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Between the Ideal and Reality of City Resizing Policy: Focused on 25 Cases of Compact City Plans in Japan

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Abstract: Since 2014, Japan has implemented a policy for forming a compact urban structure at a national level through an urban planning technique called a location normalization plan. A residence-induced zone included in the location normalization plan is considered as the essence of forming a compact urban structure and can be characterized as a policy that compactifies cities for a long period not only by inducing residence functions into the inside of the zones but also by applying regulations to the outside of the zones. This study examined the status of the dichotomous compact city policy applied in reality by analyzing various cases in Japan that established location normalization plans, and its implications. The conditions commonly observed in the induced zone in model cities indicated that the validity of residence-induced zones—how and where residence-induced zones had to be designated—was prioritized in many cases. Some cities, however, designated independent zones that maintained a certain level of residential functions outside the induced zones. Utilizing independent zones in non-induced zones can be assessed not as an act of simply dividing cities by a dichotomous way but as an attempt to reflect the situations and characteristics of individual cities.

Keywords: compact city policy; urban vitality; shrinking cities; location normalization plan; residence-induced zone; Japan

1. Introduction

Problems such as a low birth rate and aging society have been aggravated around the world. The global population that reached 7 billion in 2011 is expected to sharply decline to 4.1 billion in 2030, and in particular, Japan has experienced an unprecedented decrease in population. According to the Masuda Report of Japan Policy Council released in 2014, nearly half of the entire local governments in Japan are expected to disappear by 2040, which is shocking news [1].

The Japanese government has already recognized the seriousness of urban decline caused by a decrease in population, and has begun to set aside a budget for urban revitalization for cities across the country in the name of revitalizing central urban areas in the 1990s. However, only a limited amount of effects were obtained with hardware-focused improvement plans for revitalizing declined areas without any support plan within the framework of urban planning, such as plans for managing expanded urban areas. After reflecting and understanding this limit, the Japanese government started to pursue compactification in the direction of realizing a concentrated urban structure in the 2000s [2].

This compact city policy has been settled as a location normalization plan as the Act on Special Measures Concerning Urban Reconstruction was amended in August 2014. The gist of the location normalization plan is to set two zones—the urban function-induced zone and the residence-induced zone—within urbanized areas in existing urban spaces. The policy was designed to induce facilities for promoting urban functions such as medical services, welfare, and commerce into urban function-induced zones, and residential facilities into residence-induced zones through various support measures. In other words, facilities for urban functions or residence are regulated so that they

are not located outside those induced zones in order to form a compact city for a long period of time through inducement and regulation [3].

After the location normalization plan was institutionalized, a number of local governments started establishing and announcing their own plans, and many researchers in the urban planning area have paid attention to methods of designating induced zones or directions for on-going policies, having arguments for and against them. According to the report announced by the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) in Japan in July 2019, a total of 477 cities across the country have been making specific efforts to establish a location normalization plan. In fact, 272 cities out of them were found to have already finalized and officially announced their plan [4].

Research on location normalization plans in Japan has started to appear in 2016 and is showing a trend that will take effect in 2018. The period of its trend shows the significance of location normalization plan or its validity for compact cities' formation, which normally contains the basic aspects of policy itself, but recently the subject also becomes diverse as the local government has continued to be formed to set up location normalization plans.

The research of the institutional incentives that is especially concentrated in the urban function-induced zone has been relatively highlighted by the local government as well as trends of studies, but this study focuses on residence-induced zones among key ideas in Japan's location normalization plans. This is because turning an expanded urban area into a compact one seems to be basically associated with residence-induced zones, as urban function-induced zones are supposed to be designated within residence-induced zones. Moreover, since designating residence-induced zones is a very sensitive issue for those living outside the zones, individual local governments pay special attention to establishing their own logical grounds for designation and elaborating them to citizens. Despite this fact, it is still difficult to distinguish induced zones from others in some cases.

Another focus that this study pays attention to is the discussion related to areas that were excluded from these induced zones. There was no mention of future measures for maintaining non-induced areas in the guidelines for location normalization plans that were suggested by the MLIT. If that occurs, will the ordinary citizens who are currently living in non-induced areas be abandoned? From the perspective of individual local governments that have to establish and keep executing the plans based on the framework established by the central government, their stance towards non-residence-induced zones can be a very important concern for the urban residents who are currently living in those areas.

Against this backdrop, this study first analyzes cases of different cities in Japan that have established their location normalization plan in order to identify their criteria for designating residence-induced zones, which has drawn sharp attention, and the measures that they have implemented for non-residence-induced zones. In this process, the status of this dichotomous compact city policy that has been applied in reality is reviewed, and its meaning and the future direction for the location normalization plans are discussed in this study.

2. Materials and Methods

This study was conducted as follows: First, the background of the introduction of location normalization plans in Japan was reviewed from the perspective of forming a compact city. Next, the location normalization plans of 25 model cities selected by the MLIT in Japan [5] were analyzed. Specifically, the maps of residence-induced zones in the location normalization plans of the 25 cities were visually suggested, and their criteria for designating induced zones and measures for inducement were analyzed in order to review methods of realizing compact cities. In addition, out of the 25 cities, those of which local governments independently designated residence-related zones in non-induced areas were selected to review their future measures for maintaining the zones.

The research above was conducted mainly by performing a literature review and analyzing the location normalization plans of the 25 local governments individually. The information collected from the literature review was confirmed through interviews with people in charge in the local governments.

3. Overview of Location Normalization Plans

3.1. History of Compact City-Related Policy

Location normalization plans in Japan can be recognized as the result of numerous attempts and modifications to urban restoration policies, specifically policies for revitalizing central urban areas. As an effort to respond to a decrease in population and urban decline, Japan has focused on the revitalization of commercial functions through physical improvements in central urban areas since the 1990s. In particular, the Act on the Revitalization of Central Urban Areas enacted in 1998 (amended later) included as the main policy providing renovation subsidies for projects that were planned within revitalization zones designated in local governments' master plans in order to improve central urban areas. Since then, a number of projects have been executed, and a large number of subsidies had been provided across the country utilizing the policy, but the Japanese government saw their outcome as insufficient. The Ministry of Internal Affairs and Communications reviewed and analyzed 121 cases that were planned and executed before 2000 for revitalizing central urban areas, and released the report in September 2004, and reached the following conclusions [6]:

- Most areas showed a decrease in most of the statistical indicators surveyed in the report including population, the number of stores, annual product sales, the number of businesses and the number of employees.
- Most areas showed a decrease in the share of central urban areas in entire urban areas.
- Considering the three indicators including population, the number of stores and annual product sales, the majority of the surveyed cases showed a decrease in the share, and central urban areas were found to be revitalized in only a few cases.

Based on these conclusions, the Act on the Revitalization of Central Urban Areas was amended in May 2006. The most distinct change in the amendment was that the amended act stated that the issue of the decline of central urban areas was not just limited to commerce, but a problem observed in the overall urban structure. The amended act suggested "a compact and vital area" as a basic direction for turning central urban areas into attractive and vital spaces, and set goals such as concentrating various urban functions on urban areas, suppressing the development of suburban areas, and revitalizing central urban areas. To ensure projects achieve substantial outcomes, the central government approves local governments' plans, and individual local governments quantify and specify the achievements of each project by its item.

Despite these efforts for creating compact cities, it has been difficult to put a brake on the decline of central urban areas. (Figure 1a,b) The Japanese government surveyed a total of 30 local governments that completed their project for revitalizing central urban areas by the end of 2012, and only 27% of a total of 95 target indicators were found to be achieved [7].



Figure 1. (a,b). Photos of central urban areas in provincial cities in Japan that continue declining despite physical improvements.

For this reason, there has been a growing discussion about the necessity of a framework for plans that can share and connect urban functions by restructuring the overall urban structure and forming

networks between hubs for creating compact cities. As the Act on Special Measures Concerning Urban Reconstruction was amended in 2014, grounds for providing different types of grants and implementing special measures and taxation measures were prepared to introduce location normalization plans that can concentrate residential and urban functions and to effectively execute the plans.

3.2. Key Content of Location Normalization Plans

Location normalization plans are established by local governments based on predictions on future situations after 20 years, and their key content is as follows:

3.2.1. Designation of Induced Zones

A location normalization plan (Figure 2) is a plan to designate two zones that induce residential functions and urban functions across cities and to induce facilities for promoting a residence and urban functions such as medical services, welfare, and commerce into the induced zones.

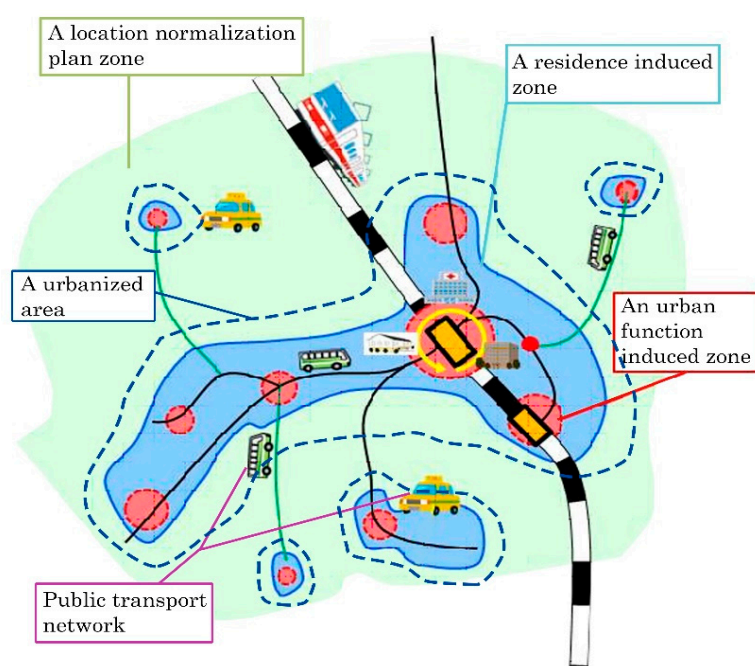


Figure 2. Conceptual diagram of location normalization plans (https://www.mlit.go.jp/en/toshi/city_plan/compactcity_network2.html).

A residence-induced zone is designated to maintain population density within a certain zone despite a decrease in population, and thus to ensure services for living and communities continue to be secured. One thing important here is maintaining a certain level of population density, which is closely associated with the smooth provision of services for living such as securing public services like medical services and welfare, and commercial functions.

Meanwhile, an urban function-induced zone is designated within a residence-induced zone and can cover examples such as from a central business district (CBD) in a large city to a center for living in a small city depending on the population and the size of cities. For this reason, it is closely related to the urban policies that individual local governments have implemented and is designated based on their urban policies. In addition, facilities that each zone does not have or needs to expand should be set as an induced facility within an urban function-induced zone, and when setting these induced facilities, each city's situations are inevitably reflected. The MLIT listed facilities that can be set as an induced facility such as a hospital and clinic, a daycare service center for the aged, a community support center, a preschool and nursery facility, an elementary school, a library, a museum, a supermarket, and an administrative facility.

3.2.2. Measures to Induce Facilities into Designated Zones

Location normalization plans include a variety of incentives and measures for gradually inducing residential functions and urban functions into the designated zones, and the incentives can be divided into those provided at a national level and those provided at the level of individual local governments.

Residence-induced zones are entitled to physical maintenance support for maintaining and expanding public transport, financial support for house purchasing and rental costs for maintaining a certain level of population density, and measures to provide safe and secure living environments against disasters or crimes.

The following examples are supportive measures for urban function-induced zones - tax benefits and direct financial support at a national level for facilities induced by private operators; maintenance support provided by local governments for public facilities and spaces of pedestrians with the subsidies of central government; measures to support the maintenance of induced facilities ran by private operators; support of the operational costs that is solely provided by local governments for induced facilities of private operators. Support for induced facilities covers not only when induced facilities need to be newly repaired within the urban function-induced zones, but also when private operators sell their assets from outside the induced zones and move them into the zones through incentives such as tax benefits.

3.2.3. Prevention and Regulation Measures for the Outside of the Zones

Location normalization plans include not only measures for inducing residential facilities and induced facilities into designated zones, but also regulation and prevention measures for the location of facilities outside the zones.

Firstly, it is mandatory to report to the head of local governments when new developments such as housing, dormitories or paid elderly homes of the certain number of households are made outside of the residence-induced zone. When the act of developing is expected to interrupt the effort to maintain the residence-induced zone, the local government can take either of the following actions depending on the level of interruption: (1) Inducing the development project into the residence-induced zone; (2) downsizing the development project; and (3) ordering the development project itself to be halted.

In the case of an induced facility in an urban function-induced zone, the act of developing the facility outside the zone also should be mandatorily reported to the local government. When the act of developing is expected to interrupt the effort to maintain the urban function-induced zone, the local government can take necessary action of recommendation. Similar to the residence-induced zone, when the project is expected to cause any specific interruption, the local government can take either of the following actions: (1) Downsizing the development project; (2) inducing the development project into a publicly owned land or an unused land within the Urban function-induced zone; (3) ordering the development project itself to be halted.

4. Analysis of Location Normalization Plans of Model City Cases

4.1. Overview of Location Normalization Plans of 25 Model Cities

Model cities are defined as cities that are selected and announced by the MLIT for other cities to utilize them as a reference in establishing their location normalization plan. Model cities have been announced once a year since 2017, and a total of 26 cities have been announced three times. Out of those announced in 2019, the case of the Nakaharima district provides guidelines on compact cities for zones that encompass multiple metropolitan areas. Since its characteristics are unlike other cases, the case is excluded here and the rest 25 cities were analyzed in this study. Tables 1–3 show the overview of the location normalization plans of 25 cities selected for analysis.

Table 1. Overview of location normalization plans of 10 model cities selected in 2017 [8].

Cities	Population in 2015 (Person)	Time of Announcement	Urbanization Intensity
Hirosaki City in Aomori Prefecture	177,411	2017.3.31	69%
Tsuruoka City in Yamagata Prefecture	129,652	2017.4.1	40%
Mitsuke City in Niigata Prefecture	40,608	2017.3.31	68%
Kanazawa City in Ishikawa Prefecture	465,699	2017.3.31	43%
Gifu City in Gifu Prefecture	406,735	2017.3.31	57%
Daito City in Osaka Prefecture	123,217	2018.1.31	89%
Wakayama City in Wakayama Prefecture	364,154	2017.3.1	67%
Shunan City in Yamaguchi Prefecture	144,842	2017.3.30	66%
Iizuka City in Fukuoka Prefecture	129,146	2017.4.1	51%
Kumamoto City in Kumamoto Prefecture	740,822	2016.4.1	55%

Table 2. Overview of location normalization plans of 11 model cities selected in 2018 [9].

Cities	Population in 2015 (Person)	Time of Announcement	Urbanization Intensity
Mutsu City in Aomori Prefecture	58,493	2017.2.20	56%
Kashiwa City in Chiba Prefecture	413,964	2018.4.2	80%
Matsumoto City in Nagano Prefecture	243,293	2017.3.31	50%
Kurobe City in Toyama Prefecture	40,991	2018.3.30	33%
Fujieda City in Shizuoka Prefecture	143,605	2018.3.20	81%
Ono City in Fukui Prefecture	33,109	2018.3.19	72%
Hirakata City in Osaka Prefecture	404,152	2017.3.31	86%
Mihara City in Hiroshima Prefecture	96,194	2017.12.25	50%
Takamatsu City in Kagawa Prefecture	420,748	2018.3.30	91%
Kitakyushu City in Fukuoka Prefecture	961,286	2017.4.1	47%
Nagasaki City in Nagasaki Prefecture	429,508	2018.8.1	63%

Table 3. Overview of location normalization plans of 4 model cities selected in 2019 [10].

Cities	Population in 2015 (Person)	Time of Announcement	Urbanization Intensity
Takaoka City in Toyama Prefecture	172,215	2019.3.31	46%
Okazaki City in Aichi Prefecture	381,051	2017.3.31	86%
Nishiwaki City in Hyogo Prefecture	40,866	2018.12.28	50%
Ube City in Yamaguchi Prefecture	169,429	2020.1.7.(d)	32%

Out of the content in the tables above, the urbanization intensity of each model city is paid attention to first. Urbanization intensity, here, is the ratio of the area left after compactification to the area of existing urbanized areas, that is, the ratio of the area to the area of residence-induced zones. Most cities have announced their plans for downsizing cities by a certain ratio, but the ratio has been varied. Many cases showed 40%–60% of urbanization intensity, and some cases showed only about 10% of urbanization intensity (Daito City in Osaka Prefecture, Takamatsu City in Kagawa Prefecture). Ube City in Yamaguchi Prefecture showed the highest downsizing rate, planning to maintain its urbanization intensity at about 32%. The rate of downsizing urbanized areas does not seem to be related to other factors such as the size of the population but varies significantly.

4.2. Designation of and Inducement Measures for Residence-Induced zones in Location Normalization Plans of 25 Model Cities

The maps of residence-induced zones in the location normalization plans of 25 model cities (Figure 3), criteria for designating each induced zone and inducement measures were summarized in the following Table 4. The maps below were reproduced as one map by collecting information from each city's location normalization plan and utilizing additional maps in order to identify their relationship with transportation such as railroads and roads. Guidelines for the operation of urban planning [11], a manual for establishing location normalization plans, state that the following zones should not be included in residence-induced zones: (1) Sediment disaster-prone area; (2) tsunami disaster-prone area; (3) disaster-danger area; (4) landslide prevention area, and (5) steep slope collapse danger area. Since they are commonly applied to most cases, they were not specifically discussed in this study.

The guidelines for the operation of urban planning also suggest the following three basic principles for the areas that can be designated as a residence-induced zone: (1) Central and residential hubs where urban or residential functions are concentrated and their surrounding areas; (2) areas that can access central and residential hubs relatively conveniently through public transport and are integrated with the areas that can use urban functions within the hubs; (3) areas where urban and residential functions are concentrated to some extent such as areas that used to be a regional hub before administrative districts were combined.

Based on these basic principles, this study examined the criteria for designating induced zones and measures for inducement that were applied in reality.

4.2.1. Status of Residence-Induced Zones

There were differences in criteria for designating residence-induced zones in Tables 4–6 above such as to whether all the criteria should be met or one of them can be met, but this study focuses on which items were utilized in the criteria.

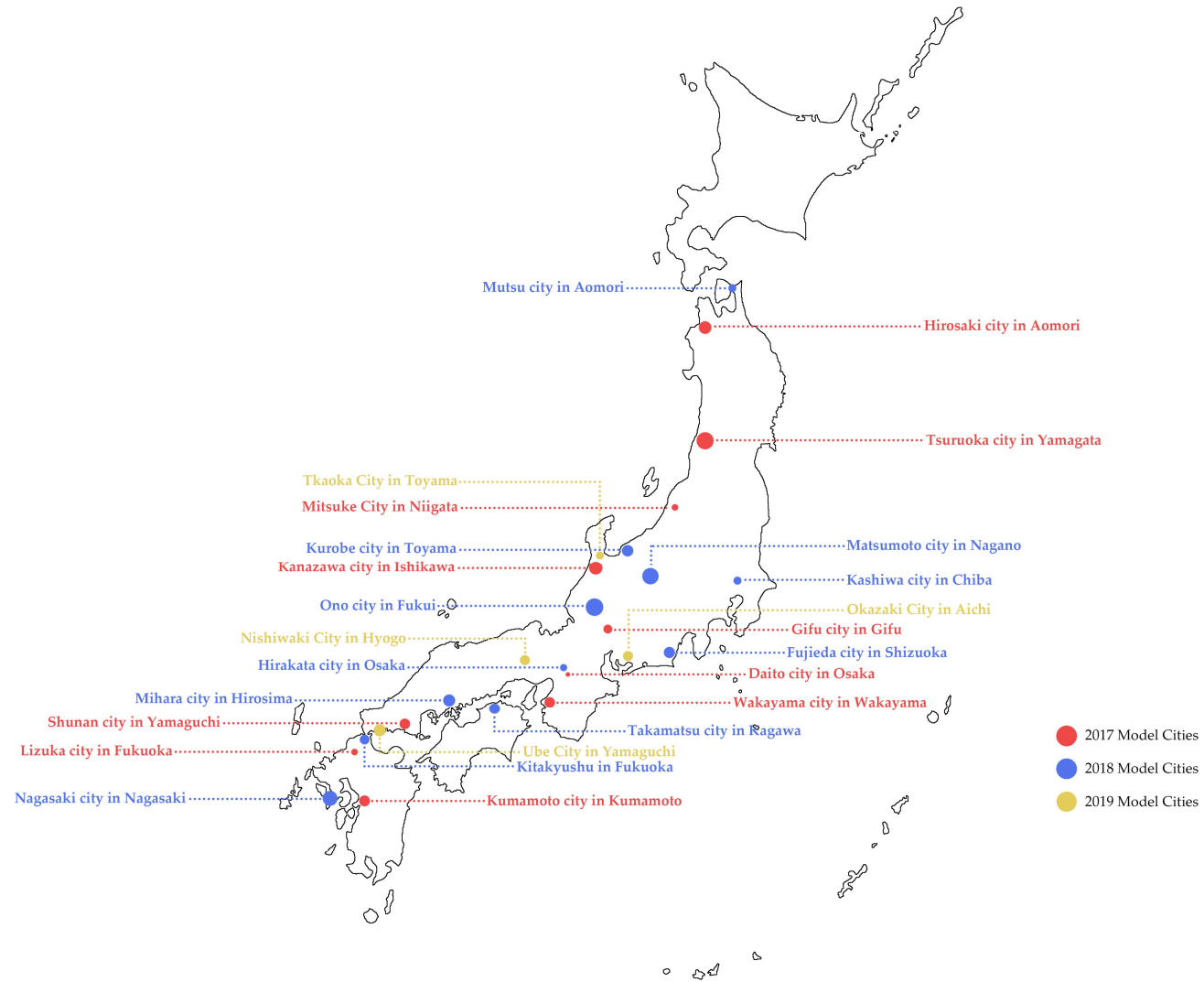


Figure 3. Key-map of 25 model cities.

Table 4. Maps of residence-induced zones, criteria for designation and key inducement measures by model city selected in 2017.

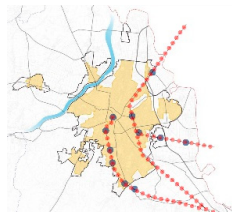


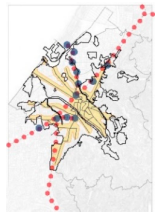
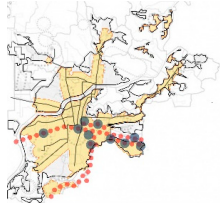
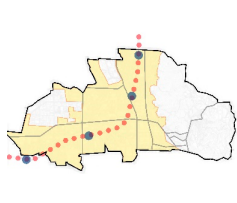
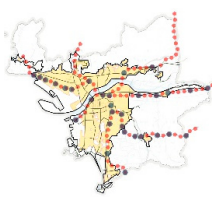
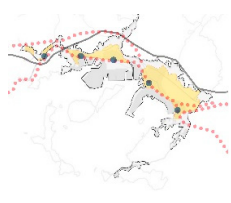
City	Hirosaki City [12]	Tsuruoka City [13]	Mitsuke City [14]	Kanazawa City [15]
Map of zones				
Criteria for designating zones	1) Access to urban function-induced zones (within a radius of 300 m from their boundary). 2) Convenience of Public Transportation (The following is referred to Convenience of P.T) (within a radius of 800 m from JR Station, 300 m from train stations & 300 m from key bus routes).	1) Near central residential areas and new residential areas. 2) Near hubs for living in the north region and research complexes.	1) Access to urban function-induced zones (within a radius of 300 m from their boundary). 2) Convenience of P.T (within a radius of 500 m from train stations, 300 m from key bus routes). 3) Zones within urban restoration plans.	1) Urban residence induced zones. 2) Convenience of P.T (within a radius of 500 m from train stations, 300 m from bus routes). 3) Historic cultural landscape zones (historic street conservation & utilization zone).
Key inducement measures	Promote movement · settlement (The following is referred to Promote MS)/Create jobs/Measures for empty lands & houses (The following is referred to Measures for EL&H)/Improve roads & public transport (The following is referred to Improve R&P.T).	Promote MS.	Improve R&P.T/Revitalize central urban areas/Improve Medical, Welfare Services(The following is referred to Improve MWS)/Promote MS/Provide houses.	Provide quality houses/Improve R&P.T/Improve MWS/Improve an env. for bicycles, pedestrians, public spaces.
City	Gifu City [16]	Daito City [17]	Wakayama City [18]	Shunan City [19]
Map of zones				
Criteria for designating zones	1) Urban residence induced zones. 2) Convenience of P.T (within a radius of 1 km from train stations, 500 m from key bus routes).	Entire urbanized areas.	Zones left after excluding the following areas: 1) Areas not suitable for residence. 2) Areas that were used for other purposes than residence. 3) Historic cultural landscape zones. 4) development of public housing complexes area.	1) Residence or commerce area. 2) Completed maintenance of urban infrastructure area. 3) Access to urban function-induced zones (within a radius of 300 m from their boundary). 4) Convenience of P.T (within a radius of 800 m from train stations, 300 m from key bus stations).
Key inducement measures	Promote central urban areas/Promote MS/Improve R&P.T.	Not mentioned.	Induce development/Optimize infrastructure (The following is referred to O.I)/MDP(The following is referred to MDP)/Establish security measures/Improve R&P.T.	Promote MS/O.I/Measures for EL&H/Improve dense urban areas/manage public houses(The following is referred to Manage PH)/MDP.

Table 4. Cont.

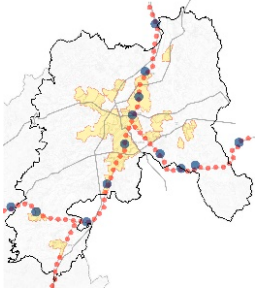

City	Iizuka City [20]	Kumamoto City [21]
Map of zones		
Criteria for designating zones	<p>1) Urban function-induced zones. 2) Convenience of P.T (within a R of 800 m from train stations, 300 m from bus stations of which daily bus operation is over 15 times). 3) Population density (areas that can secure 30 persons/ha or more among areas above).</p>	<p>1) Urban function-induced zones. 2) Convenience of P.T (within a radius of 500 m from train stations, 300 m from bus stations of which daily bus operation is over 76 times).</p>
Key inducement measures	<p>Promote MS/Supply lands for housing/Manage PH/Measures for EL&H/Improve MWS.</p>	<p>Promote MS/Create local communities/O.I/Measures for EL&H/MDP/ Properly Manage PH/Improve R&P.T.</p>
<p> : Boundary of urbanized area; ●●: Railway route; : Residence-induced zone; ●: Train station; : Major road. </p>		

Table 5. Maps of residence-induced zones, criteria for designation and key inducement measures by model city selected in 2018.


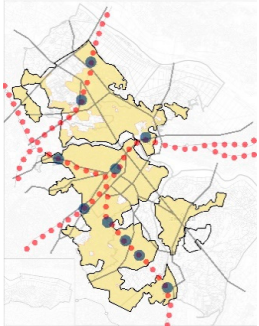


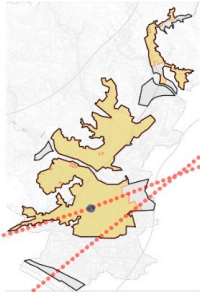
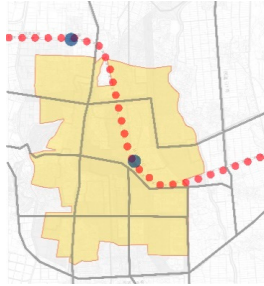
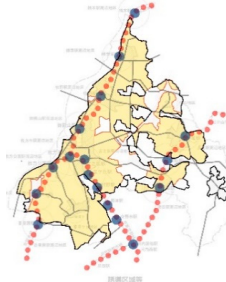
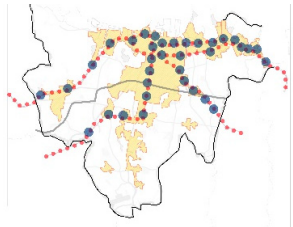
City	Mutsu City [22]	Kashiwa City [23]	Matsumoto City [24]	Kurobe City [25]
Map of zones				
Criteria for designating zones	No special criteria for designation.	<ol style="list-style-type: none"> 1) Areas that completed maintenance of urban infrastructure. 2) Areas that can access green spaces sized over 2,500 m² (within a radius of 500 m). 3) Convenience of P.T (within a radius of 800 m~1 km from train stations, 300 m from bus routes of which daily one-way operation is over 60 times on both sides). 	<ol style="list-style-type: none"> 1) Access to urban function-induced zones. 2) Convenience of P.T (key stations, bus routes). 3) Areas that completed maintenance of urban infrastructure (Areas of which residential areas were well maintained). 	<ol style="list-style-type: none"> 1) Central urbanized areas in higher-level plans. 2) Areas that excluded industrial areas that have not developed residential areas.
Key inducement measures	Readjust land use purposes/manage public facilities (The following is referred to MPF)/Measures for EL&H/Improve R&P.T.	Measures for EL&H/Promote MS/Manage PH/Improve MWS.	MPF/Measures for EL&H.	Promote MS/Optimize public infrastructure/Provide new lifestyles/Improve R&P.T/MDP.
City	Fujieda City [26]	Ono City [27]	Hirakata City [28]	Takamatsu City [29]
Map of zones				

Table 5. Cont.


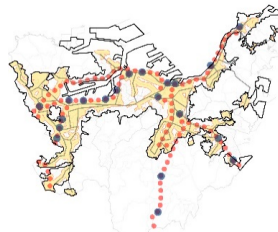
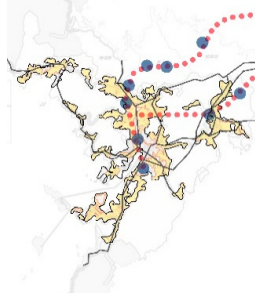

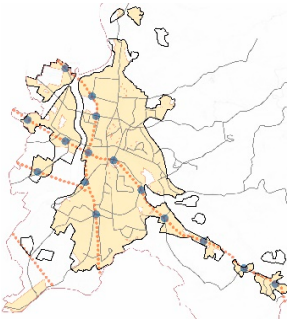

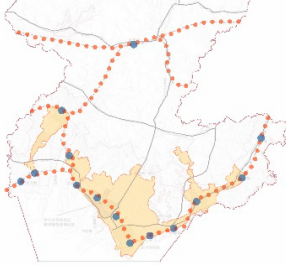
Criteria for designating zones	<ol style="list-style-type: none"> 1) Convenience of P.T (within a radius of 500 m from bus stations). 2) Population density (Areas that secured 40 persons/ha). 3) Areas that secured safety against disasters. 	<ol style="list-style-type: none"> 1) Access to Urban function-induced zones (within a walking distance of 500 m). 2) Convenience of P.T. 3) Proper level of population density. 4) Areas that completed maintenance of urban infrastructure. 	<ol style="list-style-type: none"> 1) Areas that have already formed residential areas 2) Areas where services for daily life are concentrated 3) Convenience of P.T 4) Access to urban function-induced zones. 	<ol style="list-style-type: none"> 1) Population density (as of 2015, over 30 persons/ha or over 20 persons/ha + for the past 10 years population growth rate of over 50%). 2) Convenience of P.T (within a R of 800 m from train stations, 300 m from major roads). 3) completed maintenance of urban infrastructure area. 4) Access to Urban function-induced zones (within a radius of 2 km from metropolitan interchange points, 1 km from living exchange centers).
Key inducement measures	Promote MS/Measures for EL&H/O.I/MPF.	Improve R&P.T/Improve nursery facilities/Promote MS/MDP/Improve env. for bicycles, pedestrians/MPF.	Improve R&P.T/Measures for EL&H/Improve an environment for pedestrians & green spaces & infrastructure/ Establish disaster prevention measures.	Promote MS/Create a good residential environment/Create local communities/Improve R&P.T/Maximize efficiency of urban management/Deter expansion of urbanized areas.
City	Mihara City [30]		Kitakyushu City [31]	Nagasaki City [32]
Map of zones				
Criteria for designating zones	<ol style="list-style-type: none"> 1) Proper level of population density. 2) Areas where services for daily life are concentrated. 3) Access to Urban function-induced zones. 4) Areas that secured safety against disasters. 		<ol style="list-style-type: none"> 1) Urban function-induced zones. 2) Convenience of P.T (within a radius of 500 m from train stations, 300 m from bus routes). 3) Areas that have already formed residential areas. 	<ol style="list-style-type: none"> 1) Urban function-induced zones. 2) Areas that completed maintenance of urban infrastructure. 3) Traditional structure conservation zones. 4) Convenience of P.T 5) Lands that fronted roads of which width is over 6m for firefighting-emergency medical activities.
Key inducement measures	Create good residential environment/Establish disaster prevention measures/Measures for EL&H/Promote MS/Manage PH/Improve R&P.T/Create local communities.		Promote MS/Supply quality houses/Manage PH/Improve residential areas within regional centers/MPF/Measures for EL&H/Revitalize central urban areas/Improve MWS	Improve R&P.T/O.I (park facilities)/Promote MS/Manage PH

Table 6. Maps of residence-induced zones, criteria for designation and key inducement measures by model city selected in 2019.

City	Takaoka City [33]	Okazaki City [34]	Nishiwaki City [35]	Ube City [36]
Map of zones				
Criteria for designating zones	<ol style="list-style-type: none"> 1) Convenience of P.T (within a R of 500 m from train stations. 300 m from key bus routes (over 30 buses/day)). 2) Urban residence promoted areas. 3) Historic cultural landscape zones (landscape conservation). 3) Population density. 4) Areas that completed maintenance of urban infrastructure. 5) Distribution of low- & non-used lands, etc. 	Entire urbanized areas.	<ol style="list-style-type: none"> 1) Population density. 2) Aged population density. 3) Concentration status of hubs & urban functions. 4) Convenience of P.T (within a radius of 500 m from train stations, 300 m from bus stations (over two buses/hour)). 	<ol style="list-style-type: none"> 1) Population density. 2) Convenience of P.T (walking distance from train stations, bus stations). 3) Areas where services for daily life are concentrated. 4) Land use.
Key inducement measures	Promote MS/Conserve-utilize historic structures/Measures for EL&H/Supply lands for housing/MDP/MPF/Create local communities/Improve MWS /Improve R&P.T.	Improve infrastructure/Measures for EL&H/Establish disaster prevention measures/Promote MS/Improve R&P.T.	Measures for EL&H/Improve R&P.T/Improve environment for pedestrians/Improve public spaces.	Promote MS/Create good residential environment/Revitalize central urban areas/Improve residential areas within regional hubs/O.I/Improve R&P.T.

The results of the analysis show that the convenience of public transport was overwhelmingly frequently utilized. Areas that people can easily access from train stations, bus stations and public transport axes that connect them were also frequently utilized. They tended to be designated within a radius of 500 m–1 km from main train stations, and 300 m–500 m from other train stations and bus stations. Besides, in the case of utilizing bus stations as a criterion, some cities like Iizuka, Kumamoto, and Kashiwa considered the number of daily bus operations as a criterion along with the radius of bus stations and set the minimum number of bus operations.

Urban function-induced zones and accessibility to the zones were also as a key criterion for designating residence-induced zones. In terms of accessibility to urban function-induced zones, many cases were designated within a radius of 300 m from a walking distance, but some cases like Takamatsu City were designated within a radius of 1–2 km.

Most local governments, an entity that establishes location normalization plans, utilize these two elements most frequently, which indicates that setting objective criteria for downsizing urbanized areas plays an important role. This shows that inducing future residence into hierarchical hubs for a living (urban function-induced zones) in cities that were established in line with the legal urban planning of the cities, their surrounding areas and areas within a certain distance from major public transport axes reflect the basic principles of the compact city. At the same time, it shows an objective criterion for explaining to those who might be excluded from residence-induced zones and have a backlash against the designation of the zones in the most reasonable manner.

The intensity of urban infrastructure or services for daily life was also frequently utilized as a criterion for designation. This can be interpreted as a measure to prevent lack of finance caused by a decrease in population and consequently a decrease in the tax revenues of local governments.

In the same vein, the formation of existing residential areas and the maintenance of a proper level of population intensity were used in many cities. Some cases utilized quantitative figures of population intensity such as 30–40 persons/ha.

Relevance to higher-level plans was also utilized in designating residence-induced zones in areas that aimed to restore the number of residents within the center of cities such as Kanazawa, Gifu, and Takaoka.

Though in few cases, some local governments reflected their situations as a criterion such as the service area of large-sized parks and green spaces (Kashiwa), and areas that have few geographical limits and can secure fire lanes (Nagasaki). Based on these items, it is possible to predict the conditions of urban infrastructure and special conditions such as natural features in individual local governments.

Very few cases designated their entire urbanized areas as residence-induced zones (Daito, Okazaki) or suggested the maps of zones without any mention about criteria for designation (Mutsu), based on which the intention of the local governments cannot be read at all.

4.2.2. Status of Independently Designated Zones by Cities

Non-induced zones, that is, independently designated zones outside residence-induced zones, were not set in law as discussed above, but they showed the actual concerns of individual cities. Out of the 25 surveyed cities, the following cities were found to designate independent zones.

As shown in Table 7, 9 out of 25 model cities set separate residence-related zones outside residence-induced zones. Although their names and content differed, the general images that people can think of from the overview of the zones seem to be that the convenience of public transport is relatively low, but that they pursue towns with a relaxed and good living environment that is comprised of private or low- and medium-rise residential areas. Besides, methods of designating independent residence zones can be divided into two types: Designating the entire non-induced zones and designating only a part of the non-induced zones, which shows that their purposes and details differed.

Table 7. Independently Designated Zones Related to Residence within Non-induced Zones


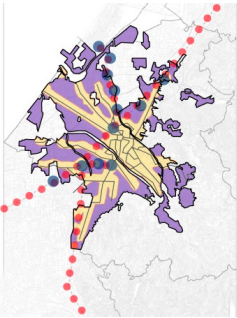
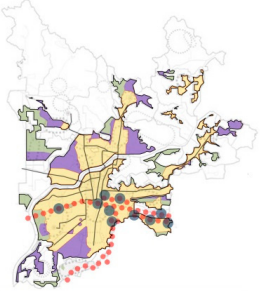
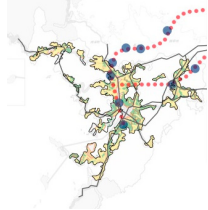
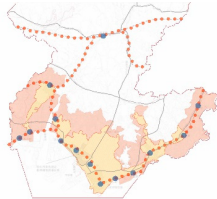
City	Map of Zone	Zone	Overview of Zone	Inducement Measures
Hirosaki City		Residential environment Area ■	Areas that have already formed residential areas and can continue to maintain the current residential areas and environment for living.	Maintain local communities and living environment based on each area's characteristics.
		Area for sustainable local communities ●	Areas that need to maintain local communities against a decrease in population density (20 persons/ha or less) and a high aging rate (40% or higher). Areas that have common concerns that need to be discussed together with citizens on the future of communities.	
Kanazawa City		General residential zone ■	Areas that have maintained facilities required for daily life and can maintain the current living environment using transport modes such as cars and bicycles (outside residence-induced zones within urbanized areas).	Maintain residential functions/Restructure urban areas in a planned manner/Support local shopping districts/Optimize the arrangement of large commercial facilities/Provide medical and welfare facilities/Support securing transportation modes led by residents/Improve bus networks.
Gifu City		General residential zone ■	Areas that have a relatively high convenience of transport (within a radius of 500 m from feeder bus routes) and are comprised of affluent low- and medium-rise houses.	Implement measures according to guidelines for maintenance included in the urban planning master plan of Gifu City.
		Suburb residential zone ■	Area that have maintained residential areas comprised of affluent low-rise houses.	

Table 7. Cont.

City	Map of Zone	Zone	Overview of Zone	Inducement Measures
Fujieda City		Residential environment conserved zone ■	Areas that can maintain the current residential environment in the future.	Maintain infrastructure for disaster prevention/secure access to central areas.
Ono City		Residence maintained zone ■	Areas that require using vehicles but have already had urban infrastructure.	-
Hirakata City		Residential environment conserved zone ■	Areas that have already formed a residential environment of a certain level or higher outside residence-induced zones.	Apply the same measures as those for residence-induced zones.
Takamatsu City		General residential zone ■	Areas that have already secure good urban infrastructure such as sewerage and can conserve good urban infrastructure in the future.	-

Table 7. Cont.

City	Map of Zone	Zone	Overview of Zone	Inducement Measures
Nagasaki City		Areas for symbiosis with the nature ■	Area that can “improve disaster prevention” and “promote symbiosis with the nature” by utilizing empty spaces that increase due to a decrease in population, allowing spacious residential areas by utilizing sloping lands with great views, ventilation and lighting.	Improve disaster prevention by utilizing empty houses and lands.
Ube City		Living environment maintained zone ■	Areas that can maintain the core functions of local communities and a relaxed residential environment.	Use land according to the purpose of areas.

: Boundary of urbanized area;
 ●● : Railway route;
 : Residence-induced zone;
 ● : Train station;
 : Major road.

Many cases did not provide a detailed explanation on measures to maintain these residence-related independent zones, and even those that explained gave abstract content only such as measures to maintain infrastructure for living and utilizing empty houses for maintaining a residential environment, or instructions only such as referring to other plans such as a master plan for urban planning. In addition, since these zones focused on the lifestyle of driving cars rather than using public transport, a certain level of public transportation such as feeder bus services were found to be provided. This shows, though abstract directions, the intention of local governments that they will continue to provide a certain amount of support for non-residence-induced zones for a certain period. Hirakata City, however, suggests the same measures as those for residence-induced zones. This seems to be contradictory to the purpose of compactification through residence-induced zones and raises a doubt about the appropriateness of such measures.

Considering the basic purposes of location normalization plans, it is natural not to prepare institutional measures for maintaining or improving a living environment for non-induced areas; on the contrary, regulations to deter people from living in the areas were suggested only. From this perspective, the fact itself that residence-related independent zones were designated and that measures to maintain the zones were suggested seems to reflect the reality that local governments face—they need to divide urban areas into the inside and outside of the residence-induced zones, enhance people's understanding of them and execute the plans.

To sum up, utilizing independently designated zones within non-induced zones can be recognized as an attempt not only to divide urban areas simply using a dichotomous way of thinking but also to clearly characterize the zones in location normalization plans by reflecting the situations and characteristics of individual cities. The plans, however, still lack clear directions for independent zones and proper measures to pursue the directions, and it is necessary to connect with and be faithful to the measures of any other effective policies as a future task.

5. Discussion

This study aimed to discuss the purposes of the compact city policy implemented in Japan and to examine the actual conditions of the policy applied by local governments to diagnose the status, and the following conclusions in this process are as follows.

From the perspective of forming a compact urban structure, the essence of location normalization plans is residence-induced zones. Inducing urban functions is mainly achieved through targeting the functions of centers that the public sector can be involved to some extent, but this can be a limited means considering that the use of the entire land of cities has to be managed. After the analysis of the 25 model cities of residence-induced zones, the basic principles of compact cities including the convenience of public transport and access to central urban areas were found to be most frequently utilized. Other elements such as the maintenance status of urban infrastructure, the maintenance status and population density of existing residential areas, and relevance to higher-level plans were also frequently used. In a few cases, elements that reflected the unique situations of individual cities such as the relation with parks, natural features, and frontage conditions were utilized as a criterion for designating zones. On the other hand, in some cases, entire urbanized areas were designated as an induced zone, and the intention of local governments could not be read at all.

The status of the induced zones of 25 model cities shows that the validity of residence-induced zones—how and where residence-induced zones had to be designated—was prioritized in many cases. It is necessary to set more concrete and detailed directions for inducing residential areas and implement inducement measures for zones designated within residence-induced zones.

In comparison, 9 out of the 25 model cities set independent zones related to residence in non-induced zones that were excluded from induced zones. Out of the zones that were excluded from residence-induced zones, they had residential areas that were already formed by citizens who earned a certain amount of income that needed to be maintained. In addition, independent zones are worthy of notice as an attempt to characterize non-induced zones created as a result of the designating

residence-induced zones which were based on the situations of the regions in the process of planning. However, the plans did not suggest detailed measures for these attempts, which indicates the necessity of improving policies for maintaining and improving an environment for living in non-induced zones and connecting them with any other effective policies.

It is necessary not only to simply divide urban areas into being inside and outside of the residence-induced zones, but also to make attempts to suggest guidelines for maintaining existing residential environments. Furthermore, it is important to respect existing residential environments and newly designated induced zones in urban plans.

Since the location normalization plans in Japan were designed to realize compact cities over a long period, it is premature to assess the impact of these plans at an early stage. However, they are still worthy of notice in the future as a very rare urban planning technique in the world as compact cities were planned and established with a concrete methodology at a national level.

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