Chapter 19

The Paradigm Shift in Urban Regeneration

Field of expertise: Planning technology for urban revitalization

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Summary

Most of the areas affected by the Great East Japan Earthquake are mainly low-rise wooden houses, and most of the reconstruction houses are also wooden houses, except for disaster public housing in urban areas. Utilizing the local living culture and existing stock in the area for housing reconstruction in these areas will be a new urban renewal method for regional revitalization and a super-aging society.

Keywords: wooden emergency temporary housing, local reconstruction housing, group relocation, local revitalization, local housing builder

Introduction

In the event of a disaster, it is necessary to revitalize the lives of not only the city but also the entire area such as the surrounding rural areas. In addition, the rapid changes in the social structure after World War II have significantly changed the way of life in modern areas that have been cultivated over many years, and the appearance of the regenerated areas will change significantly from before.

1: Problems revealed by the Great East Japan Earthquake

What happened?

Most of the building damage caused by the Great East Japan Earthquake was caused by the tsunami. Most cities in Japan are occupied by wooden houses (Figure 19-1), so many buildings were washed away. Therefore, it was necessary to reconstruct these areas by providing new residential areas such as relocating residential areas from areas that are in danger of tsunamis and land reconstruction, accompanied by raising the ground level to prevent tsunamis, and as a result, it took a long time for reconstruction. During that time, the supply of comfortable temporary housing became an important issue.

In the Great Japan Earthquake, more than 50,000 temporary housing units were built. This time, a local construction company also constructed wooden temporary housing. Especially in Fukushima Prefecture, the total supply of 17,143 temporary housing units, 6,639 (38.7% of the total supply) was supplied by local contractors (Photo 19-1). It was reported that this wooden emergency temporary housing is much more comfortable than the prefabricated temporary

housing because it was designed and constructed by a local contractor who is familiar with the local climate and housing culture.

For reconstruction housing, local production groups were formed and constructed by local builders, design offices, foresters, timber manufacturers, building material manufacturers, etc. who are familiar with the local climate and housing culture. For these groups, the Ministry of Land, Infrastructure, Transport and Tourism supported the construction of these houses by utilizing the Regional Housing Branding Project subsidy system. These are also efforts that consider regional revitalization as well as reconstruction.

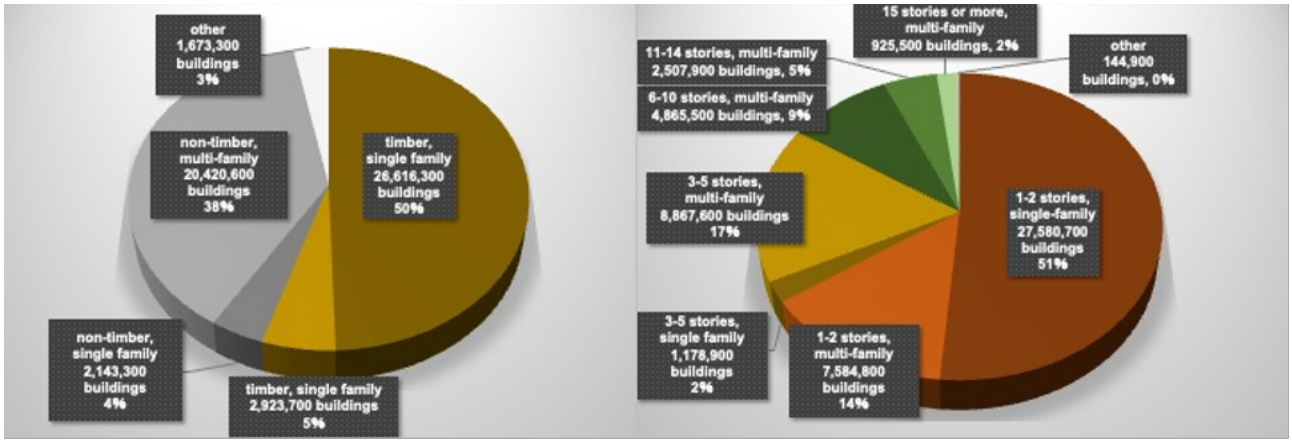

Figure 19-1. The number of Japanese housing units by structure/building (left), number of floors/building (right). There are about 53,655,600 houses in Japan, 55% of which have a wood frame, and half of them are wood-frame detached houses. Sixty-five percent are detached houses and apartments with 2 floors or less, and only about 7% of high-rise houses with 11 floors or more. (From the 2018 Housing and Land Statistics Survey)

Photo 19-1. Wood-frame temporary housing by the Miharu Reconstruction Housing Association, a group of local construction companies in Miharu, Fukushima Prefecture. It was built on the grounds of the park using the current greenery. These are comfortable temporary houses with the scent of wood, which use a lot of natural wood for both interior and exterior, and at the same time consider high heat insulation and high airtightness. Residents also highly evaluated these temporary houses. (Photo by Iwata)

The reality of the damage

The number of buildings that were seriously damaged by the Great East Japan Earthquake amounted to about 400,000, and it was thought that 100,000 homes would need to be rebuilt. Of these, about 30,000 were built as disaster public housing. Approximately 18,000 plots were prepared as residential land through the land readjustment project, disaster prevention group relocation promotion project, and the fishery settlement disaster prevention function enhancement project. It took 7-8 years for all of the construction.

2: Paradigms Destroyed by the Earthquake

Conventional wisdom and necessary responses

Japan is facing a declining population and a super-aging society with a declining birthrate. For this purpose, urban renewal methods need to prevent urban sprawl to the suburbs, bring the population back to the old urban area where infrastructure already exists, and create a walkable town that responds to the aging society. In other words, it is necessary to make it a compact city. However, the Great East Japan Earthquake created a banned area due to the tsunami, and many group relocations resulted in many suburban housing estates scattered in the mountains. In addition, more residential areas were supplied to the suburbs through land readjustment projects. On the other hand, there are many traditional towns and villages in the disaster area. The reconstruction of these commercial, agricultural and fishing facilities was separate from the reconstruction of housing. This is because housing cannot be built in the areas affected by the tsunami. This situation is similar to the relationship with suburban housing estates and large commercial facilities. In addition, the lifestyle will be commuting, shopping, and entertainment based on the premise of a car-based society.

As a result, we went against the urban renewal method required by Japan's current population decline, declining birthrate and super-aging society, and used the method of expanding to the suburbs of the 20th century. As a result, Japan's compact system of towns and villages close to work and residence that has existed since ancient times has been abandoned, and at the same time, the landscape of Japan's wood-framed buildings along streets and villages has been lost.

3: A New Approach

The Regional Housing Plan was started in 1983 as a national subsidy project to implement a housing policy unique to the region based on the living culture of the region. This was done from the reflection on the overconcentration in big cities and the standardization of cityscapes and houses nationwide. As a result, it has become common to consider the regional characteristics of current housing and community development.

Japan belongs to the monsoon climate zone as a whole. It is hot and humid mainly in summer, and low temperature and low humidity in winter. In addition, there are regions with a wide variety of climate characteristics, from Hokkaido, which has a cold climate, to Okinawa, which has a subtropical climate. Each region has cultivated a unique culture made of wood-framed buildings. It is the traditional construction companies in each region of Japan that have supported these from ancient times.

The economic spillover effect on housing construction is great. In addition to direct construction costs, there are various ripple effects such as incidental works such as electrical work and water and sewage works, moving costs, purchase of durable consumer goods, and interest payments on mortgages. It can be derived from the input-output table that the final demand

amount considering the secondary effect is more than twice the direct investment amount, and about 20% of it is tax revenue. For example, if the construction cost per building is 25 million yen (approximately 217,000 USD), the final price including the secondary effect will be 51.7 million yen (approximately 450,000 USD), and the tax revenue will be 4.8 million yen (approximately 42,000 USD). Most of the houses in the area are wood-frame detached houses, and if a local builder can build it, it will lead to great revitalization of the area. Therefore, if a local builder who is familiar with the local climate and culture actively participates in these series of housing reconstructions, it will be possible to simultaneously realize regional housing/town development and regional revitalization as well as reconstruction.

4: Achievements and the Future

In the Great East Japan Earthquake, regional production groups cooperated to open the door to the supply of regional reconstruction housing, rooted in the local culture at the time of the disaster. Regional reconstruction methods that utilize the power of these regions were also realized in Totsukawa Village in the 2011 Kii Peninsula flood, the 2016 Kumamoto earthquake, and the 2017 northern Kyushu flood. In Totsukawa Village, we have realized the construction of a wooden emergency temporary housing and a regional reconstruction housing using local timber. Instead of constructing housing that needs to be relocated in a new land like the Great East Japan Earthquake, regional disaster public housing was constructed by utilizing the vacant lot of the existing village. In other words, it shows that the relocation project and the disaster public housing construction project can be constructed of wood-frame structures and the vacant lots in the existing urban areas can be used to revitalize the area and realize a compact city.

Conclusion - from the author

Trees are living things. Therefore, if used improperly, it will rot and die. Japan's wood technology for over a thousand years has overcome it and built up local housing cultures. Due to new technological innovations such as CLT, wooden skyscrapers are beginning to be realized. Many of Japan's buildings are made of wood and this will continue to be the mainstream. When local communities realize this, a resilient and truly sustainable housing and town space, unique to Japan, will be created. I want to expect that.

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