CASE STUDY ON MANAGING URBAN EXPANSION IN TOKYO
1. OVERVIEW ON TOKYO’S URBAN EXPANSION

Tokyo, with a population of 38 million (2017) has been the world’s largest mega city for the past sixty years in terms of economic scale and population agglomeration. Through Japan’s drastic economic and social changes, this enormous city has been performing a difficult balancing act of managing urban growth at the national, prefectural, and municipal levels.

Tokyo today consists of 23 special wards, 26 cities and multiple small towns and villages. It is the nation’s political and economic core and boasts an abundant supply of Grade-A business office buildings. The metropolitan area furthermore includes the seven surrounding prefectures of Kanagawa, Saitama, and Chiba, with over a dozen large satellite cities, comprising the nation’s Capital Region (Syutoken).

The city’s overall growth has been guided by the National Capital Region Master Plan (NCRMP) of 1956, under which Tokyo obtained special status as a capital and a higher level of support from central government for planning and rebuilding. In Japan, the national government has a dominant power in planning and development to embody unitary management and coordination over the country. Holding inclusive visions in the national development plans (Comprehensive National Development Plans (CNDPs)), the national government draws master plans and enacts special laws, backing them with large financing for the Capital Region. Adapting the nation’s umbrella plans to the local context, prefectural and municipal governments devise city plans including arrangement of land use, provision of infrastructure, and incentive systems for private sectors. The region is thereby guided by both top-down strategy of the central government and horizontal coordination among prefecture and municipal governments with the multilayered arrangement.

Under a free-hold land tenure system and relatively limited government intervention in the land market, the growing capital city succeeded in mobilizing private sector interest to invest in railways and housing, and the results can be witnessed in Tokyo’s urban spatial structure today. Versatile privately owned and managed railway companies radially extended commuter lines outwards and built residential suburbs along them (e.g. Tokyu Corporation and the Garden City Project, Seibu Railway and Tokorozawa, Keio Corporation and Seiseki Sakuragaoka1), contributing to forming an urban shape of “fingers”.

After WWII, Japan suffered the pressure of mass rural to urban migration. Tokyo regained its population during the immediate post-war period and reached 7 million by 1955, subsequently reaching 10 million only seven years later. It then started to expand especially westwards, inducing haphazard small-scale development and sprawl (Figure 1).

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1 Based on Iwamoto, T. et al. (2009). Post Evaluation on a Collaborative Development in Urban Railway Station Areas and their Surroundings in Tokyo Metropolitan Area. Journal of the City Planning Institute of Japan, 44-1, 3. https://www.jstage.jst.go.jp/article/journalcpij/44.1/0/44.1_1/_pdf
While the central business districts enjoyed economic benefit from urban agglomeration, the fast-growing mega region faced scarcity of affordable housing for middle-income workers and saw a significant increase of long journey commuters from the neighboring cities (Figure 2). To meet the surging demand, the government supplied mass developable tracts of land (large areas vacated by older industrial units which were then developed for mass housing) to the market by relocating large factories to the new industrial areas in the fringe, mobilizing untapped land, and reclaiming the coastline of Tokyo Bay. This decentralization trend continued until the 1990s, until Japan was faced with a halt in its high economic growth era; the “burst” of the real estate bubble. Land prices in Tokyo dropped sharply, leading to Japan’s decade long economic stagnation (Figure 3).

Central Tokyo was more recently transformed through urban revitalization and regeneration. Under deregulation of floor-area-ratio and height control of high-rise buildings (increasing the ratio of a building’s total floor area (zoning floor area) to the size of the land (site) area upon which it is built, which then as a result allows for higher buildings to be built), housing and property became much more affordable, and Tokyo saw itself re-densify at the core once again. However, as a mature mega city, Tokyo underwent various urban problems such as traffic congestion, pollution, flooding, lack of access to basic services, degrading living environments, and lack of affordable housing resulting from the long pursuit of pro-growth policy and, more critically, is now struggling with emerging issues caused by the gradually but steadily changing demography and the downward economy across the country.

FIGURE 1 Expansion of Densely Inhabited Districts (DIDs) in Tokyo Metropolitan Area

Note: DID is defined as districts with a population density of 4,000 or more inhabitants per square kilometer, and a total population of 5,000 or more. Source: Ministry of Land, Infrastructure, Transport and Tourism.
FIGURE 2  Changes in Population and Density in Tokyo Metropolitan Area

Source: Author adapted National Accounts Statistics by the Cabinet and Ministry of Land, Infrastructure, Transportation and Tourism, National Census, Metropolitan Statistics by Tokyo Metropolitan Government.
FIGURE 3  Changes in National GDP Growth and Average Land Price of 23 Wards in Tokyo

Real GDP and Real economic growth rate

Average Land Price in 23 special wards

Source: Author adapted National Accounts Statistics by the Cabinet and Ministry of Land, Infrastructure, Transportation and Tourism, National Senses, Metropolitan Statistics by Tokyo Metropolitan Government.
2. POLICY ALTERNATIVES DURING AN ERA OF HIGH POPULATION AND ECONOMIC GROWTH: WHAT WORKED AND WHAT DIDN’T WORK?2

How would a city, faced with the challenges due to high population and economic growth pressures against a backdrop of limited fiscal capacity, land and resources, go about solving the increasing issues from rapid urbanization, traffic congestion, pollution, flooding, lack of access to basic services, degrading living environments, and lack of affordable housing? Japan “explored” various policy alternatives, and some worked, others didn’t – each with its respective positive and negative impacts and outcomes.

POLICIES TO DECENTRALIZE EMPLOYMENT

If the concentration of jobs in the inner wards of Tokyo is the main cause behind the spatial separation of employment and population in the Tokyo metropolitan area, policies to decentralize employment would be the most rational solution to the city’s problems. There was in fact a long tradition of such policies. After the 1923 earthquake, the first major industrial plants were relocated from inner city locations to newly created industrial areas along Tokyo Bay, and this was continued in the post-war reconstruction period, partly using land reclaimed from the Bay. Decentralization of office activities proceeded more slowly. Only during the 1980s have excessive land prices in central Tokyo spurred the development of secondary office centers throughout the region, many of them waterfront developments around Tokyo Bay. However, a slump in demand for office space followed and retarded the process. The plans for a decentralized National Capital Region conflicted with its stated goal of making Tokyo a ‘global city’ and the related tendency of high-level office functions to concentrate in central Tokyo, and situation today shows that the late change from decentralization to centralization was not effective as envisaged.

POLICIES TO CREATE NEW LAND

These policies aim at increasing the supply of land by creating new land underground (extensive use of underground space for commercial use, mainly at railway terminal stations and intermodal facilities, done in partnership between public and private sectors), on the water (land reclamation, mostly public-led), or in the air (high-rise buildings, mostly private-led). The most substantial land gains are expected from land reclamations from Tokyo Bay. Major projects aimed to provide housing and workplaces were planned on several artificial islands. These projects have one thing in common: because of their high construction costs, their financing schemes work only under the prospect that the land they create can be sold after completion at market prices. So, these projects could not be expected to bring

land prices down, even though they may take some pressure from central Tokyo. The effect on commuting time depends on the number of residences that will eventually exist in the new developments.

POLICIES TO MOBILIZE UNTAPPED LAND SUPPLY

The aim of these policies was to make it less attractive for landowners to hold vacant land. The greatest impact was expected from abolishing the tax privilege (all farm land in Urbanization Promotion Areas to retain preferential tax treatment, which was 1-2% of the tax paid on nearby residential land) of farming landowners in suburban areas. If the property tax on suburban agricultural land could be made equal to that on residential land, most farmers would be forced to sell or develop their land. Depending on the amount of supply released, land prices should go down. This would lead to shorter commuting times. However, the new property law which went into effect in 1992, had again failed to solve this problem as it retains the privileges of suburban farmers. The effects of an increase in the tax on capital gains from land sales are difficult to predict. In the case of speculative land transactions, the effect on price formation is likely to be minimal. Increasing city planning tax (Japan has two types of property taxes which are imposed yearly, namely 1) fixed asset tax: tax that is calculated based on the price of fixed assets such as land, a house, and depreciable assets, 1.4% of assessed value of fixed assets and 2) city planning tax: tax to be levied as objective tax to allot for expenses required for city planning projects or land readjustment projects, 0.3% of assessed value of fixed assets) would have had a similar effect as the property tax, except that it would also increase the tax load of residential lots. Land Readjustment reduced the amount of residential land, and although the new lots have higher use-value and may carry more dwellings, so commuting times would decrease. Land prices are likely to go up, as improvements carried out by the public sector through land readjustment projects increases the attractiveness of land and its value.

POLICIES TO INCREASE HOUSING SUPPLY

One way to protect households from the financial burden of high land prices and rents is to subsidize housing construction. In the Tokyo Metropolitan Area, there have been extensive housing projects both by the Japan Housing Corporation and by local government. Being in general high-rise developments, these projects have helped to fight urban sprawl. However, as land for these houses had to be bought at market prices, they have not contributed to a reduction on land prices. Because of high land prices, the housing projects of the Japan Housing Corporation had tended to be at distant locations and had thus effectively contributed to the increase in commuting times.

POLICIES TO SUBSIDIZE HOUSING DEMAND

Besides housing projects, housing subsidies can be given to households in the form of housing loans or allowances. Housing loans from public loan corporations had lower interest rates than private bank loans, and the amount of finance had continued to increase through 1990s. With rising land prices, not only had the number of households finding themselves in debt grown considerably, but the share of their income required for monthly instalments and

3 The government pools or assembles the various privately owned land parcels in each area and prepares a land use plan for the overall area including designating spaces for public infrastructure and services such as roads and open spaces. It then implements the plan and provides the necessary trunk infrastructure. At the end of the process, the government returns to each landowner a land parcel proportional to their original parcel but of smaller size (for instance, 60-70 percent of the original land parcel) except that the new land parcel is of a higher value because it is now serviced urban land. The government retains selected strategic land parcels that it auctions or sells at market rates for cost recovery of its investment in infrastructure and service delivery.

4 Infrastructure improvements (such as transport including roads, bridges, and public transport, water supply, sewerage, electricity, gas, etc.), supply of open and green space and its maintenance, and basic public services (public buildings, schools, hospitals, libraries, etc.)
the duration of repayment had also increased. Housing loans create demand at market price, and hence stimulate land price development. Many large corporations, especially foreign firms, gave housing allowances to employees to make it possible for them to live in Tokyo.

POLICIES TO SUBSIDIZE COMMUTING

Practically all firms subsidize the commuting expenses of their employees through commuting allowances. While it is fair that at least the financial burden of long commuting is taken from commuters, it has the undesirable effect that, when choosing a residence, they consider only travel time. If they had to pay for commuting from the same budget as housing, many households would probably opt for a closer but smaller house. The neo-classical economic concepts of household locational decision making, or the access-space tradeoff model, does not apply in the Japan context. Possible unpopular but necessary policies to reduce long commuting would be to abolish the tax exemption of commuting allowances and raise public transit fares.

POLICIES TO REDUCE COMMUTING TIME

The most direct way to reduce long commuting times is to provide faster transport. On existing commuter rail lines this can be achieved through higher train speeds, shorter stops and more frequent trains. In fact, these measures have been extensively applied to produce the impressive efficiency of the public transportation system in Tokyo. Therefore, dramatic further reductions in door-to-door journey times are not likely. The greatest impacts will occur where entirely new lines open land at the periphery of the metropolitan area for commuting. The irony is that such transport improvement, under the conditions of a speculative land market, may contribute to its extension of railway lines. With an upward sloping demand curve, the additional land supply does not help to bring land prices down; instead, through land price increase along the line, it forces many households to move farther out. The benefits of the new line largely go to developers and landowners, while the households, through higher land prices and longer commuting times, are in a worse situation than before.

POLICIES TO RECLAIM TRANSPORT COSTS

These policies were originally discussed to open new channels for financing transport infrastructure in the face of rising construction costs and land prices using the principle of value capture. However, some of these measures also serve to distribute the benefits and burdens of transport improvements in a more equitable way between landowners and land users. If, for instance, landowners along a new rail line are charged a higher property tax in proportion to the increase in price of their property due to the new line, a fairer distribution of benefits would result. Apart from the difficulties of objectively imputing the benefits to individual lots, the problem is that nothing can prevent landowners passing these extra costs on to their tenants or buyers, in which case the value capture measure would contribute to justifying further land price increases. A positive effect would result in the case of speculative land hoarding, as it would make it more expensive to withhold vacant land from the market.

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5 The neo-classical economic concepts of household locational decision-making can basically be understood as a simple trade-off model between accessibility and space requirements. That is, the size of a property and its accessibility to the city center are inversely proportional; the further the property is from the city center, the larger the property will likely be. Since distance to the city center means more transportation cost, and transportation costs and space requirements are seen to be the main factors influencing household locational decision-making.
3. KEY POLICY INSTRUMENTS TO MANAGE GROWTH: THE STRUCTURE AND LOOPHOLES

The first urban master plans were drawn around 1940 when housing development started remarkably expanding westwards. The plan envisaged a core area ringed by green areas and surrounded by linked cities, influenced by European ideas, especially Ebenezer Howard’s earlier “social city” scheme as “Garden City”.

MASTERS PLANS FOR THE CAPITAL REGION

The first urban master plans were drawn around 1940 when housing development started remarkably expanding westwards. The plan envisaged a core area ringed by green areas and surrounded by linked cities, influenced by European ideas, especially Ebenezer Howard’s earlier “social city” scheme as “Garden City”. The city leveraged post-war reconstruction to push this vision. The initial reconstruction plan passed for the execution targeted the city population below 5 million while settling 4 million inhabitants in the fringe cities by conducting more than 10,000 hectares for Land Readjustment, new multiple 100- and 80-meter-wide road construction, and 18,000 hectares for green area in the city. However, these were relinquished due in large part to austerity. 90% of original Land Readjustment plan was cut off, only existing roads were slightly expanded without almost no new construction, and all the planned green area was abandoned.

The NCRMP substituted these masterplans. It has been revised five times until now and is still in effect. The first plan designated a 10-kilometer-wide greenbelt, adopting Abercrombie’s Greater London Plan. However, it was renounced, facing strong housing demand and active opposition by farmers who wanted to subdivide and sell farmland. Instead, the existing built up area around a 50-kilometer radius from the city center was designated for Suburban Development Area, which were divided into Urbanization Promotion Area (UPA) and Urbanization Control Area (UCA) by 1970. In contrast, the idea of satellite business cities was accepted over a series of the NCRMPs up to the latest 5th plan, attempting to form both highly self-contained but also mutually supportive sub regions to accommodate a diverse range of residents in the suburbs (Suzuki et al, 2015).

CITY PLANNING SYSTEM (see Figure 4)

The 1968 New City Planning Law is the current active city planning law in Japan, the first major revision of the law since first passed in 1919. The objective of the Law is to promote the sound development and orderly improvement of cities by stipulating the details of city planning and decision procedures. As urban sprawl became prevalent in the suburbs after the first stipulation of the Law, it was revised in 1968 to deal with issues in urban fringe areas and suburbanization and to primarily focus on controlling excess land conversion from rural to urban. While under the 1919 Law the ministry at the national level held all planning powers, the 1968 Law enabled considerable delegation of planning powers to prefectural and municipal governments.

Japan’s planning system has mainly three types of “city planning instruments and tools” i.e. 6 Sorensen, A. (2002). The Making of Urban Japan. London: Routledge.
land use regulations (area division, land use zones, special districts), designation of urban facilities (mechanism for securing land upfront for infrastructure development), and urban development projects (which includes various land conversion mechanisms such as land readjustment).

**AREA DIVISION**, or the concept of growth boundary in the Japanese context is precisely the borderline of Urbanization Promotion Area (UPA) and Urbanization Control Area (UCA), which are both within the City Planning Area (CPA).

- **City Planning Area (CPA):** CPA can be designated for land that meets conditions for population, number of employees, that require integrated urban improvement, development and preservation in due consideration of both current and future natural and social conditions. CPA is composed of Urbanization Promotion Area (UPA) and Urbanization Control Area (UCA).
- **Urbanization Promotion Area (UPA):** UPA can be designated for land which will be urbanized within a designated period (approximately 10 years). UPA and UCA classification is primarily based on the following criteria: potential for future urban growth and expansion, urban service coverage, and natural preservation considerations.

- **Urbanization Control Area (UCA):** UCA can be designated for forest area, natural conservation area, agricultural and rural village area, disaster and flood-prone area, and other preservation area. Any construction and urban development activities without permission are restricted within UCA. Land conversion from agricultural to urban is not permitted within UCA under Agricultural Land Law.

**LAND USE ZONES** is an instrument which regulates the use, density and form of buildings in guiding land use, and must be designated in the entire Urbanization Promotion Area (UPA). Based on designated use zone by block, other indicators such as Floor Area Ratio (FAR), Building Coverage Ratio (BCR), and maximum building height are designated for each use zone to control volume of buildings of each
block. It is pro-development in nature, that is, development which conforms to these land use zones are in principle permitted by default.

**URBAN FACILITIES** are one of the most fundamental provisions of Japanese City Planning Law. The location and area of Urban Facilities are stipulated in advance to 1) tightly regulate the building and land development activities of the land plots included within the Urban Facilities area, so that the construction of such facilities in the future can be restricted; and 2) ensure the consistency across land use, projects and facilities, ensuring the effective consultation with relevant agencies and the general public. The first objective is due to the country’s experience during the rapid growth period when urbanization happened very rapidly and hence became very costly to secure land in a built-up area for urban facilities.

This is done through a “City Planning Decision” otherwise known as *Toshi Keikaku Kettei*. Effects include, among others:

- Building activities will be restricted in areas where Urban Facilities have been stipulated;
- Once the location of facilities is determined, landowners/leaseholders can prepare an appropriate development plan in accordance with the facility plan.

**URBAN DEVELOPMENT PROJECTS** schemes enable the public and private sector to carry out necessary development projects to serve public interests through the provision of infrastructure and service delivery. The objectives of having these schemes are to: enhance land use efficiency, consolidate fractioned land ownership and ensure efficient development of roads etc. There are various schemes in place to enable such actions, such as using exchange and conversion of land rights, or acquiring the entire land within the project area. Some projects involve elements such as: development of business, construction of commercial and residential facilities, development of new towns, establishing industrial zones in suburban areas and thereby dispersing population and industries, reinforcing buildings to be resilient, and securing roads and parks for evacuation purposes.

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**BOX 1 Why was Japan not able to contain urban sprawl?**

Given that the new planning system had been explicitly designed to prevent further sprawl, why did this continue in the 1970s? The following were ways in which the city planning system was compromised:

1. **Over-designation of UPA:** pressure from farmers and farm organizations to include as much land as possible within it, and the Ministry of Construction wanted to ensure that an adequate supply of raw land is available
2. **Failure of the proposed land tax reform:** broad loopholes in the new tax which allowed virtually all farm land in UPAs to retain preferential tax treatment (i.e. 1-2% of the tax paid on nearby residential land)
3. **Creation of significant loopholes that allowed sprawl development in both the UPA (mini-kaihatsu) and UCA (kison-takuchi):** mini-kaihatsu is exempted developments of 1,000 m² or less within the UPA from the need to gain development permission (unpaved access roads, serviced neither with sewers nor piped gas, etc.) and kison-takuchi is the result of granting “right to build” in UCA for landowners in specific areas
4. **Very loose planning regulations in non-Senbiki “white” areas (area where UPA/ UCA is unidentified):** only half the CPA was divided to UPA and UCA, and are only subject to weak development permits

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7 Includes transport facilities: roads, urban rail transit systems, car parks, automobile terminals, public space: parks, open spaces, plazas, utilities: water, sewerage, electricity/gas, waterways: rivers, canals, education and cultural facilities: schools, libraries, research facilities, medical and social welfare facilities: hospitals, day care centers.

4. OPPORTUNITIES FOR THE PRIVATE SECTOR: RAILWAY-BASED LAND DEVELOPMENT

Tokyo’s urban area has grown outwards along railway lines such that the Tokyo metropolitan area, which currently is home to the world’s most extensive railway network. Slow onset of motorization (happening only after 1970s) and poor road network in and around the city spurred rail-based suburbanization.

RAILWAY DEVELOPMENT AND URBAN EXPANSION

Tokyo’s urban area has grown outwards along railway lines such that the Tokyo metropolitan area, which currently is home to the world’s most extensive railway network. Slow onset of motorization (happening only after 1970s) and poor road network in and around the city spurred rail-based suburbanization. Importantly, the land market is open to private developers under Japan’s free-hold land tenure system and relatively limited government intervention in the land market. Mass demand for suburban housing in the 1950’s at the dawn of Tokyo’s expansion invited a series of disorderly development, undermining the living environment. Nevertheless, some private companies did indeed achieve integrated rail and housing development, grounded on long-term master plans and a vision of a new community development. Naturally, the companies broadened their business fields and initiated what could be the origins of transit oriented development and land value capture long before these concepts were globally acknowledged.

OVERVIEW OF RAILWAY DEVELOPMENT AND INCENTIVE MECHANISMS FOR THE PRIVATE SECTOR

Multiple railway agencies serve the metropolitan railway network. There are about 48 rail transit providers including public, semiprivate, and private rail agencies, which operate highspeed railways, monorail, new fixed-guideway transit, and classic tram lines across seven prefectures. The railway agencies are classified into three categories based on ownership (Table 1). The first boom of the establishment of railway agencies was between 1910s to 1920s. The national government proceeded with nationwide railway network construction while the internal metropolitan network is intensified with subway lines developed by a public agency jointly invested by national and metropolitan governments. It should be noted, however, that the public Japan National Railway (JNR) was established in 1949 but fell into bankruptcy in 1987 with the debt of about JPY 17 trillion due in large part to financial inefficiency of the bureaucratic management.

In post-war reconstruction programs, the national government stressed the

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9 "Integrated Station-City Development – the Next Advances of TOD" (Nikken Sekkei Ltd.)
10 Most operational duty was devolved to seven privatized companies, current Japan Railway Companies while some ownership of rail facilities including guideways of bullet trains and the settlement role remained in a national agency (Japan Railway Construction, Transport, and Technology Agency). See page 104 of Financing Transit-Oriented Development with Land Values, The World Bank, 2015, for the detail of JNR’s privatization.
importance of seamless commuter rail lines in the metropolitan area. The Ministry of Transportation in 1955 established the Urban Transportation Council that compelled “mutual extension operation” to multiple railway providers scattered throughout the area; this is an operator-blind approach which allows for trains to directly run through the metropolitan subway and commuter lines. For instance, a passenger on a train running on Line A of Operator A will be connected seamlessly to Line B of Operator B, without the need of any transit. Mutual extension operation was introduced in 1962 and is known as a distinctive feature of Japanese metropolitan railway operation. This guidance became the foundation for railway operators for decades. Although the installation requires overcoming many technical difficulties in configuring facilities such as railway width, electric power connection, size of trains, operation security system, cost sharing of salary of staffs, and other charges for using facilities, this has been adopted by most metropolitan subway lines. Thoroughly introducing the interconnected operation at the early stages of railway development had various positive outcomes; mitigating congestion at terminal stations, reinforcing carrying capacity, and ensuring seamless transfers.

To add some context, by this time trams were no longer functioning in the huge city; the carrying capacity were much inferior to subways and the running speed was lowered by urban road traffic congestion. The Council hence decided to eliminate them, and the once total 200-kilometer-long tram lines had been mostly removed by the 1970’s.

JNR also dramatically reinforced the capacity of the commuter lines. After WWII, it spent JPY 680 billion (USD 1.9 billion at the rate in 1965\textsuperscript{11}, USD 6.8 billion at the current rate) over five trunk rail lines following the large-scale railway reform plan stipulated in 1965. This huge amount of investment enabled separated operations on the same tracks (e.g., express / rapid / local trains and passenger / freight trains), making trains longer and faster. Thanks to this large investment, these rail facilities currently operated by JR’s still enjoy superiority to private lines in terms of carrying capacity and service frequency.

Replacement of railroad crossing to continuous grade separation is another political option to prevent urban sprawl by effectively utilizing limited spaces. Agreement between Ministry

\textsuperscript{11} Currency exchange rate of Japanese Yen had been fixed as extremely low as USD 1 to JPY 360 after WWII until 1973.
of Construction and Ministry of Transportation in 1969 enabled the provision of subsidies for eliminating at-grade railroad crossing on traffic roads by leveling the guideways or moving it underground. Currently major defayers of these projects are local governments; they pay 90% of the total cost, the half of which is covered by grant from the central government with earmarked funds from fuel tax and vehicle registration tax and the remaining 10% should be covered by railway companies. It should be noted that these railway companies benefit greatly from improved operational safety and effective use of new spaces generated by the project.

Private railway development was also encouraged by various incentive programs provided by the government. Low interest rate loans and loan-interest subsidies are available to railway providers, in addition to exemption or significant reduction of property tax on rail-related facilities. To promote integrated development of railway and housing, the Special Urban Rail Development Promotion Special Measure Act of 1986 was enacted. It allows railway agencies to collect extra money from their current services and to reserve them in a special fund to support future improvements.

**HOUSING DEVELOPMENT INTEGRATED WITH RAILWAY DEVELOPMENT**

Most housing development in the Tokyo Metropolitan Area was led by the private sector railway companies. Tokyu Corporation among others developed the country’s largest private-led community along the Tama Denentoshi-line when it was extended between 1966 and 1984. This symbolic case attempted to embody the garden city concept for wealthy urban residents, and then broadened its concept to an inclusive community development accommodating 620,000 residents over 50 square kilometer area along the extended line. Most of the development area was in the previous Greenbelt between the two cities, Yokohama and Kawasaki, but the Greenbelt designation was revoked subsequently by the two municipalities. The company collectively acquired development sites with dozens of Land Readjustment projects over a 50-year period. Land Readjustment has been significant to promote integrated development of railway and housing in Japan. It existed in pre-WWII times and began from agricultural land consolidation. After the Agrarian Reform in 1940’s, Land Readjustment was more needed to reorganize increased number of small-land lots in the urban fringe. Lately, this traditional instrument was innovatively integrated with railway development when building Tsukuba Express, a large-scale suburban commuter rail connecting between Tokyo and multiple satellite towns.

Although the legal arrangement chased this case down much later after the plan of this new commuter line was devised, a special law of Housing-Railway Integration Law in 1989 was implemented only for this project with the provision of zero-interest loans as well as public financial assistance. While other new suburban rail projects suffered from high costs for land acquisition, under this law, the right of way for the new rail line was designated by municipal government, and the area was exceptionally allowed to collectively transfer with the surrounding land lots that governments or public agencies previously acquired. Various land value capture schemes have also been explored by railway operators. By nature, new railway projects require huge capital investment. Although cost recovery should primarily be from fare revenues, full cost recovery can be challenging. Railway companies

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12 Refer to TDLC Knowledge Product, Case Study Land Readjustment in Japan, for details of Land Readjustment mechanism.
13 From 1947 to 1950, the central government expropriated agricultural land from great landowners and distributed those land rights to the tenant farmers. Consequently, farm lands were subdivided and the new small-land owners ran for seeking development opportunities, active lobbying for preferential land tax treatment, opposition to the initial plan of small UPA boundary, and claiming “right to build” in UCA.
14 Refer to Land Readjustment for Transit-oriented Suburbanization and Land Value Capture - The case of Tsukuba Express and the Kashiwanoha Campus Township.
15 Refer to Financing Transit-Oriented Development with Land Values, the World Bank 2015, for detail of types of land value capture and details of financial arrangement for TOD.
in Japan have combined multiple sources and schemes, as summarized in Table 2.

Not only had real estate developers and railway agencies formed suburban communities, the public sector such as the Japan Housing Corporation (JHC) also played a major role to respond to the surging housing demand of middle-income workers. The JHC, the predecessor of Urban Regeneration Agency, was established by the central government in 1955 in response to the trend of population concentration into mega cities and increasing nuclear families. As an independent public enterprise, the JHC retained a healthy balance sheet by applying a variety of funding sources such as public and private loans, self-issued bonds, and public investment. By leading multiple Land Readjustment programs, it arranged areas for public amenities, including roads, parks, and other mixed use of schools and small retailers together with residential land, avoiding excessive costs. It provided 1.02 million households mostly as a form of housing complex and developed 26,000 hectares, of which 6,000 are for residential use, until it was dissolved in 1981.

However, the government failed to provide access railways to these housing estates. They were not connected by commuter lines at least when they opened due to its unprofitability. Hastily, the government established laws and set forth public subsidies for railway construction to provide access to new towns, which did prove effective to an extent.

**TABLE 2  Summary of Land Value Capture Mechanisms in the Tokyo Metropolitan Area**

<table>
<thead>
<tr>
<th>Type</th>
<th>Location</th>
<th>Key stakeholder</th>
<th>Mechanism</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internalization</td>
<td>Urban-suburban</td>
<td>Private railway corporations</td>
<td>Carrying out land readjustment projects along rail lines, receiving the land reserved for property development, and allocating the capital gains from real estate to railways internally (“internalizing” external businesses in private railway companies)</td>
<td>Tokyo Corporation Denentoshi Line</td>
</tr>
<tr>
<td>Requirement</td>
<td>Suburban</td>
<td>Private railway corporations</td>
<td>Paying half of the construction costs of new town lines and providing the rights of way at a base price</td>
<td>Hokuso Line</td>
</tr>
<tr>
<td>Integration</td>
<td>Suburban</td>
<td>Local governments With developers</td>
<td>Reserving the rights of way for new rail lines and increasing developable parcels for housing sales jointly through land readjustment projects</td>
<td>Tsukuba Express</td>
</tr>
<tr>
<td>Petition</td>
<td>Suburban-rural</td>
<td>Local communities with developers</td>
<td>Paying the construction costs of new station facilities, providing the rights of way for free, and creating station plazas and access roads through land readjustment projects</td>
<td>JR Lines</td>
</tr>
<tr>
<td>Agreement</td>
<td>Urban-suburban</td>
<td>Developers, landholders, and building owners</td>
<td>Sharing the construction costs or development benefits of new rail projects (and pedestrian access pathways)</td>
<td>Yokohama MM21 Line (and Tokyo Metro)</td>
</tr>
<tr>
<td>Auction</td>
<td>Urban</td>
<td>JNR Settlement Corporation with developers</td>
<td>Selling former rail yard sites for private redevelopment around JR’s terminal stations to reduce the former JNR’s debt</td>
<td>JR Shinagawa Station</td>
</tr>
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Source: Financing Transit-Oriented Development with Land Values, the World Bank 2015
5. POST-BUBBLE AND IN-MIGRATION TO CENTRAL TOKYO

As seen in earlier sections, post-war central Tokyo was highly concentrated but living standards were substantially low; chronic traffic congestion, inadequate and dense housing, air pollution, frequent floods and water contamination, and waste management issues were prevalent.

People’s desire for a livable environment and affordable housing was a push factor that led to the out-migration of people to the suburbs of Tokyo, known as the “donut phenomenon” from 1960s to 1980s. However, the “burst of the bubble” – a major collapse of the financial market in early 1990s significantly affected the spatial distribution of people, infrastructure and services.

Put simply, people came back to central Tokyo. The government continued urban regeneration efforts supported by significant deregulation on planning (see paragraphs to follow), but many see it also as a natural result of supply-demand dynamics; low population/ economic growth leading to lower demand for residential and commercial land, resulting in more affordable land and property prices in central Tokyo. Deregulation of floor-area-ratio (FAR) and height control led to an increased supply of high-rise buildings; high-end flats became affordable, welcomed by a new generation equally open to apartments versus the “garden home” dreams of their parents’ generation in the 1970-80s. The introduction of bonus FAR schemes prompted private-sector led high-rise/ high-end redevelopment projects such as Roppongi, Shiodome, Toranomon, and other prime districts in central Tokyo.

However, these deregulations are inconsistent with the government’s long desire for polycentric development. Tokyo is now being re-densified. The office supply is spurred under easy monetary policy with increasing money supply and negative interest rate. The forthcoming Tokyo Olympics in 2020 might be somehow boosting the real estate price in the outer urban centers, increasing a potential risk of a small “bubble” in the urban area. Nevertheless, the country is still in the prolonged economic stagnation in the “lost two decades”, facing shrinking and aging society, which is causing reductions in tax revenues, inflated public debts, and many other economic difficulties.

Population over 65 years old is increasing rapidly in the fringe of Tokyo, especially between 10 to 50-kilometers away from the center, where there are many new towns built 30-50 years ago. They are left behind from urban regeneration but young people are more attracted to the center. The outer economies have declined with aging occupants and city infrastructure. The auto-dependent residents are losing their mobility for driving safety reasons and left in the long-standing urban facilities that have not applied universal design. Hundreds of thousands of suburban and rural homes are left vacant, and many primary schools are abandoned due to the demographic changes.

It has been more than 70 years since the opening of the major railway lines. Not only is the maintenance cost increasing but there are large structures requiring immediate rehabilitation; the average of railway bridge and tunnel vintage years is already older than statutory requirements. While some policy makers intend to promote compact city concept, unprofitable rail lines are difficult to be withdrawn as inhabitants along the lines would be left without accessibility.
Social living standards have also changed dramatically. Increasing telecom conferences, remote office- and house-works, and flextime systems adopted by many organizations are reducing congestion on commuter lines. Instead, remarkable growth in e-commerce and home delivery services is bursting the current freight capacity. In the mature economy, people seek highly value-added commodities with the diversified sense of values, being satisfied by sharing them rather than dominating. Policy makers hence are required to support diverse lifestyles across multiple age groups efficiently and equitably through a combination of specific capital projects and operations.

**BOX 2 Bonus Floor-Area-Ratios (FARs)**

Floor Area Ratio (FAR) with the combination with Building Coverage Ratio (BCR) help maintain livable environments through height and volume control of buildings. FAR/BCR also helps estimate the future population and the scale of activities for non-residential areas upon formulating urban development plans, and infrastructure development is planned in line with this estimated population; lack of control of the FAR/BCR would imply various issues such as deprivation of the right to sunlight, lack of sufficient infrastructure provision and other challenges associated with overconcentration.

However, City Planning Law and other relevant laws have provisions to relax the base FAR (stipulated through Land Use Zones) under certain circumstances. An example is when there is contribution to public plazas and open space, and pedestrian walkways. Moreover, unused FAR (difference of maximum permitted FAR of the area to the building’s actual FAR) can be transferred to another building in the vicinity as air rights transfer. However, this is possible only in certain District Planning areas.

The underlying principle of this deregulation is the optimal distribution of costs and benefits based on local conditions. From the government’s perspective, FAR bonuses are given to realize public goods with no cost for the government. The “Special District Plan for Redevelopment” for major urban redevelopment projects is a common scheme where bonus FARs are given. Significantly higher FARs allowances than specified in the land use zones are granted as a “bonus” in return for private investment in compensating public facilities. Another common example is how the District Plans in the 1990s used FAR bonuses to ensure the provision of wider roads. More recently, the government modified the guidelines so that FARs can be relaxed up to 1.5 folds for hotels to address the lack of room supply.
6. IMPLICATIONS OF URBAN SPRAWL AND FUTURE PROSPECTS

What does all of this mean for Tokyo today, situated in a country facing population decline and the significant need for infrastructure maintenance and renewal? Much of the large-scale infrastructure developed in the post-war period is nearing the end of the life cycle and must be renewed.

Tokyo had given in to economic prosperity and consumers’ affordability at the cost of major urban sprawl. How will the city manage these assets spread out to the suburbs which are facing major fiscal challenges due to decreasing population leading to less defrayers/payers of these services? What will happen to the self-contained “bed towns” or “new townships” very far from central Tokyo which are now occupied mostly by senior citizens who are over 60 years? These are all important questions that must be answered today - the costs of urban sprawl need to be paid.
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