

What is TOD

Transit Oriented Development (TOD) is a public-transport-based development model to respond to urbanization. The model includes a terminal station development in city center and an integrated development of a railway and suburban areas along the railway line.

TOD has been implemented in Japan together with the railway network development, and as a result has formed the current structure of cities.

The concept of TOD has become widespread since an American urban planner named Peter Calthorpe advocated public-transport-oriented urban development aiming for a society away from automobiles in 1993.

Since the first railway opening in Japan in 1872, urban development based on

1. Solving urban issues with TOD

Promoting urban development by TOD is effective in solving urban issues in the following ways.

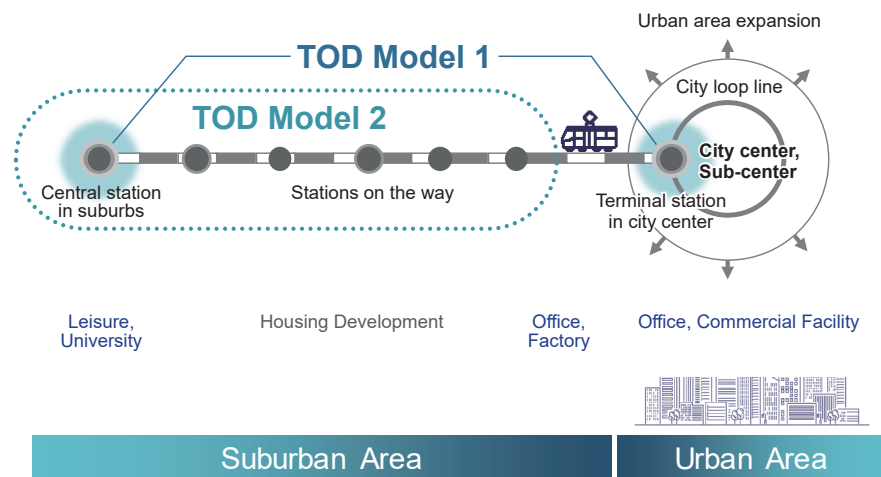
- Ease the concentration of population in urban areas
- Reduce traffic congestions by modal shift to public transport
- Reduce air pollution and other environmental impacts through reduction of the use of automobiles
- Improve the work and housing environment through formation of an urban structure and systematic arrangement of urban functions

2. Two models of Japan's TOD

Japan's TOD forms an urban structure along the railway networks through two development models (stated below). Solving urban issues and enhancing the value along the railway lines (as shown in 1) is possible by planning according to the conditions of the development area such as demographic composition, market economy, regional characteristics, and urban policies.

Model 1 – Urban TOD
High-level usage of areas around terminal stations in urban areas and central stations in suburban areas and mixed-use development integrating stations and cities.

Model 2 – Suburban TOD
Integrated development of suburban railways and areas along railway lines (mainly for housing)

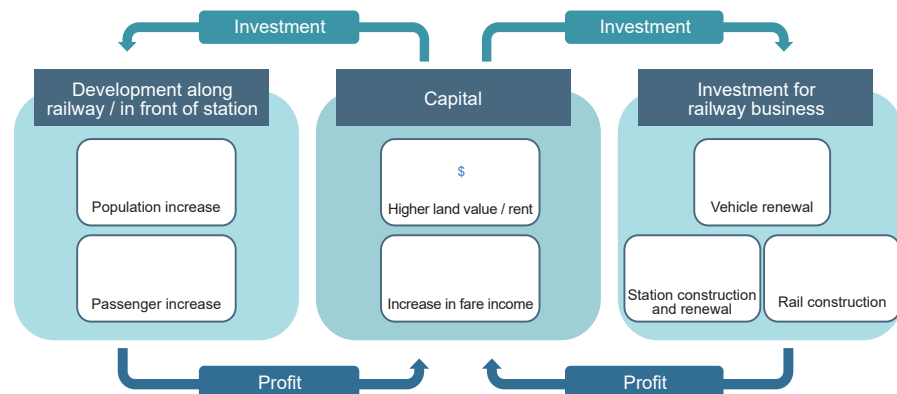


(1) The two models of TOD

3. Characteristics of Japan's TOD: Mechanism of virtuous cycle of railway capital

The numbers of residents and passengers increase due to TOD, resulting in an increase in profits from real estate business and railway fares. Investing these profits in railway constructions and development around station areas and along railway lines can improve the brand power and real estate value, leading to a further increase in the number of residents.

Creating such a virtuous cycle of investment and profits is an important aspect of TOD, contributing to the efficiency of railway operations and the strengthening of management and financial foundations of railway companies in Japan.



(2) The cycle of investment from profit

Two models of Japan's TOD in detail

Model 1: Urban TOD

Urban TOD is a development model for urban terminal stations and central stations in suburban areas that further enhances the value of the station area through high utilization of the area and development of complexes with multiple functions.

It is important to create “the face of the city” by developing complexes of offices and commercial facilities and landmark facilities in the station area, as it will enhance the value of the station area and the entire areas along the railway line.

Also, integrated development of a station, bus terminals, complex facilities, etc. as a seamless transport hub can improve accessibility, and the synergy of the increase in passengers and customer attraction effect of commercial facilities contributes to the creation of liveliness in the entire city.

(3) Aerial view of the Shibuya station development (above) and future image of the area around Shibuya Station East Exit Urban Core (below) (4) Shinjuku Station area development and bus terminal

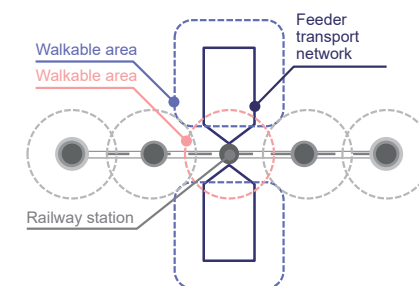
Images (3) are the courtesy of Shibuya Scramble Square and Shibuya Station Block Joint Buildings Operator Image (4) is the courtesy of East Japan Railway Company

Model 2: Suburban TOD

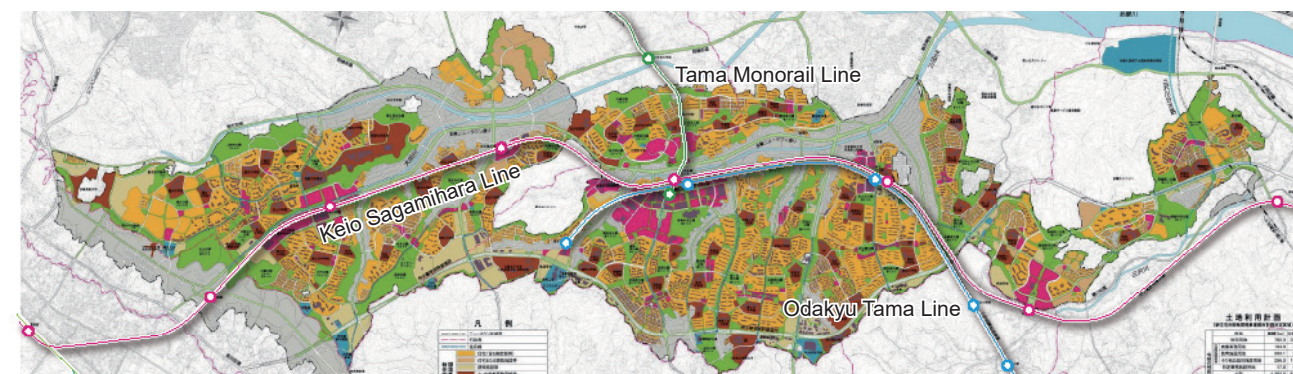
Suburban TOD is a development model to ease excessive population concentration in urban areas and integrally develop railways and areas along the railway line in the suburban areas.

The point is to cover the enormous railway capital expenditure required for the development along railway lines through securing profits from railway business and urban development by increasing the number of residents and passengers. To achieve this goal, it is important to form the structure of the city through implementation of land readjustment projects and infrastructure development in the station area and along the railway line, and appropriately allocate the urban functions for creating a comfortable living environment.

Also, it is important to expand walkable areas from the station to remote areas by forming a feeder transport network such as buses and monorails around stations.



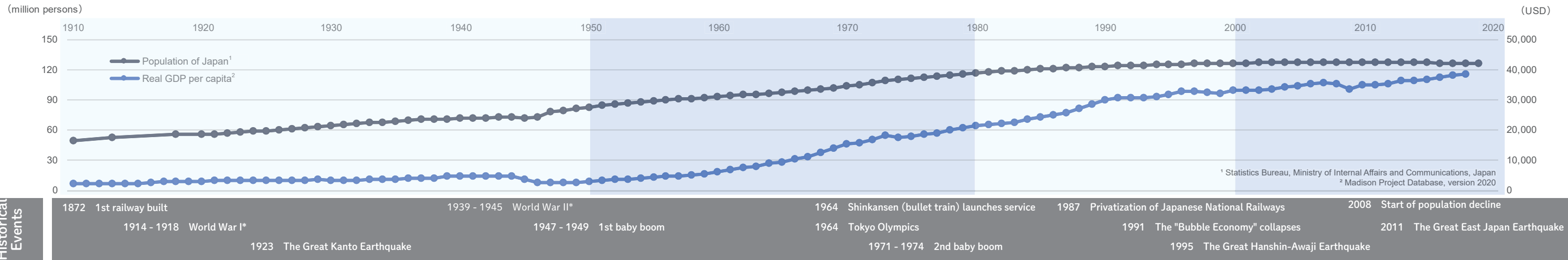
(5) Expansion of walkable area through feeder transport network



(6) Railway network and urban development in Tama New Town

Image (6) is edited based on the image courtesy of Urban Renaissance Agency

History of Japan's TOD



1910 - 1950 The Beginning of TOD

Population growth in large cities and shift of urban transport to railways



(1) Tokyo after the Great Kanto Earthquake

(2) Hanyu Department Store connected to Umeda Station

1950 - 1980 New Town Development and TOD Projects

Rapid urban expansion and huge demand for housing due to rapid economic growth



(3) Crowded train station

(4) Tama Den-en-toshi

1980 - 2000 TOD's Development Along Railway Lines

Correction of the structure of unipolar dependence on the city center and formation of Business Core Cities



(5) Minato Mirai 21 District

(6) Atré Ebisu (Utilization of land for commercial development)

2000 - 2020 TOD for a New Era

Formation of smart cities and compact cities that respond to diverse social environment changes



(7) Public space of Compact City, Toyama

(8) Kashiwa-no-ha Smart City

Background

As industrialization progressed through the Russo-Japanese War and World War I, the urban population grew rapidly. By the end of 1918, the population in the six major cities of Tokyo, Yokohama, Nagoya, Kyoto, Osaka, and Kobe accounted for about 12% of the total population in Japan. The Great Kanto Earthquake struck the Tokyo metropolitan area in 1923, devastating the urban areas of Tokyo and Yokohama, but the cities were rebuilt through capital reconstruction projects.

The high economic growth in the post-war period led by heavy and chemical industries brought about a massive influx of population from regional areas to metropolitan areas. As a result, urban functions were decentralized from the city center to the suburban area, and the urban area was increasingly spreading. For urbanization of these metropolitan suburban areas, legislations such as land readjustment project were established.

Due to the population growth in cities, there was a growing need to solve urban issues, such as shortage of housings and long commute between office and home. To solve these issues, Business Core Cities were selected from the city surrounding areas to serve as the sub-center of the city. Self-sustaining urban areas were planned to be developed around these Business Core Cities.

As the era of population increase and economic growth transition to an era of maturity, an unprecedented variety of changes occur, such as population decline, aging society, declining birth rates, advancement of information technology, internationalization, increased need for environmental initiatives, and increased activities by individuals based on diverse values.

TOD History

Streetcars used to be the main mode of urban transport, but these could not meet the increasing traffic demand and new railways were constructed instead. In 1910, the founder of the Minoh-Arima Electric Railway Company (now Hankyu Corporation), KOBAYASHI Ichizo, constructed a railway line and developed areas along the line to increase railway passengers, which can be said as "TOD project." He also developed a business model of locating department stores at terminal stations, targeting residents who live in suburban areas and commute by train to the city center.

Responding to increasing demand for housing due to the massive influx of population into major cities, large-scale residential development projects (new town) were carried out by both the public and private sectors. For the development of new towns, railway is a key means of transport for residents. Therefore, there were cases of new town development that also constructed its own railway for access, like Tama Den-en-toshi Area.
(○ Tama Den-en-toshi Area > see below)

In addition to business functions, Business Core Cities were designed to have cultural and recreational facilities, a center for welfare, healthcare, and medical services, and lifestyle-related functions. Within the Business Core Cities, areas that were deemed appropriate for the concentration of business facilities, such as areas around major stations in the suburban area and the area where Minato Mirai 21 District is located in Yokohama, were designated as Business Facility Concentration Area, and were targets for large-scale development. Also, with the privatization of Japanese National Railways in 1987, there was a growing trend for railway companies to promote non-railway businesses such as real estate and retail, and utilization of idle land.

Urban development concepts such as smart city and compact city have become popular. Also, area management and data-driven initiatives have become actively incorporated to create urban liveliness and improve convenience. Development around stations has also begun to incorporate these concepts and approaches. In this way, next-generation TODs that respond to the new era are being developed in various places, combining knowledge from the experience of TOD projects with the information technology that will shape the society.

TOD case study from 1950-1980: Tama Den-en-toshi Area



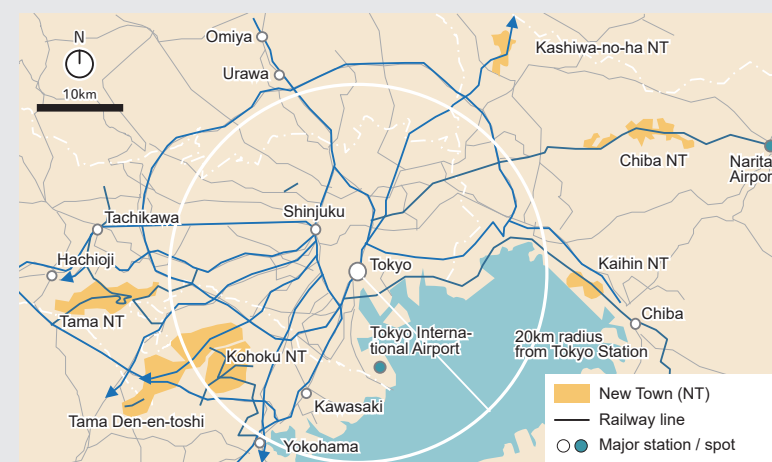
Tama Den-en-toshi Area along Tokyu Den-en-toshi Line

Tama Den-en-toshi is an area that has been developed since the 1960s by integrated development of residential areas and railways. The population along the line was initially planned at 400,000, but, as of March 2020, it is home to 633,000 people, making it one of the largest urban development projects by a private sector in Japan.

Many of the areas along the railway line were developed through land readjustment projects, and the railway company, Tokyo Kyuko Dentetsu Kabushiki Kaisha (now Tokyu Corporation and Tokyu Railways Co., Ltd.), was responsible for fund-raising and operations related to the implementation of the project. In addition to building necessary public facilities such as roads and parks, the railway company has been actively involved in the development of commercial facilities around major stations, such as the opening of hospitals and other infrastructure necessary for daily life, and the opening of universities and other educational facilities, thereby improving the convenience of the area along the line.

As a result of these efforts, Tama Den-en-toshi continues to develop as an attractive city and has succeeded in continuously increasing the population along the railway line.

New Towns spreading along railway lines

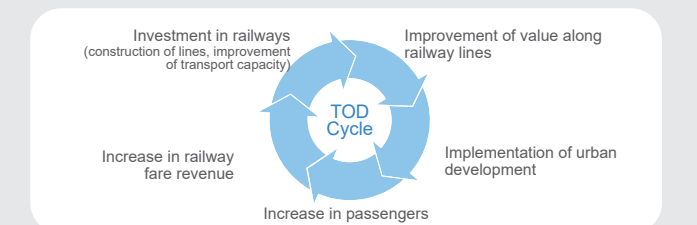


New towns (NT) spreading along railway lines in the Tokyo metropolitan area

With the enormous demand for housing caused by the urbanization in the Tokyo metropolitan area, railway and residential land were developed in an integrated manner, resulting in the development of several New Towns (NT) in the suburbs along railway lines.

TOD Cycle

To develop TOD projects successfully, it is essential to incorporate virtuous cycle of development. Development of railway line and attractive facilities such as station building lead to adding value to the land along the line. Then real estate development along the line contributes to passenger increase of the railway line. With the increased fare revenue, further railway investment and real estate investments become possible.



Conceptual diagram of the cycle of investing development profits in railway development