 1980, 1985, and 1990. Average one-way commuting distance falls by about three to four kilometers and time falls about eight minutes. Spatial structure seems to show little change because UCIs stay almost at the same value. The Excess and TFR are growing steadily. That indicates jobs in Tokyo are spreading out to suburbs producing increase of cross commuting. All data show significantly less excess commuting than Small and Song (1992) found in the LA metropolitan area. However, Tokyo seems to be going toward LA situation.

Other metropolises show differences in urban structures and that might produce differences in spatial commuting patterns. Thus comparative study might be help to understand how urban structure have an effect on commuting. In Table 2, 13 metropolises, their population and jobs-housing balance are shown in Figure 1 to Figure 3, including Tokyo (slightly different in covered jurisdictions) are summarized.

We examined minimum and maximum commute for those metropolises. Table 3 shows excess commutes in major metropolises (Tokyo, Osaka, Nagoya and Fukuoka) are larger than that in other metropolises. This empirical result comes from the fact that major metropolises has suburban subsenters – multi-nucleated spatial structures. Other Japanese metropolises still have concentrated spatial structures and less excess commuting than major metropolises. Because of their largeness in size, however, major metropolises have larger maximum commutes. Then UFIs show smaller values and accordingly no discrimination is seen in TFR.

## 4. Conclusions

What have we learned from excess commuting studies? Hamilton's (1982) original contribution remains important because it alerted us to the fact that the monocentric city model makes strong and testable predictions about the volume and direction of commuting. His empirical results cast serious doubt on the reasonableness of the monocentric city model. Subsequent studies yielded mixed conclusions. White (1988) and following papers can all be seen as casting some doubt on Hamilton's (1982) dramatic findings. However, Small and Song's (1992) carefully done and finely disaggregated study of LA appears to both confirm Hamilton's 1982 study and explain White's (1988) conflicting results. Using disaggregated data on the TMA Merriman, et al. (1995) find significantly less absolute, and a dramatically smaller percentage, of excess commuting than Small and Song (1992) find for the LA metropolitan area. This discrepancy is thought to be explained by differences in methodologies and data sources or by differences in urban structures and institutions. If difference in urban structures and institutions are the ultimate cause, universalistic claims about the

quantity of excess commuting may be unwarranted.

In this context, this paper reveals that, although Tokyo is – probably Osaka, Nagoya, and Fukuoka are also – going toward US cities like LA that has more decentralized spatial structure and more excess commuting, other Japanese metropolises still have concentrated spatial structures and less excess commuting than four major metropolises. Thus discrepancy seems to be explained by differences in urban structures and so far.

Suzuki (1994, 1998) extends the discussion to energy issues and mixed development. Suzuki and Tagashira (2000) deals with national-wide travel minimization. The discussion should cover those problems.

More importantly, recent every-5-years survey for commuting of workers who use mass-transit – 2000 Transportation Census of Metropolises (Daitoshi Kotsu Census) reveals that commuting time in three major metropolises decreased for the first time. Centralization of suburban residents is current trend in Japanese megalopolises, and might be promising cause to reducing commuting. Finding evidence whether changing urban structure contributes lower commuting time remains an issue for further academic study.

**Table 3** Optimal Commuting Assignment Solutions in the Tokyo Metropolitan Area

| Year | Number of Workers | Total Distance Travelled | | | Average Distance | | | Distance Based | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum km | Observed km | Maximum km | Minimum km | Observed km | Maximum km | Excess | UCI | TFR |
| 1980 | 12713891 | 82089065 | 124174072 | 537004784 | 6.46 | 9.77 | 42.24 | 0.339 | 0.153 | 0.093 |
| 1985 | 14002641 | 92330935 | 141393051 | 603855198 | 6.59 | 10.10 | 43.12 | 0.347 | 0.153 | 0.096 |
| 1990 | 15599154 | 108064127 | 168461428 | 687766217 | 6.93 | 10.80 | 44.09 | 0.359 | 0.157 | 0.104 |

| Year | Number of Workers | Total Time Travelled | | | Average Time | | | Time Based | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum min | Observed min | Maximum min | Minimum min | Observed min | Maximum min | Excess | UCI | TFR |
| 1980 | 12713891 | 535941524 | 623080001 | 1384293043 | 42.15 | 49.01 | 108.88 | 0.140 | 0.387 | 0.103 |
| 1985 | 14002641 | 594527428 | 697786670 | 1548284339 | 42.46 | 49.83 | 110.57 | 0.148 | 0.384 | 0.108 |
| 1990 | 15599154 | 673790007 | 802003594 | 1751777434 | 43.19 | 51.41 | 112.30 | 0.160 | 0.385 | 0.119 |

Data: Population Census.

Notes: UCI = Urban Consolidation Index

TFR = Travel Flow Ratio

**Table 4** Japanese Metropolises Tested (as of 1990)

| Metropolis | # of Zones | Area | Population | Daytime Population | Pop Density | Daytime Pop Density | Number of Workers | | | | Density of Workers | | | Inner Rate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Live | Work | Within Juris-diction | Live & Work | Live | Work | Live & Work | |
| | | km² | | | /km² | /km² | | | | | /km² | /km² | /km² | % |
| Sapporo | 24 | 4460 | 2234582 | 2236890 | 5.01 | 5.02 | 1047201 | 1047983 | 556571 | 1037652 | 2.35 | 2.35 | 2.33 | 53.6 |
| Sendai | 41 | 4005 | 1655344 | 1665589 | 4.13 | 4.16 | 804264 | 811577 | 456096 | 785321 | 2.01 | 2.03 | 1.96 | 58.1 |
| Utsunomiya | 33 | 5042 | 1225389 | 1236456 | 2.43 | 2.45 | 641180 | 649716 | 482974 | 620408 | 1.27 | 1.29 | 1.23 | 77.8 |
| Maebashi | 56 | 5152 | 1578174 | 1566021 | 3.06 | 3.04 | 814100 | 803145 | 567906 | 779761 | 1.58 | 1.56 | 1.51 | 72.8 |
| Tokyo | 336 | 16371 | 33374526 | 33403662 | 20.39 | 20.40 | 17188099 | 17221743 | 7683268 | 17080834 | 10.50 | 10.52 | 10.43 | 45.0 |
| Shizuoka & Hamamatsu | 41 | 4227 | 2359881 | 2356484 | 5.58 | 5.57 | 1265874 | 1262739 | 960011 | 1241877 | 2.99 | 2.99 | 2.94 | 77.3 |
| Nagoya & Yokkaichi | 196 | 11303 | 9162919 | 9187368 | 8.11 | 8.13 | 4762229 | 4780045 | 2729707 | 4730516 | 4.21 | 4.23 | 4.19 | 57.7 |
| Osaka & Kyoto | 253 | 14230 | 17976405 | 17987241 | 12.63 | 12.64 | 8635030 | 8642758 | 4042547 | 8572128 | 6.07 | 6.07 | 6.02 | 47.2 |
| Okayama | 36 | 3169 | 1477779 | 1485115 | 4.66 | 4.69 | 723716 | 726362 | 580697 | 709346 | 2.28 | 2.29 | 2.24 | 81.9 |
| Hiroshima | 58 | 5025 | 2027441 | 2033031 | 4.03 | 4.05 | 1001375 | 1007166 | 580497 | 989899 | 1.99 | 2.00 | 1.97 | 58.6 |
| Fukuoka & Kitakyushu | 76 | 3262 | 3868653 | 3900403 | 11.86 | 11.96 | 1745784 | 1770038 | 901002 | 1715037 | 5.35 | 5.43 | 5.26 | 52.5 |
| Kurume | 49 | 2410 | 1225462 | 1196432 | 5.08 | 4.96 | 575219 | 553966 | 395037 | 521941 | 2.39 | 2.30 | 2.17 | 75.7 |
| Kumamoto | 36 | 1855 | 1053344 | 1061032 | 5.68 | 5.72 | 496207 | 502669 | 387033 | 483649 | 2.67 | 2.71 | 2.61 | 80.0 |

**Table 5** Optimal Commuting Assignment Solutions in Japanese Metropolises, 1990

| Metropolis | Total Distance | | | Average Distance | | | Excess | UCI | TFR |
|---|---|---|---|---|---|---|---|---|---|
| | Minimum | Observed | Maximum | Minimum | Observed | Maximum | | | |
| | km | km | km | km | km | km | | | |
| Sapporo | 6378674 | 7977971 | 21338927 | 6.15 | 7.69 | 20.56 | 0.200 | 0.299 | 0.107 |
| Sendai | 5167196 | 6340034 | 21483833 | 6.58 | 8.07 | 27.36 | 0.185 | 0.241 | 0.072 |
| Utsunomiya | 4793889 | 5753812 | 21588253 | 7.73 | 9.27 | 34.80 | 0.167 | 0.222 | 0.057 |
| Maebashi | 4234668 | 5452318 | 22180340 | 5.43 | 6.99 | 28.45 | 0.223 | 0.191 | 0.068 |
| Tokyo | 117587325 | 184512363 | 882076114 | 6.88 | 10.80 | 51.64 | 0.363 | 0.133 | 0.088 |
| Shizuoka & Hamamatsu | 10694404 | 12510725 | 71290558 | 8.61 | 10.07 | 57.41 | 0.145 | 0.150 | 0.030 |
| Nagoya & Yokkaichi | 24595558 | 39007727 | 234810947 | 5.20 | 8.25 | 49.64 | 0.369 | 0.105 | 0.069 |
| Osaka & Kyoto | 46679690 | 76345068 | 419412515 | 5.45 | 8.91 | 48.93 | 0.389 | 0.111 | 0.080 |
| Okayama | 6656411 | 7407113 | 17329249 | 9.38 | 10.44 | 24.43 | 0.101 | 0.384 | 0.070 |
| Hiroshima | 5432260 | 7050708 | 26299446 | 5.49 | 7.12 | 26.57 | 0.230 | 0.207 | 0.078 |
| Fukuoka & Kitakyushu | 7924335 | 11445907 | 79750712 | 4.62 | 6.67 | 46.50 | 0.308 | 0.099 | 0.049 |
| Kurume | 2394261 | 3052127 | 17962975 | 4.59 | 5.85 | 34.42 | 0.216 | 0.133 | 0.042 |
| Kumamoto | 2892039 | 3418551 | 9219282 | 5.98 | 7.07 | 19.06 | 0.154 | 0.314 | 0.083 |

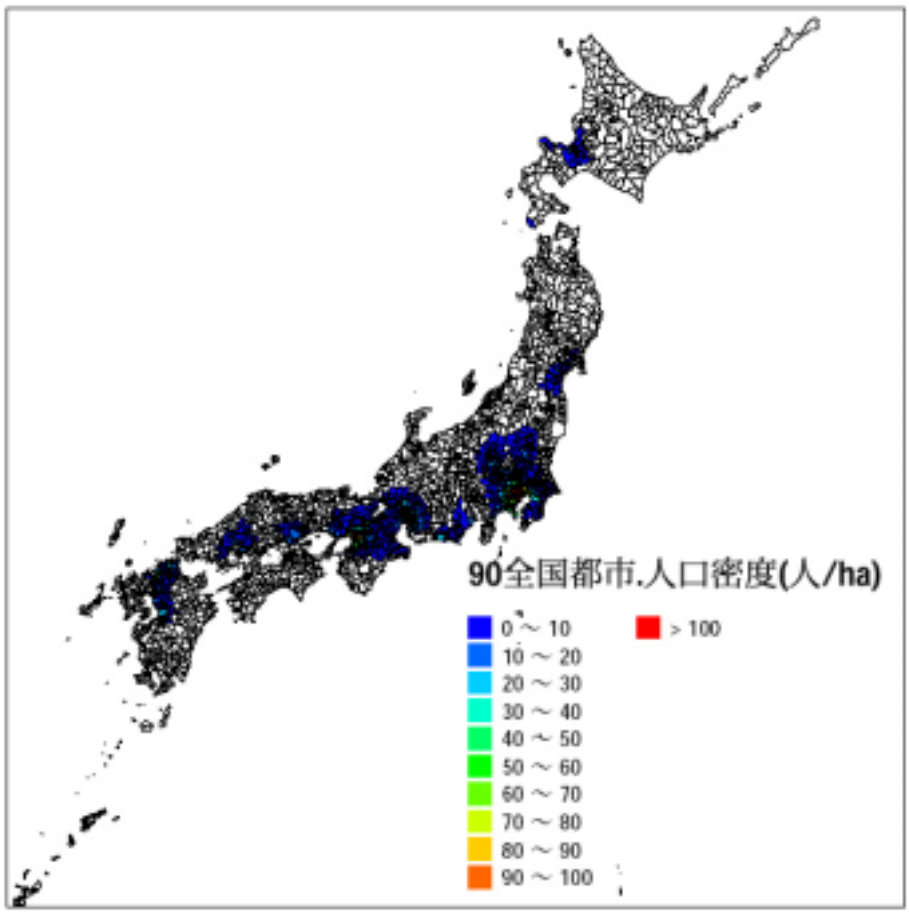


**Figure 1** Population density in Japanese metropolises

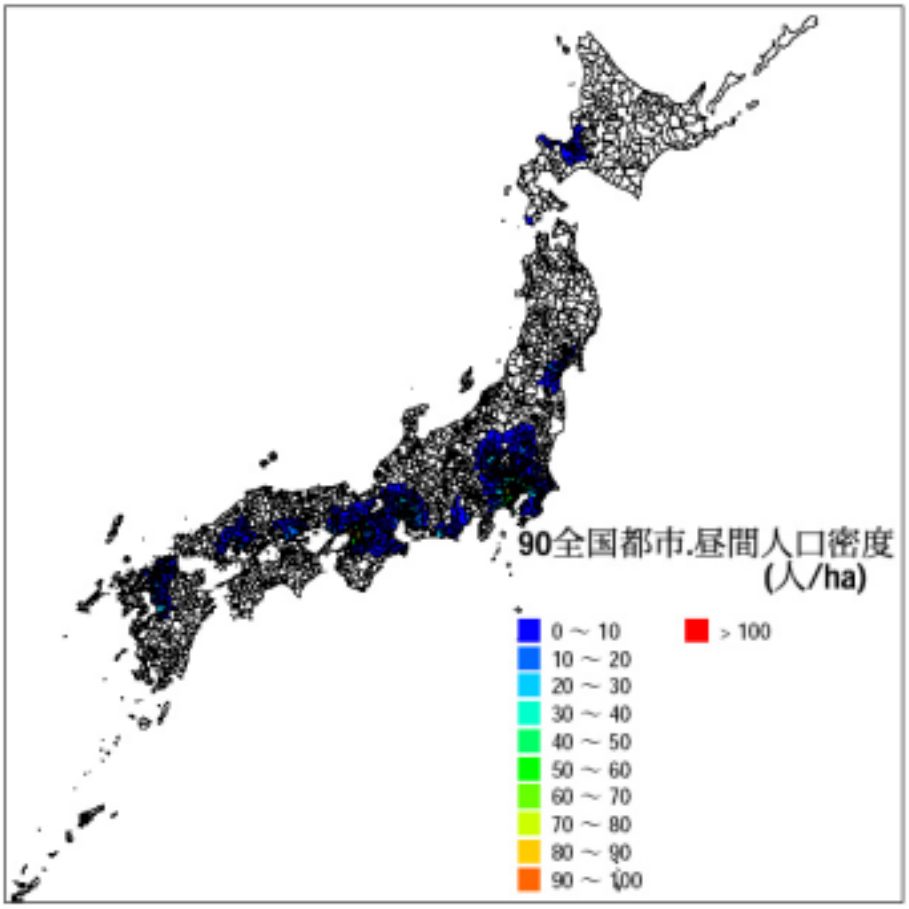


**Figure 2** Daytime population density in Japanese metropolises

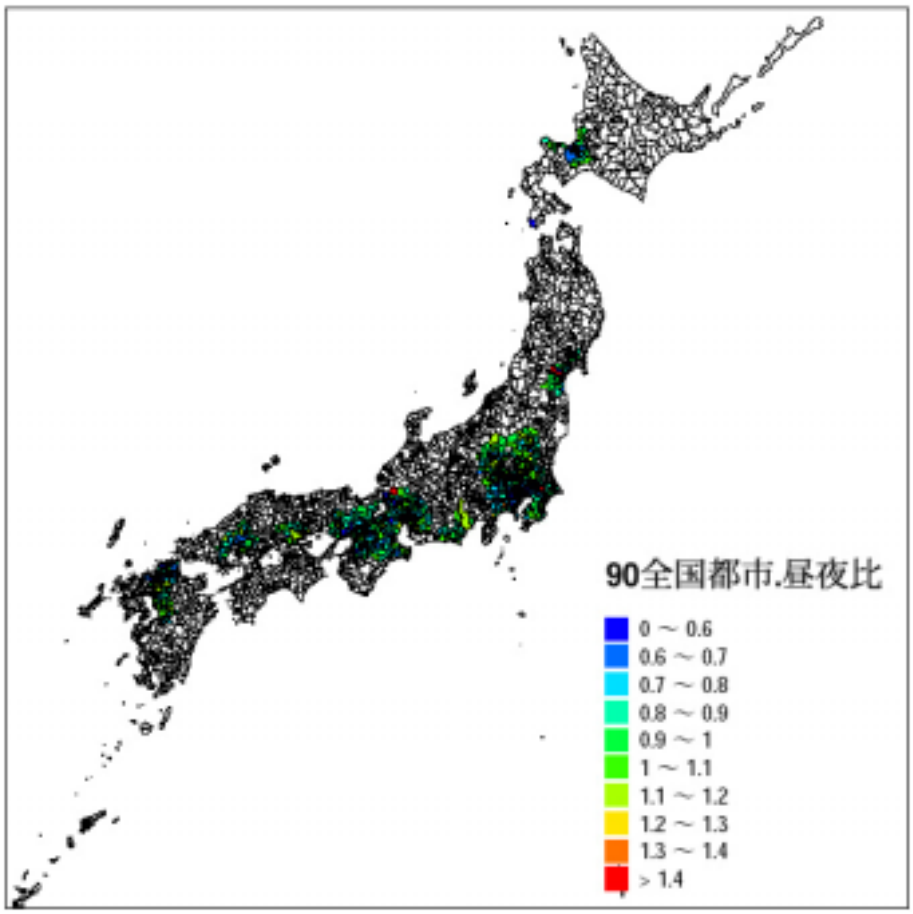


**Figure 3** Day-night population ratio in Japanese metropolises

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# Regulatory Policy Measures in the Capital Region of Korea: Problems and Proposals

Dong-Woo Lee
Research Fellow
Korea Research Institute for Human Settlements

## 1. Introduction

The concept of the Capital Region in Korea is defined by the Capital Region Development Plan Law. It contains Seoul City, Incheon City and Kyonnggi Province. It covers 11.8% of national lands. But it contains about 46.3% of the national total population

The over-concentration of the Capital Region has been a problem to be solved since the mid 1960's. At that time, the Region had a population of 7 million which is about 24 % of the national total population. Since then to now, a number of regulatory policies have been designed to control the location of economic activities in the Capital Region. However the population of the Region has increased to 21 million (46.3% of the national total population) in 2000.

The activities which have been controlled in the Capital Region

include the location of factories, universities, offices, sales facilities, public facilities, cram schools, training institutes, and the development of housing land, industrial park and resort. Among these, the regulation of cram schools was abolished in 1994. The permit regulations of offices and sales facilities were changed to the tax regulations in the same year. The most persistent and the most important subjects of regulation are factories, universities and public facilities.

Fig.1 shows the shares of manufacturing employments, university students, population and land area by the Capital Region in Korea. The share of university students has decreased steadily from about 70% in 1966 to about 40% in 2001. The share of manufacturing employments had increased slowly until the mid of 1970's, but it has fluctuated around 45% from that time on. On the other hand, the share of population has increased steadily from about 23.9% in 1966 to about 46.3% in 2001. The share of university students began to fall below the share of population in 1990, and the share of manufacturing employments began to fall below the share of population in 1997.

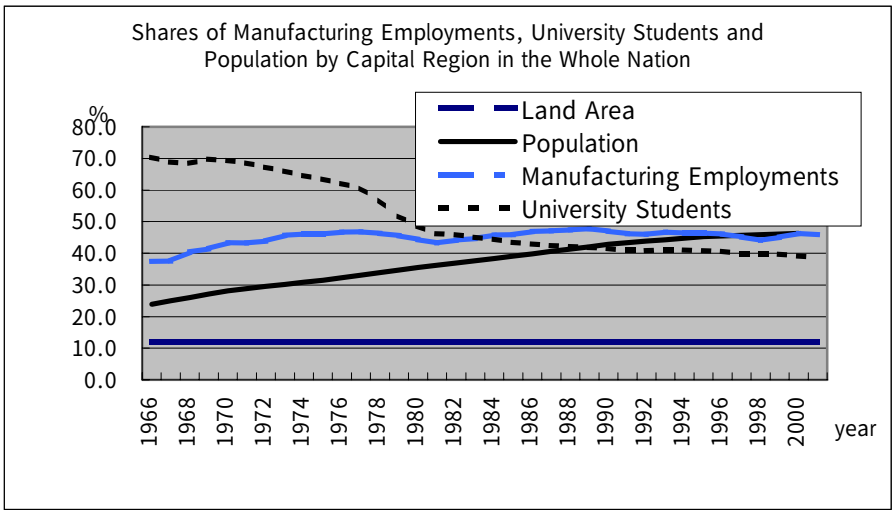



**Figure 1** Shares of Some Indicators by the Capital Region in the Whole Nation

From the statistical view, the variation both in university students and in manufacturing employments seems to have no relation with the variation in population. While the share of university students decreased from 70% to 40%, the share of population increased from 25% to 46%. While the share of manufacturing employments fluctuated around 45%, the share of population increased steadily.

Based on this fact, opponents of the regulation in the Capital Region argue that the current regulation is ineffective to control population increase in the Capital Region. On the other hand, proponents of regulation argue that deregulation would result in further population increase in the Capital Region. It is still unclear which argument is true in reality.

The purpose of this paper is not to examine which argument is right, but to evaluate the quality of the current regulations. It is assumed that regulatory polices are needed in order to control the population increase in the Capital Region. Regulations are expected to push economic activities out of the controlled areas while incentives operate to pull them into the target regions. The question is whether the current regulatory instruments are well designed or not. In order to evaluate the quality of the regulations, criteria such as equity, selectivity and flexibility can be used.

## 2. Current Regulations in the Capital Region

### 2.1. Regulation Framework

#### 2.1.1. Subjects of Regulation

The Capital Region Development Plan Law enacted in 1983 defines both "Population Inducing Facilities" and large-scale development projects as subjects of locational regulation. "Population Inducing Facilities" include: public offices with floorspace above 1,000 ㎡, manufacturing factories with floorspace above 200 ㎡, universities, office buildings with floorspace above 25,000 ㎡, sales buildings with floorspace above 15,000 ㎡ and training institutes with floorspace above 3,000 ㎡. Large-scale development projects include: housing land development project with area size above 1 million ㎡, industrial park development project with area size above 300 thousand ㎡, resort development project with area size above 100 thousand ㎡.

### 2.1.2. Tools of Regulation

Various tools such as legal prohibition, permit by CRMC (Capital Region Management Committee), ceiling of total amount permitted, building levy and surcharge of local tax, are used to regulate the economic activities in the Capital Region. For example, the law prohibits the establishment of new university or large company's new factory in the Capital Region. New large-scale development project referred above should be deliberated by CRMC before proceeding. Either a new office building with floorspace above 25,000 ㎡ or a new sales building with floorspace above 15,000 ㎡ should pay a tax before proceeding. New firms established in the Restricted Population Zone, which is explained below, should pay additional tax.

### 2.1.3. Spatial Coverage of Regulation

Prohibition regulation for new university and large company's new

factory apply to the whole Capital Region. But other regulations are applied in differentway by zone.

The Capital Region Development Plan Law divides the Region into three zones: Restricted Population Zone, Environmental Conservation Zone and Growth Management Zone.

Restricted Population Zone covers major cities and their surrounding areas where the concentration of industry and the rate of population increase is so high that it is necessary to restrict the new or additional establishment of economic activities. It covers 17.3 % of the Capital Region's land area, but about 84.3 % of the Capital Region's population resides within the zone. The most strictest regulations are applied in this Zone in order to prevent further congestion and a number of incentives are given to the firms relocating to outside of the Capital Region.

Environmental Conservation Zone is designated over the basin of upstream Han River. Most of water supply in the Capital Region is coming from Han River, and thus the regulations in this zone are focused to prevent the pollution of the River. This zone covers 32.8 % of the Capital Region's land area, but it covers only 3.5% of the Capital Region's population. There is no large city in this zone. Most of its land is covered with forest and fields.

The rest of the Capital Region is designated as Growth Management Zone. It covers 50 % of the Capital Region's land area and 12.2% of the Capital Region's population. Regulations are not so strict in this zone because congestion problem is comparatively less serious and the need to preserve nature is relatively small. For example, small and medium firms are allowed here to establish their factories, while they are limited depending on the type of industry and size in the other two zones.

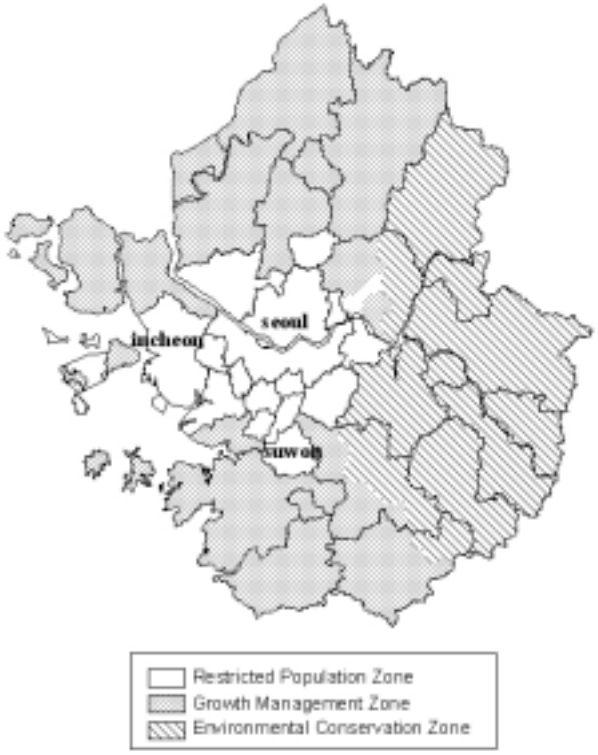



**Figure 2** Zonal Division of the Capital Region

## 2.2. Details of Regulation by Subject

### 2.2.1 Factories

For factories, such tools as locational controls, "Permit-Cap Regulation" and local taxes' surcharge are used.

*Locational Controls*

The locational controls of factories in the Capital Region were introduced in the Industrial Placement Act in 1977. At that time, the controlled area is limited to the Relocation Promotion Zone and Restricted Development Zone, both of which were integrated to Restricted Population Zone in 1982. The spatial coverage of regulation was extended to the whole Capital Region in 1982 by the enactment of the Capital Region Development Plan Act. By simplifying the complex industrial location related acts, all of the current locational controls of factories are given in the Industrial Placement and Factory Construction Act.

It is a rule that factories with a floor space above 500 ㎡ are prohibited from undertaking activities such as the new or additional establishment of factories, or the change of the business type within the Capital Region. But this rule doesn't apply in cases determined by the Presidential Decree, where it is recognized that such activities are necessary for the national economic development and the creation of a suitable living environment for local residents. Deregulation criteria include zone of location, type of industry, area of floor space, and nationality and size of firm. See <Table1> for details.

Recently, some large-scale firms strongly ask for deregulation. Samsung Electronics, for example, plans to construct its additional semiconductor factory facilities in the Growth Management Zone and asks for the increase of the current extension limit, 50% of the floor space area in 1994, to 100% of that. And LG Philips LCD, which is a foreign-capital invested company, plans to construct its new LCD factory in the Growth management zone and asks for the prolong of the current deregulation period for foreign-capital invested company which is valid until the end of 2003.

**Table 1** Locational contols of factories in the Capital Region

| Size of firm / Zone | Large company' factory | Small and medium firm's factory |
|---|---|---|
| Restricted Population Zone | Prohibition of both new and additional establishment | - Industrial park: no regulation<br>- Industrial area in a city: urban-type industry is allowed<br>- The other area: urban-type or high-tech industry is allowed |
| Environmental Conservation Zone | Prohibition of both new and additional establishment | - Industrial area in city : urban-type industry with floor space less than 3,000 ㎡ is allowed<br>- The other area : urban-type or high-tech industry with floor space less than 1,000 ㎡ is allowed |
| Growth Management Zone | Prohibition of both new and additional establishment<br>(Exceptions)<br>- Foreign direct investment<br>· only for those more than 50% of stocks is possessed by foreigners<br>· only for high-tech industry<br>· valid until the end of 2003<br>- Extension of existing facilities<br>· Auto industry etc.: to 25% of the floor space area in 1994<br>· Semiconductor industry etc.: to 50% of the floor space area in 1994 | No regulation |

***Permit-Cap Regulation***

Besides the locational controls mentioned above, the central government regulates the annual total of floor space of factories permitted in the Capital Region. Minister of Construction and Transportation sets a ceiling on the amount of new industrial floor space to be permitted in the year. If the ceiling is reached before the end of the year, construction permission shall be refused (or deferred to the next

year). This regulation applied to the factories with floorspace above 200 ㎡, while the locational controls mentioned above applied to the factories with a floorspace above 500 ㎡.

"Permit-Cap Regulation" was introduced in 1994. Because the caps were being set generous, no one had been refused until 1998. But the industrial property boom started in 1999 makes this regulation operative. The Permit-Cap of 2000 was 2.5 million ㎡, but the required floor space area by firms in that year was about 3.6 million ㎡. It resulted in a serious shortage of industrial land supply in the Capital Region, and thus the government increases the ceiling greatly in the next year.

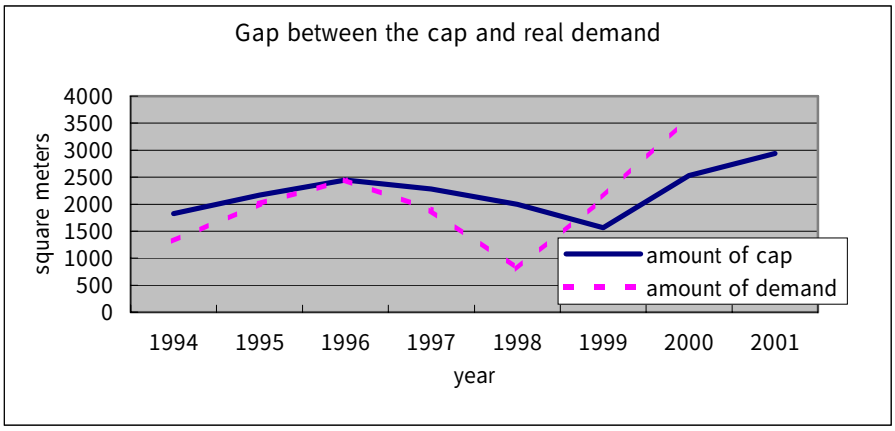



**Figure 2** Gap between the Permit-Cap and Actual Demands

***Surcharge of Local Property Taxes***

A new factory and main office of a firm located in a Restricted Population Zone shall be surcharged on local taxes including acquisition tax, registration tax and property tax.

### 2.2.2 Universities and Colleges

For universities and colleges, both locational control and "Admission-cap regulation" are employed.

#### *Locational Controls*

The locational controls of universities (colleges) were introduced in the Capital Region Development Planning Act in 1982. Since then, new establishment of universities has been prohibited except small-scale ones.

**Table 2** Locational controls of universities (colleges) in the Capital Region

| School types / Zone | Universities and teacher's college | Colleges of technology and junior colleges |
|---|---|---|
| Restricted population zone | Prohibition of new establishment | No regulation except Seoul |
| Environmental conservation zone | Prohibition of new establishment<br>(Exceptions)<br>- Small-scale universities (universities with an annual admission quota of 50 students or less) are allowed with deliberations of CRMC | Establishment of Junior colleges are allowed with deliberations of CRMC, but that of colleges of technology are prohibited |
| Growth management zone | Prohibition of new establishment<br>(Exception)<br>- Small-scale universities are allowed | No regulation |

#### *Admission-Cap Regulation*

Regulations that restrict the total admission quota of universities

(colleges) in the Capital Region were introduced in 1994. In the case of universities and teacher's colleges, Minister of Construction and Transportation determines the annual increase of total admission allowed, through the deliberations of CRMC. In the case of colleges of technology and junior colleges, the annual rate of increase in total allowable admission quota is limited within 10%.

### 2.2.3 Office Buildings and Commercial Buildings

The person who intends to construct (including extension and alteration of usages) either an office building with floorspace above 25,000 ㎡ or sales building with floorspace above 15,000 ㎡ within Seoul should pay the "Over-concentration responsibility charge". This charge was introduced in 1994. Before then, the deliberations of CRMC are necessary to construct those large buildings.

The amount of the Charge is within 10% of the standard building. 50% of the Charge goes to the Special Accounts on Land Management and Balanced Regional Development, and the other 50% goes to Seoul Metropolitan Government where the Charge is collected. The annual amount of the Charge collected is around 80 billion Won in the past years.

### 2.2.4 Public Offices

A new or additional establishment of public office with floorspace above 1,000 ㎡, and the alteration of usage to public office is prohibited within the Capital Region with some exceptions. For the public office permitted exceptionally, the “Over-concentration Responsibility Charge”

shall be charged if its location is within Seoul Metropolitan Area. This regulation was strengthened in 1999, before then the size of office regulated was above 3,000 ㎡.

Public offices regulated by the Capital Region Development Plan Act includes: offices of central administrative agencies and their institutions, government-invested institutions and organizations in which such institutions have invested 51 % or more of their paid-in capital, government-financed enterprises established under the Act on the Contribution In-kind of State Properties, organizations which are contributed by or have received contributions from the government, juristic persons established pursuant to their respective constituting statutes.

### 2.2.5 Training Institutes

Within the Restricted Population Zone, a new and additional establishment of training institutes with floor space above 3,000 ㎡ is prohibited without exception. And, within the Environmental Conservation Zone, a new establishment is prohibited but an extension is allowed within 10% of the floorspace of the existing facility. A new construction of the facilities in the Growth Management Zone depends on the deliberations of CRMC.

### 2.2.6 Large-scale Development Projects

Large-scale development project (housing land development project with area above 1 million ㎡, industrial park development project with 300 thousand ㎡, resort development project with area above 100

thousand ㎡) in the Restricted Population Zone and Growth Management Zone should have a deliberation by CRMC first, and then consult with Minister of Construction and Transportation.

In the Environmental Conservation Zone, all the development project above 60 thousand ㎡ is prohibited. But this isn't applied if the local government introduces the "Pollutant Cap" regulation under which total effluent would be capped at a given level. Housing land development project with area below 200 thousand ㎡ can be allowed in this case.

## 3. Problems

### 3.1 Conditions for the Good Regulations

Nicol and Reinhart(1979) indicates that a good locational control would possess the following attributes:

*Equity*, in that the discretionary nature of the control allows each case to be treated according to its individual merits.

*Selectivity*, to determine which applicants are able to relocate and those who are not.

*Flexibility*, to adjust the stringency of the control to changing circumstances.

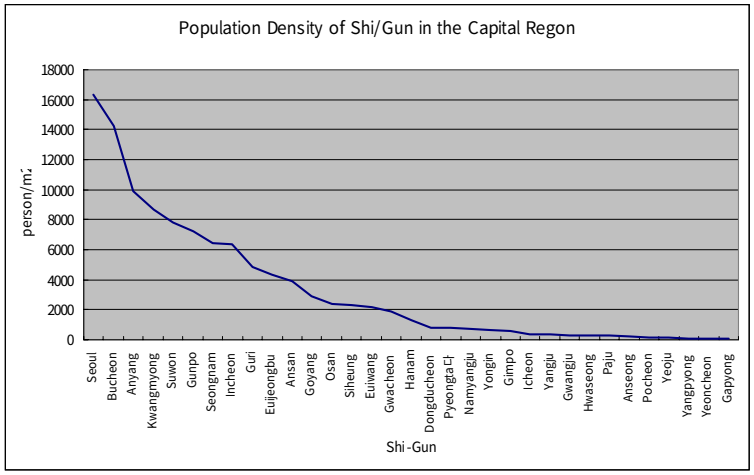
*Information and bargaining roles*, whereby the provision of information alone may be sufficient to cause the project to relocate without the issue or threat of refusal, or where a project is approved in the controlled area in return for a "gentleman's agreement" that another project will be located in an assisted area (package deals).

According to these criteria, the current regulation system for the Capital Region may be criticized for its lack of equity, selectivity, flexibility, or bargaining power.

### 3.2 Problems

#### 3.2.1 Inequitability of the Coverage Area

Not all the local jurisdictions in the Capital Region are congested, but all of those are regulated since it is located in the Capital Region. Among the 33 local jurisdictions (si and gun) in the Capital Region, at least 11 have their population densities below the national average. Moreover, rural areas including Yeoncheon gun, Gapyeong gun and Yeoju gun, have experienced rapid population decrease during the past 20 years. These localities have been deprived of development opportunities by regulation in spite of their poverty. This situation is clearly inequitable.




note) National population density is about 463 persons per ㎢

**Figure 3** Population Densities by Local Jurisdictions in the Capital Region

### 3.2.2 Lack of Flexibility

At least two kinds of regulations can be criticized for the lack of flexibility. First, current locational controls for factories are too stringent to be adjusted to changing circumstances. It is generally recognized that the locational controls have to match the cyclical changes in the economy. However there are many kinds of factories whose locations in the Capital Region are prohibited by law.

One of the typical example is the regulation for the large company's factory (Large company here indicates the firm with employees above 300 persons or the firm with the capital above 7 billions). As mentioned above, new construction of factories by domestic large companys is totally prohibited in the Capital Region, and the partial extension of existing facilities is allowed only for high-tech industries.

This regulation could cause serious problems to the domestic economy as the firm regulated would look for an alternative location in the outside of the country. With globalization proceeding apace, the regulation such as "prohibition" of a new constuction of a large company's factory in the Capital Region should be changed to a flexible one such as "permit".

Second, the Zonal division is too strict to change. The current boundaries between Zones were determined in 1994 when the current three Zonal division system was introduced. The boundaries haven't changed for 10 years although the distribution of population in the Region has changed drastically.

According to the definition by law, Restricted Population Zone is the area in which population and industries are, or are likely to be overly concentrated. It is unclear what the over-concentration means, but it is clear that the areas adjacent to the existing Restricted Population Zone, have experienced drastic population increase as figure.5 shows.

Under the current regulation systems, it looks very difficult to redraw

the boundaries. First, there are no clear criteria for the division of zone. Second, in order to change the boundaries, we must amend the Capital Region Development Plan Act since the current boundaries are prescribed in the Act. It is a big burden for the government to amend a Law. Third, residents of the area, which is likely to be merged into the Restricted Population Zone, may resist the boundary change.

In order to make the Zonal division flexible, periodical redrawing of the boundaries (for example per five years) based on the clear criteria may be recommendable.

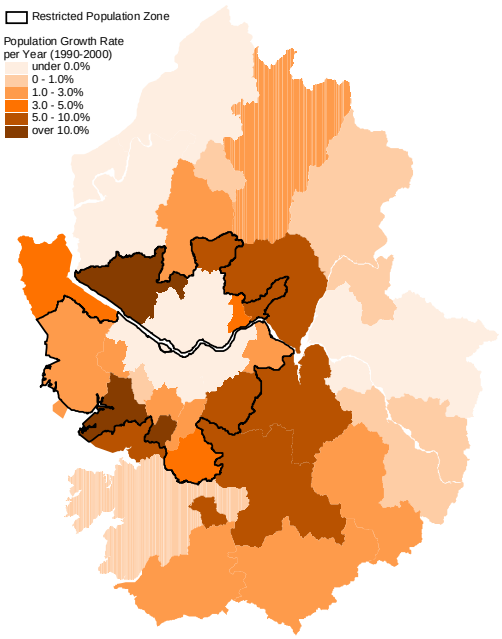



**Figure 4** Annual Increase Rates of Population by Local Jurisdiction

### 3.2.3 Lack of Selectivity

At least three kinds of regulations can be criticized for the lack of selectivity. First, the “Permit-Cap Regulation”, which controls the annual total of floor space of factories permitted in the Capital Region, is applied on a "first-come-first-served" base in general.

Purpose of the Cap regulation is to force the local government to select the desirable applicants under the cap imposed. In order to select the desirable cases, the local government must review all the applicants together and the applicants must wait until all the applications are reviewed. But it looks very difficult for the local government to persuade the applicants to wait, because the delay of factory construction may make the firm uncompetitive.

Second, the exemption limit of the “Over-concentration Responsibility Charge” is too relaxed to expect the relocation of buildings. The Charge aims for stimulating out-movement as well as to reduce congestion within Seoul by causing buildings to relocate in the outside of Seoul. Yet the current building size liable to pay the Charge is too large to achieve this purpose.

Either the office building with floorspace above 25,000 ㎡ or sales building with floorspace above 15,000 ㎡ seems to be reluctant to relocate because the demand for lagre buildings is concentrated in Seoul. Considering the mobility potential, it is recommendable to lower the exemption limit of the Charge. In the case of French system of Redevance, which is somewhat similar to the Over-concentration Responsibility Charge, the exemption limit stands at 1,000 ㎡.

Third, deliberation by CRMC (Capital Region Management Committee) seems to be insufficient to match the selectivity principle. CRMC consist of cabinet members chaired by the prime minister, and Working Committee composed of public officials concerned and experts

is installed within the Committee. From 1984 to 2001, CRMC has had 62 meetings. It has deliberated 369 projects, and has approved 90.8 % of those. Because of its high approval rate, the effectiveness of the deliberation by CRMC is doubted. Moreover, CRMC has no formal criteria to decide whether the applied project should be approved or refused.

## 4. Proposals and Conclusion

The following proposals are suggested to enhance the quality of regulations in the Capital Region. First, the coverage area of regulation should be reconsidered. Areas that are neither congested nor environmentally sensitive must be deregulated although they are located in the Capital Region. In this case, the concept of the Capital Region will be remained as a region for spatial planning.

Second, the current zonal regulation system should be replaced by the area-based regulation system. Among the current three zones, both the Restricted Population Zone and Environmental Conservation Zone are distinctive in their meanings and purposes. The Restricted Population Zone means the area in which population and industries are, or are likely to be, overly populated that moving out of which is deemed necessary. And the Environmental Conservation Zone means the area in which conservation of nature environment, such as the water of the Han River system and forestry, is required. But the meaning of the Growth Management Zone is unclear. The Act defines the Zone as the area into which shall be intentionally solicited the population and industries moving out of the Restricted Population Zone, and for which proper management of the accommodation of industries and of urban development is required. According to this definition, the Growth Management Zone should be designated over the special areas into

which the population and industries moving out of the Restricted Population concentrate. But the current Zone covers all the other parts of the Capital Region outside the Restricted Population Zone and Environmental Conservation Zone. Moreover, it looks very difficult to change zone boundaries since they are prescribed in the act. In order to keep the consistency between the purpose of regulation and its coverage area, we recommend the area-based regulation system instead of the current zonal regulation system. Under the area-based regulation system, various kinds of policy areas can be introduced such as congested area, Han River conservation area, green belt area, growth management area and assisted area. Each area should have its own designation criteria, and periodical redrawing of the boundaries (for example per five years) may be needed for flexibility.

Third, the "prohibition" regulation system should be replaced by the "permit" regulation system. There are two kinds of regulations applied in the Capital Region: regulations for balanced national growth and those for environmental conservation. Regulations for environmental conservation, which cover the Environmental Conservation Zone in general, must be designed on the absolute criteria including environmental standards. But the regulations for balanced national growth, which cover either the whole Capital Region or the Restricted Population Zone, should be designed on the relative criteria such as inter-regional distribution of industries, regional disparities and the mobility of the firms regulated. The "prohibition" regulation system may be appropriate in the former case, but is inappropriate in the latter case. The purpose of these regulations isn't to prevent the firms from locating in the Capital Region, but is to identify potentially mobile firms and to steer them to the outside of the Capital Region. The "permit" regulation system can fulfill these aims by the case-by-case treatment of applications.

Fourth, regulatory policy measures in the Capital Region should be administered by a single government agency. Currently, locational

controls for factories are administered by Minister of Commerce, Industry and Energy, although a main responsibility for balanced national growth is given to Minister of Construction and Transportation. This causes frequent conflict between the two. A number of alternatives can be considered: transfer of the responsibilities to control industrial location in the Capital Region to Minister of Construction and Transportation, establishment of a new central agency administering regional policy, strengthening of the role and function of the current CRMC (Capital Region Management Committee) or establishment of a new inter-ministerial committee.

Fifth, the Permit-Cap Regulation, which controls the annual total of floor space of factories permitted in the Capital Region, should be operated in a manner designed to select the desirable factories. As noted earlier, it is operated on a "first-come-first-served" base. In order to enhance the selectivity, a local government is required to have criteria to decide whether the factory construction applied should be permitted promptly or not. The projects didn't permitted promptly must wait till the end of the year, and they compete each other within the Permit-Cap imposed.

Finally, the exemption limit of the "Over-concentration Responsibility Charge" should be lowered to cause buildings to relocate in the outside of Seoul. Generally the larger the building, the smaller the mobility potential is expected to be. The current exemption limit, 15,000 ㎡(Sales building) or 25,000 ㎡(Official building) of floorspace, is too high to expect relocation.

There are many countries which had/have employed policies to control the location of economic activity for balanced national growth; Great Britain: Industrial Development Certificate (IDC) and Office Development Permit (ODP) in the 1960-1970's period; France: Agrément and Redevance; Japan: Permit of Factories and Colleges in the Tokyo Built-up Area in the 1959-2002 years and the Netherlands: Selective Investment Regulation (SIR) in the 1970's. All of these countries chose a

permit system as a regulation instrument, and both France and Netherlands introduced a tax system to supplement the permit system.

The reason why a permit system is preferred can be summarized as follows (Nicol and Wettman, 1979): Permit systems, relying on the case-by-case treatment of applications according to their individual merits, allow the equity principle of equal treatment of equal cases; they can be administered both selectively and flexibly; and they allow useful information and bargaining roles.

Compared with these countries, Korea has employed very stringent control systems including "prohibition". There is no room for bargaining or package deals since the allowable cases are listed in the Law. This kind of regulation system promotes transparency, but it requires higher social costs by causing some firms to relocate abroad or give up the activity.

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