A GIS-based Approach to the Planning History of Utsunomiya, a Regional City in Japan: Zoning Transformation (1934–2022) and its Relationship with Urban Development

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Abstract

Urban shrinkage and population decline have increased the importance of understanding the long-term relationship between urban planning and urban development in regional cities. This study examines the transformation of land use districts in Utsunomiya City, Japan, from the initial zoning designation in 1934 to the present using a GIS-based historical analysis. Historical zoning maps from 1934, 1952, 1971, and 1984 were georeferenced and overlaid with the latest land use district data. To quantify zoning continuity, a new indicator, the Historical Zoning Consistency Index (HZCI), was defined as the proportion of areas that retained the same zoning category between successive planning periods. The zoning changes were then compared with major urban development projects, including industrial parks, land readjustment projects, as well as regional development plans.
The results reveal contrasting patterns among zoning categories. Industrial districts exhibited the lowest HZCI values because of repeated policy shifts, including the transition from factory-location control to the recognition of existing industrial sites and the subsequent consolidation of industries into large suburban industrial parks. Residential districts showed the highest continuity, with expansion mainly occurring in suburban areas. Commercial districts experienced substantial changes only during the postwar reconstruction period, when all linear commercial districts disappeared, while commercial centers around railway stations remained stable. These findings demonstrate that the proposed HZCI provides a useful quantitative framework for evaluating the long-term continuity of land use districts and their relationship with urban development, while helping identify historical suburban hubs that can support “Compact Plus Network” policies in regional cities.

1. Introduction

1.1 Background and Objective

In regional cities across Japan, declining birthrates, an aging population, and population decline have become pressing issues. In response, the Ministry of Land, Infrastructure, Transport and Tourism is promoting the “Compact Plus Network” initiative, which aims to consolidate urban functions while reorganizing public transportation (Figure 1) (Utsunomiya City, 2024). For example, in Utsunomiya—a city of around 500,000 people located about one hour from Tokyo by high-speed rail—a new Light Rail Transit (LRT) system opened in 2023, with plans to extend the line to the western side of the station by the 2030s.

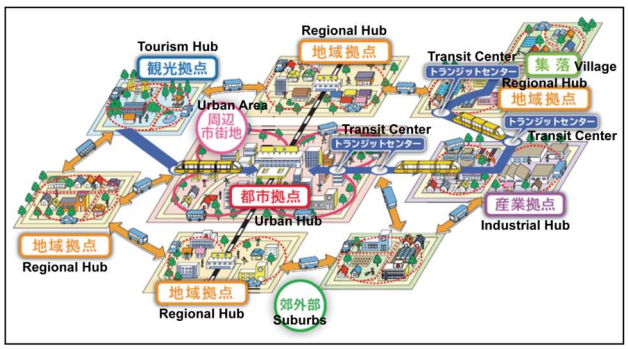

Figure 1. The “Compact Plus Network” concept in Utsunomiya.

However, to extend the benefits of the LRT system to the surrounding areas, integrated planning is required that considers not only transportation but also urban development and land use. When setting a new urban structure, considering the impacts of past urban planning processes and intentions enables the development of more effective plans.

In Japan, the zoning system was introduced in 1919, and the first land use districts in Utsunomiya were designated in 1934. Since then, land use districts have been repeatedly expanded and revised through postwar reconstruction, urban development, and successive planning decisions. Understanding this long-term evolution can provide valuable insights for urban planning not only in rapidly urbanizing cities in developing countries but also in regional cities facing urban shrinkage and population decline. Against this background, this study aims to clarify the transformation of land use districts in Utsunomiya from 1934 to the present, examine their relationship with urban development, and identify the factors underlying these changes.

1.2 Literature Review

Regarding the historical evolution of land use districts in Japan, Sugita analyzed changes in zoning technical standards from the 1920s to the 1940s. The early *Zoning Determination Standards* prescribed the designation of linear commercial districts at intervals of no more than 1 km within residential districts and discouraged the designation of excessively large industrial districts by incorporating appropriate residential districts within them. Subsequently, the 1946 *Standards for Establishing Land-Use Plans for War-Damaged Cities* adopted a policy of dispersing small clusters or strip-shaped commercial and industrial districts (Sugita, 2004). Furthermore, Morimoto et al.

examined the evolution of linear commercial districts and changes in roadside land use in prewar Tokyo (Morimoto et al., 2023). Asano investigated urban planning in Nagano between 1930 and 1969, tracing changes in land use districts, streets, and parks to assess their continuity (Asano, 2004).

Wakayama and Nakagawa (2025) compared Utsunomiya's 1932 urban planning roads with earlier drafts to explore the planning intentions. The analysis revealed that Utsunomiya's planned street network consists of three types of arterial roads: through, radial, and ring roads. Terashima and Nakagawa (2026) examined the area surrounding Minami-Utsunomiya Station during the prewar period and demonstrated the mutual influence between urban planning measures, including zoning designations, and actual development projects such as a baseball stadium, factories, and land readjustment projects. Although these studies have clarified the planning intentions and historical evolution of land use districts, few studies have quantitatively evaluated the long-term continuity of zoning designations using GIS.

From the perspective of evaluating history in contemporary cities, the "Historic Landscape Characterisation" methodology developed by the UK's Heritage Council is well-known (Clark et al., 2004). Miyawaki applied this approach to Kamakura City, identifying the dates of land use and roads at the district level and assessing the extent and characteristics of the historic landscape on maps (Miyawaki, 2012). The originality of this study lies in its use of GIS-based data analysis to clarify the continuity of planning and its relationship with urban development in a regional city.

2. Materials and Methods

2.1 Materials

For the initial zoning districts in 1934, the map attached to the designation documents preserved by the National Archives of Japan (Figure 2) was used. The 1952 postwar reconstruction urban plan was taken from the *War Reconstruction Journal* (Ministry of Construction, ed., 1960). Urban planning maps for 1971 and 1984 were provided by the Tochigi Prefectural Library. For the current land use districts, we use the 2022 data published in the National Land Numerical Information database. Urban development was analyzed with a particular focus on industrial parks and land readjustment projects. In addition, the planning objectives were interpreted based on the rationale documents for urban planning decisions and historical regional development plans.

Figure 2. Initial zoning map (1934)

2.2 Methods

Using GIS, the land use districts for 1934, 1952, 1971, 1984, and 2022 were spatially overlaid (Figure 3 and 4). For ease of comparison, the zoning districts for all time periods are displayed on the present-day base map. Historical maps were georeferenced using control points, such as railway stations and shrines, whose locations have remained unchanged. Next, within the zoning districts designated in the previous period, the proportion of areas that retained the same zoning category in the subsequent period was calculated. This proportion was defined as a new indicator, the Historical Zoning Consistency Index (HZCI). The quantified changes in land use districts are then compared with urban development projects, such as industrial parks and land readjustment projects, as well as with changes in regional development plans. Through this comparison, the factors underlying changes in land use districts are identified, and the impacts of urban development on urban structure, together with the interactions between urban planning and urban development, are examined. Georeferencing was performed in ArcGIS Pro using a polynomial transformation.

3. Results

3.1 The Evolution of the Zoning System in Japan

Before analyzing the case studies, this section briefly reviews the evolution of Japan's zoning system. The zoning system was first introduced under the 1919 Urban Building Act and initially consisted of only four categories: commercial, industrial, residential, and unzoned districts. Land-use regulations in industrial and unzoned districts were extremely weak, and the primary objective of the early zoning system was to control the location of factories (Ishida, 2004). In addition, the linear designation of commercial districts along suburban roads was influenced by the zoning system of St. Louis (Nakagawa and Sanada, 2018).

The zoning system was subsequently revised several times. The 1970 amendment to the City Planning Act introduced neighborhood commercial districts and quasi-industrial districts, increasing the number of categories to eight. The 1992 amendment further subdivided residential districts, resulting in twelve categories, while the 2017 amendment established countryside residential districts, bringing the total to thirteen. Thus, the zoning system in Japan has become increasingly diversified over time. Neighborhood commercial districts are intended to promote commercial activities that provide daily necessities to residents of surrounding residential areas. Quasi-industrial districts are intended to accommodate industrial activities that do not cause significant environmental impacts while allowing residential and commercial uses to coexist. In addition, zoning districts are designated within urbanization promotion areas, where urban development is to be carried out intensively and systematically over an approximately ten-year planning horizon.

3.2 Comparison Between the Initial Zoning Designation and the Postwar Reconstruction Urban Plan

First, we compare the land use districts originally designated in 1934 with those established under the 1952 postwar reconstruction urban plan. Table 1 presents a cross-tabulation of the areas of the respective land use districts.

According to the statement of reasons accompanying the 1934 zoning designation, the area near the national railway in the

eastern part of the city was designated as an industrial district because of its flat terrain and favorable access to transportation and water resources. In contrast, the northern and far eastern areas were designated as residential districts because they were situated on relatively high and well-drained land. In addition, a small commercial district was designated around Minami-Utsunomiya Station in the southwestern suburbs to function as a future local center. Linear commercial districts were also designated along major roads to promote commercial activities.

(ha)		Zoning (1952) Commercial	Industrial	Residential	Subtotal	Out of Area	Total
Initial Zoning (1934)	Commercial	133.6	79.9	150.7	364.2	26.4	390.5
	Industrial	17.9	155.8	108.1	281.9	462.2	744.1
	Residential	30.3	70.4	589.6	690.3	216.2	906.6
	Unzoned	0.8	102.4	35.6	138.9	17.7	156.6
	Subtotal	182.6	167.7	884.1	1,234.4	722.6	2,197.8
Out of Area		0.0	43.3	119.1	162.3	0.0	162.3
Total		182.6	451.8	1,003.1	1,637.6	722.6	2,360.1

Table 1. Cross-tabulation of land use districts in 1934 and 1952.

Utsunomiya City was heavily damaged in a U.S. air raid on July 12, 1945. Approximately 3.205 km² of the city was devastated by the attack, corresponding to 50% of the urbanized area and 15.5% of the total municipal area. The raid resulted in 521 deaths, 1,128 injuries, and damage to 9,173 buildings. Following the air raid, a postwar reconstruction urban plan was formulated.

From 1934 to 1952, the total area of land use districts decreased from 2,197.8 ha to 1,637.6 ha, representing 74.5% of the original area. Based on the areas shown in Table 1, the proportion of land that remained in the same zoning category between 1934 and 1952 (HZCI) was 65.0% (589.6 ha out of 906.6 ha) for residential districts. In contrast, the corresponding proportions were considerably lower for commercial districts at 34.2% (133.6 ha out of 390.5 ha) and for industrial districts at only 20.9% (155.8 ha out of 744.1 ha). The low HZCI values for commercial and industrial districts can be attributed to the disappearance of most industrial districts in the eastern part of the city and all linear commercial districts.

As noted in the *War Reconstruction Journal* (Ministry of Construction, ed., 1960), the zoning designations established in

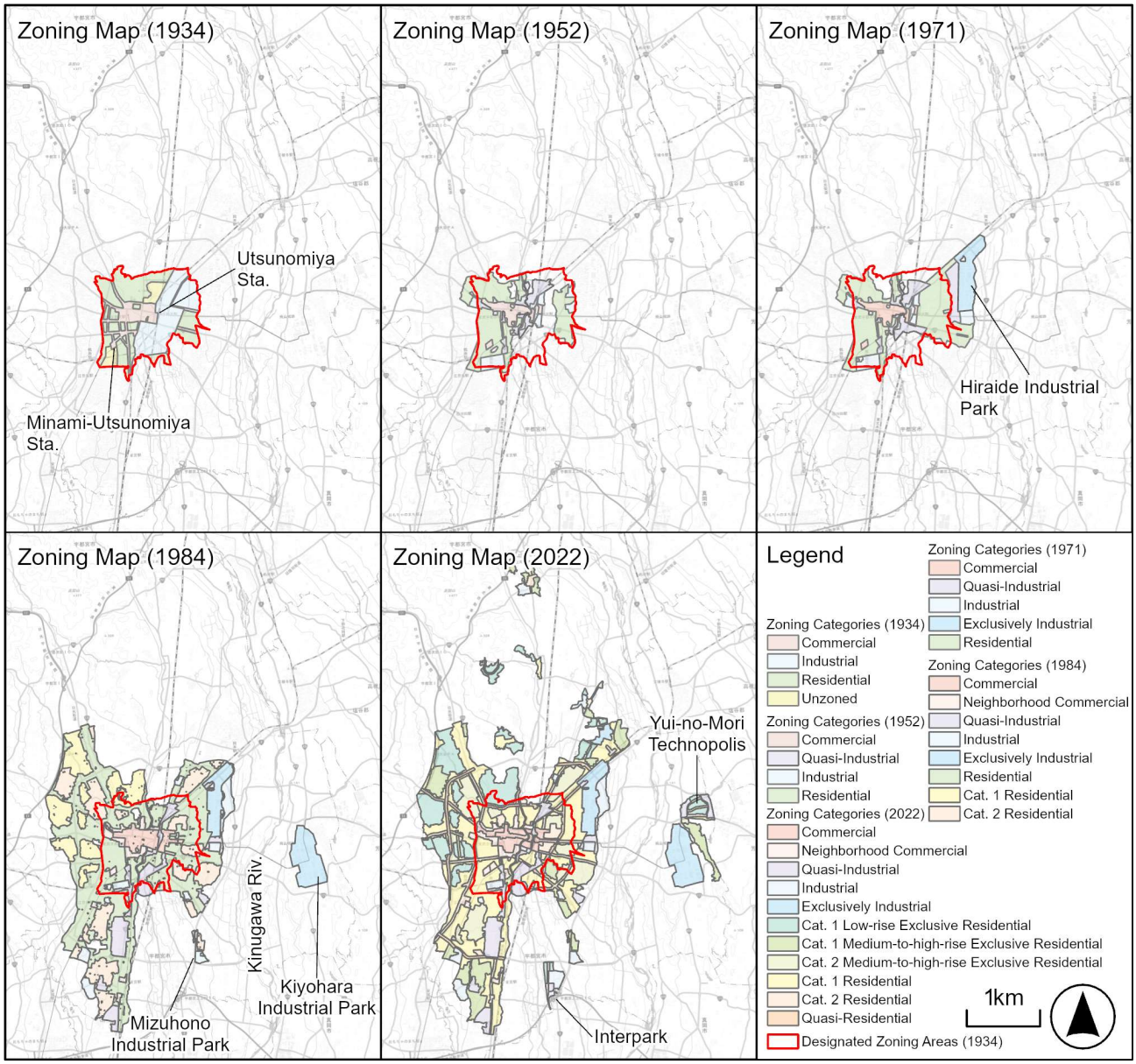

Figure 3. Changes in zoning districts in Utsunomiya City from 1934 to the present.

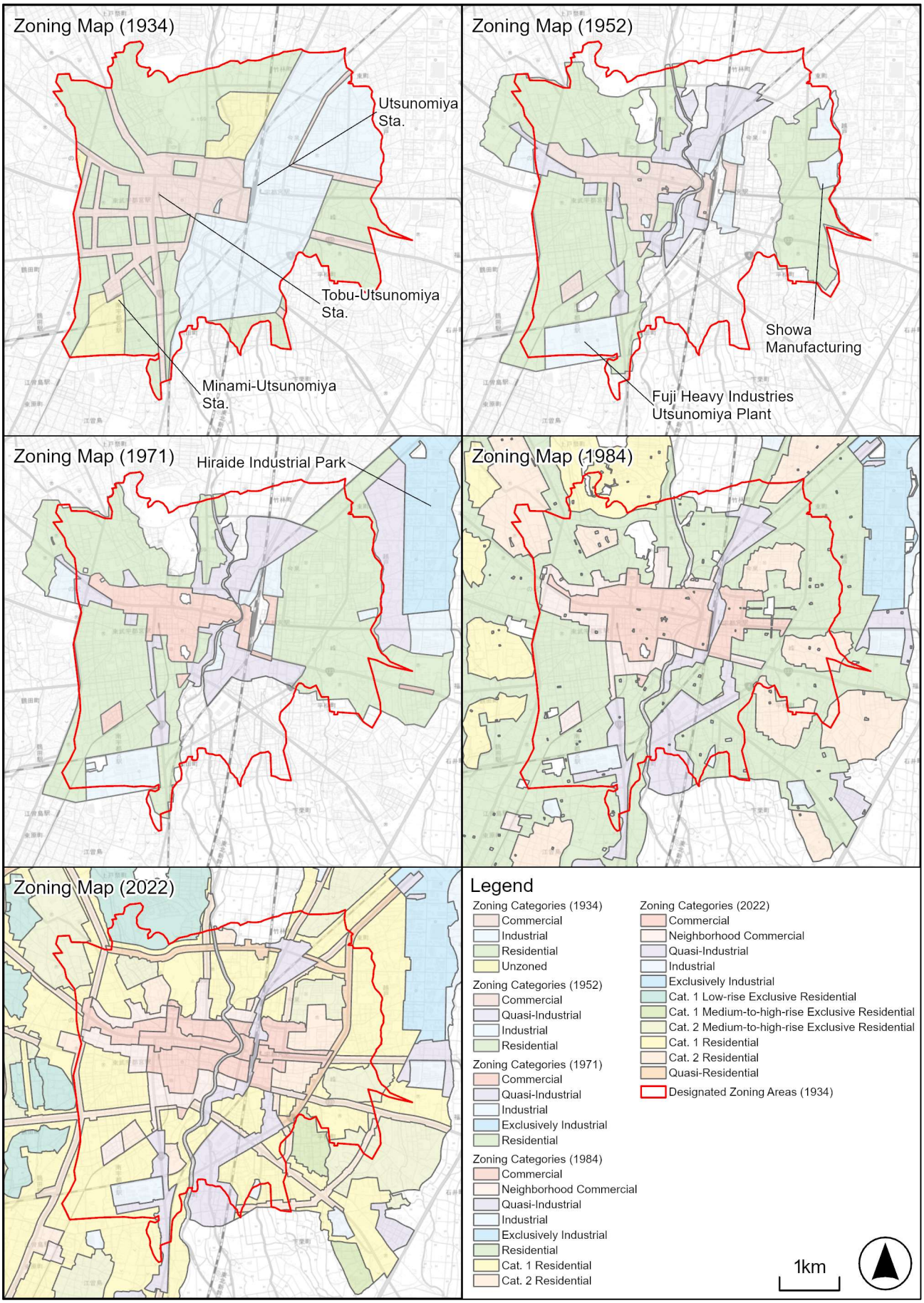

Figure 4. Changes in zoning districts within the initial designated area from 1934 to the present.

1934 were revised because they no longer corresponded to subsequent urban expansion and changes in the city's spatial structure. As a result, the 1952 industrial districts were delineated based on existing factory locations as well as topographic conditions. In fact, major factories such as the Fuji Heavy Industries Utsunomiya Plant and Showa Manufacturing were included within industrial districts (Figure 4). This suggests that the 1952 zoning plan functioned primarily as a retrospective recognition of existing industrial development rather than as an instrument for guiding factory locations. Furthermore, Japan's linear commercial districts were initially intended primarily to improve convenience for residents (Nakagawa and Sanada, 2018). As such, their functional differences from the clustered commercial districts in city centers may explain why all of the linear commercial districts disappeared in the 1952 postwar reconstruction urban plan.

3.3 Comparison Between the Postwar Reconstruction Urban Plan and the 1971 Zoning Districts

Next, we compare the 1952 postwar reconstruction urban plan with the 1971 zoning districts. Overall, the HZCI was high, reaching 91.3% for residential districts and 92.0% for commercial districts. In contrast, the HZCI for industrial districts was slightly lower at 80.2%, with 362.2 ha of the original 451.8 ha remaining in the same zoning category (Table 2). This difference can be attributed to the substantial expansion of the total area of land use districts, from 1,637.6 ha to 2,538.5 ha, during which new industrial districts were designated in the eastern suburbs and some of the original industrial districts were redesignated as residential districts. Meanwhile, the site occupied by Showa Manufacturing remained designated as an industrial district in the 1971 zoning map.

(ha)		Zoning (1971) Commercial	Industrial	Residential	Subtotal	Out of Area	Total
Zoning (1952)	Commercial	168.0	3.7	5.2	176.9	5.7	182.6
	Industrial	12.0	362.2	54.1	428.3	23.6	451.8
	Residential	7.4	24.3	916.3	948.0	55.1	1,003.1
	Subtotal	187.4	390.2	975.6	1,553.2	84.4	1,637.6
Out of Area		7.0	574.4	403.9	985.3	0.0	985.3
Total		194.3	964.6	1,379.5	2,538.5	84.4	2,622.8

Table 2. Cross-tabulation of land use districts in 1952 and 1971.

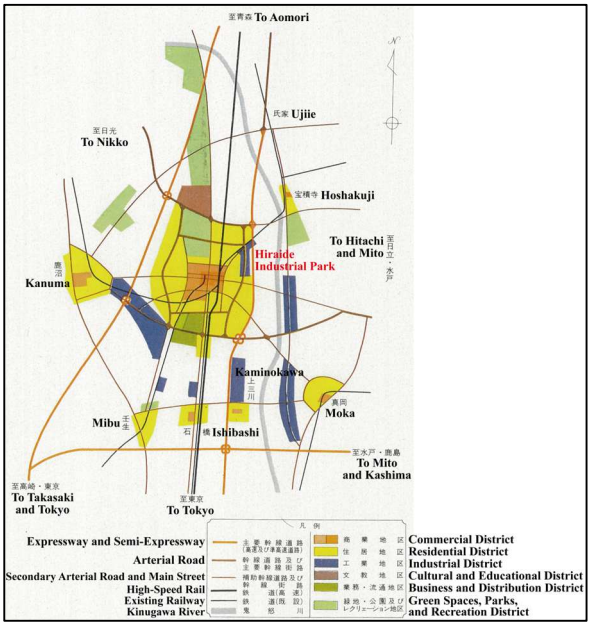

Figure 5. *Utsunomiya Wide-Area Urban Development Plan Concept*.

This expansion was exemplified by the development of the large-scale Hiraide Industrial Park in the northeastern part of the city. Utsunomiya City began acquiring and developing the 304-ha site in 1960, started selling industrial lots in 1961, and attracted 82 companies by 1970 (Utsunomiya Chamber of Commerce and Industry, ed., 1974). The *Utsunomiya Wide-Area Urban Development Plan Concept*, announced in 1969, also identified the Hiraide Industrial Park as a major industrial district (Figure 5) (Tochigi Prefecture Central District Comprehensive Development Promotion Council, ed., 1969).

3.4 Comparison of Zoning Districts Between 1971 and 1984

Between 1971 and 1984, the total area of land use districts expanded from 2,538.5 ha to 7,911.4 ha, an increase of 211.7%, as zoning designations extended substantially into the suburbs. The HZCI remained high for residential districts (87.9%) and commercial districts (96.4%) but declined markedly for industrial districts to 48.8%, with 470.6 ha of the original 964.6 ha remaining in the same zoning category (Table 3). Industrial districts were reduced around Utsunomiya Station and Minami-Utsunomiya Station, and in some locations they disappeared altogether.

(ha)		Current Zoning (1984) Commercial	Industrial	Residential	Subtotal	Out of Area	Total
Zoning (1971)	Commercial	187.4	0.1	5.3	192.8	1.6	194.3
	Industrial	114.9	470.6	355.2	940.6	24.0	964.6
	Residential	117.5	30.0	1,213.0	1,360.5	19.0	1,379.5
	Subtotal	419.9	500.7	1,573.4	2,493.9	44.6	2,538.5
Out of Area		47.2	1,088.0	4,282.3	5,417.5	0.0	5,417.5
Total		467.0	1,588.7	5,855.7	7,911.4	44.6	7,956.0

Table 3. Cross-tabulation of land use districts in 1971 and 1984.

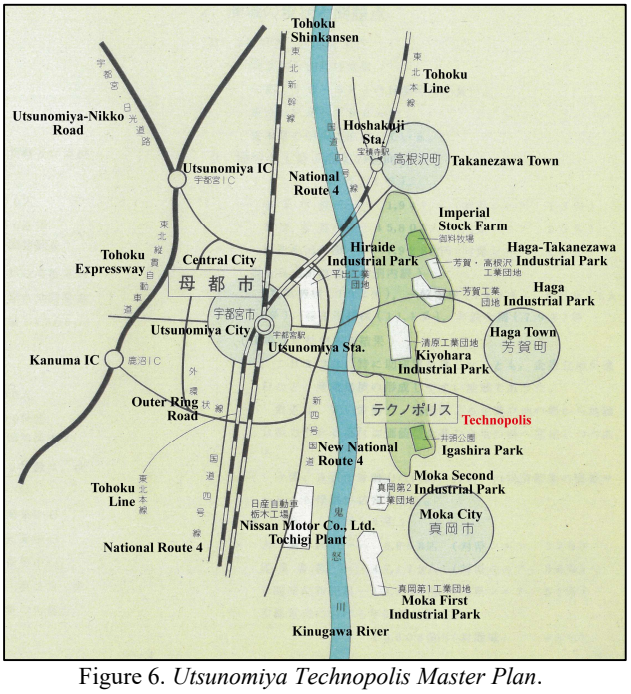

Figure 6. *Utsunomiya Technopolis Master Plan*.

The low HZCI for industrial districts can be attributed to the consolidation of the city's industrial districts into large industrial parks on the outskirts. The Kiyohara Industrial Park, approximately 1.5 km wide and 3.2 km long, was developed between 1970 and 1976 on the east side of the Kinugawa River. The Mizuhono Industrial Park was developed between 1973 and 1977 in the southern part of the city, primarily to accommodate the relocation of small and medium-sized enterprises from the

existing urban area (Utsunomiya City, ed., 1981). In 1984, a plan to develop Utsunomiya Technopolis, covering 4,800 ha on the east side of the Kinugawa River and encompassing the Kiyohara Industrial Park, was approved. The plan aimed to create a self-sustaining economic zone with a balanced mix of agriculture, industry, and commerce. It envisioned the decentralized distribution of three functions: industry (comprising high-tech industries and related small and medium-sized enterprises), academia (including universities and research institutions supporting these industries), and residential areas (to accommodate population growth) (Watanabe, 1984). As shown in the master plan (Figure 6), the Technopolis was planned at some distance from the existing urban center, with additional industrial parks and parks distributed throughout the area (Utsunomiya Technopolis Construction Promotion Council, ed., 1982).

In addition, the area of residential districts decreased from 1,379.5 ha to 1,213.0 ha, a reduction of 166.5 ha, of which 117.5 ha were rezoned as commercial districts. The expansion of the commercial district around the east exit of Utsunomiya Station was particularly notable, especially its extension along the station's main approach road. This expansion was associated with a 97.1-ha land readjustment project implemented east of the station. Construction began in 1968, and the project was completed in 1978. Before the readjustment, approximately 60% of the area consisted of farmland and about 20% of residential land, with densely packed wooden houses concentrated along the railway line. Following the project, the area was transformed into an urban district characterized by high-rise buildings (Figure 7) (Ohashi, 1987).

Figure 7. Utsunomiya Station East Area Land Readjustment Project.

3.5 Comparison Between the 1984 and Current Zoning Districts

From 1984 to the present, the total area of land use districts increased from 7,911.4 ha to 9,333.7 ha, representing an increase of 18.0% (Table 4). The newly designated areas are scattered throughout the suburbs and include major developments such as Yui-no-Mori Technopolis, located north of the Kiyohara Industrial Park, and Interpark, a large shopping mall in southern Utsunomiya that opened in 2003.

The HZCI was high across all zoning categories, reaching 93.9% for commercial districts, 94.5% for industrial districts, and 97.8% for residential districts. In other words, although the extent of land use districts has expanded from 1984 to the present, few changes have been made to the districts designated in 1984, indicating that the present zoning structure within the existing urban area was largely established by 1984.

(ha)		Current Zoning (2022)				Out of Area	Total
		Commercial	Industrial	Residential	Subtotal		
Zoning (1984)	Commercial	438.4	2.8	18.8	460.0	7.0	467.0
	Industrial	6.4	1,501.9	57.7	1,566.0	22.6	1,588.7
	Residential	14.4	46.1	5,726.6	5,787.1	68.6	5,855.7
	Subtotal	459.2	1,550.8	5,803.1	7,813.1	98.3	7,911.4
Out of Area		18.8	305.3	1,196.5	1,520.6	0.0	1,520.6
Total		478.0	1,856.1	6,999.6	9,333.7	98.3	9,432.0

Table 4. Cross-tabulation of land use districts in 1984 and 2022.

4. Discussion and Conclusions

4.1 Overall Trends in Land Use Districts

This study used GIS to analyze the relationship between changes in land use districts in Utsunomiya City from 1934 to the present and urban development. By comparing land use districts across successive periods, we defined the Historical Zoning Consistency Index (HZCI) as the proportion of areas that retained the same zoning category as in the previous period and calculated this index for each zoning category. The changes in the areas of commercial, industrial, and residential districts are summarized in Figure 8, while the changes in the HZCI are presented in Figure 9.

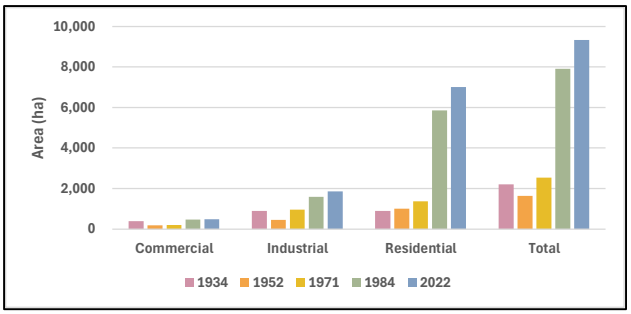

Figure 8. Changes in the area of land use districts.

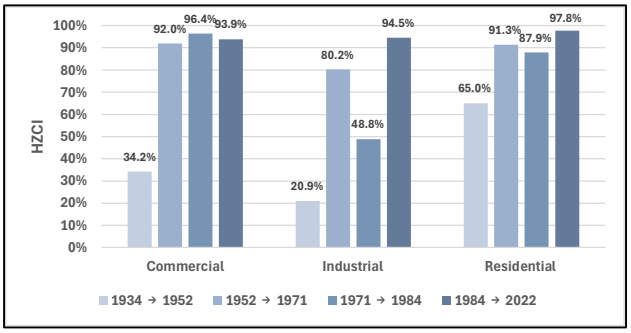

Figure 9. Changes in the Historical Zoning Consistency Index (HZCI) by zoning category.

Figure 8 shows that the total area of land use districts increased to approximately 3.1 times its 1971 level between 1971 and 1984, mainly because of the substantial expansion of residential districts into the suburbs. Although the area of industrial districts temporarily declined in 1952, it has increased steadily since then. In contrast, commercial districts have consistently occupied a smaller area than the other two zoning categories.

4.2 Changes in the HZCI of Each Land Use District

The analysis revealed that, compared with commercial and residential districts, industrial districts had lower HZCI values

and underwent more frequent changes. Although the original 1919 Urban Building Act primarily aimed to restrict factory locations (Ishida, 2004), the 1952 postwar reconstruction urban plan showed a growing tendency to designate industrial districts based on the locations of existing factories. With the development of the Hiraide and Kiyohara Industrial Parks, the city also improved the urban living environment by consolidating small and medium-sized enterprises into the Mizuhono Industrial Park. These shifts in industrial location policy had a significant influence on the evolution of land use districts in Utsunomiya City.

The residential districts exhibited a higher HZCI than the commercial and industrial districts and underwent relatively little change. In many cases, new residential districts were designated in suburban areas in response to population growth. However, the area east of Utsunomiya Station experienced substantial changes in zoning. Initially designated as an industrial district in 1934, most of the area was removed from the zoning designation under the 1952 postwar reconstruction urban plan, and by 1971 much of it had been designated as a residential district. Subsequently, a 97.1-ha land readjustment project was carried out between 1968 and 1978, supporting the expansion of the commercial district from the station's east exit. These changes indicate that land use in the area east of Utsunomiya Station evolved in response to changing urban development strategies over time, suggesting that land readjustment projects played a more decisive role than zoning in shaping the urban structure.

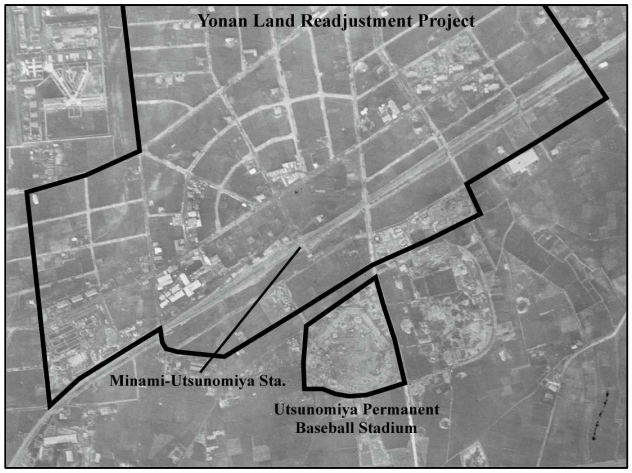

Figure 10. Aerial photograph of the area around Minami-Utsunomiya Station (1946).

Although the HZCI for commercial districts was low between 1934 and 1952, it exceeded 90% in all subsequent periods. The most significant change during the 1934–1952 period was the disappearance of the linear commercial districts. Originally, these districts were intended to improve convenience for nearby residents by locating commercial districts in close proximity to residential neighborhoods (Nakagawa and Sanada, 2018). However, with the spread of motorization, commercial activities became increasingly concentrated around railway stations and shopping malls, suggesting that linear commercial districts were no longer considered necessary. At the same time, the area around Minami-Utsunomiya Station (Figure 10) (Geospatial Information Authority of Japan, n.d.) has remained designated as a commercial district since 1934. The original designation document stated that the area around Minami-Utsunomiya Station was "expected to develop as a local commercial center in the future," indicating that it was envisioned as a suburban hub. In 1932, Yakyujō-mae Station, the predecessor of Minami-Utsunomiya Station, and the Utsunomiya Permanent Baseball Stadium were opened. In the same period, the 82.0-ha Yonan Land Readjustment Project was initiated in 1931, resulting in the development of a semicircular residential district to the north of the station (Terashima and Nakagawa, 2026). Taken together, these findings suggest that historical suburban hubs should be regarded as valuable planning assets for the effective implementation of "Compact Plus Network" urban policies in regional cities.

4.3 Contributions of GIS to Historical Urban Planning Research

The GIS-based historical analysis enabled us to quantify the long-term continuity of zoning designations and to assess the respective influences of historical planning decisions and major urban development projects on the present urban structure. Consequently, the complex relationships between planning intentions and subsequent urban development could be examined more systematically. A limitation of this study is that it is based on a single case study of a regional city in Japan, making it difficult to generalize the findings. However, the GIS-based analytical framework proposed in this study can readily be applied to other regional cities in Japan. In particular, the HZCI proposed in this study provides a practical indicator for quantitatively evaluating the long-term continuity of zoning systems from a historical perspective. Future studies examining the evolution of land use districts using a similar framework will contribute to a more systematic understanding of how Japan's zoning system has guided urban development and influenced long-term changes in urban structure.

Acknowledgements

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References

Asano, J., 2004: A Study on the Enforcement Process and the Continuity of Original Urban Plan Formed Before World War II: In the Case of Nagano Toshikeikaku Planning From 1930 to 1969. *Journal of Architecture and Planning (Transactions of AIJ),* 69(580), 133-140. doi.org/10.3130/aija.69.133_3.

Clark, J., Darlington, J., Fairclough, G., 2004: *Using Historic Landscape Characterisation*. English Heritage & Lancashire County Council.

Geospatial Information Authority of Japan, n.d.: Map and Aerial Photograph Viewing Service, M83-A-6-121, aerial photograph taken by the U.S. military on 24 March 1946.

Ishida, Y., 2004: *The Development of Modern and Contemporary City Planning in Japan 1868–2003*. Jichitai Kenkyu-Sha.

Ministry of Construction, ed., 1960: *War Reconstruction Journal*, 8, 83-128, Urban Planning Association.

Miyawaki, M., 2012: A Study on the Historic Landscape Characterisation: Historic Landscape Character Assessment of Temples, Streets, Blocks, Watercourses, and Land Use in the Central Kamakura. *Journal of the City Planning Institute of*

Japan, 47(3), 607-612. doi.org/10.11361/journalcpij.47.607.

Morimoto, K., Nakagawa, T., Sanada, J., 2023: Changes in Linear Commercial District Designation and Changes in Actual Conditions Along the Roadside in Tokyo in the Prewar Period. *Journal of the City Planning Institute of Japan,* 58(3), 961-968. doi.org/10.11361/journalcpij.58.961.

Nakagawa, T., Sanada, J., 2018: A Study on the Planning Thought of Linear Commercial District: In the Making Process of the City Planning in Tokyo before the Second World War. *Journal of the City Planning Institute of Japan,* 53(3), 281-288. doi.org/10.11361/journalcpij.53.281.

Ohashi, I., 1987: Urban Planning of Utsunomiya City. *Shin Toshi*, 41(10), 55-69.

Sugita, S., 2004: A Study of the Technical Standards on Zoning From 1920s to 1940s: By Analyzing the Standards of National Government and the Standards on Zoning for Tokyo. *Journal of the City Planning Institute of Japan,* 39(3), 931-936. doi.org/10.11361/journalcpij.39.3.931

Terashima, E., Nakagawa, T., 2026: A Study on the Formation Process of Suburban Hubs in Regional Cities: A Case of the Area Surrounding Minami-Utsunomiya Station in the Pre-war Period. *Historical Studies in Civil Engineering, Proceedings of the Annual Conference*, 46, 167-174.

Tochigi Prefecture Central District Comprehensive Development Promotion Council, ed., 1969: *Utsunomiya Wide-Area Urban Development Plan Concept*. Tochigi Prefecture Central District Comprehensive Development Promotion Council.

Utsunomiya Chamber of Commerce and Industry, ed., 1974: *Eighty Years of the Utsunomiya Chamber of Commerce and Industry*, 224-225, Utsunomiya Chamber of Commerce and Industry.

Utsunomiya City, ed., 1981: *History of Utsunomiya City*, 8, 106-108, Utsunomiya City.

Utsunomiya City, 2024: Utsunomiya's Urban Development and the SDGs. city.utsunomiya.lg.jp/kurashi/kankyo/1034536/sdgs/1023034/index.html (8 March 2024).

Utsunomiya Technopolis Construction Promotion Council, ed., 1982: *Utsunomiya Technopolis Master Plan (Summary)*. Utsunomiya Technopolis Construction Promotion Council.

Wakayama, H., Nakagawa, T., 2025: The Urban Planning Intentions Behind the Utsunomiya Urban Planning Roads (1932). *Summaries of the 52nd Technical Research Presentation Meeting of the Kanto Branch, JSCE*, IV-27.

Watanabe, H., 1984: Aiming to Become a Central Administrative Hub in Northern Kanto. *Shin Toshi*, 38(12), 78-88.