Transit Oriented Development in Japan

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TOD Model in Japan
- Suburban Area
- City Center Area

Role of Government in Urban Development
TOD Model in Japan

- Suburban Area
- City Center Area

Role of Government in Urban Development
Transit Oriented Development: TOD

Model①: Development synchronized with railway infrastructure construction

Model②: Hub station oriented highly integrated complex development

Source: Architecture and Urbanism October 2013 Special Issue
TOD Model in Japan
  • Suburban Area
  • City Center Area

Role of Government in Urban Development
Transit Oriented Development: TOD

Model ①: Development synchronized with railway infrastructure construction

- Stimulate ridership
- Provide a stable revenue source for the railway by increasing the number of permanent residents
- Preserve and enhance the value of the route by managing overall development along the entire route

Source: Architecture and Urbanism October 2013 Special Issue
Road network in Edo period

[Legend]
- : Main 5 roads
- : Other main roads
- : Others

[Total extension]
Main 5 roads: About 1,575km
Other main roads: About 3,500km
Others: About 7,000km
Japanese transportation policy

- In Meiji period, government had focused on railway construction.
- Road construction started in earnest after World War 2.

Transition of railway and highway extension

資料：
「国有鉄道鉄道統計累年表」（S61まで）、「数字で見る鉄道2004」（S62以降）
「高速道路便覧2002」
Watkins Report in 1956

「The roads of Japan are incredibly bad. No other industrial nation has so completely neglected its highway system.」
High Economic Growth in Japan

Progress of industrialization and urbanization during the high economic growth period (FY1960-FY1970) in Tokyo metropolitan area.

Population increased by approx. 5~600,000 persons/year.

Population in Tokyo Metropolitan area

(10 thousands of people)

(year)
During the high growth economic period, roads and railways became severely congested due to the increase in population and vehicle ownership and to the concentration of the population in urban areas.

Congested railways during the high growth economic period

Roads in the Tokyo metropolitan area during the high growth economic period
Transition of railway network, urbanization and number of car possession

Transition of number of car possession

(資料：財団法人自動車検査登録協力会データ)
In case of developing along a railway line, a railway company builds leisure facilities such as theaters, Universities to produce two-way flows of people.
The Plan for National Capital Region Development to control sprawl of the city and urban development.

Integrated plan to develop urban railway and new town in wide area.

Transit Oriented Development: TOD

Major new town plan and railway plan in Metropolitan Area

Legend:
- CBD
- Sub Center
- Major City
- Planned Rail Line
- New Town (NT)
- Railway Line (JR)
- Railway Line (Private)

Tama NT
Tama Den-en Toshi
Kohoku NT
Kashiwa no Ha
Chiba NT
Kaihin NT
Examples of TOD Projects: New Town Development

【Expansion of Tokyo Metropolitan Area and New Town Development】

1960s

- Development of Tama New Town
  - Start of Project: 1971
  - Planned area: 2,892ha
  - Projected population: 340,000

2000s

- Development along Tsukuba Express Line
  - Start of Project: 1993
  - Planned area: 3,000ha
  - Projected population: 250,000

Legend:
- DID: Populated area
- Urban Railways
Urban Development integrated with Public Transportation

- Urban development by public government.
- New construction of two radial private railways with direct connection to central Tokyo
- New construction of a loop of Tama Intercity Monorail with connection to Tachikawa City

Development of Tama New Town

Urban railway

Monorail

Location map

Source: City and Transportation, Vol. No. 65 (Japan Transportation Planning Association)

City plan decided: 1965
Moving-in started in: 1971
Planned area: 2,892ha
Projected population: 340,000

Project concept

Source: Materials submitted by UR
Comprehensive infrastructure development by utilizing reserved Land from land readjustment project

Compared to the project by purchase of land, enable to reduce public budget

Before

Exchange

Reserved land
(future budget for project)

Public Facility
(Road, Park, etc.)

After

Reduction

Income from sales of reserved land

Public budget

Project cost for land readjustment
(development of land, public facility, etc)

Expenditure

Frame funds

Income
By implementing urban development integrated with railway, railway passengers will increase. Thereby fare revenue will increase. On the other hand, improvement of convenience by the railway development will contribute to enhance the value and appeal of the land.

**Mechanism of TOD**

- Increase in railway passengers
- Improvement in the Commuting Environment from the Increase in Transport Capacity that Accompanies Urban Development
- Activation of urban development
- Increase in railway fare revenue
- Enhancement of land value and appeal
- Enhancement of capacity and development of new lines

**Change in the Average Congestion Rate in the Most Congested Zones and the Transport Capacity in the Tokyo Metropolitan Area**

Congestion Rate (%)

Transport Capacity Index (Set as 100 from the base year of 1975)
### Supporting systems to construct, extend and renovate railways

- Supported by Japan Railway Construction, Transport and Technology Agency (JRTT)
- Supported by the national government and local governments

<table>
<thead>
<tr>
<th>制度名</th>
<th>概要</th>
</tr>
</thead>
<tbody>
<tr>
<td>都市鉄道利便促進事業</td>
<td>短絡線などの整備による速達性の向上、周辺整備と一体的な駅設備に対する補助(補助率 国1/3、地方1/3)</td>
</tr>
<tr>
<td>地下高速鉄道整備事業</td>
<td>公営・第3セクター、東京地下鉄による地下鉄の新線建設、浸水対策及び大規模改良工事等に対する一部補助(補助率 国35%、地方35%)</td>
</tr>
<tr>
<td>ニュータウン鉄道等補助</td>
<td>公営・第3セクターによるニュータウン鉄道、空港アクセス鉄道の建設に対する補助(ニュータウン鉄道：補助率 国15%,地方15% 空港アクセス鉄道：国18%，地方18%)</td>
</tr>
<tr>
<td>幹線鉄道等活性化事業</td>
<td>貨物線の旅客線化に対する補助(補助率 国2/10，地方2/10)</td>
</tr>
<tr>
<td>鉄道駅総合改善事業</td>
<td>鉄道利用者の安全性や利便性の向上を図るために、市街地再開発事業、土地区画整理事業、自由通路の整備等都市側の事業と一体的に鉄道駅のホームやコンコースの拡幅、バリアフリー化等を行い、駅機能を総合的に改善する事業。(補助率 国2/10、地方 2/10)</td>
</tr>
<tr>
<td>交通結節点改善事業</td>
<td>鉄道駅等交通機関間の円滑な乗り換え、鉄道による市街地分断の解消、駅周辺の放置自転車問題やバリアフリー化への対応等のため、駅前広場、自由通路、パークアンドランド駐車場、自転車駐車場などを整備し、道路と鉄道等他の交通施設との結節性の向上を図る。(補助率 国5/10 ※事業内容によって異なる)</td>
</tr>
</tbody>
</table>
(2) Systems to collect money from beneficiaries, for example, land owners and developers, and re-invest it in railway facilities.

<table>
<thead>
<tr>
<th>区分</th>
<th>制度名</th>
<th>対象路線</th>
<th>負担者</th>
<th>負担方法</th>
</tr>
</thead>
<tbody>
<tr>
<td>沿線開発者</td>
<td>ニュータウン開発者負担制度</td>
<td>北総開発鉄道 京王相模原線 小田急多摩線 千葉急行線</td>
<td>開発区域内に鉄道路線を有する新住宅市街地開発事業、土地区画整理事業の施行者</td>
<td>➢ 鉄道用地の素地価格での提供 ➢ 施工基面下工事費の1/2負担 ➢ その他負担</td>
</tr>
<tr>
<td></td>
<td>宅地開発指導要綱に基づく負担</td>
<td>神戸市高速鉄道</td>
<td>須磨ニュータウン内駅の駅政権内で大規模開発を行う開発者</td>
<td>➢ 鉄道用地の無償提供 ➢ 施工基面下工事費の全額負担 ➢ 他建設費の一部負担</td>
</tr>
<tr>
<td></td>
<td>合意に基づく任意の負担</td>
<td>能勢電鉄日生線</td>
<td>阪急日生ニュータウン開発者</td>
<td>➢ 延伸・輸送力増強に係る工事費の1/2</td>
</tr>
<tr>
<td></td>
<td>鉄道事業者による利益の内部化</td>
<td>東急田園都市線</td>
<td>東急田園都市の区画整理事業者</td>
<td>➢ 区画整理事業を一括代行した対価を保留地で鉄道事業者に支払う</td>
</tr>
<tr>
<td>請願駅</td>
<td></td>
<td>関西本線三郷駅 横浜線成瀬駅 他</td>
<td>駅周辺の土地区画整理事業者</td>
<td>➢ 工事費の全額負担 ➢ 用地の無償譲渡 ➢ 駅前広場 ➢ 関連道路の整備等</td>
</tr>
<tr>
<td>連絡工事分担金</td>
<td></td>
<td>営団地下鉄</td>
<td>ビル所有者</td>
<td>➢ ビル連絡通路工事費を分担</td>
</tr>
</tbody>
</table>
TOD Model in Japan

- Suburban Area
- City Center Area

Role of Government in Urban Development
Model ②: Hub station oriented highly integrated complex development

- Highly and multi functional (Office, Commercial etc) development intended to enhance the potential value of the land
- Face of the city
- Exploit the value of surrounding district
- Environmentally-friendly
- Communicates a positive image of the city in Japan and abroad

Source: Architecture and Urbanism October 2013 Special Issue
Transit Oriented Development: TOD
Urban Redevelopment Project

- Promote the development of public facilities by utilizing advanced by development interests into a joint site by urban redevelopment project.

Before the project

- A’s building
- B’s building
- C’s building
- A’s land
- B’s land

After the project

- Advanced into the joint use site
- Reserved floor
- A’s floor
- B’s floor
- C’s floor

Expenditure

- A’s land
- A’s building
- B’s building
- B’s land
- B’s land
- C’s building
- C’s floor
- Land of A, B, C, X
- Public facility

Income

- Income from sales of reserved floor
- Public budget

Frame funds

Project cost for Urban Redevelopment (development of building, public facility, etc)
Urban Redevelopment Project

(Hikifune Station Neighborhood District, Sumida Ward, Tokyo Metropolis)

Outline of Hikifune Station-mae Urban Redevelopment Project

- Project area: approx. 2.8 ha
- Implementation period: FY 2003–2010
- Implementing body: Urban Renaissance Agency
- Project budget: approx. 390 billion yen

Before

a built-up area of deteriorative small wooden buildings

narrow lane

After
If developers establish the more efficient infrastructure than one subscribed by an urban plan, they can use more floor area than designated floor area ratio without traffic congestion and environment problems.

Ex.)
- Public Space, Public Facilities (Railway Station, Pedestrian Space)
- Green Facilities
- Residence
- Accommodation etc.

Add FAR
Examples of TOD Projects: Shibuya Station Area

Opening of Business: Apr. 2012
Floor area: 14ha
Height: 180m

Opening of Business: 2027
Total Floor area: 27ha
Height: 230m

Opening of Business: 2018
Total Floor Area: 0.3ha
Height: 110m

Opening of Business: 2020
Total Floor Area: 24ha
Height: 180m

Opening of Business: 2018
Total Floor Area: 12ha
Height: 180m
TOD Model in Japan

• Suburban Area
• City Center Area

Role of Government in Urban Development
# Key Players of Urban Development

**Roles in urban development, including public transportation, between national government, local governments and private enterprises**

<table>
<thead>
<tr>
<th>National Government</th>
<th>System</th>
<th>Plan</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National Spatial Planning Law</td>
<td>National Spatial Plan</td>
<td>Nationwide PT Survey</td>
</tr>
<tr>
<td></td>
<td>City Planning Law</td>
<td>Metropolitan Area Development Plan (Tokyo-Kinki-Chubu)</td>
<td>Urban Development (large scale project)</td>
</tr>
<tr>
<td></td>
<td>Land Readjustment Law</td>
<td>Priority Plan for Infrastructure Development (Port, Airport, Road, Railway, etc)</td>
<td>Expressway</td>
</tr>
<tr>
<td></td>
<td>Subsidy (for local governments and private enterprises)</td>
<td>etc</td>
<td>Shinkansen</td>
</tr>
<tr>
<td></td>
<td>Tax system</td>
<td>etc</td>
<td>Sewerage System (large scale project)</td>
</tr>
<tr>
<td></td>
<td>Finance</td>
<td>etc</td>
<td>etc</td>
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<td></td>
<td>etc</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Local Government (prefecture/municipalities)</th>
<th>System</th>
<th>Plan</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subsidy (for private enterprises)</td>
<td>City Planning</td>
<td>PT survey in each urban area</td>
</tr>
<tr>
<td></td>
<td>Taxation</td>
<td>Regulation and Guidance for Urban Development</td>
<td>Urban Renewal</td>
</tr>
<tr>
<td></td>
<td>Finance</td>
<td>etc</td>
<td>Land Readjustment</td>
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<tr>
<td></td>
<td>etc</td>
<td>etc</td>
<td>Public Transport (Unprofitable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban Infrastructure (Road, Park, Water supply, Sewerage system, etc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private Enterprise</th>
<th>System</th>
<th>Plan</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Private Urban Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public Transport (Profitable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>etc</td>
</tr>
</tbody>
</table>

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Role of Government in Urban Transportation Development

○ Laws and Regulations
  To promote the development/ improvement of urban transportation system and to secure the safety operation, Government of Japan has made several laws and regulations.

○ Financial Support
  To facilitate the development/ improvement of urban transport as well as integrated urban development project, Government of Japan subsidizes or loans to local government and public transportation companies.

○ Implementation of traffic surveys
  To support local governments / public transportation companies for planning the urban transportation system, Government of Japan carries various types of traffic survey by itself.
1. Japanese TOD has been promoted by cooperation between Governments and private enterprises against the background of population inflow from rural areas and lack of useful roads etc. at that time.

2. As a result, Tokyo Metropolitan Area keeps growing as an efficient, convenient and safety city. It is entirely due to synchronized the urban development with railway infrastructure construction.

3. Profit can not be earned before the integrating Railway Development with Urban Development. But it should be kept in our mind that to enjoy the profit we have to take corresponding risks.

4. To execute this kind of development, supports from Governments in planning and financing are very important.
Thank you for your attention!