

MEGALOPOLITAN DEVELOPMENT AND THE TRANSFORMATION OF RURAL JAPAN: SUSTAINABILITY IMPLICATIONS OF EXTENDED METROPOLITAN REGIONS IN ASIA

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Summary

This paper examines the implications for sustainability of new forms of metropolitan economic and spatial development that are characteristic of much of the most densely populated parts of Asia. Often described as extended metropolitan regions (EMRs), these areas are a product of the rapid expansion of urban economic spheres of influence into the densely populated rural areas common in regions of intensive rice agriculture. A distinctive characteristic of this new form of economic integration is the progressive blurring of the distinction between rural and urban, as farmers become increasingly active in the metropolitan economy, and urban and industrial land uses progressively multiply at relatively low densities in formerly rural areas.

As Japan was one of the earliest countries in Asia to develop, and the Japanese Tokaido Megalopolis is an extended metropolitan region of great size and long standing, the

distinctive problems inherent in these new forms of spatial development are particularly evident and well documented in Japan. The paper examines the most important implications of Japan's severe problems of urban sprawl, lack of basic urban infrastructure, and degraded urban and rural environments, and explores the policy implications for land management.

It seems clear that the long-term environmental sustainability of metropolitan regions can be seriously compromised by such development patterns, and that protecting open spaces and land for essential public uses is only possible early in the process of development. Even though Japan has become extraordinarily wealthy, it is now less affordable to tackle these serious environmental problems than it was earlier because land prices have risen much faster than either GDP (Gross Domestic Product) or tax revenues. It seems clear that in Asia, where the vast majority of the world's urban growth is expected in coming decades, effective land management regimes will be essential to ensure sustainable long-term patterns of rural and urban development.

1. Introduction

This paper looks at the post-war transformations of rural areas adjacent to the metropolitan areas of central Japan. Drawing on two major strands of thinking about large-scale urbanization, the Megalopolis and Mega-city thinking initiated by Jean Gottmann in 1961, and the extended metropolitan region (EMRs) debates touched off by Terry McGee in 1991, patterns of metropolitan development in central Japan are critically examined, and the sustainability implications for other Asian nations explored.

In Asia, the bulk of future urban population growth is expected to occur. For example, the World Bank has estimated that urban population in Asia will increase from 3 108 million in 1990 to 4 889 million in 2025. Accommodating a further 1.7 billion urban dwellers will necessarily result in a vast expansion of urban areas, and as these urban areas are not yet built they hold the greatest potential to affect, for better or worse, long-term patterns of world urbanization. The nature of development patterns in these areas is therefore critical to long-term environmental sustainability of major parts of Asia. Significantly, both the scale of the new extended metropolitan regions in Asia, and their patterns of growth are in important ways qualitatively different from those of the other developed countries. Any insights that may be gained from the case of Japan may therefore be highly valuable.

The question of whether the Japanese experience is relevant to other Asian countries, however, is not simple. It is always important to be extremely cautious in applying one country's experience of urbanization to another, as local conditions and institutional history are important in influencing outcomes. Many of the factors that have been most important in the Japanese case, including the extreme fragmentation of land ownership, the political power of farmers, extremely low tax rates on farm land within urban areas, and the seeming inability to require the provision of basic urban infrastructure as a condition of urban development, may not apply in other Asian countries. As discussed below, however, it seems likely that in many Asian countries some of the basic conditions of settlement prior to urbanization are similar enough for some lessons usefully—if very carefully—to be drawn from the Japanese case.

The focus here is on the extensive areas that are in proximity to the major metropolitan areas, including much of the central part of the country. More remote areas have a different set of problems related to lack of economic vitality, and population decline as young people move to the cities. These changes can contribute to sustainability where rural areas were overpopulated, and where appropriate policies for restoring forest cover and wildlife habitats, for example, are in place. Such has generally not been the case in Japan, as in the post-war period forest management has consistently meant the replacement of mixed native forests with monocultures of Japanese cedar, prized for its fast growth and clear grain, but ecologically damaging as such plantations support little of the diverse flora and fauna of the native forest cover. The enormous increase in cedar forests in the post-war period has also led to nationwide epidemics of hay fever each summer.

Part two of this selection outlines some of the distinctive features of mega-urban development in Asia, and Part three examines patterns of urban growth in the Tokyo Region, drawing on case study research which examined patterns of land development in the urban/rural fringe of Tokyo during the period of 1968-1992. Part four explores the distinctive challenges for sustainable development posed by EMRs, while Part five draws out the most important implications for sustainability policies in EMRs that may be gleaned from the Japanese case.

2. From Megalopolis to Extended Metropolitan Regions

A key aspect defining rural areas is that the main economic base is found in primary occupations, particularly farming, fishing, and forestry. In contemporary developed countries, however, the share of primary industries in national employment is continually shrinking. In the Japanese case, primary industry accounted for 53.8% of national employment in 1920, but only 9.3% in 1985. That reduction is largely a consequence of the migration of the population to cities, but it is also a result of the penetration of the urban economy throughout what are apparently still rural areas. In 1985, for example, some 68% of Japanese farmers throughout the country gained less than half their income from agriculture. The extent of participation in the “urban” economy was even higher in areas adjacent to the great metropolitan areas. In mountainous Japan, where urban and agricultural areas are crowded tightly together on narrow alluvial plains, non-agricultural employment is accessible to most of the population, and the former distinction between urban and rural has lost much of its meaning. The spread of metropolitan economic influence far beyond areas that are identifiably “urban” is not, however, a phenomenon that is restricted only to Japan.

2.1. The Concept of Megalopolis

One of the first thinkers to address the implications of these new patterns of development was the French regional geographer Jean Gottmann, whose seminal study of the “Megalopolis” of the Northeast seaboard of the US, published in 1961, initiated a whole new way of thinking about large-scale urbanization. In Gottmann’s view, Megalopolis stood as a prototype of the future of urban civilization because of the vast scale of metropolitan development, and the new patterns of economic and spatial organization that it represented. Gottmann emphasized the ambiguous division between

rural and urban in Megalopolis, arguing on page five that “the old distinctions between rural and urban do not apply here any more. Even a quick look at the vast area of Megalopolis reveals a revolution in land use. Most of the people living in the so-called rural areas, and still classified as ‘rural population’ by recent censuses, have very little, if anything, to do with agriculture”. Gottmann’s analysis was on the whole optimistic, and he was careful to guard against the alarmist view often associated with urbanization on a massive scale. He argued against the description of huge cities as a pathological phenomenon or sickness, suggesting that, on the contrary, in Megalopolis the population was on the average healthier, the consumption of goods higher, and the opportunity for advancement greater than in any other similar sized region of the world.

Gottmann’s analysis of the new patterns of metropolitan development found an enthusiastic reception in Japan, where rapid economic growth during the 1950s and 1960s saw the concentration of population and industry in a corridor between Tokyo and Osaka. This area quickly became known as the Tokaido Megalopolis, after the ancient road linking the two cities along the Pacific coast. The Japanese were proud that their own Megalopolis was the biggest and fastest growing of them all, and Gottmann himself was regularly invited to comment on the Japanese government’s long-term plans for the management of the megalopolis as it grew to its current size of over 70 million people.

2.2. Extended Metropolitan Regions and Desakota

In the early 1990s the Canadian geographer Terence McGee drew on Gottmann’s megalopolis idea in developing his concepts of Desakota and the extended metropolitan region in Asia, which have since prompted a rapidly expanding literature of their own. The concept of Desakota, a neologism based on the Indonesian words for village, “desa”, and town, “kota”, was proposed by McGee in 1991 to describe the newly emerging interlocking metropolitan regions of Asia. The fundamental idea is that urbanization in Asia may follow patterns very different from elsewhere because of the pre-urbanization patterns of high density rural settlement resulting from the intensive cultivation of rice which is characteristic of Japan and many other Asian countries. Rice agriculture areas are characterized by gross population densities in rural areas which are, prior to urbanization, often higher than those in fully developed American suburbs, and frequently also contain or are adjacent to the largest urban centers. With economic and technological change these areas are progressively integrated into urban economic networks and emerge as large mega-urban regions. McGee suggested that Desakota zones are regions with an intense mixture of agricultural and nonagricultural activities that stretch along corridors between major cities. Such extended metropolitan regions previously supported dense agricultural populations primarily engaged in wet-rice agriculture. Desakota thus describes a spatial and economic phenomenon whereby urban economic integration and land development occurs over a very large area, as more and more peasant households are integrated into metropolitan economic networks, and urban land uses are spread ever further from the original urban areas.

McGee divides the Desakota regions in Asia into three types based on the level of economic development. Type 1 is that found in South Korea and Japan where Desakota areas typically have a mixture of small farm plots, housing, and industry. Type 1

Desakota regions are also characterized by rural landscapes in which most economically active work is in nonagricultural activities. Examples of type 2 Desakota can be found in Taiwan's Taipei- Kaosiung corridor, the Calcutta region, and Jabotabek in Java. These are areas which are experiencing rapid economic growth which is concentrated in the urban cores and adjacent regions. Type 3 Desakota is found in Kerala in South India, the Sichuan Basin of central China, and Jogjakarta in Java, and is characterized by slow economic growth, high population growth, surplus labor, and persistent low productivity in both agriculture and non-agriculture. Such Desakota type development commonly takes place over very large areas between and around major metropolitan areas, forming what are now commonly referred to as extended metropolitan regions.

McGee, in common with Gottmann, sees this form of urbanization as a generally positive development. Among the benefits seen to flow from the development of extended metropolitan regions are economic vitality and flexibility, and the reduced pressure of migration towards existing urban centers, as people can participate in the urban economy while remaining in extended family units on the farm. Desakota is therefore seen as both a natural and even inevitable form of urbanization of Asia's high density rural areas, and also as a highly fertile medium for economic growth.

One part of the agenda of McGee and collaborators has been to challenge the applicability in Asia of the traditional Western dichotomy between rural and urban, and resulting policies designed to keep them separate. Western objections to urban sprawl are seen as primarily a manifestation of a culturally specific preoccupation with a tidy division between rural and urban areas which has no place in the very different Asian context. It seems clear that the positive evaluation of Desakota style urbanization is a powerful challenge to traditional Western notions of the division between rural and urban. McGee's collaborator, Ginsberg, in 1991, described the phenomenon as "the urbanization of the countryside" in which "the distinction between what is thought of as 'urban' and 'rural' has become distinctly blurred". Ginsberg further suggested that without the common Western assumption that urban sprawl is ugly, the arguments against it lose much of their force. As shown below, however, the Japanese case challenges that assertion, as aesthetic issues are not the main problem of sprawl in Japan.

2.3. The Tokaido Megalopolis

In the Japanese case the post-war land reforms transferred ownership of the majority of rice growing land to peasant smallholders, and created a structure of very small farms averaging about 1 hectare in size, which has endured to the present day. Small scale mechanization dramatically reduced the labor required to grow rice, at the same time that rapid economic growth created labor demands which were met, to a significant degree, by the incorporation of a majority of farmers into the urban/industrial economy even while they continued to farm part-time. Thus by 1985 only 14% of Japanese farm households were still farming full-time, 18% were farming part-time with the majority of their income from farming, and 68% were farming part-time with the majority of their income from off-farm sources. This shift in the income packaging strategies of Japanese farmers has had profound consequences for the structure of the rural space economy. It has also transformed the rural landscapes of Japan, as farmers have found

such employment only partly by traveling to cities. To a great extent factories and other enterprises have also come to farmers, in search of labor, cheaper land, and less congestion than within built up areas. A result has been that throughout Japan, but particularly in the vast Tokaido Megalopolis that now stretches from Tokyo to Hiroshima, urban industrial, commercial, and residential uses tend to be scattered throughout what had been rural areas as recently as the 1950s. This area, which is now home to more than half the Japanese population, is an extended metropolitan region par excellence and has exhibited many of the characteristic features of such regions, including economic vitality and serious urban problems such as pollution and congestion. Japanese planners have tried to put a positive spin on this form of urban growth, and have labeled these areas “Konjuka” where city and countryside are “melting” into each other.

It seems likely that in the short run, up to a certain stage of development, these patterns of development will have many advantages, which almost certainly outweigh the disadvantages. Chief among these is that households can integrate themselves progressively into the urban economy while maintaining their land holding and residence. They thus have land and housing, which provide an important family asset and capital base, and can maintain the link to subsistence food production in times of crisis. By maintaining their residence they also reduce migration-induced housing pressure in the core urban areas. Economic development in the extended metropolitan areas will almost always result in less congestion, at least to a certain stage of urbanization, as gross population densities are lower than in fully built up urban areas. Also, little investment in urban infrastructure is necessary, as traditional rural methods of handling solid and liquid waste can remain viable up to certain levels of density, and much travel is by bicycle and two-stroke motorbikes on the old rural road networks.

In the longer run, and those concerned with sustainability must always be concerned with the longer run, it seems very likely that these extensive, sprawling patterns of urban development do create serious problems. The conventional wisdom of urban and regional planning is that such extensive development will be likely to lead to higher costs for the provision of basic urban infrastructure, greater travel burdens resulting from longer distances traveled, and greater car dependence as a result of low-density development. It is useful to consider the patterns of land development in the semi-rural areas outside of Tokyo for an indication of some of the issues associated with such development patterns.

3. The Melting of Rural and Urban in the Tokaido Megalopolis

The Tokaido Megalopolis, a vast area of urban/industrial sprawl between Tokyo and Hiroshima, and including the three main Japanese metropolitan areas (Tokyo, Osaka and Nagoya) is the central fact of post-war Japanese development. One of the dominant features of growth in this region has been the scattered location of housing and industrial uses throughout what had been densely populated rural areas around and between the metropolitan cores. In other words, the region shows many characteristic features of an extended metropolitan region. This section outlines the main factors that shaped development in this region: the extreme fragmentation of rural land holdings; the continuing importance of farm land owners as land users, developers, and speculators;

and the relative weakness of land development controls. Case study data are then presented showing the development patterns and issues that resulted.

3.1. Fragmented Rural Land Ownership

Fragmentation of land holdings is in part a legacy of centuries of intensive cultivation of limited areas of arable land and incipient rural overpopulation in Japan. Over the centuries, rural poverty and frequent subdivision of land holdings led to farm sizes that were barely large enough to support a family. As rice agriculture can support a family on very small plots of land, the average size of a subsistence farm was tiny by Western standards, resulting in relatively high rural population densities in rice growing areas. Similarly high rural population densities are characteristic of many of the other rice-growing areas of Asia. In Japan rural land fragmentation is also significantly a product of the post-World War Two land reform carried out under the direction of the Allied occupation which saw the forced purchase of 1 128 000 hectares of rice land and 790 000 hectares of dryfield land from 2 341 000 landlords and sale to 4 748 000 tenants. The reform caused a reduction in the number of holdings above 2 hectares, and a significant increase in operated holdings of less than .5 hectares from 33 to 41% of all farms. At the same time there was an increase in the total number of farms from 5.4 million in 1940 to 6.2 million in 1950. Therefore over 2.5 million farms were less than 5000 square miles in size, or smaller than a good sized suburban residential plot in the United States. The haste with which the reform was carried out perpetuated existing fragmentation, as land holdings of individual farmers were not consolidated as part of the process, meaning that family holdings were often composed of many scattered plots. This fragmentation of land holding has persisted, as 2 609 000 out of the total 3 739 000 farm households outside of Hokkaido, or 70%, had holdings of 1.0 hectare or less in 1990.

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Biographical Sketch

André Sorensen was born and raised in Canada. He received his MSc and PhD in Planning Studies from the London School of Economics, and lived and worked in Japan from 1994 to 2002. This paper draws on research undertaken during a two year Postdoctoral Research Fellowship in the Department of Urban Engineering, University of Tokyo funded by the Japanese Society for the Promotion of Science, and during two years as Lecturer in the same department. The most significant product of his years in Japan is a research monograph titled *The Making of Urban Japan: Cities and planning from Edo to the Twenty-First Century*, published in 2002 by Routledge, which examines the development of Japanese cities and city planning from the feudal period to the present. He is now Assistant Professor of Urban Geography in the Division of Social Sciences of the University of Toronto at Scarborough, and in the Department of Geography and Program in Planning at the University of Toronto.