Urban Planning for a Depopulating Society

Japan's Building Research Institute is researching and developing residential and urban planning methods that take account of regional characteristics in an effort to counter the effects of depopulation.

According to demographic statistics for 2005, Japan is rapidly becoming a depopulating society with the first natural attrition since records began. Because of longevity and low birthrates, the percentage of the aging population has reached 20% of the total population. This is already the highest in the world. In the future, the rate of population decrease will remain at maximum levels for an advanced nation and by 2050 the proportion of the elderly is projected to be double what it is now (see **figures 1 and 2**). As for the economy, the expectation is for no growth or contraction. Taking into account the increase in global environmental problems as well, there will be major changes in the social environment surrounding residential and urban planning.

In this context, we are presented with problems such as the hollowing out of central areas, primarily in local towns and cities. It is already difficult to implement conventional development methods aimed at upgrading land use and with the decline in public finance reserves for state and local public bodies, we are in a situation where it is difficult to expect improvements in public services. Therefore, it is necessary to rebuild systems to support urban planning, to develop residential and urban planning methods including proactive participation by local residents' organizations such as neighborhood association, and to share roles appropriately between public and private sectors while utilizing regional resources such as the housing stock and townscapes.

In response to these socioeconomic changes, the Building Research Institute is researching and developing residential and urban planning methods that take account of regional characteristics.

Present Situation in Urban Centers in Regional Towns and Cities

Many of the central areas of local cities are residential areas with a concentration of low-rise detached housing and there are many small lots of approximately 100 m^2. When the elderly residents of housing built on such small lots die, the children inherit the lots,

Figure 1: Population increases and decreases in Asia and the West

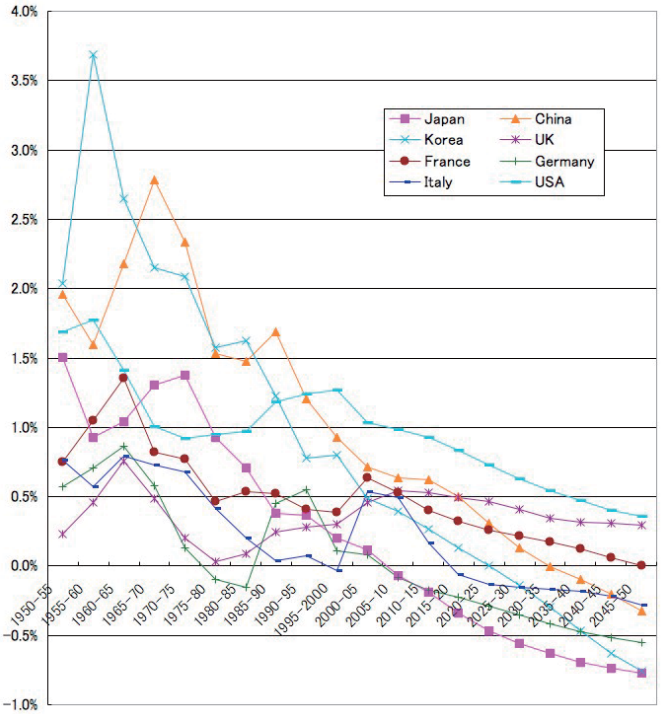


Figure 2: Proportion of aging population (ratio of population aged 65 and over) in Asia and the West

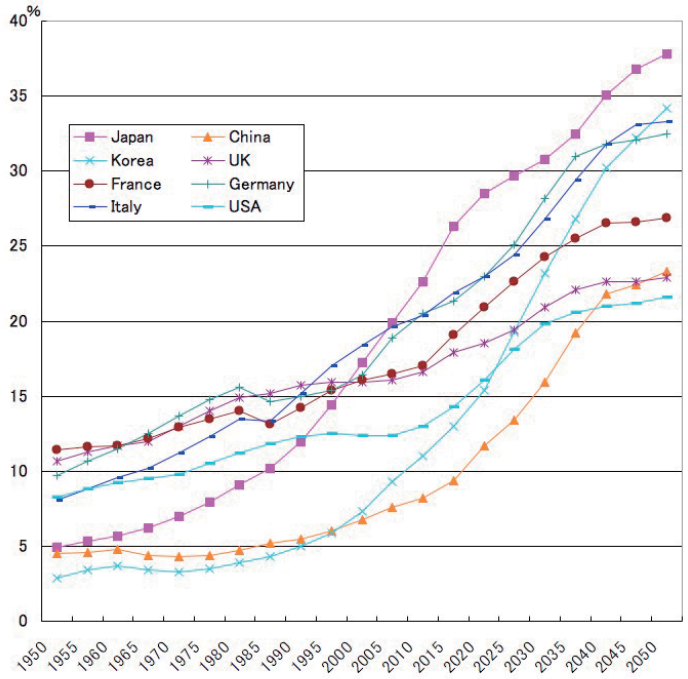
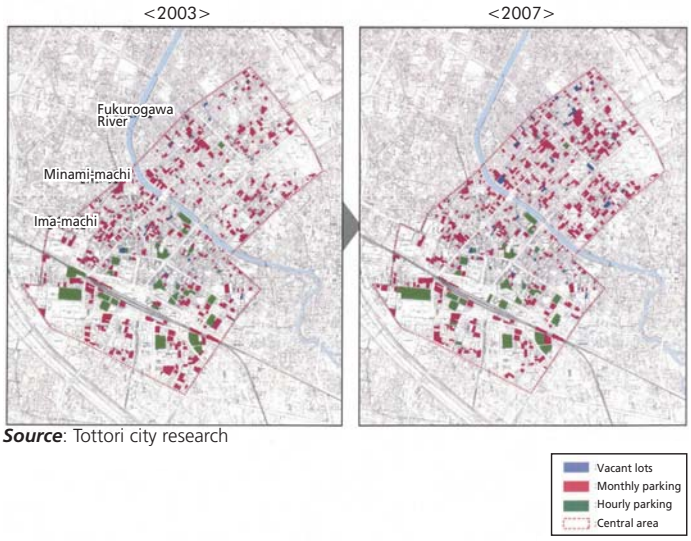


Figure 3: Parking lots are increasing in residential areas.

Figure 4: A medium-rise apartment building built in a low-rise residential area

Figure 5: Underused and unused land in an urban city center



Source: Tottori city research

but many people in the children's generation are leaving for the major cities and the houses and land are soon vacant. In this way, there is an ongoing hollowing out of the central areas in local cities with vacant lots, parking lots and other underused or unused land becoming more common, while the construction of medium to high-rise apartment buildings is advancing when comparatively large lots are sold to developers, causing the destruction of the townscape and becoming something of an issue (**figures 3–5**).

In these circumstances, as the population continues to age, there is a growing need for housing in areas where it is possible to get around on foot (**figure 6**). However, in the centers there is a strong awareness of continuous property holding among landowners and the supply for residential needs is extremely limited.

Aiming for Dynamic and Comfortable Urban Planning

Utilizing regional resources, residential and urban planning methods suited to regional characteristics, and the role of people in the community are the key points for redressing the hollowing out of city centers caused by the population decline, revitalizing housing in downtown areas and upgrading and maintaining regional residential space. As for specific methods, we propose the following.

(1) The need to develop effective land use techniques to replace downtown parking lots

Low-rise residential models suitable for dowtown areas in local and cities and methods for their realization

Parking lot landowners in urban city centers place a high value on parking lots as a hassle-free method of asset (land) ownership (**figure 7**). It is also clear that as matters now stand, no method for effective land use to replace parking lots has been found. With regard to this situation, major contributions to revitalizing urban city centers and facilitating downtown living are conceivable, if it were possible to develop methods for supplying housing while retaining ownership of the land as a method of land use that could replace parking lots.

(2) Potential for a method utilizing leaseholds

Verification by means of model design and project simulation

As a method of delivering low-rise housing in central area in local cities, we studied the potential for land use utilizing leaseholds (a lease with a term of at least fifty years and, as a rule, not renewable) in Tottori City (**figure 8**).

Typically, housing with leaseholds has materialized because, compared with the usual subdivision method, the land is ultimately not retained and the price is said to be 80% or less of a condominium (ownership of land). Preliminary calculations by the Building Research Institute based on the example of a leasehold for a model-designed, low-rise connected house format (terraced houses) found that they were available at 80% or less of the price of the normal subdivision method. Based on this, there is potential to establish low-rise housing with leasehold rights since they seem to be undervalued in contrast with normal condominiums (ownership of land) (**figure 9**).

As a result of the preliminary calculations, we also found that with respect to profitability for the landowner, low-rise housing with a leasehold secures profitability that is equivalent to

operating a parking lot (**figure 10**).

As for medium to high-rise housing with leaseholds, the results of the preliminary calculations indicate that there is no market from the perspective of homebuyers and landowners in local cities where the price of land is low.

It is possible to purchase housing with a term leasehold for less than the normal condominium because the share of land expense is low. Therefore, when land prices are low, the price difference with normal condominiums is diminished and from the perspective of the buyer, the advantage is lost. On the other hand, profits are also low for landowners because they cannot set a high ground rent.

Figure 6: Reasons for wanting to live in the urban city center

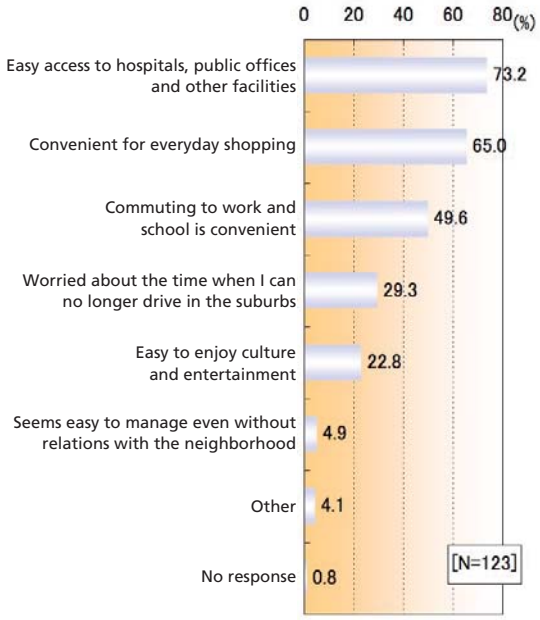
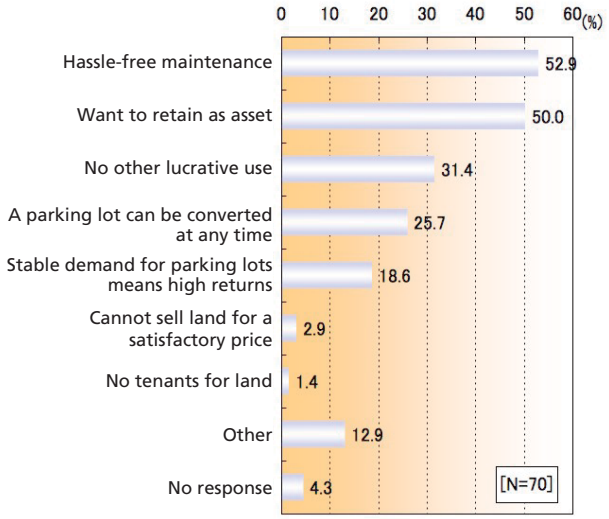


Figure 7: Reasons for owners to use land as parking lots



(3) The need for a combination of support systems for downtown housing and urban planning regulation

In local cities, the revenue from operating parking lots is relatively high. As matters now stand, if revenue were equal, we believe that the potential is still high for choosing to operate a parking lot due to the liquidity of the land. Therefore, in order to find ways to promote downtown living with low-rise housing suited to the central areas of local cities, it would be effective to combine measures such as preferential treatment for fixed asset taxes involving ownership of housing and land, and urban planning control, including height regulations that consider the townscape.

Figure 8: Downtown low-rise housing model

(4) Methods to improve space in the regions and management of vacant lots and housing

In areas where there is a concentration of small-scale building lots, management of vacant lots and vacant housing is inadequate, and as vacant housing continues to deteriorate, damage to the surrounding residential environment emerges. When these areas are neglected, there is not only an increase in collapse and other dangers, but there is also emerging concern that they are becoming breeding grounds for criminal activity. With regard to such vacant lots and houses, a structure is required that assumes the role of managing such information centrally, making improvements through repairs, and proposing methods of utilization through shared use with adjoining land.

As a method for regional space improvement, assuming the pattern of basic land use and space improvement outlined in **figure 11**, we propose improvement methods to connect building lots with no access to roads to the road network, to maintain the facilities and infrastructure elements that are necessary for the region such as new turning roads for automobiles using existing unused land, improvement methods utilizing adjoining vacant houses and unused building lots, and methods of utilizing existing vacant housing based on characteristics such as the state of road-to-lot connections and the degree of obsolescence of the buildings. By utilizing these types of improvement patterns to reorganize the space, unused land in a bad state of repair and dwelling density will be reduced with the effect of improving the standard of the

Figure 9: Price comparison for housing with term leasehold and normal condominiums (land ownership)

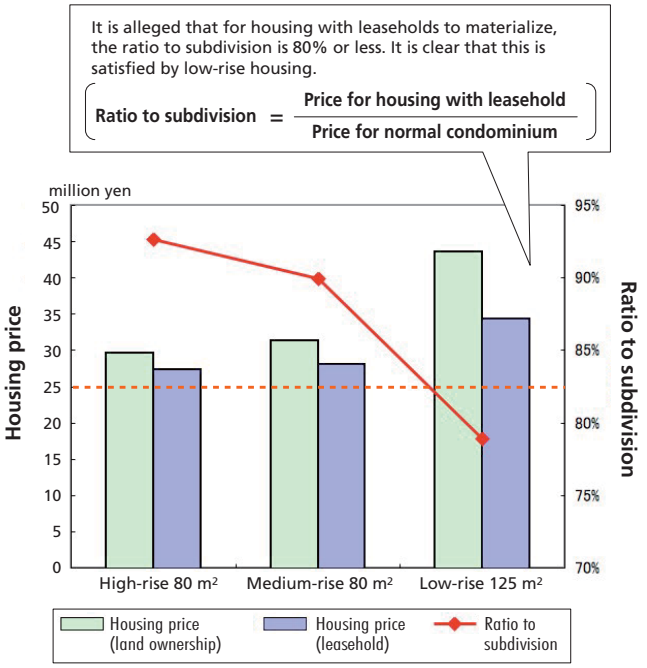


Figure 10: Comparing annual revenue for landowners

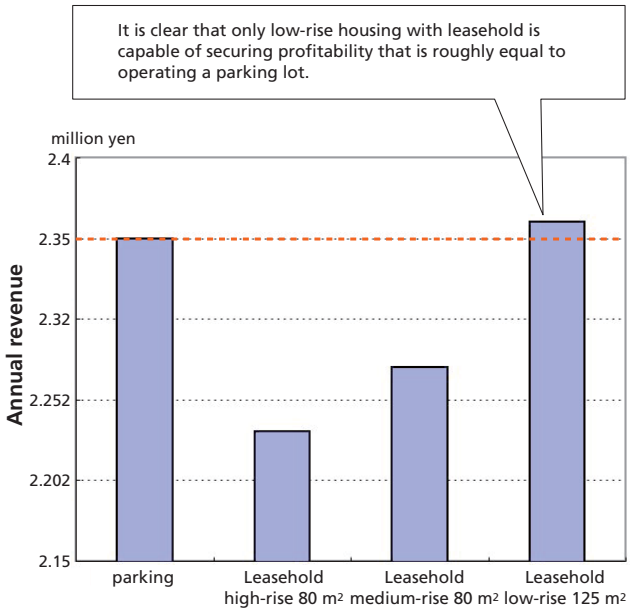
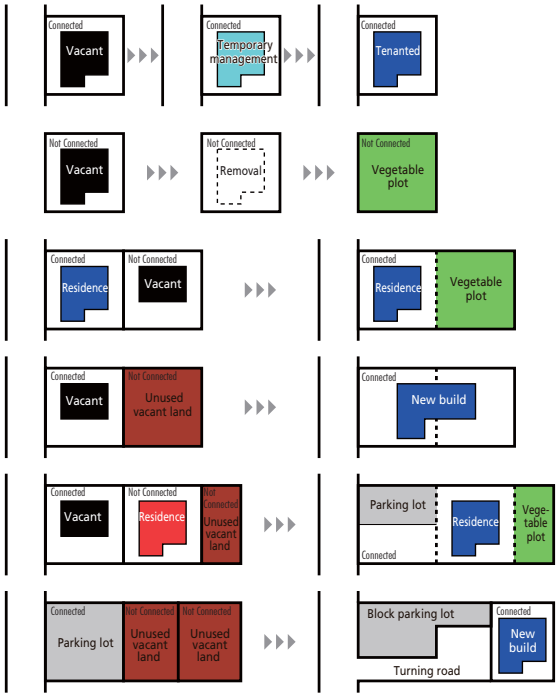


Figure 11: Pattern for basic land use and space improvement (example)



Put vacant houses connected to a road under temporary management and advertise for tenants after renovation.

Remove vacant houses that are not connected to a road, and advertise for people to use the lots to grow vegetables.

After removing vacant houses on back lots not connected to roads, consolidate the lots and use as a single vegetable plot (garden).

Remove vacant houses connected to roads, consolidate unused vacant land at the back and build new housing.

Remove vacant houses, consolidate unused vacant land at the back, and improve conditions for road connection by turning the frontage into parking space.

Use parking lots and unused vacant land to build new turning roads with remaining land operated as a block parking lot by the community association, and build new housing on land where the conditions for connection to roads have been improved.

residential environment.

Toward the Future

With respect to the application of basic space improvement patterns and methods for implementing low-rise housing in downtown areas in local cities and towns introduced earlier, implementation by bringing in the proactive participation of neighborhood associations and other community associations is thought to work well for residential and urban planning under depopulation.

With respect to the residential and urban planning methods proposed and studied in the past, the Building Research Institute will continue to study the potential for implementation through trials in model zones as well as making broad studies of the potential for applications in other areas. In a few decades, the developed nations in Europe, China and Korea will also be faced with aging societies similar to Japan, and we believe there will be an increase in opportunities to utilize this kind of expertise.