

# PATTERNS AND CONCEPTS OF SUBURBAN DEVELOPMENT

## *in Metropolitan Areas of Japan*

Tomohiko Yoshida

### **1. Introduction**

It is often said that two-thirds of Japan's national land area consists of mountains, and the habitable area covers only 34% of the total area. The habitable and plain land is located mainly along the shoreline. As a result, urban spaces are geographically limited and population density is particularly high, compared with countries in Europe and North America, for example. This geographical limitation is considered to be one of the reasons why regulations to control rapid urbanization are comparatively loose in Japan. Resultantly, the country's urban areas have expanded in the absence of effective methods for controlling the strong demand for the development and improvement of living spaces in cities and towns. In particular, the suburban areas of metropolises developed rapidly due to the period of high economic growth that commenced at the start of the 1960s.

This chapter aims to analyze such patterns as well the locations of suburban developments, focusing mainly on detached houses in Japanese metropolises. A discussion of the problems with the existing model will provide the basis for a suggested urban policy that would enable Japanese cities (as well as overpopulated cities in European countries, such as Germany) to become more compact.

### **2. The Relationship between Urban and Rural Policy in Japan**

It is important to discuss the relationship between the central government's policies related to agriculture and city planning in order to understand what has happened in the

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suburbs of Japan's metropolises. Generally, policies related to agriculture, farm land and rural areas are under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries (MAFF), whereas policies related to infrastructure, buildings, urban areas and national land area are under the jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

Figure 1 shows the relationship between the separate regulations for national land use defined by MAFF and MLIT. Agricultural Promotion Regions (APRs) are designated by prefectural governors and are regions in which policies for agriculture are to be promoted comprehensively for at least 10 years, based on the Act on the Establishment of Agricultural Promotion Regions. Agricultural Land Areas (ALAs) are designated areas in which various projects for agricultural improvement should be promoted intensively, in which much farm land is included.

On the other hand, the designation of City Planning Areas (CPAs) is based on the City Planning Act, which came into force in 1968. Prefectural governors create CPAs to encourage integrated and sound development, well-ordered improvement, and preservation in cities. In the case of necessity, the extended areas of a municipality may also be designated as City Planning Areas by the governor.

City Planning Areas are divided into two types according to the stage of their urbanization process: "Urbanization Control Areas" (UCAs) and "Urbanization Promotion Areas" (UPAs). If the area has potential for urbanization and is expected to become fully urbanized within

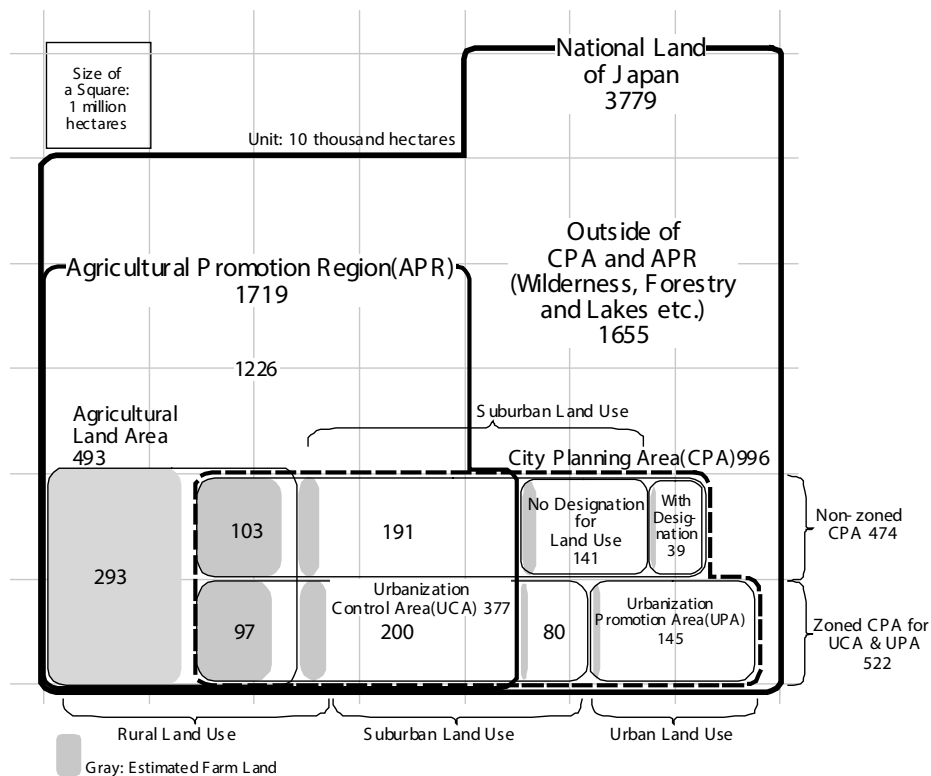


Fig. 1: Proportion of suburban land use in Japan, depicted through the relationship between Agricultural Promotion Regions and City Planning Areas. (Source: Based on Yamada (2006))

ten years, it is designated a UPA. Areas with less scope for urbanization are named UCAs. Some CPAs are subdivided into a UPA and a UCA, known as “Zoned” CPAs. Areas that are not zoned due to less demand for development are called “Non-Zoned” CPAs. If the potential for urbanization exists within a Non-Zoned CPA, a land-use zoning code will be implemented, according to which sub-areas are earmarked for certain types of development by the relevant municipality using labels such as “residential district,” “commercial district” and “industrial district.” In Figure 1, such areas are shown as being “with designation”.

Yamada (2006) has made estimates of the extent of areas of farm land, which are shown as gray rectangles in Figure 1. There is much farm land in the ALA, if it is included in the CPA. The land area that is in the CPA and falls outside of the ALA but inside the APR consists of 1.91 + 2 million hectares, which is 3.91 million hectares in total (and is designated for “Suburban Land Use,” as Figure 1 shows). This 3.91 million hectares has characteristics of both urban and rural areas because it is included both in the CPA and APR. Regulations and projects related to city planning, such as land-use zoning and Land Readjustment Projects, are planned and implemented mainly in Urbanization Promotion Areas. These areas are the only ones considered to be actual urban, built-up areas with “Urban Land Use” (as shown in Figure 1).

### **3. *Patterns of Suburban Development in the Case of Chiba Prefecture***

To facilitate detailed discussion of the patterns of suburban development in Japan, the total allocations for residential areas in Chiba Prefecture, by type of regulation and project, are given as an example in Figure 2. There are four categories of development given in this figure. The second of these, existing Development Permission, is granted based on the City Planning Act. This is the most basic permission system for suburban developments. In Urbanization Promotion Areas, it is necessary for developers to be granted Development Permission by the prefectural governor if the area of the development site is more than 500 square meters (Table 1). In Urbanization Control Areas, development is, for the most part, prohibited, following Article 34 of the City Planning Act—although some development for farming activities in the surrounding areas (existing farming villages) is permitted, based on the Prefectural Ordinance set forth in 2001.

The fourth development category in Figure 2, Prefectural Ordinance, was established in 1969 and relates to older residential land developments in the Non-Zoned CPA and outside the CPA of Chiba Prefecture. Three target areas are placed in the “Prefectural Ordinance” category in Table 1 and Figure 2.

Before the enforcement of the City Planning Act, an act was passed in 1964 to control private residential development, with a view preventing urban sprawl in particular. This act was valid for a very short period, until the beginning of the 1970s, when the current City Planning Act was ratified. Much development was permitted, however, under this old act due to the rapid economic growth of Japan in the 1960s. This is categorized as “old development permission” in Figure 2. A significant amount of this old development permission was granted in the Zoned CPAs.

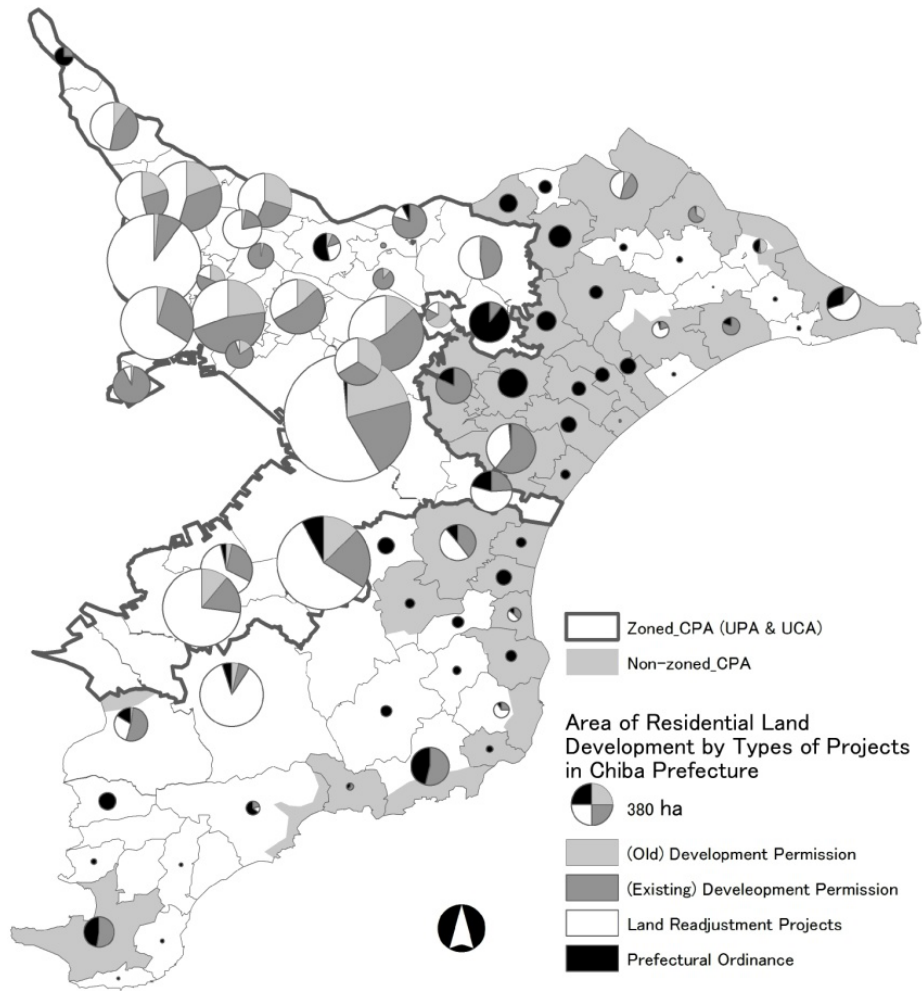


Fig.2: Residential land development areas in Chiba Prefecture by type of permission and project, 1994-2002  
 (Source: Chiba Prefecture (1994) and MLIT (2002))

Category	Target Area	Sites Suitable for Development Permission	Exception
Zoned CPA	UPA (Urbanization Promotion Area)	500 m <sup>2</sup> and over	300 m <sup>2</sup> and over 1,000 m <sup>2</sup> and over
	UCA (Urbanization Control Area)	Permissions are not granted, except for in surrounding areas (existing farm villages etc., less than 50,000 m <sup>2</sup> ) (Prefectural Ordinance, 2001)	
Non-Zoned CPA		3,000 m <sup>2</sup> and over (Prefectural Ordinance, 1969)	1,000 m <sup>2</sup> and over
Outside of the CPA	Residential use	5,000 to 10,000 m <sup>2</sup> (Prefectural Ordinance, 1969)	1,000 to 10,000 m <sup>2</sup> 3,000 to 10,000 m <sup>2</sup>
	Other than residential use	10,000 m <sup>2</sup> and over (Prefectural Ordinance, 1969)	

Tab. 1: Suitable sites for development permission by target area in Chiba Prefecture (2015)

The Land Readjustment Project (LRP) is called the “mother of city planning in Japan” and was started in 1919, based on old City Planning Act that bore resemblance to the Adickes Act in Prussia. It is said that a quarter of the Urbanization Promotion Areas developed in Japan over the last one hundred years of city planning in Japan have been part of the LRP.

As has been seen, in order to understand how residential land has been developed in Chiba Prefecture, four types of projects and regulations must be considered: (1) development permissions that target UPAs in Zoned CPAs in the main; (2) development permissions with a Prefectural Ordinance that target Non-Zoned CPA and areas outside of the CPA; (3) old development permissions, which were only valid for a short period from 1968 to around 1973 (the end date varies depending on the municipality); and (4) the Land Readjustment Project – a traditional development method in Japanese cities.

Figure 2 gives the distribution of the areas for these four categories in relation to the city planning blocks of the municipalities. Each polygon does not necessarily indicate the boundary of municipality; rather, the polygons represent blocks of city planning units, which are smaller than the municipalities themselves, in some cases. Some blocks have been newly merged into Zoned or Non-Zoned CPAs following revisions to City Planning Areas. The size of each circle symbolizes the size of the total development area in relation to others. Each segment in a circle represents the proportion of each development type in that area. As is evident, the Prefectural Ordinance zones (depicted in black) are located in the east of the prefecture, and mainly in Non-Zoned CPAs. The Land Readjustment Project has been implemented generally in UPAs within Zoned CPAs.

In the suburban areas outside of Chiba City, there are many low-density built-up and abandoned districts, which were sold to individual owners and in which there are few (or no) residential buildings. Most of the subdivided lots have been neglected, left vacant, and the land has been covered with weeds, particularly in summer. Following Yoshida (2005), the author defines this kind of residential land as a “low-density built-up district”. Yoshida explains that low-density built-up—or almost “abandoned”—suburbs exist in UCAs within both Zoned and Non-Zoned CPAs in Chiba Prefecture. The term “low density”, however, does not have any fixed definition in Yoshida’s work, and is used in conjunction with other terms such as “un-urbanized,” and “non-built-up”.

There were huge land resources for residential development both in UCAs and Non-zoned CPAs as seen in Figure 2. As a result of the rapid development after 1960, Chiba Prefecture, as one region of the Tokyo Metropolitan Area, has a little more revenue from property tax than some other areas, but also labors under burdensome maintenance costs, which are associated with ineffectual roads and various residential services in the outer suburbs of UCAs and Non-zoned CPAs.

As the example given above shows, in terms of Japanese national land-use plans, huge areas are designated for use as suburbs, and only loose regulations are in place in relation to potential development.

#### 4. Suburbs of the Kansai Metropolitan Area

Figure 3 gives a comparison of Densely Inhabited Districts (DIDs) in the Tokyo Metropolitan Area (left) and the Kansai Metropolitan Area (right) between 1960 and 2005. The images given are to scale, in order to facilitate comparisons. A method for fixing DIDs is given in the Population Census of Japan and is revised every 5 years, when the census is held. If an area has a population density of 4,000 persons per square kilometers or more, it is defined as a “DID” by the census. At present, 67% of the total population in Japan lives in these DIDs. This is considered to be Japan’s urban population.

The DID areas for 2005 (depicted as black in Figure 3) are arranged on top of those from 1960. The urbanization areas that developed after 1960 in each metropolitan areas correlate, therefore to the black areas on the images. These areas are a kind of “a map of suburbs,” demonstrating the rapid economic growth of Japanese metropolises over a 45-year period.

It is clear to see that Tokyo is bigger than Kansai in terms of the total area of urbanization. There are some mountain areas in Kansai (for example, in the northern part of Hyogo and the eastern part of Osaka), providing one reason why suburban developments seem to be more regulated in Kansai. In contrast, there are bigger suburban areas, shown by the black coloration on the image, in Tokyo. Kyoto City is well known as being surrounded by three mountains: on the north, the east and the west sides. For this reason, Kyoto’s urbanized areas have expanded to the southwest, in the direction of Osaka, along the Yodo River.

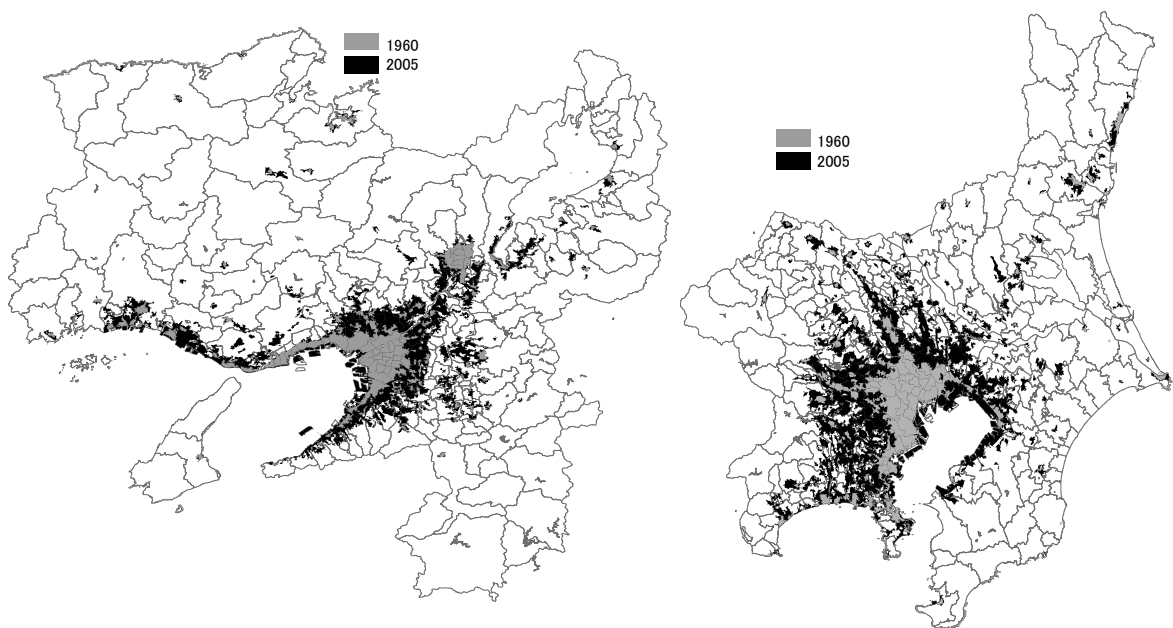


Fig. 3: Comparison of DIDs in 1960 and 2005 according to population census data (images are to scale).

Left: Kansai (Hyogo, Osaka, Kyoto, Shiga, and Nara Prefectures).

Right: Tokyo (Tokyo, Kanagawa, Chiba, Saitama, and Ibaraki Prefectures)

(Source: Population Census of Japan (1960, 2005), courtesy of National Land Numerical Information Download Service (MLIT))



Most of the DIDs are located within Urbanization Promotion Areas. In general, they can be regarded as existing built-up areas. According to the author's definition, "suburbs" are not included as DIDs. "Suburbs" that create many problems, in terms of the maintenance of vacant lands and of inconvenient living services, are located on the periphery of the DIDs (depicted as white in the images). These areas are mainly designated as UCAs or Non-Zoned CPAs, as seen in Figure 1.

Yoshida (2003, 2005) states that there are many low-density built-up districts and even abandoned districts in Ibaraki and Chiba Prefectures (suburbs of the Tokyo Metropolis). It is worthy of note that terms such as "low" and "abandoned" do not have exact definitions in Yoshida's work. This phenomenon can also be observed, however, in Kansai's Metropolitan Area.

Figure 4 gives the geographical distribution of low-density built-up and abandoned districts in the Kansai Metropolitan Area, as observed via Google Maps. Here, if a residential district is subdivided by road networks and has vacant lots within one block or more, it is defined as a low-density built-up area. In some cases, there are no buildings or houses at all, just artificial road networks. Such areas as defined as abandoned.

As of the beginning of March 2015, these low-density built-up and abandoned districts were posted on the author's website via the Google Maps service. If a keyword search is performed—for example, "yoshida\_tomohiko\_ritsumei"—one can view the locations of these residential districts (for some municipalities, the more detailed aerial photographs are not available in Google Maps; Google Earth must instead be used, due to Google policies. Google Earth provides more detailed aerial images than Google Maps).

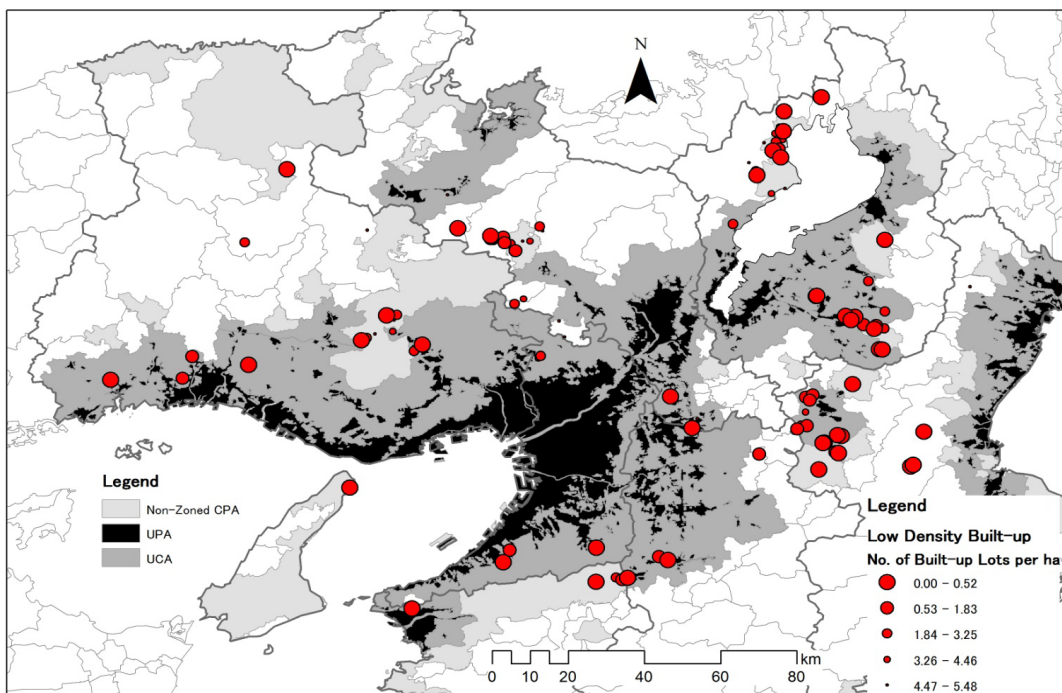


Fig. 4: Locations of low-density built-up districts and abandoned districts in relation to DIDs in the Kansai Metropolitan Area (Source: Population Census of Japan (1960, 2005). Compiled by the author, courtesy of data from the National Land Numerical Information Download Service (MLIT) and Google Maps.)

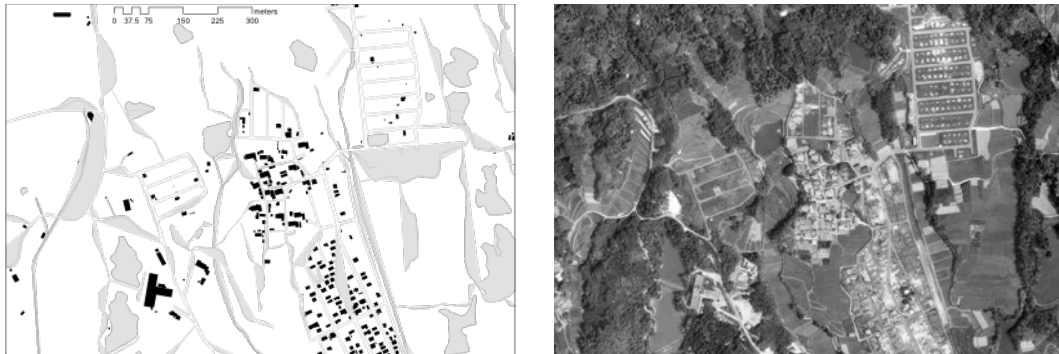


Fig. 5: Map and aerial photo of low-density built-up districts in Iga City, Mie Prefecture (left: 2015; right: 1983)  
 (Source: Zenrin Zmap Town II (Iga City, 2015) and Geospatial Information Authority of Japan)

Most of the districts located in white or grey polygons outside of the UPAs (black) can be defined as rural or as suburbs of the metropolis. It seems that these districts are primarily located in UCAs, except for some municipalities north of Kobe City and Shiga Prefecture. A larger circle size shows a lower density of built-up lots per area. In this regard, most lower-density districts are thought to be developed due to the loose regulation of Urbanization Control Areas following the current City Planning Act.

Figure 5 gives an example of an actual low-density built-up district. The aerial photograph was taken in 1983 (right) and the map shows the roads and buildings as of 2015 (left). On the map, there are three developed districts to the north and west of a farming village. A built-up district also exists to the south of the village. Black polygons indicate buildings and gray polygons show areas of water. After examining multiple aerial photos from a number of years, the author was able to confirm that the land development in two of the districts on the west side had already been completed in 1975. The district on the east side can be seen for the first time in a photograph taken in 1983. Only a few of the buildings (three or four buildings in each district) can be seen in the image on the left. The figure indicates that a period of 30 years of development does not seem to be long enough for urbanization to be completed in such districts.

Iga City is categorized as a Zoned CPA and these low-density built-up districts are located in the Urbanization Control Area.

## 5. ***The Shrinkage of Local Areas: an Analysis of Vacant Dwellings***

When we discuss the shrinkage of Japanese cities, it is important to focus on vacant dwellings as well as vacant lands in suburban areas. This is due to the sheer number of vacant dwellings in Japan: approximately 8.2 million units, according to the Housing and Land Survey of 2013, which is 13.5% of the total number of residential properties (60.6 million). There were less than 4 million vacant dwellings in 1988, indicating that the figure has more than doubled in 25 years.



According to the Housing and Land Survey, four types of vacant dwelling exist: 1) “for rent” – dwellings that are on the rental market, whether newly built or not; 2) “for sale” – dwellings on the sales market, whether newly built or not; (3) “second dwellings” – properties with no permanent householder, which are used as holiday homes; and 4) “others” – vacant dwellings other than those mentioned above, including those uninhabited for a long time due to the transfer or to the hospitalization of residents, and those to be destroyed and rebuilt. It is not possible to discuss the meaning of vacant dwellings in further detail within the confines of this chapter, but, for our purposes, the “others” category will be renamed the “not in use” category, which gives a clearer explanation of their status to the reader. Therefore, in sum, there are four types of vacant dwelling: for rent, for sale, second dwellings, and not in use.

Figure 6 organizes the vacant housing in Japan according to these four types and by the width of the road abutting the housing site. The road widths are defined as follows: “not abutting a road”, “less than 2 meters”, “2-4 meters”, “4-6 meters”, “6-10 meters”, and “10 meters and over”. In Japan, every building should abut on a road with a width of more than 4 meters, according to the Building Standards Act enforced from 1950 onward. If the width of the abutting road is less than 4 meters, the road should be designated as a specific road, based on Article 42 of the Building Standards Act, and should be improved in the future.

The size of each square reflects the total number of dwelling units in each category. The greatest number of vacant dwellings is seen in the “for rent” category (4.1 million units), followed by “not in use” (2.7 million units). The “second dwellings” and “for sale” categories form approximately 10% of all empty dwellings and are thus marginal compared with the other two categories.

A clear pattern can be seen in terms of the types of building in Figure 6: the vacant dwellings “for rent” tend to be apartments, whereas the vacant dwellings that are “not in use” are most often detached houses. The reason for the large number of apartments “for rent” is that there is a surplus of one-room dwellings for single families and young residents in

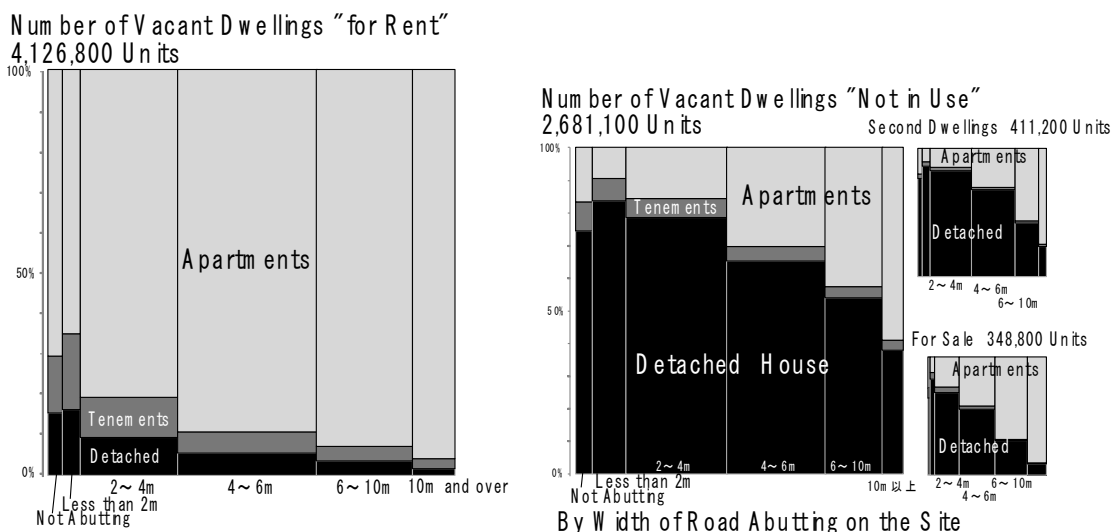


Fig. 6: Vacant dwellings by type and width of Road Abutting the Site (Source: Housing and Land Survey, 2008)

larger, rented houses. The number of vacant dwellings “for rent” thus implies an oversupply in the rental housing market. As far as tenement houses are concerned, there are more vacant dwellings “for rent” than “not in use” because tenement houses are built using a traditional wooden structure and more elderly residents tend to live in such properties.

It is therefore necessary to divide the discussion of existing vacant dwellings into two main categories: the first is the “rented apartment” and the second is the “detached house not in use.” In Figure 7, the regional distribution of vacant dwellings is shown by percentage per prefecture. The left figure represents “not in use” and the right shows “for rent” housing. The average ratio of vacant dwellings to the total number of housing units is 13.1% in Japan (Housing and Land Survey, 2008) and the numbers given in Figure 7 indicate the ratio of empty dwellings to the total number of houses in each prefecture.

There are also clear patterns in the vacant dwelling data. As far as “not in use” is concerned, there are more vacant dwellings in areas such as Wakayama, Kochi, Shimane, and Kagoshima Prefectures than in others. There are also comparatively few vacant dwellings “for sale” in areas such as Shimane and Kagoshima. There seems to be an oversupply of rental housing in areas surrounding the Tokyo Metropolitan Area, such as Ibaraki and Yamanashi, and in medium-sized “mega-cities” such as Osaka, Fukuoka, Miyagi, and Hokkaido. It can be said that the highest concentration of vacant dwellings for rent exists in areas surrounding Tokyo and in other prefectures that contain larger cities. In other words, the location of vacant dwellings for rent is closely related to the locations of metropolises.

There is a weak negative correlation between “for rent” and “not in use”, with a coefficient of -0.26. There are more vacant detached houses not in use in the west and in local areas, and there are more vacant apartments in the east and in big cities.

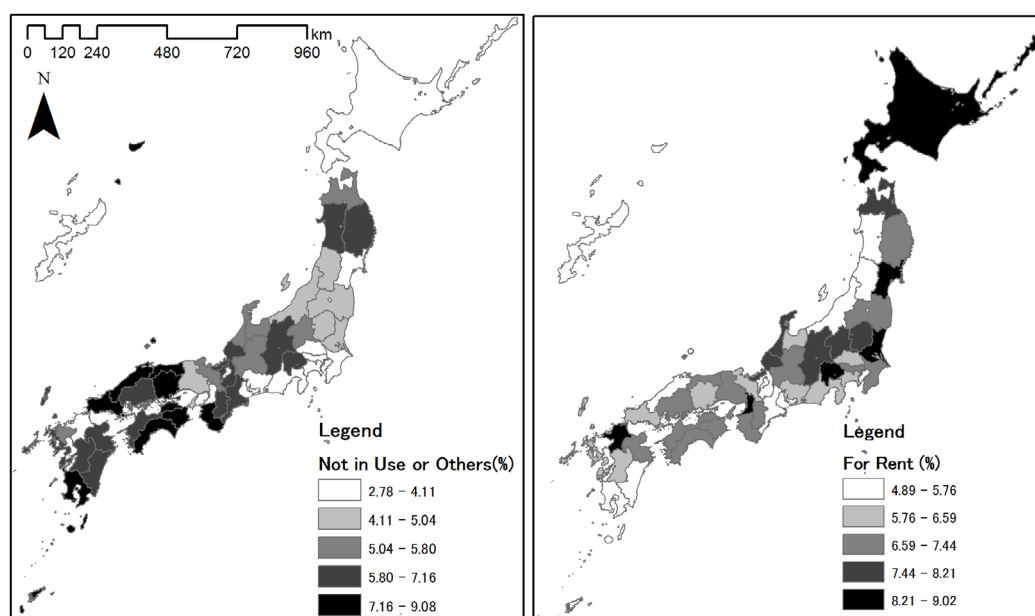


Fig. 7: Percentage of vacant dwellings. Left: not in use; right: for rent. (Percentage of dwelling units sorted by Jenks Natural Break. Okinawa is enlarged.) (Source: Housing and Land Survey, 2008)

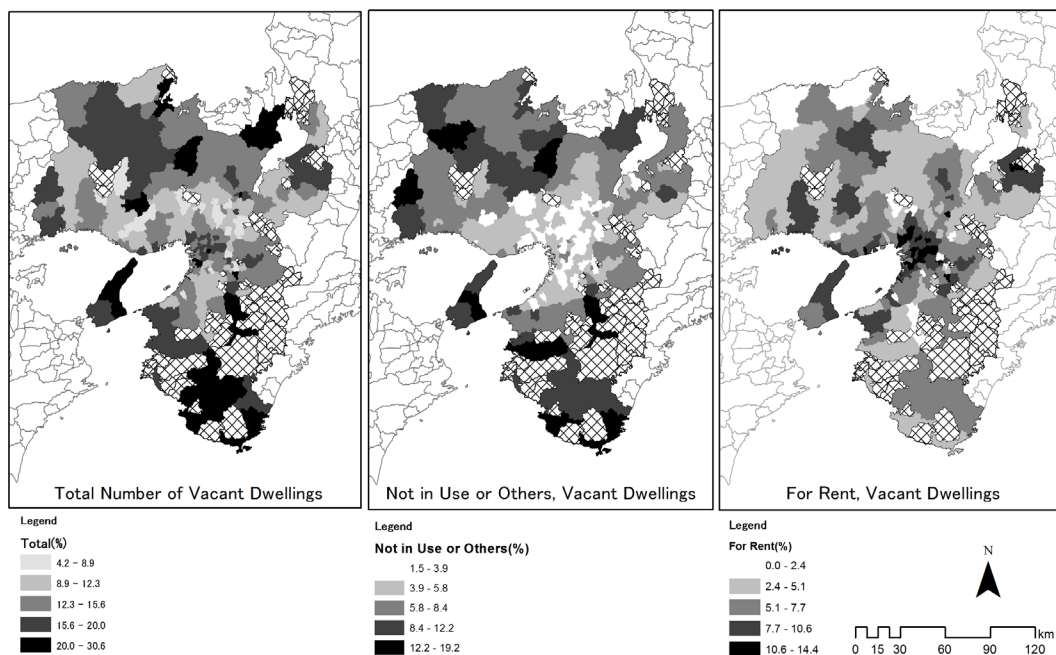


Fig. 8: Percentage of vacant dwellings in the Kansai Metropolitan Area. Left: total; center: not in use; right: for rent (Kyoto, Shiga, Osaka, Hyogo, Nara, Wakayama Prefectures) (Source: Housing and Land Survey, 2008)

Figure 8 shows the regional distribution of vacant dwellings in cities, towns, and villages in the Kansai Metropolitan Area (in percent). Some municipalities that do not have any data for vacant dwellings; the municipalities in question are located in mountainous areas and are indicated by hatched polygons on the diagram. It is evident that there are more vacant dwellings “for rent” in urban areas and more “not in use” in suburban areas. By analyzing vacant dwellings, it can be said that this is a spatial structure between urban and suburban. A similar tendency can also be confirmed at a national level via an analysis of Figure 8. From the point of view of policy making, however, these two levels of analysis have different meanings. In terms of making national policies, the vacant housing problem seems to relate to detached houses in depopulated villages. On the other hand, when considering regional policies, the main problem may be how to control disorderly development in residential districts through administrative regulation – that is, through city planning and related ordinances. Even if the spatial structure is similar in regional and national contexts, the policies for solving these issues may need to be more specific than the national picture suggests.

## 6. Conclusion

Before trying to answer the question “what is a suburb?”, we must understand exactly what is happening in our suburbs. Our knowledge about the suburbs may be too limited for us to attain such an understanding; researchers and policymakers, like the rest of the population, have neither the time nor the means to visit all the suburban residential districts. People visit commercial complexes in the suburbs on Saturdays or Sundays and may spend half a day or so there. We can never discuss the suburbs only with such an ordinary feeling.

This chapter has discussed residential developments. The analysis has shown that the issue of making cities smaller in Japan is related to two main problems: low-density built-up districts and vacant dwellings. These two problems are seldom observed within urbanized areas; they usually exist in more rural locations.

In suburban districts in Japanese metropolises, detached houses were developed in the main. Three types suburban district can be identified: first, high- and medium-density built-up areas; second, low-density built-up areas; and third, abandoned subdivisions. The present phenomena and the possible positive futures associated with these three types of districts are summarized in Table 2 below.

In high- and medium-density districts, the populations are aging year by year. Commercial facilities and means of transportation are suddenly being cancelled due to their low profitability. The number of vacant dwellings is (or will be) increasing, along with the aging process. A mixture of age groups and the appropriate control of vacant lots are necessary in such districts, as is the renewal of dwellings.

In low-density districts, it is necessary to convert vacant lots into well-designed urban or natural forests. In these areas, the same kinds of problems can be seen as in the high- and medium-density districts. Moreover, vacant lots in abandoned districts should also be converted back into forests.

Due to the absence of clear divisions between agricultural areas and areas under the City Planning Act, there are significant overlaps between City Planning Areas and Agricultural Land Areas in Japan, as seen in Figure 1. In such areas, rapid and disorderly residential development has been permitted since the 1960s, affecting the history of city planning of Japan.

When asked the question “should we maintain or abandon these low-density built-up districts?”, many researchers have answered without hesitating that “this can be left to market principles”. I believe, however, that we cannot help but face our negative heritage of urban history; this cannot be put off for several more decades. In other words, the focus should move from shrinking the cities to confronting the history of city planning and its legacy.

Type of Districts	Present Phenomena	Positive Future
High- and Medium-Density Built-Up Districts	<ul style="list-style-type: none"> <li>• Aging population</li> <li>• Decrease in commercial facilities and means of transportation</li> <li>• Increase in vacant dwellings</li> </ul>	<ul style="list-style-type: none"> <li>• Mixture of age groups</li> <li>• Appropriate control and conversion of vacant lots</li> <li>• Renewal of dwellings</li> <li>• Demolition of vacant dwellings</li> </ul>
Low-Density Built-Up Districts	<ul style="list-style-type: none"> <li>• Constant high costs of maintenance for environment</li> <li>• Increase in vacant dwellings</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate control and conversion of vacant lots</li> <li>• Partial restoration to natural forests</li> <li>• Demolition of vacant dwellings</li> </ul>
Abandoned	<ul style="list-style-type: none"> <li>• Existence itself is not known</li> </ul>	<ul style="list-style-type: none"> <li>• Restoration to natural forests</li> </ul>

Tab.2: Types of district, present phenomena and positive future requirements for suburbs in Japan

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**Tomohiko Yoshida** D.Eng., Professor, College of Policy Science, Ritsumeikan University. Studied Architecture at Kyoto University and Toyohashi University of Technology, and Policy and Planning Sciences at the University of Tsukuba, Japan. Research topics: sustainability of Japanese suburban developments after rapid economic growth; urban infrastructure development in developing countries in Asia.

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