Problems of low-rise residential area of Seoul  
- Focused on Malmi village of Guemcheon-gu, Seoul, Korea -

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Abstract. In Korea, there are many low-rise dwellings that are under five floors. In Seoul, for instance, about 38.2% of the total residential area is occupied by low-rise dwellings. The area has a wide variety of problems, like Malmi village. Among the many low-rise buildings, Malmi village of Guemcheon-gu, Seoul, is constructed spontaneously. Infrastructure problems such as narrow roads and the lack of parking lots, pose great challenges. When the infrastructure was initially made, the plan was based on the traditional spatial use. The infrastructure problem came out continuously due to the increases in the size of houses and density. These problems are commonly found in many low-rise dwellings in Seoul as well as in the Malmi village. Therefore, it is the time to look into the problems of the low-rise dwellings and seek solutions.

Keywords: low-rise residential area, semi-industrial district housing, multiplex housing

1. Introduction
The residential areas of Korea can be divided into low-rise residential neighborhoods and mid/high-rise apartment complexes based on the type of housing that is distributed. Low-rise residential areas are concentrated on housing such as detached and multiplex houses. According to the research of the Seoul Institute[1], the low-rise residential area is currently widely distributed among the city, accounting for 38.2% of the total residential area of Seoul. Unlike apartment complexes, the low-rise residential environment is often characterized by the lack of parks and amenities, and the residential environment is undermined. In particular, some problems emerged as a result of the surging number of households, causing inconveniences among residents.

Malmi village of Guemcheon-gu, Seoul, is located in the semi-industrial district and it’s near G-valley (Seoul Digital Industrial Complex). Also, the village is mixed with diverse small size factories and houses. The village also has many problems facing the low-rise residential areas of Seoul.

Therefore, the purpose of this study is to analyze the physical problems of the low-rise residential area and the inconvenience factors experienced by the residents. The information might be used as basic data to solve the problem of residential settlements.

2. Methods
At first, the authors analyzed the contents of the village through the internet, news reports, etc., and analyzed the physical condition of the village through on-the-spot inspection. In addition, the authors looked into the previous surveys from Guemcheon-gu office, population data, and traffic accidents data, among others, to identify the problems facing the village. Afterwards, through cooperation of
Guemcheon-gu office, living lab could be proceeded for a week and in-depth investigation of the location and residents’ interview was conducted.

3. Discussion

3.1. Location
Malmi village of Guemchoen-gu, Seoul, is located south-west sides of Seoul city and G-valley, which has about 150,000 employees, forms the western boundary of Guemchoen-gu[2]. There are only three bridges in Guemchoen-gu, linking the east area with the west. The transport infrastructure is congested with many cars during the peak hours. Also, one of them is connected with Malmi village.

Northern part of the village is mixed with meat market, restaurant, commercial facilities and industrial facilities. Moreover, the southern part of the village is occupied by a military camp, which has planned to move over on near future as it shows in Figure 1. Some factories around the south and nearby the village will be built with high-rise apartment complex. Therefore, the village will be surrounded by high-rise apartments, and it is feared that the gap between the rich and poor will appear.

![Figure 1. Current state of Guemcheon-gu](image)

![Figure 2. Current state of Malmi village](image)

Because Malmi village is located in the semi-industrial district, a number of factories are abutting on the village as it shows in Figure 2. Also, the influence of meat wholesale markets on the north part of the village brought small meat markets into the village, causing unsightly sights and odors.

Low-rise residential area in Seoul normally has relatively low proportion of under the age 14 and high proportions of the elderly[1]. Moreover, according to the 2015 population data[3], 67% of single households live in a low-rise residential area. The situation of Malmi village is similar. There are many elderly people who lived in the village for more than decades. Recently, large number of young couples and single households who work in G-valley came to the village, too. Therefore, there are also young children in the village.

3.2. Interview
Using an in-depth interview method, the study surveyed the opinions of residents of various ages living in Malmi village. Through this, the inconveniences and conditions of the village could be analyzed. The key opinions about the village were as follows in Table 1.
### Table 1. Malmi village residents interview

| Interviewee         | Opinions about Malmi village                                                                 | Keyword                                      |
|---------------------|---------------------------------------------------------------------------------------------|----------------------------------------------|
| High School Student | There are plenty of old people and children in town, but there is no place for them. Because there are no place to play, I also move somewhere else to play with my friends. | No place to play                             |
|                     | Because of nearby factories and many shoulder parking, I am always worried about children playing outdoors. Plus, there is not enough space for children to play, so our family move to another area on weekends. | Factory, Shoulder Parking, Unsafe outdoor    |
| Housewife           | I hope there are lots of parks and sports area. Also, there are lots of illegal parking on the street because there are insufficient parking spaces. It makes narrow street much narrower. It’s too inconvenient to walk. | Insufficient parking lot, sports area         |
| G-Valley Worker     | There is only one public space in town. Even the public space is a playground. I hope there are diverse spaces to rest in the village. | Lack of public space                         |
| Representative of Malmi village | Cleanliness seems to be the most necessary issue in this village. This place is too dirty because of trashes from meat markets and garbage from each house. I am afraid that my grandchildren will see it. | Dirty outdoor                                |

As shown in Table 1, the lack of a parking space was seen to be problematic by the residents. The lack of parking lots led to the illegal parking, which threatens residents’ safety and even narrower roads which is already too narrow. In addition, public space and places for residents were very necessary. Trash in the village and from the meat markets were piled up on the roads, so it was important to know that cleanliness is also a key issue.

#### 3.3. Problems

Seoul has witnessed a rapid increase in population through the process of urbanization. Due to the rapidly aging population, the housing shortage was inadequate and the government provided a large volume of new housing. To provide low-cost or affordable housing quickly, apartment buildings and multiplex housing emerged. As a result, the housing of Seoul was occupied with almost apartment house, such as apartment complexes, multiplex housing, and studio apartment buildings[4]. Malmi village is also composed with lots of multiplex houses and small size of apartments. Rapid increase of population caused the increase of vehicles and various problems occurred.

#### 3.3.1. Road infrastructure and insufficient parking space

The village has organically-shaped roads that are naturally created. In addition, it was reorganized in the 1970s and 80s. When the infrastructure was initially made, the plan was based on the traditional spatial use. Therefore, now, with increased population and cars, roads are far narrow and parking spaces are lacking.
As shown in Figure 3, in parking spaces, only 56% of the vehicles owned by the residents could be parked compared to the number of households. That’s how much increasing parking spaces are important in this town. Also, the roads in the village are mostly narrower than 4-6m, so only one vehicle can pass (Figure 4). As the parking space ran out, illegal parking took place frequently as it shows in Figure 5, and it caused a lot of problems. Because there are many factories near here, there are lots of trucks passing by, but illegal parked cars block the sight and occur traffic accidents. Moreover, because of narrow roads and illegal parking, emergency vehicles cannot go into the village. Plus, according to the traffic accident analysis system homepage[5], there was a constant traffic accident in this area as it shows in Figure 6.

3.3.2. Littering problem
One of the problems that many low-rise residential areas in Korea has is the dumping of littering. As the population grew rapidly, a lot of garbage was emitted, creating a messy village atmosphere (Figure 7). Especially in this village, meat market has been mixed with residential areas, so blood and internal organs of cows and pigs caused stinky odor and a negative image of the town as it shows in Figure 8.
3.3.3. Lack of public spaces and facilities

There was only one park in the village, and even the park was a playground park, not suitable for use by residents of other ages, and the actual park utilization was very low. In case of apartment complexes, green spaces and various amenities are provided, but in low-residential area, only houses are dense and there are no enough facilities and public space for residents. As shown in Figure 4, there was a noticeable lack of cultural facilities within a 500-meter radius of the village.

3.3.4. Deteriorated architecture and house that are not accessible from the road

Recently, old buildings have been newly built to multiplex housings, but yet there are still many old, deteriorated houses. These old buildings are already extremely deteriorated as it shows in Figure 10. In addition, there are a great deals of architecture that is not accessible from the road, because they were illegally built like Figure 11. Therefore, they made small roads between buildings to make the entrances.
In 2010, there was a redevelopment plan for the Malmi village, but the project was canceled due to the residents’ opposition and the village is still having the same problems. Moreover, recently, the plan of building high-rise apartment complexes near the village got confirmed. Therefore, Malmi village is expected to be further isolated.

4. Conclusion
Through investigation and interviews of residents, problems of the Malmi village are, poor road infrastructure, insufficient parking spaces, littering problem, lack of public space, and deteriorated architecture as it shows in Table 2.

| Problems                        | Detailed problems                                      |
|---------------------------------|--------------------------------------------------------|
| **Poor road infrastructure**    | Narrow width of road (almost 4-6m) / Illegal shoulder parking / Traffic accident |
| **Insufficient parking spaces** | Only 56% of households can park their vehicles / Illegal parking |
| **Littering problem**           | Dumping of littering / Garbage from meat market – blood & internal organs |
| **Lack of public space**        | No enough facilities and public spaces for residents   |
| **Deteriorated architecture**   | Deteriorated old architecture                          |

Guemchoen-gu office is trying hard to solve these problems by proceeding shared parking system, green parking system which intends to demolish a wall separating individual parcels and to create a parking lot there, and so on. However, since the proposed measures are not a fundamental solution, Guemchoen-gu office is trying hard to improve the village by urban regeneration projects. The office is having cooperation work with Graduate School of Environmental Studies in Seoul national university and search for the better solution. There are many common problems with low-rise residential areas of Seoul, but to solve these problems, analyzing the characteristics of the area and identifying the problem should be occurred first like Guemchoen-gu office is doing right now.

5. References
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