

THE ZONING SYSTEM IN JAPAN: THE COEXISTENCE OF HIGH - AND LOW-RISE BUILDINGS

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ABSTRACT

During the twentieth century, Japan was transformed from a largely rural country with approximately 15% of its population living in cities into one of the most urbanized countries in the world with an urban population approximating 80%. Such rapid urbanization mirrors Japan's emergence as a major industrial power. Although Japan's urban planning methods are highly sophisticated, their implementation poses several unsolved problems. The present study discusses the conflicts induced by the coexistence of low-and high -rise buildings in Japan's zoning system.

This study is organized into three parts. First we provide a data analysis of Japan's zoning system based on a literature. Second we examine the current situation of the zoning system through evaluation of a field survey, focusing on residential and commercial land use in three districts of Saitama-Shi as a case study. Third, we summarize the evidence and highlight the main issues.

1. INTRODUCTION

During the twentieth century, Japan was transformed from a primary rural country into a major industrial power and one of the world's most highly urbanized nations. To achieve that high development level, Japanese governments and planners borrowed the ideas and methods from many other countries and integrated them into their own urban planning and governance systems, with the purpose of developing their cities very differently from those of other developed countries.

Japan's urban history had already started many centuries earlier. The Tokugawa period (1600-1868), marked the starting point of Japanese urbanization in many aspects, including the definition of the idea of "city", the understanding of "urbanization", and traditions of urban administration, life and society. However, Japan's urban planning changed drastically after 1912 with the reinforcement of modern city planning in the Meiji

period and the development of inter-war urbanization. Through effective management of the emerging urban problems and the establishment of city planning and building laws, Japan's first urban planning system was designed in 1919.

This article introduces Japan's zoning system as one of the primary parts of its urban planning system and one that remains in need of improvement to make Japan a more inhabitable country. The next section provides an overview of the Japanese zoning system by means of a data analysis; we then present a field survey focusing on residential and commercial land use in three districts of Saitama-Shi, as a case study.

2. OVERVIEW OF ZONING SYSTEM: DATA ANALYSIS

2-1 "Inclusive zoning" in Japan's urban planning

As Japan recovered from its massive wartime destruction, the need to improve city planning processes was crucial. Major revisions occurred beginning in 1968, and land use zoning was revised from three to twelve land use zones, mostly organized into residential, commercial, and industrial uses. However implementation efforts revealed the weakness of the zoning measures adopted.

Japan's zoning measures allow a wide mixture of different uses in each zone for instance, offices and small factories are allowed in residential areas, and housing construction is permitted in industrial zones. Zoning restrictions tend toward establishing an inclusive set of uses, rather than an exclusive use, for each zone. Table 1 illustrates the large diversity of zone usage in Japan. The approach focuses mainly on facilitating human activity, in that it allows various uses as long as they contribute to making life easier for people, although they sometimes introduce nuisance. For example, schools, hospitals, and shops are typically allowed to coexist with housing in residential zones as a way of making life more convenient for residents. Schools despite the noise and

traffic that they can bring to residential areas are welcomed in order to make it unnecessary for students to take buses to school. Two ratios, the building coverage ratio and floor area ratio are crucial in defining the permissible height of buildings and density of residential areas. As certain values of these ratios are common to different zoning categories, the use of these criteria tends to foster the coexistence of high-and low-rise buildings in the same zone.

Table 1: Diversity of uses under Japan's zoning system.

Red (B) indicates the forbidden uses and green (A) the allowed uses in each zone.

| Uses | Zoning categories | |
|-----------------------------------------------------------------|-------------------|------------|
| | Residential | Commercial |
| Residential (houses, schools, hospitals ,shops) | A | A |
| Commercial (offices, banks, cinemas, department stores) | B | A |
| Industrial | B | A |

2-2 Low-rise detached houses and high-rise apartment buildings in Saitama City as a case study

Saitama-Shi is the capital and is the most populous city of Saitama prefecture in Japan. It is situated in the southeast portion of the prefecture and it incorporates the former cities of Urawa, Ōmiya, Yono and Iwatsuki. For the purpose of this study, we were interested in several districts of Saitama-Shi that have a high concentration of both low-rise buildings and high-rise apartments. The boroughs of Omiya-Ku, Chuo-Ku, Minami-Ku, Kita-Ku and Urawa-Ku were our main observation areas. Figure1 illustrates the evolution of the number of households living in high-rise buildings in Urawa-Ku, Chuo-Ku, Minami-Ku and Kita-Ku. This number has drastically increased in Urawa-Ku from 5,000 in 2003 to 8,500 in 2013. Figures 2and 3 show the density of households living in low-rise detached houses and high-rise apartment buildings respectively in these areas. One can observe from the figures that several districts in Urawa-Ku have a high concentration of both low-rise detached buildings (Figure2) and high-rise apartment buildings (Figure3) in close proximity to each other.

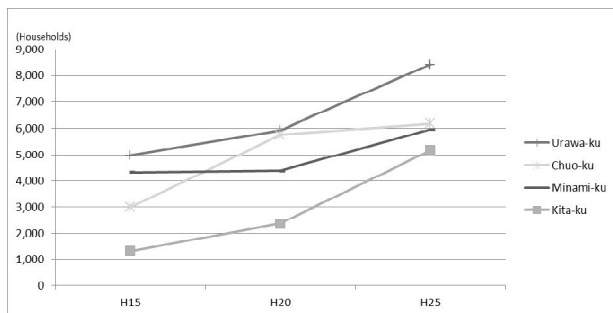


Figure1: Evolution of the number of households in high-rise buildings

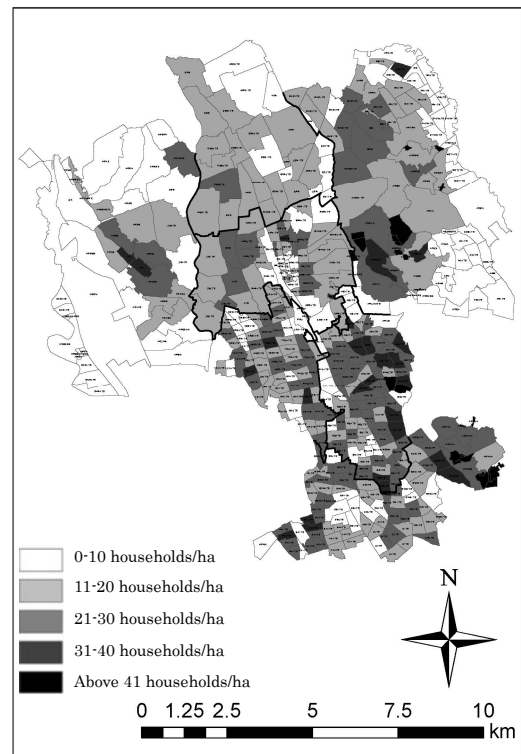


Figure2: Households living in low-rise detached houses in part of Saitama-Shi

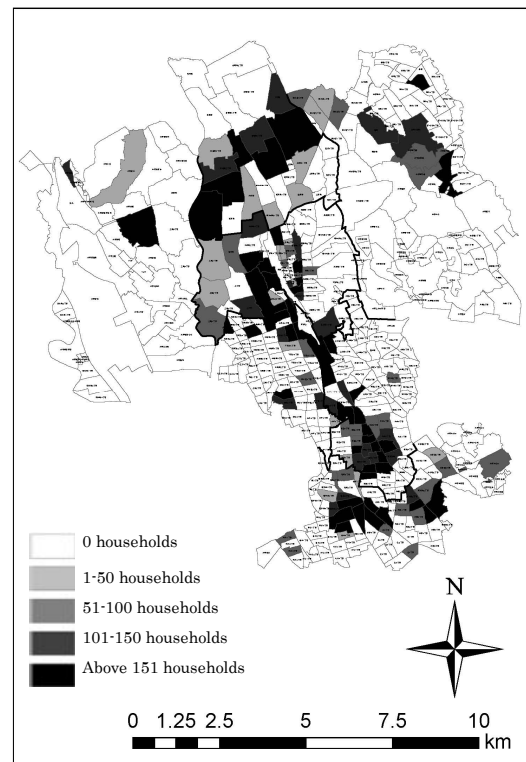


Figure3: Households in high-rise apartment buildings in part of Saitama -Shi

Three districts were selected from the residential and commercial zones of Urawa-Ku (Figure 4). The number of housing in each is summarized in Table2, based on the Housing and Land Survey Census of 2010. The categorizations used in that census were adopted as the terms do not have internationally agreed-upon definitions.

Table 2: Housing and Land Survey Census data for three districts of Urawa-Ku (2010)

| Name of Districts | Detached | Tenement | Apartments (number of stories) | | | | Total |
|-------------------|----------|----------|--------------------------------|-----|------|-----|-------|
| | | | 1-2 | 3-5 | 6-10 | 11 | |
| Segasaki 2-Chome | 147 | 1 | 39 | 126 | 365 | 70 | 748 |
| Motobuto 4-Chome | 267 | 5 | 100 | 87 | 124 | 95 | 679 |
| Higashi Nakacho | 330 | 8 | 293 | 350 | 159 | 186 | 1329 |

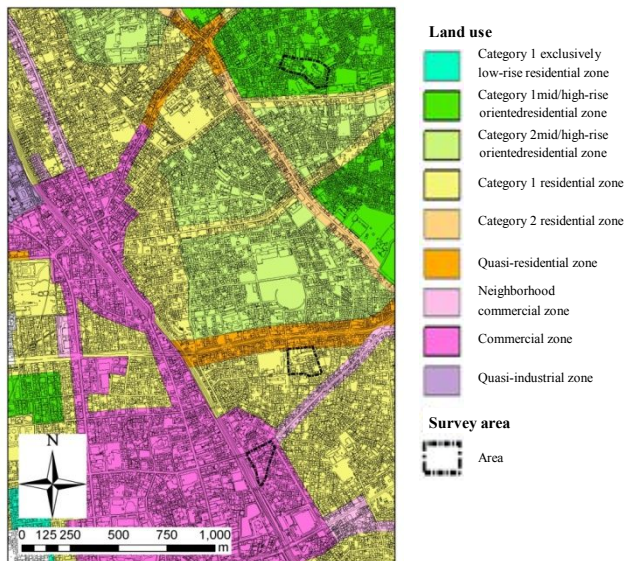
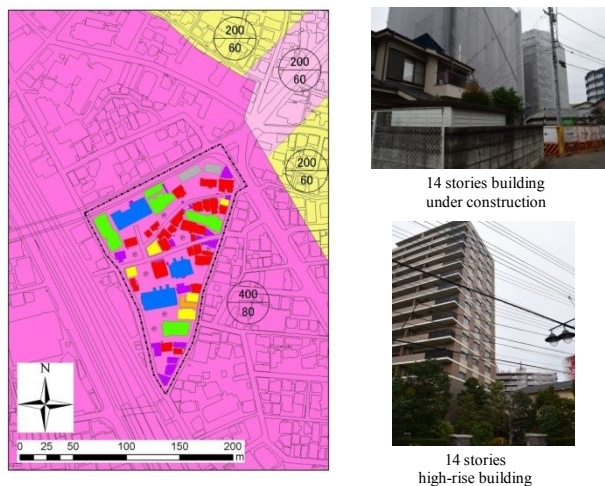


Figure4: Land use map of the surveyed area

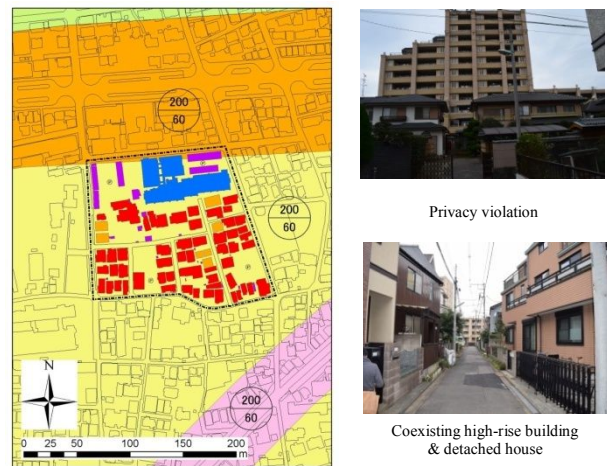
3. THE COEXISTENCE OF LOW-AND HIGH-RISE BUILDINGS: A FIELD SURVEY ANALYSIS

3-1 Overall observation

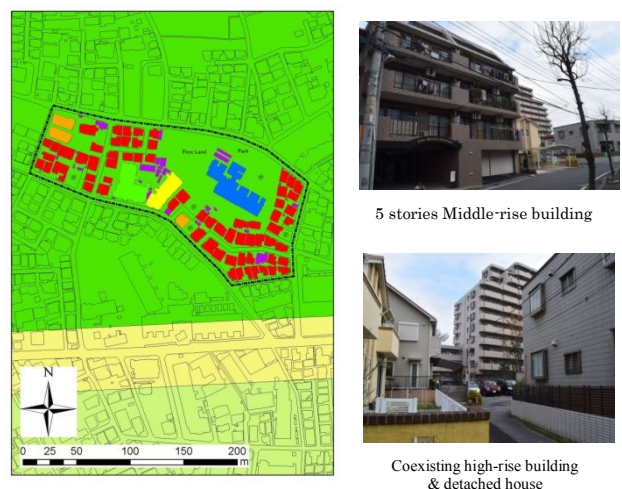
Through several field surveys, the existing situation of detached houses and apartments buildings in each selected district was examined. As shown in Figure 5, low-rise building use zones are not formally separated from mid and high-rise building use zones.



(1) Existing situation in Higashi-Nakacho (commercial zone)



(2) Existing situation in Motobuto 4-Chome (Category 1 residential zone)



(3) Existing situation in Segasaki 2-Chome (Category 1 mid to high-rise residential zone)

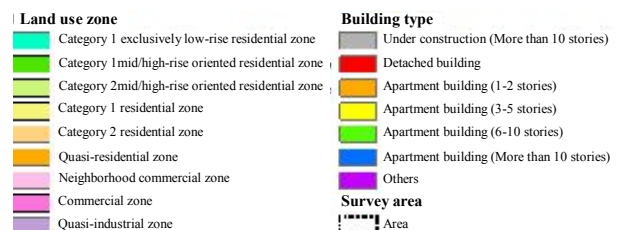


Figure5: District maps of the surveyed area

3-2 Analysis of the existing situation in the selected districts of Urawa-Ku

The views from high-rise buildings can be stunning, but the best way to view a city is at eye level. It is not easy to make connections with people that are living on the upper floors of high-rise buildings and they are less likely to leave their houses.

Furthermore, meaningful contact with ground-level events is possible only from the first two floors of detached houses or in a multi-story building. Between the third and fifth floors, a marked decrease in the ability to have contact with the ground level can be observed. Another threshold exists between the sixth and tenth floors. Anything and anyone above these floors is

definitely out of touch with ground-level events. High-rise buildings are simply so tall that they make no visual sense to a pedestrian at eye level. When walking around buildings of five or six floors, you can see the faces of people looking out their windows, as well as personalizing details such as flowerpots in windows. In contrast around taller buildings you cannot see this sort of detail in most of the building's facade. In other words, sight of the human scale is lost in high-rise neighborhoods. The proximity of low-and high-rise buildings especially in residential zones presents problems for quality of life for neighborhood residents (for example in Segasaki 2-chome), and violations of privacy for households living in low-rise buildings (as in Motobuto 4-chome). Moreover in commercial areas where high-rise buildings are also present, the problem of providing inadequate sun shine and outdoor air circulation to some buildings becomes a major issue despite the legal assurance of sunshine rights (this situation is observable in Higashi-Nakacho).

4. CONCLUSION

This article has examined the current Japanese zoning system and indicated some issues that Japan should address to create a more livable space for its population. Mainly, a focus on the existing conflict between low-rise and high-rise buildings coexisting in the same zone has shown the need to improve Japanese zoning laws. The important overall issue here is the surprising mess that the existing zoning has made of Japan's cities, including several nuisances introduced by the placement of high-rise buildings in low-rise residential zones. Although some measures have been implemented to provide the Japanese with a better quality of life, further improvement are need to create more comfortable living environments. Primarily, the maximum building height regulation and the sunshine regulation should be more strictly applied in the future. For instance, the new Height Regulation effective in Saitama City as of august 1st, 2013 allows a maximum building height of 15 to 20 meters in residential zones. This means that the construction of buildings higher than five floors will no longer be permitted in Segasaki 2-Chome. A similar regulation in Motobuto 4-Chome will limit future constructions to buildings of seven or fewer floors as the maximum building height permitted here is 20 meters. Another way to provide low-rise building occupants, with better protection against the consequences of higher buildings surrounding them could be to carefully review the floor area ratio and the building coverage ratio in order to define exclusive values in residential zones. In case of the inescapable coexistence of high-rise buildings with low-rise residential zones, a minimum distance between the buildings should be strictly determined. In summary, the question is no longer whether Japanese zoning laws should be changed, but how they should be changed in order to make Japan's cities more livable and oriented to human development.

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