

# Architectural Planning and Design Characteristics of Public Housing in Modern Architecture

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## Abstract

Since the 2000s, Korea has been expanding the supply of public housing to improve the quality of life and stabilize the housing for urban dwellers under the rapid urbanization. The purpose of this study is to analyze and derive architectural planning and design characteristics, shown in excellent public housings in modern architecture base on case study. And this study is to identify the current problems and limitation of the architectural planning and design approach of public housing in South Korea based on case study of public housings. Responding to changes in new public housing demand due to population change and social demand in South Korea, this study finds the possibilities for new approach to public housing with architectural planning and design suitable for Korean situation.

**Keywords:** Architectural planning, Case study, Architectural design, Public housing

## 1. Introduction

### 1.1. Background

Today, the importance of quality of life is emphasized through pleasant and comfortable residential environments, along with economic stability in our society. In this view, there is a need for various architectural approaches to increase satisfaction with public housing in our society and create higher quality residential environments by planning and supplying beautiful and pleasant public housing. The percentage of one-person and two-person households is increasing as traditional four-person households are decreasing in Korea. Moreover, along with the change in population structure and rapid increase in the aging population, there is more and more emphasis on the importance of housing welfare through the supply of public housing for the underprivileged, including low-income groups, that considers the characteristics of residents [1]. There is a need for a new approach of more diverse architectural planning and public housing designs in order to consider and implement various features of residents and break free from simple and uniform large-scale public housing plans and supply [2].

Therefore, this study determines the situation of Korean public housing, as well as the limitations and problems of architectural planning and design of public buildings. Moreover, the objective of this study is to analyze the most recent cases of public housing in five countries—Denmark, the Netherlands, Japan, Spain, and Singapore—and come up with architectural planning and design characteristics of public housing in modern architecture. The

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results are used as the basic research material to seek a new approach to architectural planning and design of public housing suitable for Korea.

## **1.2. Research method**

To achieve the purpose, this study establishes the research method and scope as follows. First, a literature review of research articles or reports is conducted to determine the situation of Korean public housing, as well as the limitations and problems of architectural planning and design of public housing in Korea. Second, five of the most recent cases of public housing in five countries, including Denmark, the Netherlands, Japan, Spain, and Singapore are selected to come up with a new approach to architectural planning and design of public housing in Korea, as well as architectural planning and design characteristics of public housing in modern architecture. Third, this study will seek a new approach to architectural planning and design of public housing that can be applied to Korea. The case analysis is conducted by selecting the most recent cases of public housing that are excellent in terms of architectural planning and design in each of the five advanced countries.

## **2. Public housing in Korea**

### **2.1. Changes in the concept of residence and public housing in Korea**

With the population rapidly aging and households shrinking to single and two-person homes since the 2000s, the demand for housing is diversifying due to the changing population and household structure. Furthermore, there is a need for an architectural approach to new housing that considers the diversity of housing and quality of life based on social perceptions of residential space amid economic affluence and social stability in Korean society.

In this context, the Korean government decided to supply 850,000 units of public rental housing and 150,000 units of public tract housing for five years, starting in 2018, to secure residential stability of low-income groups that do not own homes. The plan is to increase the portion of public rental housing, which is currently 6.3% according to the public housing roadmap, up to at least 8%, which is the OECD average [3][5].

Moreover, there is a uniform and massive supply of public housing that does not consider regional circumstances and resident characteristics. Public housing units that have remained empty for at least half a year since construction due to failed demand forecasting are emerging as a huge social problem. In addition, the quality of public housing is relatively lower than private housing in terms of architectural design, space organization, and finishing materials [4].

### **2.2. Characteristics and limitations of architectural planning and design of public housing in Korea**

Architectural planning and design characteristics of public housing in Korea demonstrate a poor reflection of resident characteristics, uniform architectural space and form, deteriorated quality of architectural design, formation of a closed housing complex, and limitations in resident community facilities and shared space.

Despite the continuous supply of public housing, the needs are not sufficiently reflected according to the characteristics of residents living in public housing. Moreover, massive public housing residential environments are created with a repetition of uniform housing unit plans and monotonous architectural forms and façades supplied based on the standardized floor plans of Korea Land & Housing Corporation (LH). The overall quality of architectural design and

construction is decreasing with the use of low-quality finishing materials, considering the economic feasibility of public housing due to limited budget and construction costs. High-density closed housing complexes surrounded by concrete and walls are constructed without enough outdoor green space [2][3].

Social conflicts among residents are growing between public rental housing and general housing with a huge financial gap. There is a lack of guidelines for architectural planning and design of public housing, as well as insufficient support and amendment of related laws. In this situation, it is difficult to apply customized architectural planning for residents and creative architectural design owing to the limitations in community facility plans and shared space design within public housing [4].

### **3. Architectural planning and design characteristics of public housing in modern architecture**

As described in Chapter 2, this study determined the situation of public housing in Korea and presented architectural characteristics and limitations of public housing to examine the architectural planning and design characteristics of public housing.

This chapter seeks an architectural approach to new public housing suitable for Korea by presenting architectural planning and design characteristics of public housing in modern architecture based on a case analysis of public housing in five advanced countries.

By studying recent cases of public housing in five countries, including Spain, Japan, Singapore, the Netherlands, and Denmark, this study analyzes characteristics of the architectural approach to new public housing such as architectural space organization and façades of public housing that are different from those of Korea.

#### **3.1. Carabanchel housing (2007)**

Carabanchel Housing was built in Madrid, Spain, in 2007 as public housing in Spain. The building with a white façade is simple and yet has a variable and formatively beautiful exterior with various forms of balconies [6]. It well reflects the characteristics of public housing that must consider economic feasibility by using the modularized concrete unit system to reduce the construction period and save materials at the same time. Moreover, 102 housing units are planned in the building, with three different types depending on the number of bedrooms, reflecting the diverse characteristics of residents to create a residential environment in which various forms of households can live in harmony. Each housing unit is connected to the outdoor garden, providing a more pleasant and open residential space.

#### **3.2. Shinonome canal court (2006)**

Shinonome Canal Court was built in Tokyo, Japan, in 2006. Reflecting the characteristics of various residents living in the public housing complex, one building block provides a home office for residential use and telecommuting [7]. In planning the residential space, there were attempts to create various structures beyond just the general LDK form of living room, dining room, and kitchen. The community facilities in the complex were laid out in low-rise spaces between buildings instead of concentrating them in one place. Moreover, there is also a “Common Terrace,” which is a shared space that vertically connects two floors, creating a space that is not only visually but also physically open.

#### **3.3. Pinnacle@Duxton (2009)**

Pinnacle@Duxton is a 51-story super high-rise public rental housing building constructed in the heart of Singapore in 2009, with 1,848 housing units in seven buildings in the form of towers [8].

The low-rise areas of the public housing are connected to the community around the large open outdoor space, with great accessibility within walking distance to various convenient facilities at the heart of the city. To design outdoor rest areas in community facilities that are relatively small compared to the housing units owing to the nature of super high-rise buildings, the Sky Garden on the 26th and 50th floors, with excellent outdoor views, will connect the seven building towers. The public housing also features a playground, fitness center, garden, park, and trail for pedestrians. This is one of the best practices of super high-rise and high-density public housing planning at the heart of a city.

### **3.4. Wozoco housing (1997)**

Wozoco Housing was designed by the world-renowned architectural design firm MVRDV in 1997 and planned as a multi-family dwelling for the elderly aged 55 and above in Netherlands [9][11]. It is a good example of elderly housing, especially for Korea, which is currently facing the rapid aging of society.

This public housing broke the stereotype of the elderly preferring more stable and simple forms to design a unique and beautiful building exterior with protruding balcony spaces and windows in various shapes and colors. It also presented a new concept of multi-family dwelling for the elderly by changing the spatial layout and structure of simple elderly housing.

### **3.5. 8 house (2010)**

The project, 8 House, was designed by Bjarke Ingels Group (BIG) in Ørestad, a developing city area in Copenhagen, Denmark, in 2010. It was planned as a 10-story building with 476 housing units, as well as community and commercial facilities [10][12].

From the top, it has a unique design in the shape of an 8, and even though it is public housing, it provides a mini garden in all homes and corridor space in the form of ramps, designed like the alleys of a single housing complex. Also known as Big House, this building has multiple uses, including housing, stores, and offices, and is the biggest private development complex project among all projects carried out in Denmark.

Completed in 2010, this building is unique in that all residents can ride their bikes up to the rooftop on the 10th floor of the building, along the path next to the terrace garden. Instead of adopting for the traditional form of blocks, the building's spatial structure piles up all elements of life in the urban neighborhood layer by layer in a horizontal form connected to a continuous promenade and bike path. This new residential and commercial complex building was designed by connecting the flow horizontally and overlaying it vertically, breaking free from the traditional vertical form of housing.

## **4. Conclusion**

This study determined the situation and problems of public housing in Korea and attempted to come up with a new architectural approach that can be applied to Korean public housing, based on a case analysis of excellent public housing in five advanced countries.

Public buildings in Korea are limited in terms of creative architectural design owing to a poor reflection of resident characteristics, uniform architectural space and form, deteriorated quality of architectural design, formation of a closed housing complex, insufficient resident

community facilities, and limited budget and laws. In addition, the architectural planning and design characteristics of modern architecture based on the case analysis of public housing are as follows.

First, advanced countries plan customized housing units for residents based on their characteristics, instead of planning uniform housing units. Second, they plan public housing by combining various housing units, using plane modules of public housing. Third, they supply new and original public housing by attempting and applying creative and innovative architectural forms, floor plans, and façade designs, instead of monotonous and repetitive forms. Fourth, new and unique building materials are actively used to create a new, bright, and cheerful image and identity for public housing. Fifth, the advanced countries create open spaces to communicate with the surroundings of public housing, as well as shared spaces and community facilities inside and outside the building for residents to communicate with one another. Sixth, efforts are made to achieve economic feasibility in construction and to manage quality, given the nature of public housing.

By employing a case analysis, this study analyzed architectural planning and design characteristics of modern public housing. Research must be conducted continuously on more cases to come up with more reliable results and different architectural characteristics of each country. It is necessary to continue research on community facility planning of public housing for communication among residents within the residential space and connection to the neighborhood, in addition to research that reflects various resident characteristics, considering the situation in Korea, and that examines various sizes and types of public housing. Furthermore, the differences in architectural planning and design of public housing among the buildings selected for the case analysis and those in Korea result from sociocultural differences, but it was also possible to understand that each government provided policy support to plan and design new and creative public housing. It is necessary to innovatively improve the public housing system in Korea, and the government must establish drastic policies related to public housing and make active financial investments to improve residential stability and quality of life. To supply more beautiful and livable public housing in the rapidly changing social structure, more diverse and continuous studies should be conducted for architectural planning and creative design of public housing suited to the characteristics of residents.

## References

- [1] M.Y.Jin, Y.S.Kim, J.K.Jang, "Demand survey for activation of Enterprise-Type housing rental business, Ministry of Land, Infrastructure and Transport"., ROK.- Korea Land & Housing Corporation, (2015). p19
- [2] H.S.Kang, "The plan study of public rental housing community facility for activation of local community", Ph.D Dissertation, Hongik Univ. (2016)
- [3] Ministry of Land, "Infrastructure and Transport, 2016 A Survey on the Actual Condition of Housing - Statistical Report", Ministry of Land, Infrastructure and Transport., ROK. (2016)
- [4] LH Korea Land & Housing Corporation, "A Study on the Planning Criteria and Planning Methods of the Bogeumjari Housing", LH Korea Land & Housing Corporation, (2010)
- [5] [www.myhome.go.kr](http://www.myhome.go.kr) // MyHome Portal Site (2018)
- [6] <https://www.archdaily.com/4750/carabanchel-housing-dosmasuno-arquitectos>, August 9 (2008)
- [7] <http://architecturaleskine.blogspot.com/2011/10/toyo-ito-kengo-kuma-etc-shinonome-canal.html>, October 24 (2011)
- [8] [https://en.wikipedia.org/wiki/The\\_Pinnacle@Duxton](https://en.wikipedia.org/wiki/The_Pinnacle@Duxton), February 18 (2019)
- [9] <https://www.mvrdr.nl/projects/170/wozoco>, February 28 (2011)
- [10] <http://www.archdaily.com/83307/8-house-big/> October 20 (2010)

- [11] Xuerui Wang, B.K. Jun, "A Study on the spatial composition Characteristics of the Communal Space in Dutch Housing", proceedings of the AIK Spring Conference, vol.32, no.1, pp.5-6 (2012)
- [12] J.S Moon, B.K. Jun, "A Study on the Architectural Planning Characteristics of Modern Collective Housing in Denmark", proceedings of the AIK Spring Conference, vol.32, no.1, pp.3-4 (2012)