Special feature: *Kokudo-gaku* (national land infrastructure planning) as code

National land infrastructure planning and urban form: The twenty-first century as an era of planned retreat from suburban sprawl

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One of the worst areas in which Japan has failed to attain international standards is that of urban form. Cities lack a two-dimensional shape and there is no boundary between urban and non-urban areas. The buildings of built-up areas within cities are faceless, and cities lack a well-defined three-dimensional shape.

If the population declines by half, urban areas should also decline by half

According to an estimate by the National Institute of Population and Social Security Research, an organ of the Ministry of Health, Labor and Welfare, the population of Japan will decline by approximately one-half during the twenty-first century. If the population is reduced by one-half, it stands to reason that urban areas should also shrink by one-half. To maintain today's urban areas with half the population would mean doubling the per capita costs of maintaining urban areas and the proportion of costs borne by public investment. Considering that that the government's burden for social security costs will also rise in the future, this would be practically impossible. Nevertheless, urban areas are still expanding in Japan, from large cities to smaller cities and even small villages.

Photograph 1 is an aerial photograph of Letchworth Garden City, a suburb of London.[1)] Here, the boundary between urban and non-urban spaces is very clearly defined. In contrast, Photo 2 shows a suburb of Nagoya, with no clear boundary defining the urban district. The important distinction is that in Letchworth, the urban area which is to be maintained is consolidated, allowing efficient public investment into the future; while sprawl has occurred in the Nagoya suburb, making it necessary to maintain roads, water and sewer systems, electricity, gas, and other elements of infrastructure, even in areas with a low population density. The same is true of provincial cities in addition to the suburbs of large cities. For example, in the city of Iida in Nagano Prefecture, the densely inhabited district (DID) tripled in area during the twenty-year period from 1970 to 1990 (Fig. 1), while the population of its DID remained roughly constant. This is the first pattern of urban decay in Japan.

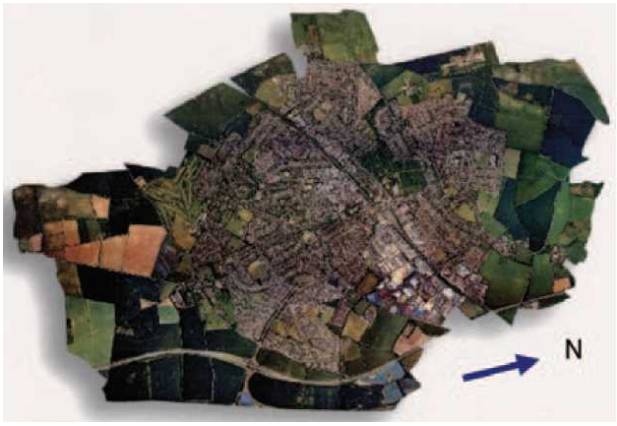

Photo 1. Suburb of a large city (Letchworth, suburb of London) with clearly defined urban district boundaries (Source: Reference 1)

Photo 2. Suburb of a large city with poorly defined urban district boundaries (suburb of Nagoya)

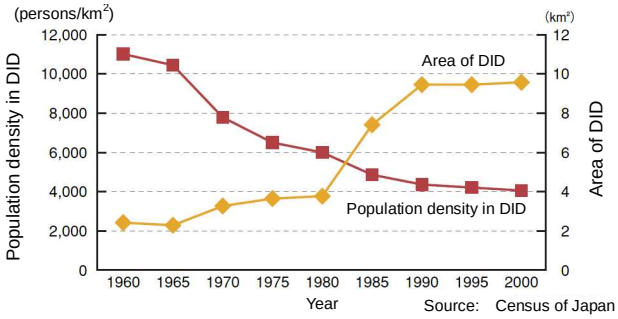

Fig. 1. Trends in DID size and population density in Iida, Nagano Prefecture

Monthly income of ¥2.25 million by 2050?

During the second half of the twentieth century, nominal income rose by an average of about 9% per year, multiplying about 75 times over 50 years. The average monthly salary of a new university graduate in 2000 was about ¥300,000 (face value, including bonuses and other compensation prorated per month), compared to about ¥4,000 for their grandparents' generation upon graduation from university in 1950. If this 9% growth rate continued, their grandchildren's generation would earn a monthly salary of about ¥2.25 million as new university graduates in 2050. However, many economists are predicting an economic growth potential of about 1 to 3% in the first half of the twenty-first century.[2] In this case, the monthly salary of a new university graduate would only be about ¥500,000 to ¥1.3 million in 2050. Considering that the economic growth rate will be flatter in the future, the dangers of unchecked expansion in urban areas are clear.

Seeing only buildings and ignoring city blocks

Japan's cities are subject to the phenomenon of "throwaway buildings," which does not occur in other advanced countries. The average lifetime of a residential building in Japan is only 26 years, much shorter than in the U.S. (44 years) or the U.K. (75 years).[3] Why is there such a difference? Buildings destroyed or rendered unusable by earthquakes or flooding account for only a very small proportion. The main reason seems to be an excessively high level of freedom with regard to the construction of buildings. For buildings within built-up areas of cities, the attitude is that only the building itself matters, and the city block might as well not exist. For example, it is not at all unusual to see a mixture of two-story homes with 20-story condominiums in neighborhoods near the commercial districts of built-up urban areas. There is a significant trend toward reduction of the functional lifetimes of buildings due to disturbance of the cityscape.

Slums appearing throughout cities

Western cities such as London experienced declining populations and economic downturns beginning in the 1960s, as high-income earners escaped the overcrowded, unsanitary inner city and moved to the suburbs. Slums emerged as more and more homes were abandoned in the inner city and only the unemployed and low-income earners remained. This sort of geographical social stratification has not occurred in Japan. However, as the population continues to decline, it is feared that more and more dwellings will be abandoned as they

come to the end of their functional lifetime, so that vacant buildings will be randomly scattered throughout every part of a city, not only the inner-city area. The result could be a depressing, brutal landscape all over the city. This is the second pattern of urban decay in Japan.

Twin strategy for reverse suburbanization

What strategies are needed to prevent urban decay? One important tactic is a twin strategy for reverse suburbanization, combining a planned retreat from suburban sprawl with investment in existing built-up areas.

The following are some specific policy tools that could be used in this approach. As stated above, the average lifetime of a residential building in Japan is only 26 years. The following five policy measures could be adopted to combat this trend:

(1) Landowners in an urban neighborhood formulate a future cityscape vision statement and adopt a neighborhood building plan based on that vision statement, including equivalent exchanges of land and building space.

(2) This plan is approved by the municipal government.

(3) Landowners who rebuild in accordance with the approved plan are eligible for reduction or exemption of the fixed asset tax.

(4) Extra space is created, since floor space is generally larger after a building is rebuilt.

(5) Persons who move into a neighborhood that has an approved plan are eligible for reduction or exemption of the municipal inhabitant tax.

The result of this series of policy measures would be to stock the central part of a city with long-lived, quality-controlled buildings that will not be rejected based on the values of future generations. Here, the concept of a long lifetime does not refer to improving the strength of structural materials in order to heighten earthquake resistance. Instead, it refers to extending the functional lifetime through assurance of the comprehensive living environment, including aspects such as semi-permanently fixing the spatial arrangement of a neighborhood's buildings and gardens and ensuring an attractive landscape with greenery to reduce the heat island effect.

With these kinds of policies, the population would return to the central parts of cities, and maintenance costs for suburban built-up areas would be reduced. This would improve municipal finances and reduce the public investment burden per household, placing less of a burden on the household budget. It will be necessary to give consideration to various types of strategies and policy measures to prevent urban decay, but the important thing is to develop holistic systems which will promote activities to improve the assets of society, as described above, instead of the existing social systems in which it is more advantageous to separately pursue the profitability of each individual site. *Kokudo-gaku*, or national land infrastructure planning, is the theory that is needed to lead this effort.

References

1. Pamphlet issued by the Letchworth Garden City Heritage Foundation, 1999.
2. Report by the Dai-Ichi Life Research Institute, "Asia's medium to long-term growth potential and the medium to long-term outlook for Japanese exports: With a declining population, the Japanese economy will increasingly rely on exports to Asia," 2004 [in Japanese].
3. 1996 White Paper on Construction