A Study on Characteristics of Underutilized and Unutilized Land in City Center of Provincial City

-The Case Study in the City Center of Ishinomaki after the Disaster-

Tomohiro, KARIYA*, Michio, UBAURA**

The hollowing-out of the city center has been a common serious problem in Japanese regional cities. This phenomenon has two aspects; hollowing-out of economic activities and that of physical condition.

From the economic standpoint, the hollowing-out means that the land does not make any profit to their owners and community. On the other hand, from the physical standpoint, it means that the space becomes sparse by dismantling of building. Underutilized and unutilized lands emerge because of this hollowing-out.

In general, the economic hollowing-out brings about the physical hallowing-out in the city center. Various concrete methods have been developed from the point of view of architecture and urban planning to prevent the physical declining. Considering the economic decline and the demographic change, however, it is supposed that the number of underutilized lands will increase in the not too distant future. There are two factors that inhibit the effective utilization of these lands. The first one is the intention of the landowners. In the shrinking society, it would be effective to transfer the underutilized land into housing or public use, which does not profit them more than the commercial use. It is difficult to obtain the consent of the landowners for these challenges. The second one is the problem of research and practice. In the suburban city, the sites of the closed shops are usually used for parking lots, so that the planners and the researchers have been hard to recognize the underutilized lands. In spite of the necessity of the prescription of the underutilized lots, there has not been sufficient data on the prospect how these lands emerge and increase in downtown.

In city center of Ishinomaki city, Miyagi pref. in Japan, the economic hallowing-out has accelerated through the Tohoku Earthquake in 2011. A lot of buildings were dismantled, and a large amount of underutilized lands have emerged at once. This paper clarifies the changes of these underutilized lands emerged after the disaster and considers the site characteristics of them.

To consider the property of the underutilized lands will be useful in finding the concrete solutions against it. Furthermore, if large disaster would occur in the Mega-Cities, it would also be necessary to handle a lot of underutilized lands emergence at once. This paper examines the characteristics of the underutilized site especially focusing on the relationship with the size, former use, and nearby attractions etc.

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* Research fellow of JSPS ** Tohoku University, Japan
E-Mail: kariya@m.tohoku.ac.jp, ubaura@archi.tohoku.ac.jp

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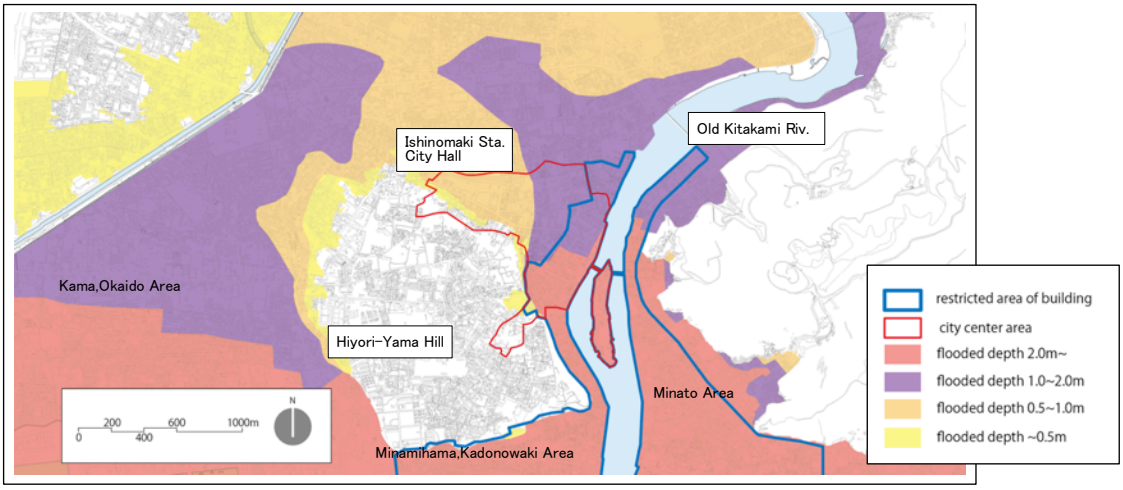

Figure.1 Flooded area of Ishinomaki City

Overview of the area under discussion

This study discusses a core urban district designated under Ishinomaki's downtown revitalization master plan (hereinafter referred to as "city center"). Ishinomaki is a port city. Although main roads are well maintained as it emerged unharmed from the Second World War, the streets and lanes that run perpendicular to these main streets remain overcrowded, and the adjacent lands are also long and narrow.

Almost the entire area of Ishinomaki's city center was inundated because of the Great East Japan Earthquake. The tsunami that flowed up the Old Kitakami River flooded the area along the river by more than two meters, carrying away commercial products and shop fixtures. Two months after the disaster, construction restrictions were set up in city center areas along the river under the sponsorships of the Act on Special Measures concerning Reconstruction of Urban Districts Damaged by Disaster.

Survey methods

The state of buildings in the city center was assessed by a field survey (conducted in August and December 2013). A residential map published in February 2011 by Zenrin before the disaster was then covered with these survey data to understand the position and former use (e.g., shops, commercial office buildings, houses, apartments, offices, hospitals, hotels, multilevel parking lots, or use unknown) of buildings that had been demolished since the earthquake. Next, the building area of these structures was calculated based on the Zenrin map using Adobe Illustrator.

Thus, a summary was produced of the position of buildings demolished following the earthquake, their distance from major facilities, their building area, and former use.

Survey results

The survey results identified a total of 638 buildings in the city center that had been demolished following the earthquake. Of these, 44 buildings (6.9% of the total) had been rebuilt in the same position as the demolished structures, suggesting a significant reduction in the flexibility of the city center. Many buildings had been demolished in the areas along the river

where the inundation depth had been two meters or more, and in most cases, the study was unable to confirm any new construction of buildings in the same position. Conversely, a relatively large number of structures had been newly built in the same positions in the areas around JR Ishinomaki Station and Ishinomaki City Hall. Classifying the former use of each of the demolished buildings and comparing the average building area for each reveals that multilevel parking lots were the largest (904.0 m^2), followed by hotels (239.6 m^2). However, in both these cases the actual number of buildings was low.

In contrast, while the average building area for shops (88.3 m^2) and houses (90.8 m^2) was small, in terms of the actual number of buildings, these made up a large proportion of the overall total, with shops accounting for 35.1% (224 of 638 buildings) and houses 17.0% (108 of 638 buildings) of the total structures. In addition, many of the properties that are adjacent to shopping streets (*shōtengai*) and passages were irregularly shaped such as being long and narrow.

The demolition of narrow, irregular structures resulted in the creation of a large number of vacant lots, and it is conceivable that this has created many obstacles for investigating land utilization.

	Size Mean	Observations
Commercial	88.3 m^2	224
Comm. Condo	150.0 m^2	21
Residential	90.8 m^2	108
Res.Condo	109.5 m^2	4
Office	110.0 m^2	24
Hospital	146.7 m^2	8
Hotel	239.6 m^2	2
Parking Structure	904.0 m^2	2
Unspecified	55.2 m^2	245
Total	82.8 m^2	638

Table.1 Classification of the building demolition

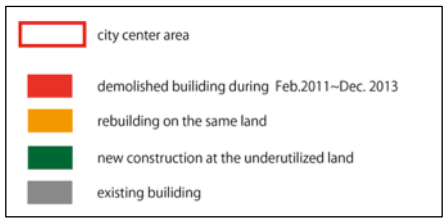

Figure.2 The Building Demolition in city center of Ishinomaki

Case studies of temporary usage

As described above, renewed buildings can be seen in areas close to public facilities and where the damage was comparatively minor. Conversely, reconstruction has not progressed in areas that suffered heavy damage or that are located far from public facilities. In addition, even when the investigation of land utilization can proceed, the land that was used for narrow shops or housing are small in terms of area, and it is difficult to create plans for their utilization. Under such circumstances, there are visible efforts to bring some life to these narrow lots by leveraging them for temporary use. In Case A (building area of the former structure: 45.7 m^2),

with the consent of the landowner, a food truck has been placed on the property where it carries out the night-time sale of food and drink. In Case B (building area of the former structure: 79.5 m^2), in collaboration with a local community development agency, local university students managed and operated a rest space for about a week in conjunction with a local event.

These isolated efforts on the part of merchants, civic groups, and others do not represent any form of networked initiative. Hence, they are "one-off" events that occur incidentally. In the city center, while the development plan for medium-to-long term urban redevelopment has begun to be implemented in numerous locations, it will also be necessary to supplement these with temporary (and in some cases medium-to-long term) usage initiatives in the future. Therefore, it will be necessary not only to understand the conditions relating to the character of land but also other factors including the intentions of land owners on the use of their lands.

Photo.1 Land utilization in Case A

Photo.2 Land utilization in Case B

The result of the analysis reveals following three points. Firstly, many buildings had been torn down around the area along the Old Kitakami River directly hit by Tsunami and few new buildings have been rebuilt even at the point three years after the disaster. Secondly, on the other hand, several new buildings have been built near the Ishinomaki station and the city hall. Thirdly, some underutilized lands especially along the main street are used temporarily for example food stall.

***Keywords**: underutilized lands, revitalization of city center, reconstruction from the disaster*