

# Land Readjustment for Transit-oriented Suburbanization and Land Value Capture

The case of Tsukuba Express and the Kashiwanoha Campus Township

Japan Project Brief

## Background and Objectives

Tsukuba Express is the latest large-scale suburban rail extension that integrates private housing development and public infrastructure investment in the Tokyo Metropolitan Area. The 58.3-km line with 20 stations came into operation in 2005 to offer fast travel between central Tokyo (Akihabara) and the nation's largest research hub (Tsukuba Science City) by serving several satellite towns across four prefectures. The new train service takes around 45 minutes from end to end at the maximum speed of 130 km per hour.

When the development plan of Tsukuba Express was proposed, the demand for housing was rapidly swelling over Tokyo and the existing commuting line around the northeast area of Tokyo was seriously congested as there were no alternative modes and routes in the area. To meet the surging demand for both suburban housing and transportation capacity, the national government enacted the Housing-Railway Integration Law of 1989 for the development of Tsukuba Express. Two years later, the Metropolitan Intercity Railway Company was established jointly with several local governments and private entities along the new railway corridor. The company skillfully took advantage of zero-interest loans and land readjustment projects to reduce the cost of rail construction, since other suburban rail lines struggled with the payment of loan interests during the 1980's and 1990's.

## Project Overview

### Special Land Readjustment Practices

The national government introduced a "special" land readjustment approach that aims to supply a large volume of new housing lots into the high-demand market together with fast rail infrastructure and services to and from central Tokyo. Along the Tsukuba Express line, 18 districts around 13 stations were designated for special land readjustment projects, accounting for about 2,903 hectares (Figure 1).



Figure 1: Tsukuba express line and the major town development area along the corridor

Source: Produced by author based on Tsukuba Express Town Map, Urban Renaissance Agency.

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Under the Housing-Railway Development Law, the prefectural governments, Urban Renaissance Agency, and municipal governments could proactively obtain the land parcels contributed by individual private landholders through the land readjustment scheme. Upon an approval of the project, the contributed land parcels were partially replotted for the railway facility uses transferred to the former Railway Construction Agency at the assessment price, while the other contributed parcels were sold for private property development around newly coming stations. Using this scheme, the public entities could save land acquisition costs, promote transit-oriented developments, and attain a sufficient volume of passengers soon after the train service came into operation (Figure 2).

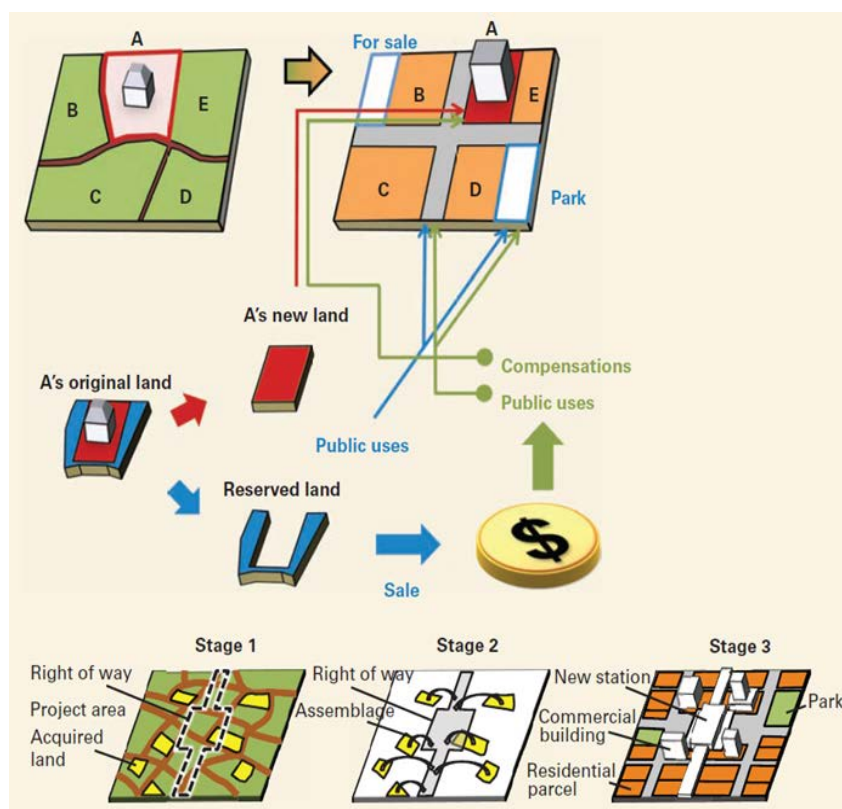


Figure 2: Integrated land readjustment for Tsukuba Express  
 Source: Suzuki, H., Muyrakami, J. Hong, Y., Tamayose, B. 2015. Financing Transit-oriented oriented development with land values, Adapting Land Value Capture in Developing Countries. The World Bank. <https://openknowledge.worldbank.org/handle/10986/21286>

## Kashiwanoha Campus Station

Kashiwanoha Campus Station at 32 km northeast from the core of Tokyo was one of the innovative transit-oriented land readjustment applications along Tsukuba Express. Initiated by the Chiba prefectural government, a 272.9-hectare district was designated for land readjustment and converted from a former golf course, green fields, and small factories to developable land parcels for residences, offices, and other variety of purposes. The total asset price increased 42% before and after the land readjustment project<sup>1</sup>. In addition to the prefectural government’s arrangements, local efforts of landholders, developers, and communities characterized this new suburban township. Mitsui Fudosan Corporation is a real

estate giant originally owned the former golf course. The company reinvested in a new shopping mall, residential tower packages, and community health centers, including the innovative elements of Smart City. The area energy management system invented by advanced technology companies connects building facilities (e.g., commercial and residential buildings, offices, hotels) and electrical facilities (e.g., solar panels and batteries) through a smart grid, which interchange electrical power inside the district cost-efficiently and reserve backup power in cases of natural disasters. In addition to the cutting-edge hardware, a series of community events and placemaking efforts have been promoted to increase its neighborhood image and, in turn, the whole asset values. The station area is forming a cohesive knowledge hub by involving two universities in successive urban design workshops and town meetings.

## Project Impacts

**Economic Impact:** The comprehensive rail and housing development contributed to revitalize the local economies of the many cities and towns across the four prefectures. The number of housing and residents also grew along the corridor at a higher pace than that estimated. Consequently, the land prices in 1.5 km of the stations significantly increased from 2005 to 2010. Importantly, the new rail line successfully turned profitable within five years after it came into operation, while the original plan estimated to achieve the positive turnaround 20 years after.

### Social Impact:

The high-amenity housing development package provided around suburban stations have been attracting a number of relatively young households with children. These new residents with private developers have been playing an important role in energizing and creating unique cultures and lifestyles along the corridor. Old residents also enjoy the newly created residential amenities and city access services brought by the integrated housing-railway projects.

### Environmental Impact:

The railway operator and the developers made large efforts to reduce the energy consumption and CO2 emission generated from the newly developed district. Tsukuba Express introduces a variety of ecofriendly systems (e.g., solar panels on station roof, no railway crossing, trains without polishing) to their facilities. In several new satellite towns, the developers challenge to harmonize the new township development with the existing natural setting by preserving large-scale forest and parks around the stations and promoting community-based environmental activities. Moreover, some smart technologies (e.g., smart grid in Kashiwanoha Campus) were incorporated into town infrastructure to efficiently reduce energy consumption in the region.

## Lessons Learned

Private rail projects have historically been integrated with real estate and other related businesses in Tokyo during the rapidly growing periods. By contrast, the Tsukuba Express project under the gradually slowing periods was successfully led by the local governments using land readjustment techniques in a special way. This public initiation was successively followed by major developers and other private stakeholders. Key lessons from Tsukuba Express and Kashiwanoha Campus are summarized below.

### Public Initiative for Land Assemblage:

Local governments along a new suburban line can play a pivotal role in land assemblage for both railway and housing development. Under market freehold systems, inclusive land adjustment schemes could be effective to economize urban infrastructure costs and produce transit-oriented built environments together with new rail stations, if land use planning and development incentives are attractive enough for individual landholders to make contributions to the districts designated.

### Private Contribution for Long-term Township:

Major developers, key landholders, and academic institutes along new rail lines need to be involved in not merely raising urban capital funds for short-term profits but rather establishing transit-oriented township in the long run. In general, these private stakeholders are likely to provide high-quality urban settings and state-of-the-art smart technologies around stations, as motivated to take advantage of the accessibility benefits brought by new rail development and maximize their own asset values with a good image of town management. The novel concepts introduced by private entities tend to attract younger generations who would prefer transit-oriented lifestyles and shape unique communities for the next decades or more. Such an intergenerational business strategy is of



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particular importance for developers and universities in a shrinking society.

## Future Challenges

Land readjustment practices might result in uneven development along a new rail line, as the quality of township depends on local efforts and development progresses around each station. Corridor-wide initiatives should be introduced to regenerate synergetic effects across different districts. Also, metropolitan-wide rail network extensions from the new science corridor to the central business district, airports, and other sub-employment centers would further accelerate intercity face-to-face interactions, business innovations, and, in turn, cities' global competitiveness.

<sup>1</sup> Suzuki, H., Muyrakami, J. Hong, Y., Tamayose, B. 2015. Financing Transit-oriented oriented development with land values, Adapting Land Value Capture in Developing Countries. The World Bank.  
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