An Analysis of the Cadastral Non-Coincidence Occurrence Situation of the Urban Regeneration Project Area

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Abstract

This study aims to present the possibility of linking with the cadastral resurvey project by analyzing the current state of the cadastral non-coincidence in the urban regeneration project district. We analyzed the characteristics of urban regeneration projects for each target region and analyzed the details of the cadastral non-coincidence area and suggested the possibility of linking with the cadastral resurvey project. The urban regeneration project district is located in the Chungju and Jecheon cities of Chungcheongbuk-do,
Chungcheongnam-do, Asan and Gongju in Korea. The results of the analysis on the occurrence of cadastral non-coincidence in the urban regeneration project district were as follows. In Chungju City, 38 parcels of 194 parcels, 20 parcels of 391 parcels in Jecheon City, 94 parcels of 457 parcels in Asan City and 105 parcels of 381 parcels in Gongju City were found to be cadastral non-coincidence. It was found that all of the four districts identified in the study had collective cadastral non-coincidence more than 10 parcels. In addition, the characteristics of cadastral non-coincidence area in the region are shown as the irregular type including the bias type in the case of Chungju, and it is analyzed that it shows the result error of the block and inner boundary. Based on the analyzed data, the characteristic of the declining urban area is that the cadastral non-coincidence is generated in all urban regeneration project districts, and the occurrence characteristics also appear as irregular type which is caused by overlapping of several types of non-coincidence. There is generated collective cadastral non-coincidence more than 10 parcels in each of the four targets, the type also has the irregular shape. The area can be judged to meet the designation requirements of the cadastral resurvey project.

**Key Words**: Cadastral Non-Coincidence, Urban Regeneration, Cadastral Record, Cadastral Surveying, Cadastral Resurvey.

1 **INTRODUCTION**

The cadastral resurvey project is to replace the existing cadastral record with the new digital cadastral record by survey and surveying and at the same time, Refers to a national project that is carried out to rectify the registration of cadastral record if it does not match the actual status of the land (Mun et al., 2014). The cadastral resurvey project is being implemented based on the "Special Law on Cadastral Resurvey" enacted on September 16, 2011, and the planning period is about 20 years from 2012 to 2030, and the 6th year project (Kim and Choi, 2014).

The central government and a local government are promot-
ing urban regeneration projects to improve the quality of people's lives by preventing the city from significantly degrading its role and functions and restoring the community by enhancing the city's competitiveness (Jun et al., 2010). The urban regeneration projects are being promoted based on the "Special law on Urban Regeneration Activation and Support" enacted on June 4, 2013 to expand the city's natural growth base and enhance the city's competitiveness (Lee, 2013).

Urban regeneration projects and cadastral resurvey projects are common in that they are related to business entities, government budgets, and property rights of citizens. In particular, the two projects have a commonality in that the success or failure of the business is decided by the participation of the residents and the residents are the main business by inducing the participation of the residents. On the other hand, urban regeneration projects utilize the local resources of the city, economic, social, physical, as the project is being promoted for the purpose of environmental activation, the boundary line maintenance of the land is excluded. The cadastral resurvey project is a project to properly maintain and register that land boundaries of realities registered in cadastral records are not identical, rather than maintenance of urban facilities including buildings (Son and Koh, 2011). As such, the two projects are promoted with different characteristics in terms of the improvement of the boundary of the land and the improvement of the environment of the city facilities, but it is considered that there are many common aspects in the aspect of project subjects, budget support and inhabitants' participation. If the two projects are linked to each other through complementary features, the efficiency of the two projects will be maximized.

Currently, the previous study (Kwon et al., 2004; Cho and Huh, 2015; Moon et al., 2006) on cadastral non-coincidence is mainly focused on investigation, search, and arrangement, and there is no precedent research related to urban regeneration site. In addition, precedent research on urban regeneration projects is mainly focused on policies, indicators (Kim et al., 2015) and case studies (Kwon and Joo, 2015) of urban regeneration.

Therefore, in order to link the two projects in this study, it is necessary to analyze the current state of cadastral non-coincidence in pre-urban regeneration area. In other words, the common factor
of the two projects is that it is possible to link with the cadastral resurvey project if the cadastral non-coincidence is generated in the urban regeneration project district. Therefore, this study aims to present the possibility of linking with the cadastral resurvey project by analyzing the current state of the cadastral non-coincidence in the urban regeneration project district.

2  RESEARCH METHODS AND AREA

A. Research method

In order for the urban regeneration project to be linked to the cadastral resurvey project, collective cadastral non-coincidence should be generated within the urban regeneration project district. The Urban Regeneration Project District is located in the Chungju and Jecheon cities of Chungcheongbuk-do, Chungcheongnam-do, Asan and Gongju. Information related to cadastre was processed with Korea Land and Geospatial Informatix Corporation. We analyzed the characteristics of urban regeneration projects for each target region and analyzed the details of the cadastral non-coincidence area and suggested the possibility of linking with the cadastral resurvey project.

B. Research area

The study area is as follows:

1. Chungju City is promoting urban regeneration projects for members of Seongseo-dong, Seongnae-dong and declining commercial districts. The area is about 212,000 square meters. This project is being promoted in 2016 and is aiming to be completed by 2020. It is being promoted to promote revitalization of the city through restoration of cultural and economic functions by the neighborhood renewal type activation plan. Figure 1 (a) shows the Chungju City Regeneration Project Area and the review area for the cadastral non-coincidence status.

2. Jecheon City is promoting the urban regeneration project for members of Insoung-dong (Jungangno 1-ga, 2-ga, Myeong-dong), Namhyeon-dong (Namcheon-dong, part of Gyo-dong).
The area is about 212,000 square meters (Jungangno 123,000m², Myeong-dong 52,000m², Gyo-dong 180,000m²). This project is being promoted in 2016 and is aiming to be completed by 2020. Figure 1 (b) shows the Jeacheon City Regeneration Project Area and the review area for the cadastral non-coincidence status.

3. Chungcheongnam-do, Asan is promoting the urban regeneration project for numbers of Gongsu-ri, Baebang-eup, Buksuri. The area is about 440,000 square meters. This project is being promoted in 2015 and is aiming to be completed by 2025. Figure 1 (c) shows the Asan city regeneration project area and the review area for the cadastral non-coincidence status.

4. Chungcheongnam-do, Gongju is promoting the urban regeneration project for members of Ungjin-dong, Junghak-dong, Ongnyong-dong. In the case of Gongju City, the decline of the city due to relocation provincial office and the development of the new city center is the cause of the urban regeneration project. This project is being promoted in 2014 and is aiming to be completed by 2017. Figure 1 (d) shows the Gongju City Regeneration Project Area and the review area for the cadastral non-coincidence status.

![Images](a) Chungju-si (b) Jecheon-si (c) Asan-si (d) Gongju-si

Fig. 1. Research area. All four study areas are shown. In the picture, the red part is the concrete target area.
3 RESULTS AND DISCUSSION

We used the cadastral actual state surveying data and the land register for the urban regeneration district of Chungju city to grasp the situation of the cadastral non-coincidence. The total required was 194 parcels. Figure 2 shows an overlay analysis of individual cadastral maps and cadastral actual state surveying data.

As a result of reviewing the present situation, as shown in Table 1, the target district is a densely populated area, and there is collective cadastral non-coincidence of 38 parcels among 194 parcels. If a cadastral resurvey project is in progress, about 20% of the parcels will be subject to boundary and area adjustments. In particular, it is difficult to distinguish the current status of neighborhoods from old towns in this area. It is necessary that the adjustment for each block and edge separation should proceed as well. In addition, 20% of the total parcels are adjusted, but the difficulties of adjustment due to block and edge separation is expected to be doubled.

![Figure 2. Overlapping cadastral actual state surveying map of urban regeneration area and cadastral map in Chungju-si](image-url)
In case of Jecheon City, 291 parcels were required. Figure 3 shows an overlay analysis of individual cadastral maps and cadastral actual state surveying data.

As a result of reviewing the present situation, as shown in Table 2, the target district (Namchun-dong) is a densely populated area, and 20 of the 391 parcels have collective cadastral non-coincidence. If a cadastral resurvey project is in progress, approximately 7% of parcels will be subject to adjustment of boundaries and area. This area is an area that needs to be adjusted on a block-by-block basis, and 7% of the total parcels must be adjusted. In addition,
it is predicted that the amount of cadastral non-coincidence will be increased because the whole can be adjusted if it is practically adjusted by block.

**TABLE II**

<table>
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<th>Section</th>
<th>within tolerance</th>
<th>out of tolerance</th>
<th>difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>sum of record area</td>
<td>sum of shape area</td>
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<td>67,513 m²</td>
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</table>

In case of Asan city, 457 parcels were analyzed. Figure 4 shows an overlay analysis of individual cadastral maps and cadastral actual state surveying data in Asan.

As a result of reviewing the present situation, as shown in Table 3, the target district (Namchun-dong) is a densely populated area, and the 94 parcels of the 457 parcels are adjusted to 94 parcels when the cadastral resurvey project is implemented. It is the case that the entrance road, which is the most common case in the city center, is formed in a densely populated area, and it is necessary to solve the problem of without road and to secure a moving passage. There are a lot of parcels that are subject to area correction, and many difficulties due to the adjustment of the parcel that occupies more than the present situation. In order to solve the road part, it is predicted that the adjustment will be calculated and paid by exchanging with the government official or by purchasing as much as the occupancy part.
In case of Gongju city, 457 parcels were analyzed. Figure 5 shows an overlay analysis of individual cadastral maps and cadastral actual state surveying data in Asan-si.

As a result of reviewing the present situation, as shown in Table 4, the target district is a densely populated area, and the 105 parcels

<table>
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<th>out of tolerance</th>
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<td>sum of record area</td>
<td>181,896 m²</td>
<td>165,096 m²</td>
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<tr>
<td>shape area</td>
<td>363</td>
<td>127,889</td>
<td>94</td>
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<td>parcel area</td>
<td>54,007</td>
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In case of Gongju city, 457 parcels were analyzed. Figure 5 shows an overlay analysis of individual cadastral maps and cadastral actual state surveying data in Gongju.

As a result of reviewing the present situation, as shown in Table 4, the target district is a densely populated area, and the 105 parcels
of the 381 parcels are adjusted to 105 parcels approximately 28% is subject to adjustment requirements when the cadastral resurvey project is implemented. In this area, individual parcels as well as block-by-block adjustments and it is necessary that the adjustment for edge separation should proceed as well. Therefore, 28% of the total parcels are adjusted, but in reality, the problem of adjustment is expected to be even greater.

![Figure 5. Overlapping cadastral actual state surveying map of urban regeneration area and cadastral map in Gongju-si](image)

<table>
<thead>
<tr>
<th>TABLE IV</th>
<th>Cadastral non-coincidence of urban regeneration area (Gongju-si)</th>
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<td>Section</td>
<td>sum of record area</td>
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<td></td>
<td>65,661.2 m²</td>
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10
4 CONCLUSION

In this study, we analyzed the current state of cadastral non-coincidence in the urban regeneration project area, which is currently being promoted, and suggested the possibility of linking with the cadastral resurvey project. In Chungju City, 38 parcels of 194 parcels, 20 parcels of 391 parcels in Jecheon City, 94 parcels of 457 parcels in Asan City and 105 parcels of 381 parcels in Gongju City were found to be cadastral non-coincidence. Therefore, it was found that all of the four districts identified in the study had collective cadastral non-coincidence more than 10 parcels. In addition, the characteristics of cadastral non-coincidence area in the region are shown as the irregular type including the bias type in the case of Chungju, and it is analyzed that it shows the result error of the block and inner boundary.

In Jecheon City, all the parcels showed irregular type, and the result errors of block and inner boundary were occurred as same as Chungju. Asan city has irregular type and it is recognized that errors occur in individual parcel. Gongju city showed that irregular type with bias type of cadastral non-coincidence was generated by applying each the block result.

Based on the analyzed data, the characteristic of the declining urban area is that the cadastral non-coincidence is generated in all urban regeneration project districts, and the occurrence characteristics also appear as irregular type which is caused by overlapping of several types of non-coincidence.

Therefore, there are generated collective cadastral non-coincidence more than 10 parcels in each of the four target based on the current status of the project district designated as the cadastral resurvey project district, the type also has the irregular shape which is the most difficult to repair, so the area can be judged to meet the designation requirements of the cadastral resurvey project.

References


