

Japanese TOD

- Ensen Kaihatsu:
Development along the Railway -

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1. Railway in Tokyo Metropolitan Area: History and Current Status
2. What is Japanese TOD? - Experience in Japan
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1. Railway in Tokyo Metropolitan Area: History and Current Status

1872 Starting Operation of Railway (Shinbashi-Yokohama)



Japan in 1890s

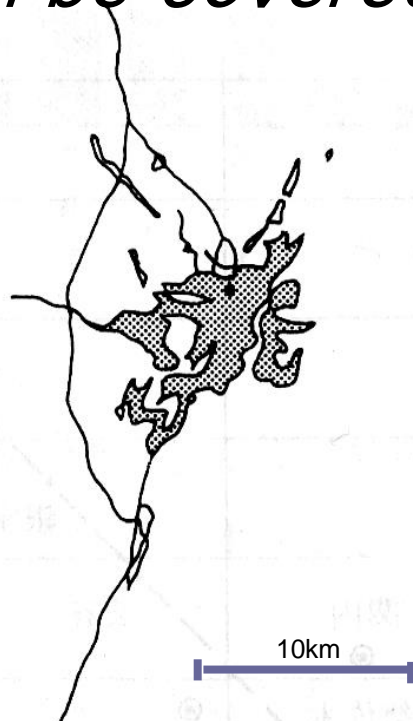


Japan in 1900s



Period of walking (Samurai Period) – 1890

Area of urban district based on that of Edo which can be covered on foot



馬車鉄道 : Horse carriage railway

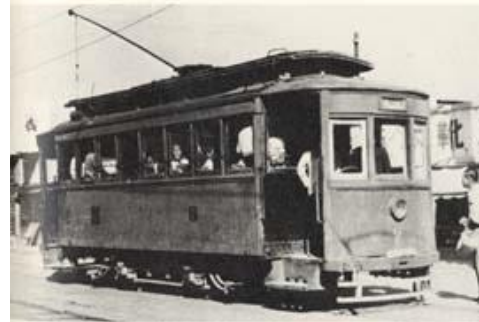
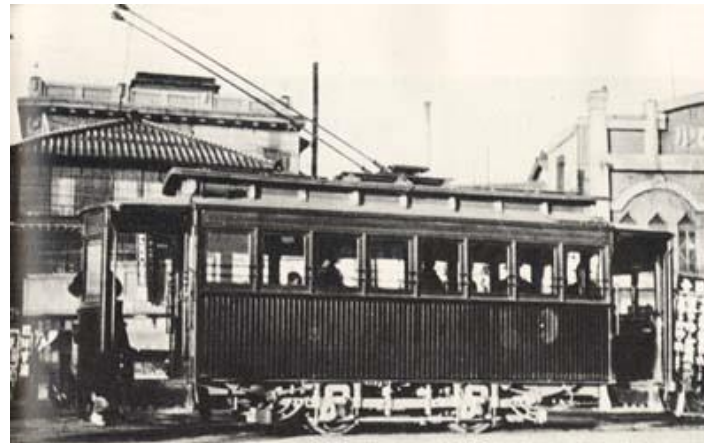
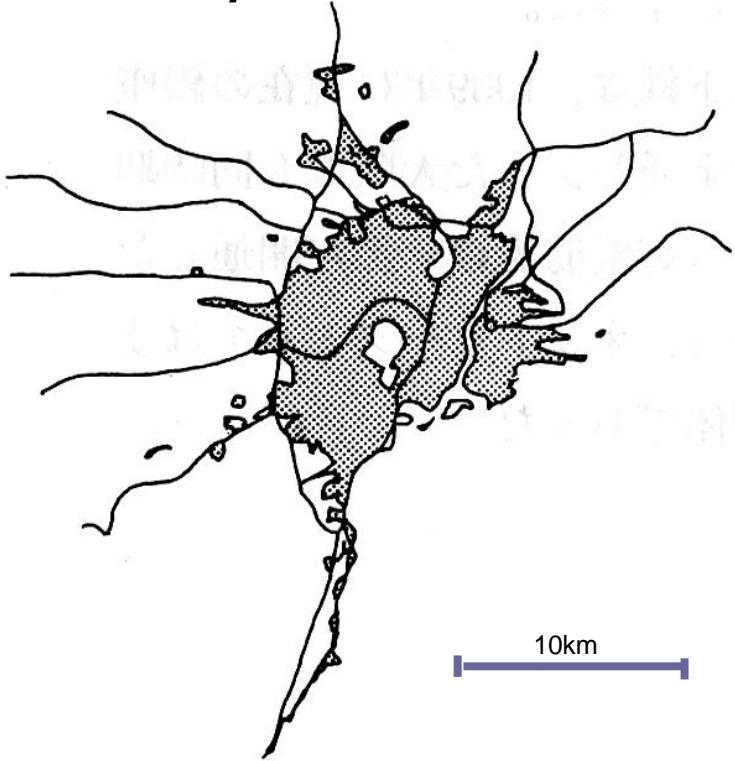


The bustling crowds on Nihonbashi Bridge in central Edo, the starting point of Edo's Five Major Roads (around 1830)
五街道の起点 江戸日本橋の賑わい(1830年頃)

Source: "Easy to Understand Urban Transportation--1988."
Society for the Study of Urban Transportation

Appearance of Streetcars 1890–1920

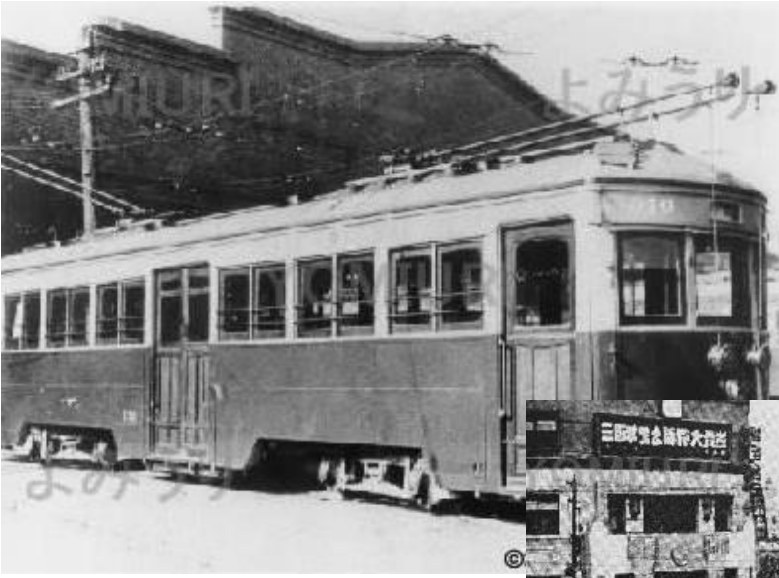
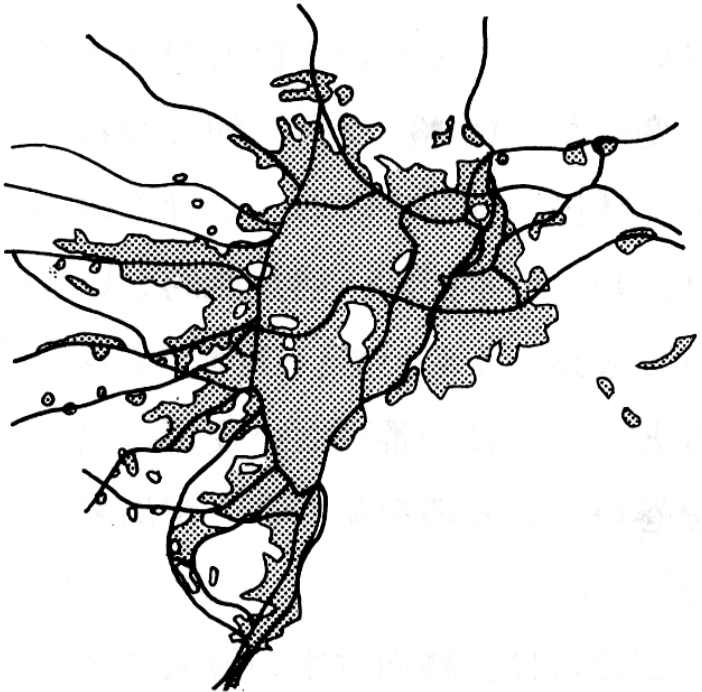
Urban district expands to the western part because of reconstruction after earthquake disaster

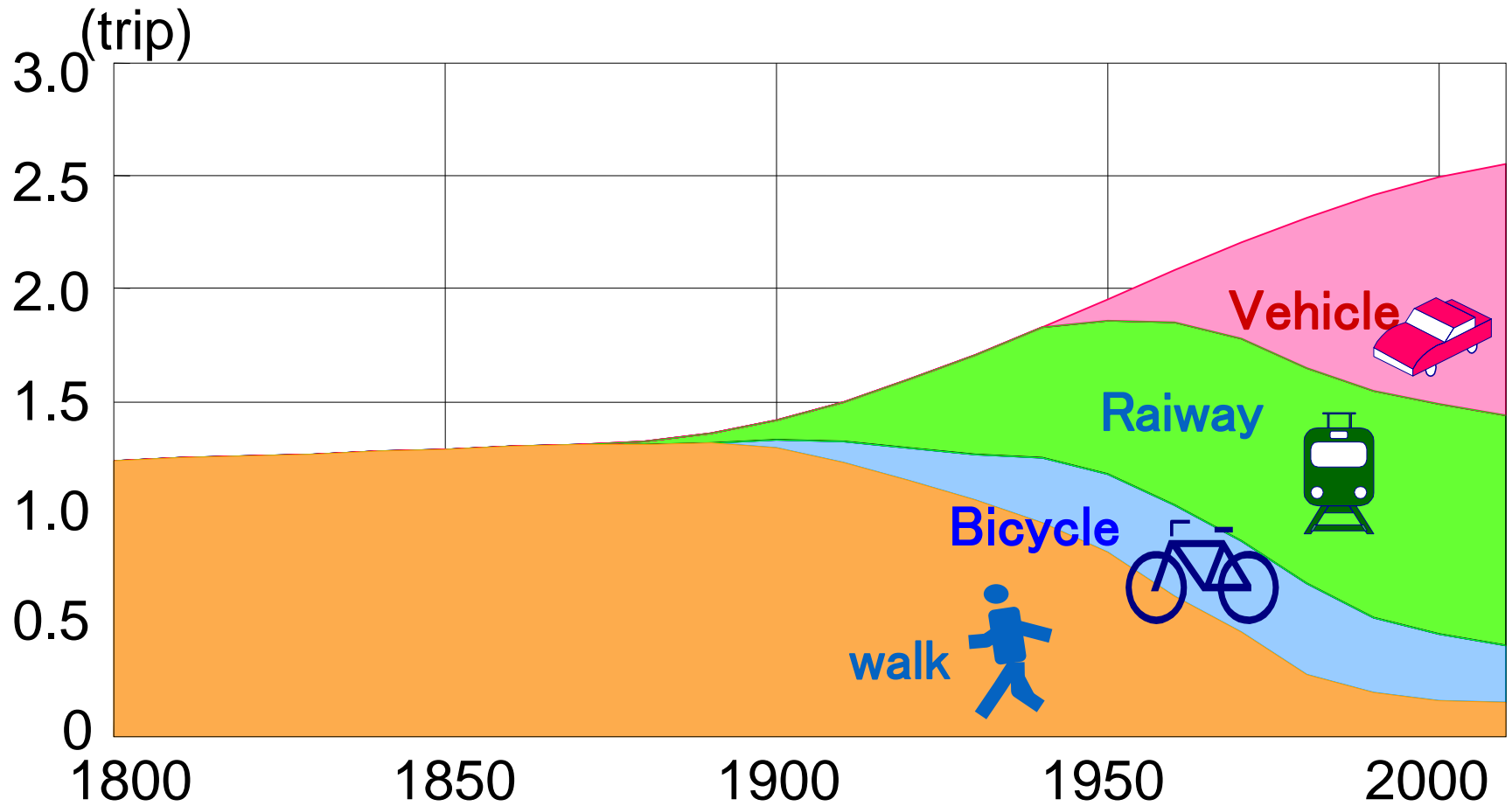


*Source: "Easy to Understand Urban Transportation--1988."
Society for the Study of Urban Transportation*

Expansion of Urbanized Area and Railway Development 1920-1960

*Formation of systems launching into subway
Urbanization advances along railway lines as
suburban trains reach the Yamanote loop line*

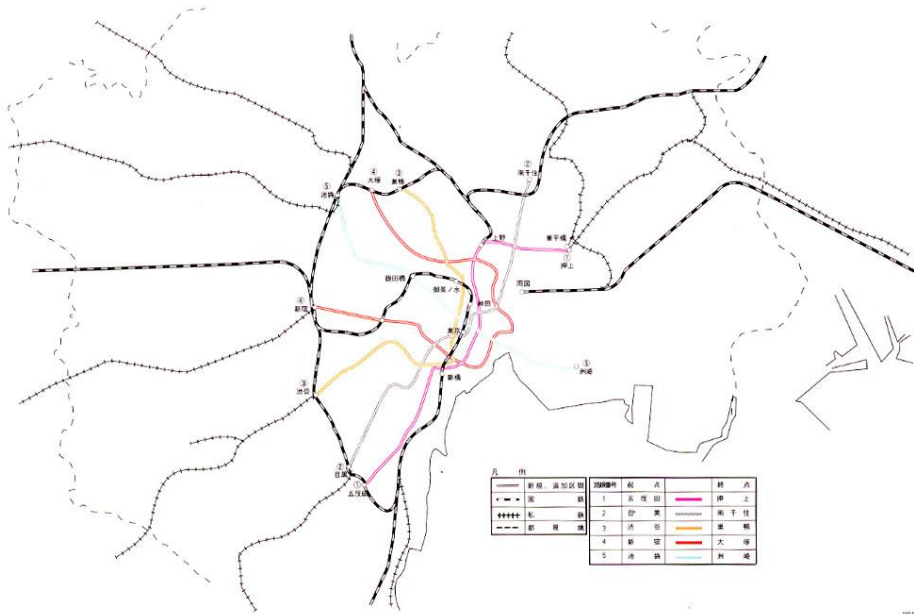




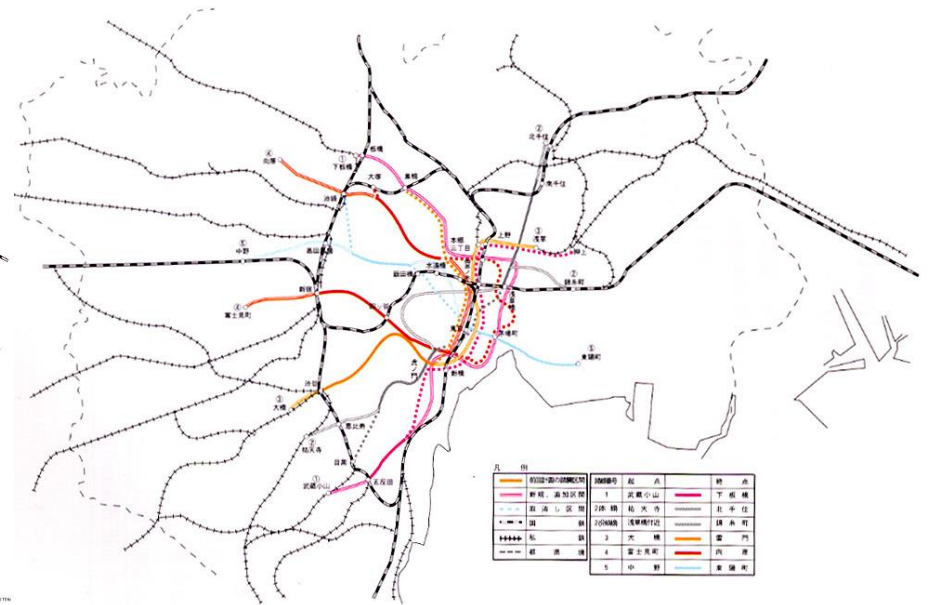
Urban Transport and Environment: Hideo Nakamura 2004.9

Changes of mode share in Europe and USA

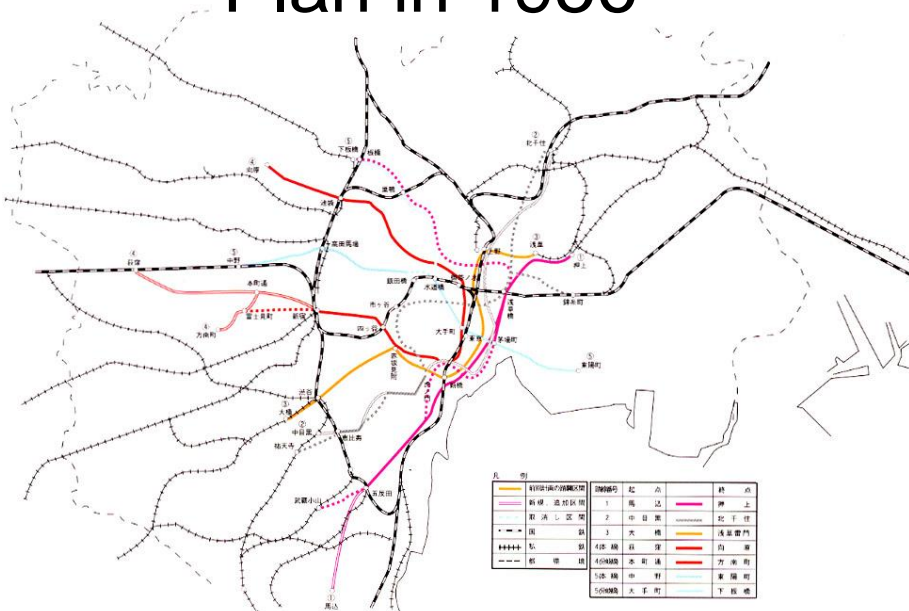
Plan in 1925



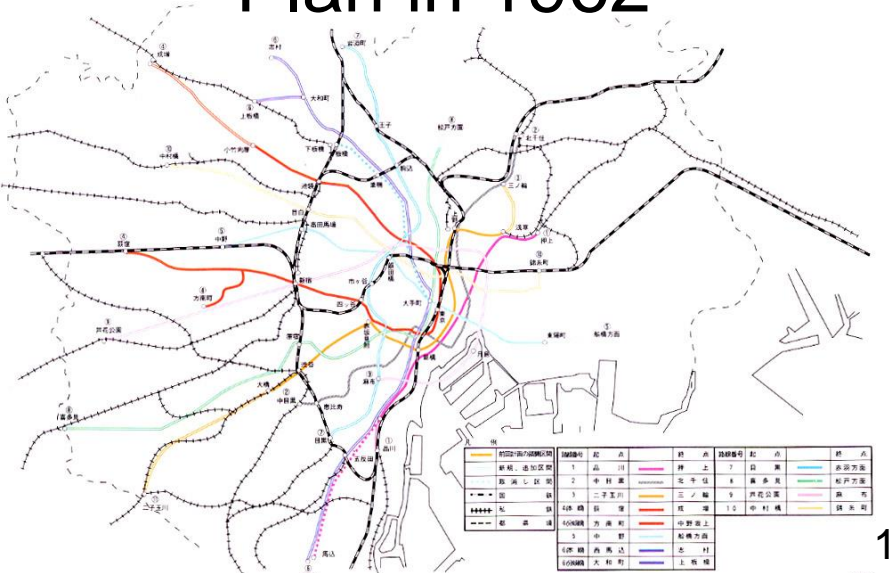
Plan in 1946



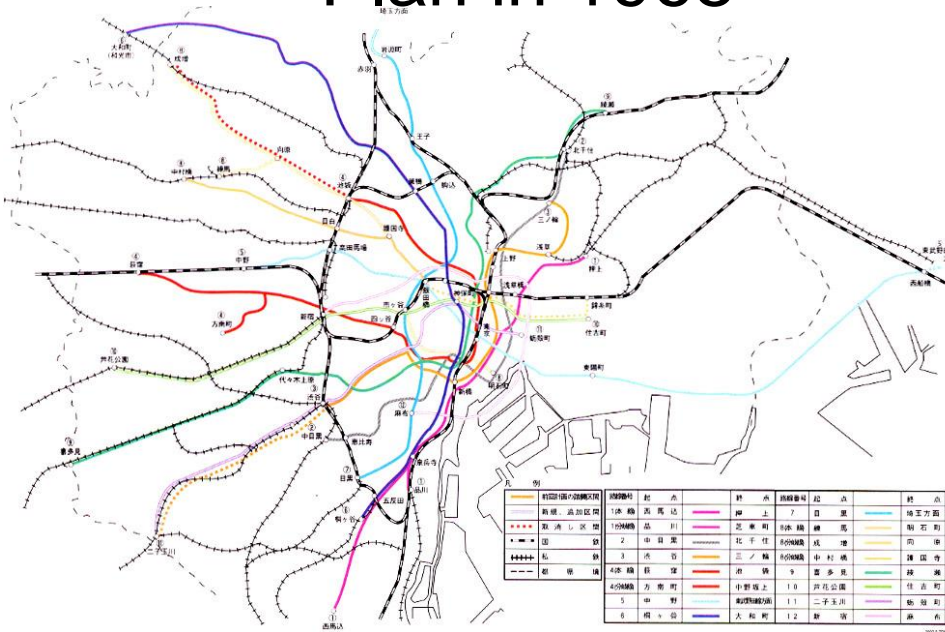
Plan in 1956



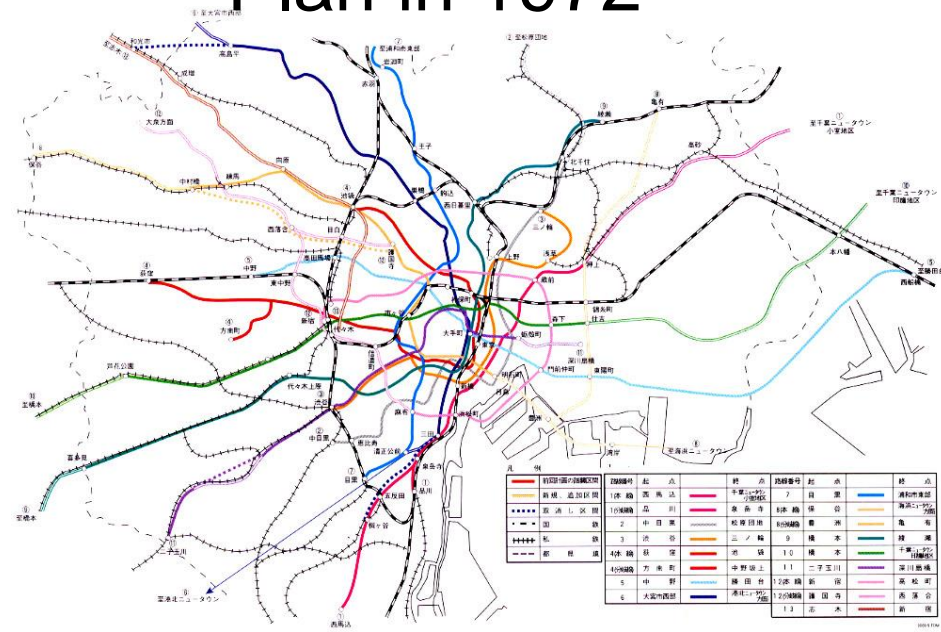
Plan in 1962



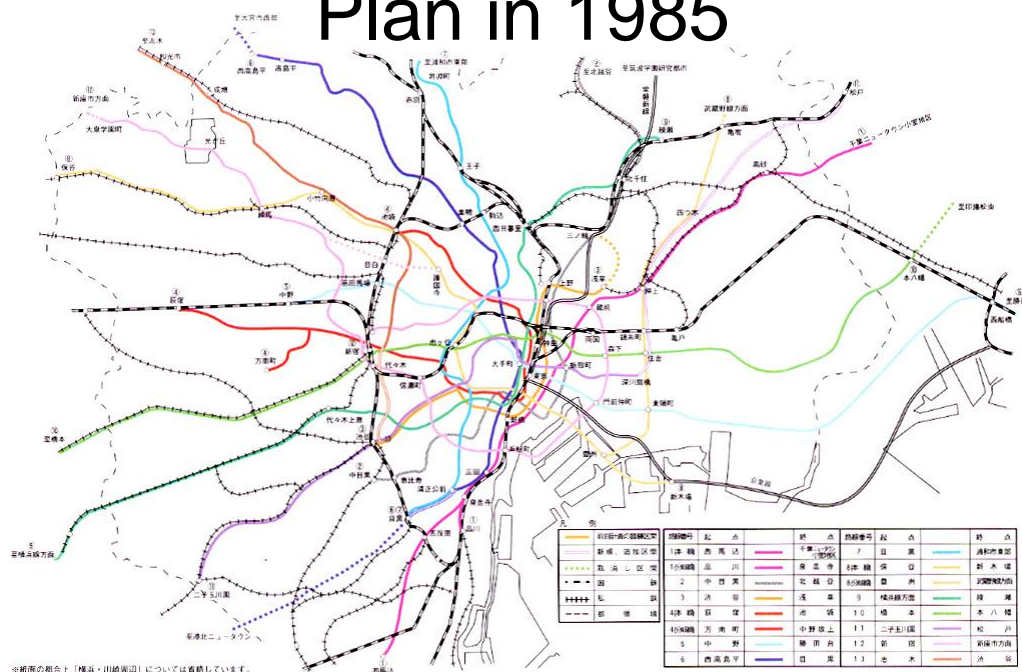
Plan in 1968



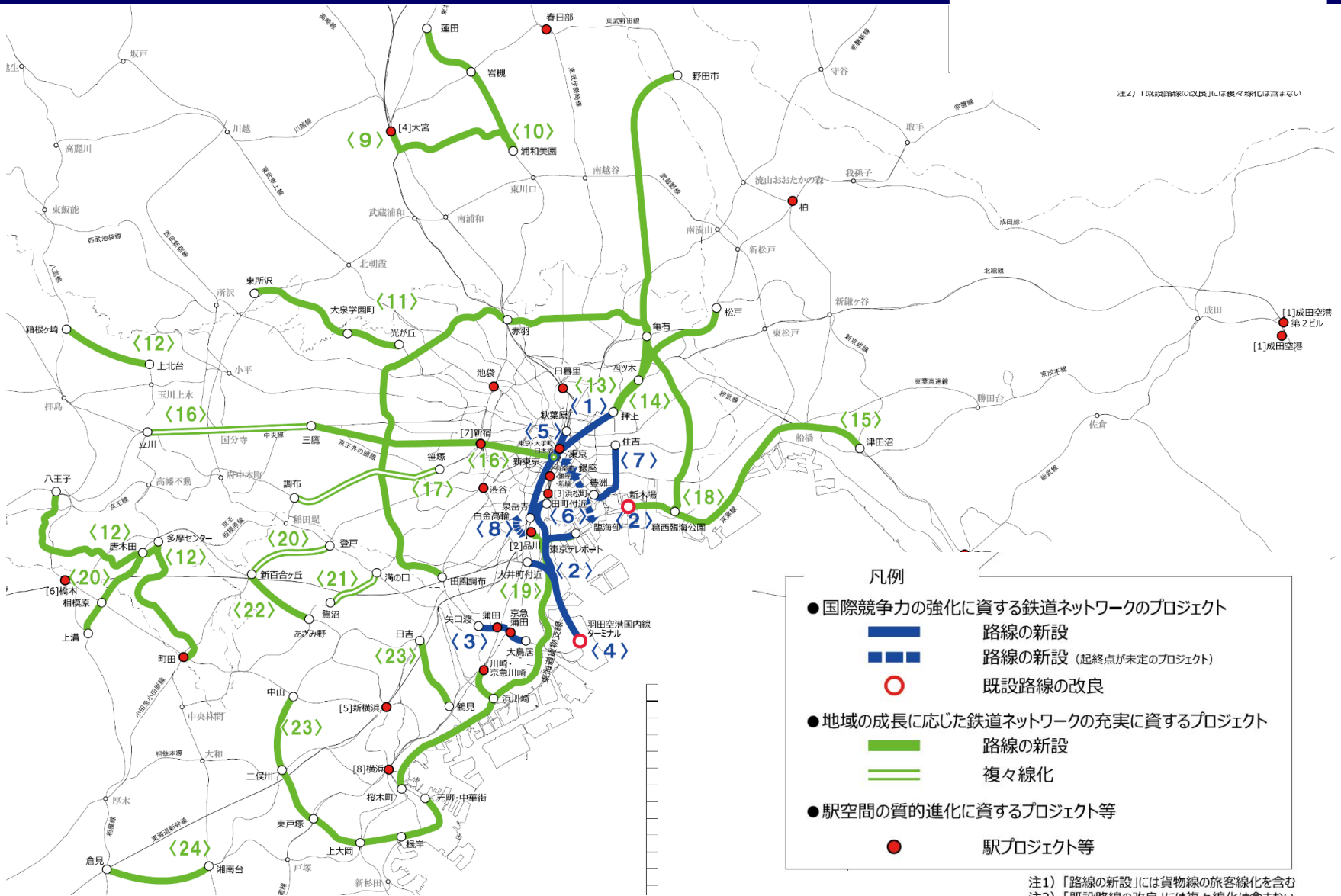
Plan in 1972



Plan in 1985



Plan in 2016



注1) 「路線の新設」には貨物線の旅客線化を含む
 注2) 「既設路線の改良」には複々線化は含まない

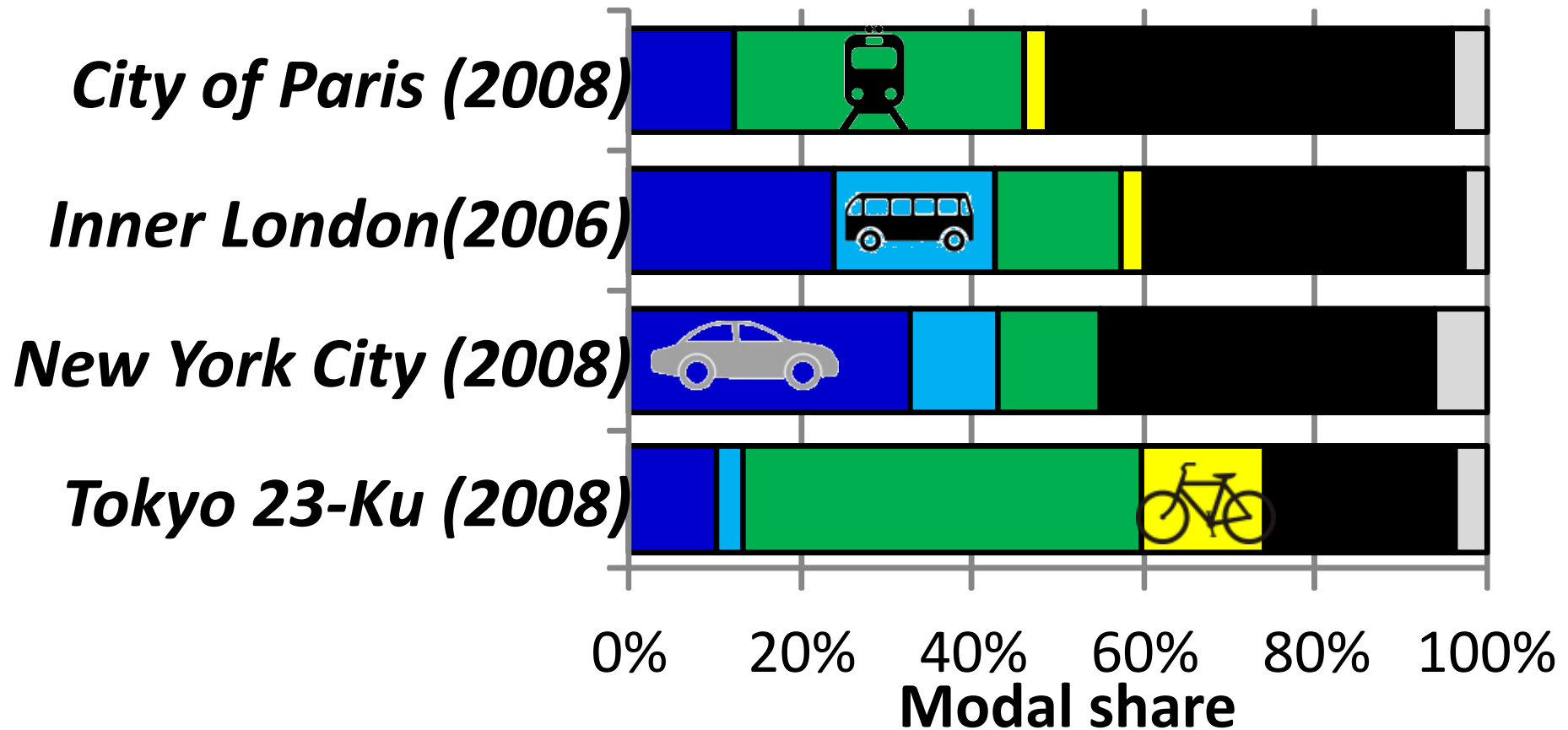
Huge Role of Private Railway

JR EAST	7,457 *	*including other region
Tokyo Metro (subway)	195	
Toei (subway)	129	
Tobu	463	
Seibu	177	
Keisei	152	
Keio	85	
Odakyu	121	
Tokyu	105	
Keihin Kyuko	87	
Sotetsu	36	
Shin-Keisei	27	

Operating length (km)

Current Status of Modal Share (all trip)

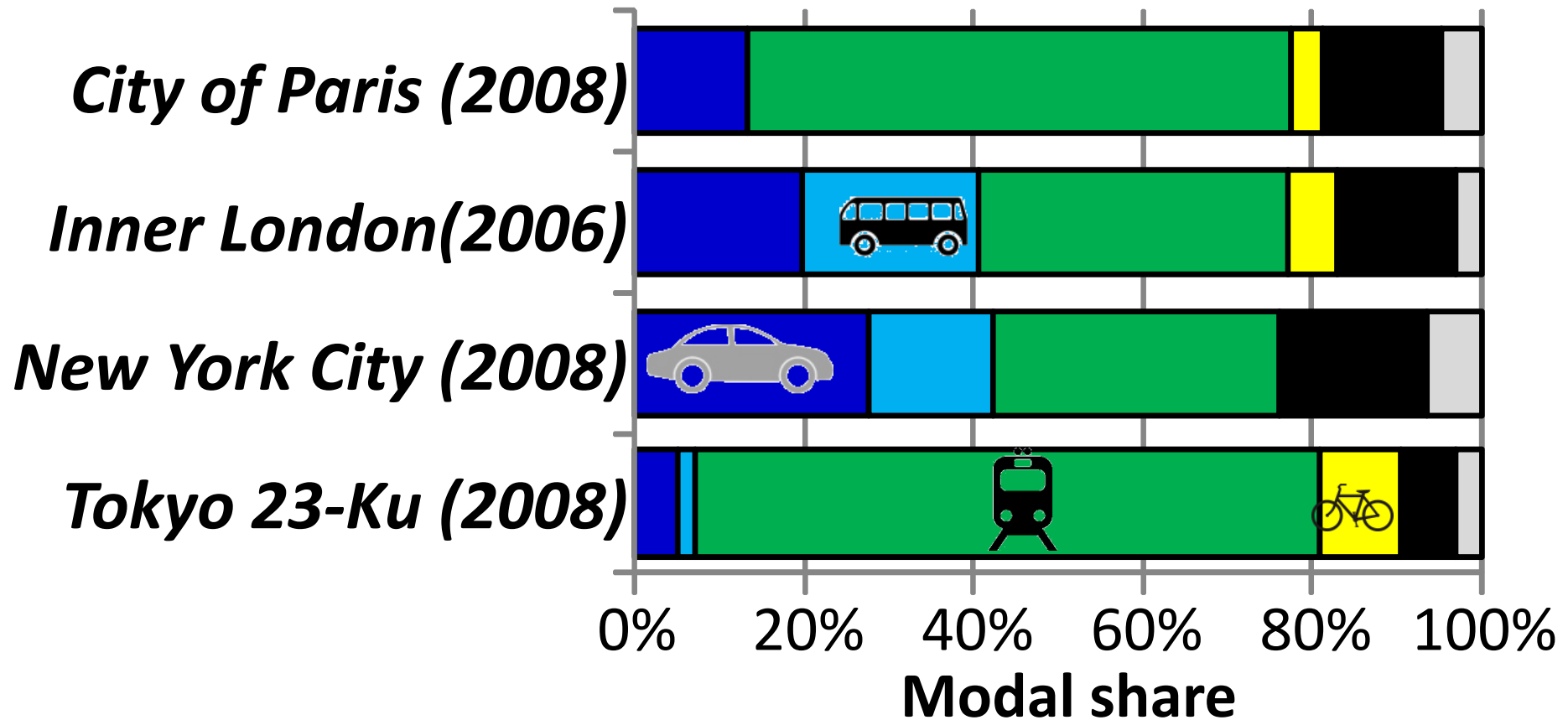
■ Car ■ Bus ■ Rail ■ Bicycle ■ Walk ■ Others



Data source: person trip survey from respective public agencies; Data year is indicated in the parenthesis after the name of each city; For Paris, Rail also includes Bus
Data and Figure by Professor Shigeru MORICHI

Current Status of Modal Share (Commuting trip)

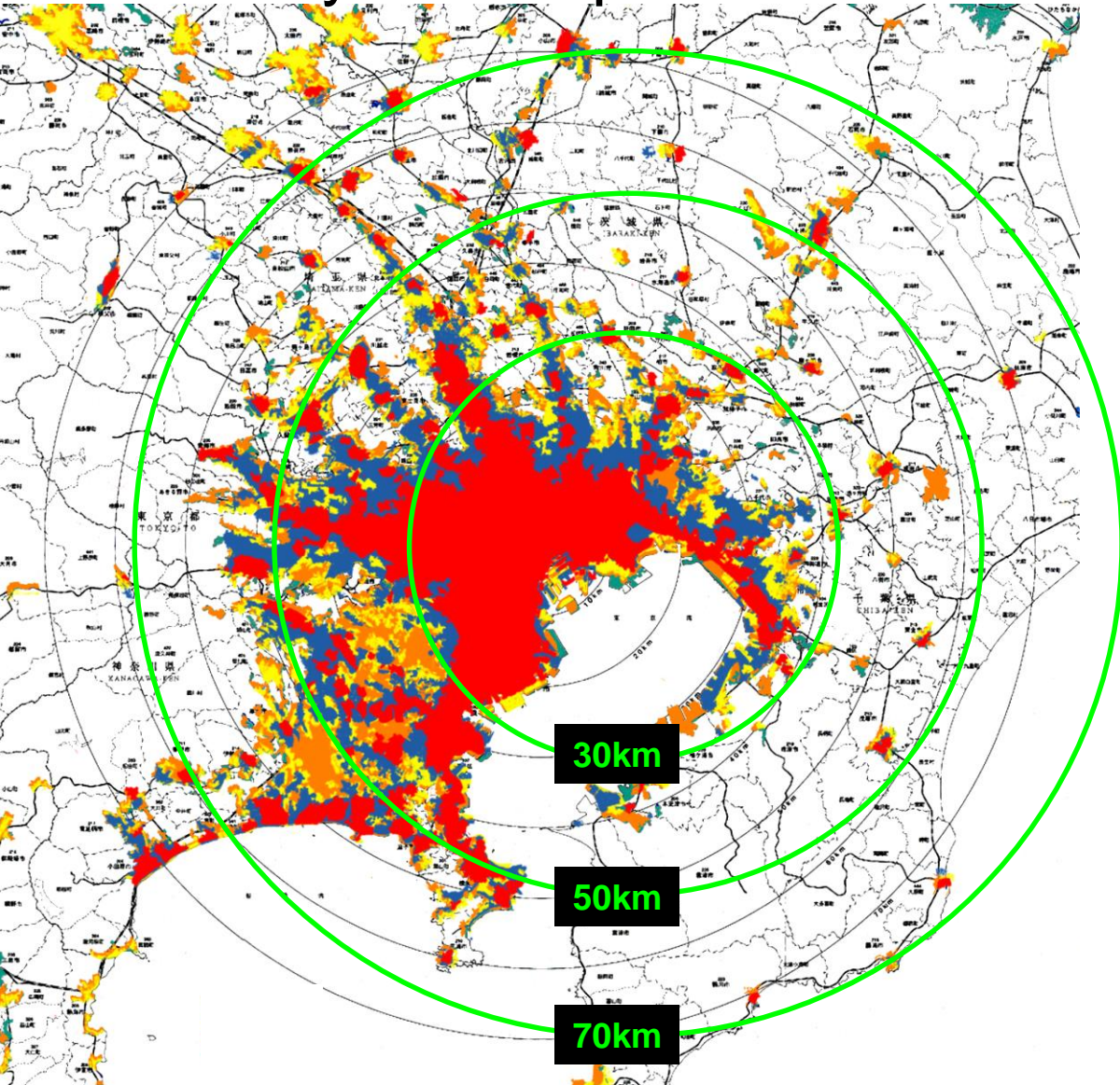
■ Car ■ Bus ■ Rail ■ Bicycle ■ Walk ■ Others



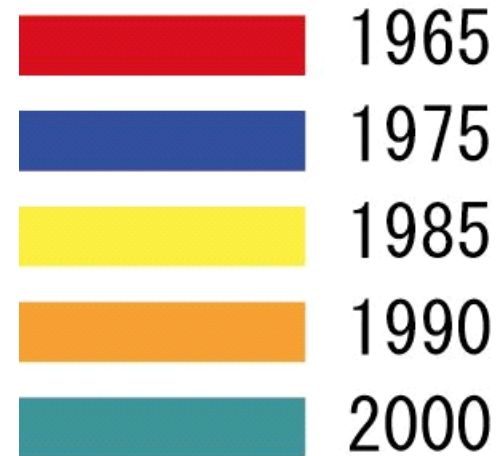
Data source: person trip survey from respective public agencies; Data year is indicated in the parenthesis after the name of each city; For Paris, Rail also includes Bus
Data and Figure by Professor Shigeru MORICHI

Expansion of Urbanized Areas

Tokyo Metropolitan Area and Railways



Palm & Fingers

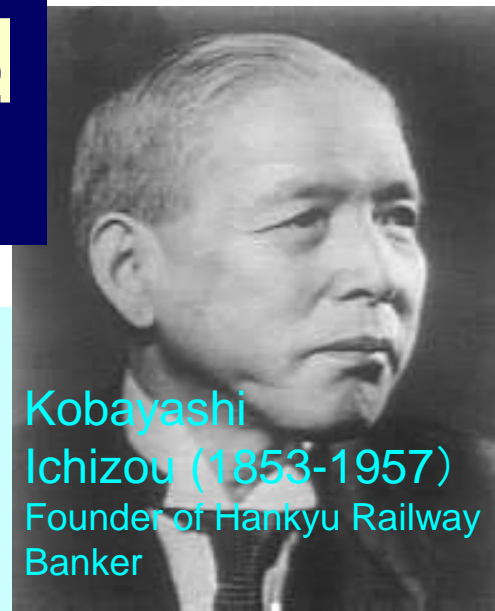


* 市街地はDID(人口集中地区)をさす。
* *Urban district refers to the density inhabited district (DID).*

2. What is Japanese TOD? - Experience in Japan

Ensen Kaihatsu, Railway Conglomerate and Kobayashi Ichizou

- Residential district development along Railways (Ensen-Kaihatsu : EK)
- Demand Creation thru department store, university invitation
- Branding of Ensen



Kobayashi
Ichizou (1853-1957)
Founder of Hankyu Railway
Banker



Railway company and Ensen-Kaihatsu

1910 Opening of new railway from Osaka CBD and suburbs

1910 Development of Ikeda Muromachi and sale promotions

- Proposal of new suburban life
- First home loan in Japan
- New demand of commuters to Osaka



High density residential area development along railway (Japanese TOD)

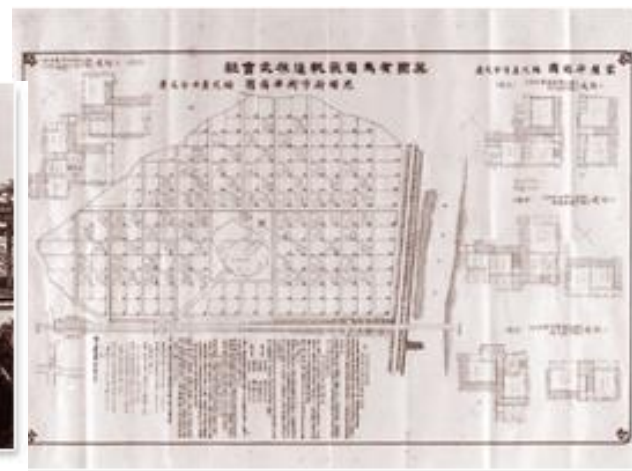
Ensen-Kaihatsu(EK)



開発前の池田室町 明治42年 (1909年)



開発後の池田室町 明治44年 (1911年)



池田新市街平面図 明治43年 (1910年)

Creation of Railway Demand I

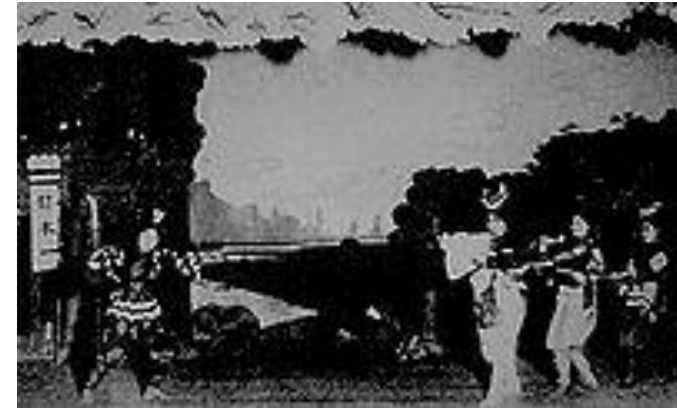
Takarazuka -Review (Musical by girls)

Demand creation for full utilization of capacity

Weekend

Opposite direction with main commuter flow

Amusement complex in Takarazuka
(Opposite side terminal)



First performance(1914)



Theaters in Takarazuka



Performance in 1930

Creation of Railway Demand II

Department Store at Osaka Terminal

Demand creation during **off peak** time

New lifestyle of housewives

Shopping and entertainment

Multi income resources

Rapid spreads to other railway companies



Gorgeous main concourse
Of Hankyu Umeda Station



The world first department
store at terminal station(1929)
24

Creation of Railway Demand III

Inviting new universities along Ensen

Counter flow passengers

Good images of Ensen

Consumption by students



Kobe Women
University



Kansei University



Konan University

Branding Strategies

Modernism
Best residential area



旧宝塚家劇記念館



倚松庵(谷崎潤一郎旧宅)



神戸女学院大学



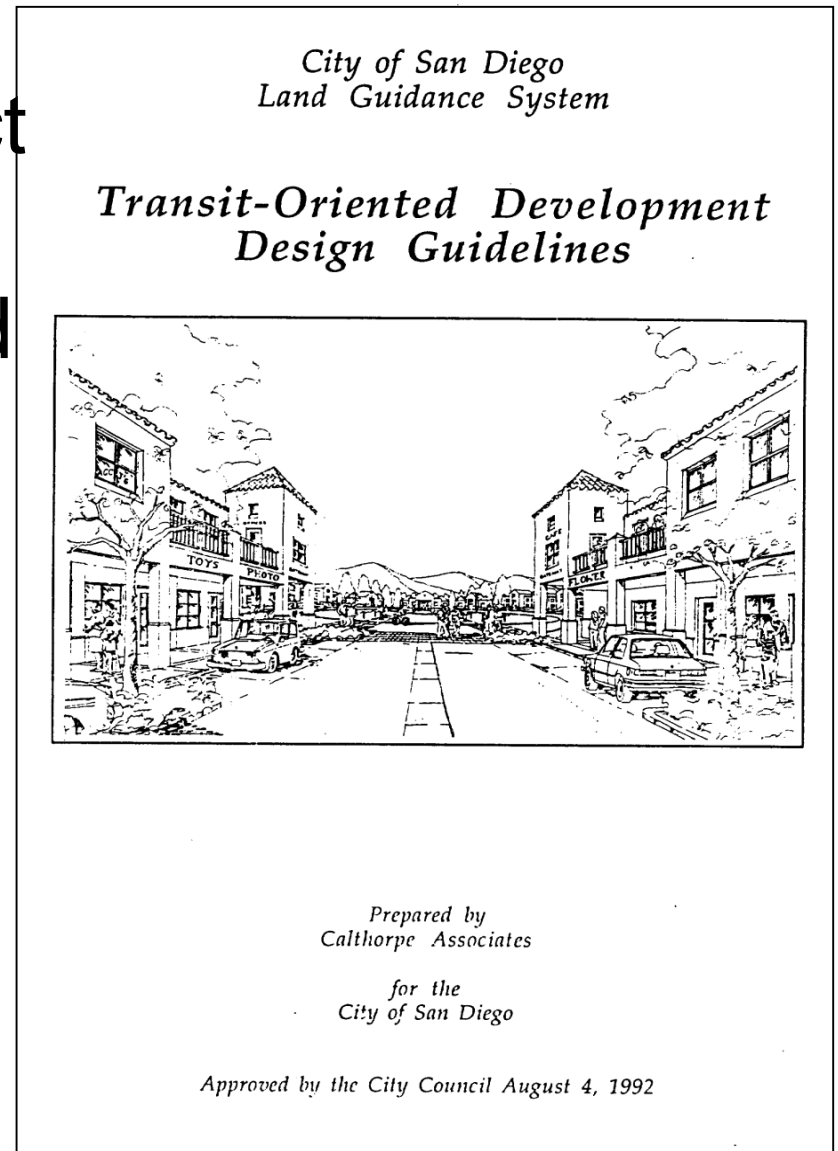
関西学院大学



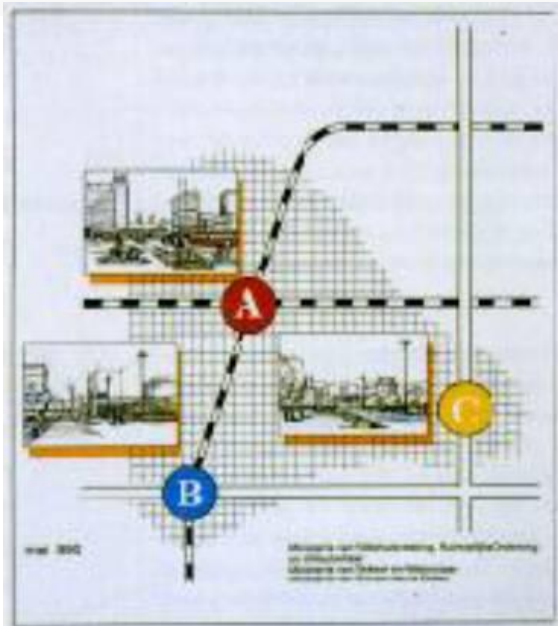
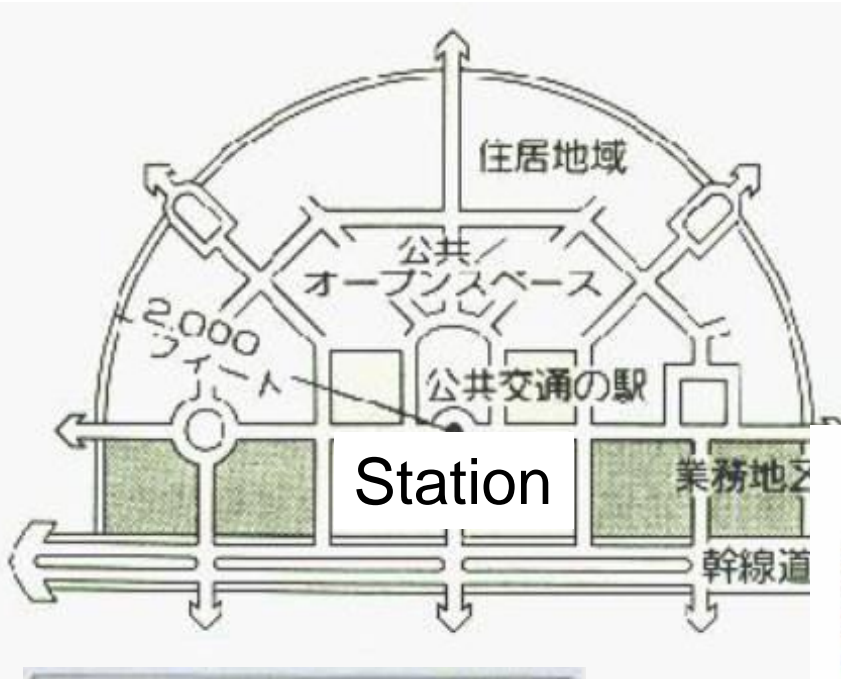
旧小寺家厩舎
(重文指定)

TOD: Transit-Oriented Development

A Transit-Oriented Development is a compact land use pattern with housing, public parks and plazas, jobs, and services along key points on the transit systems.



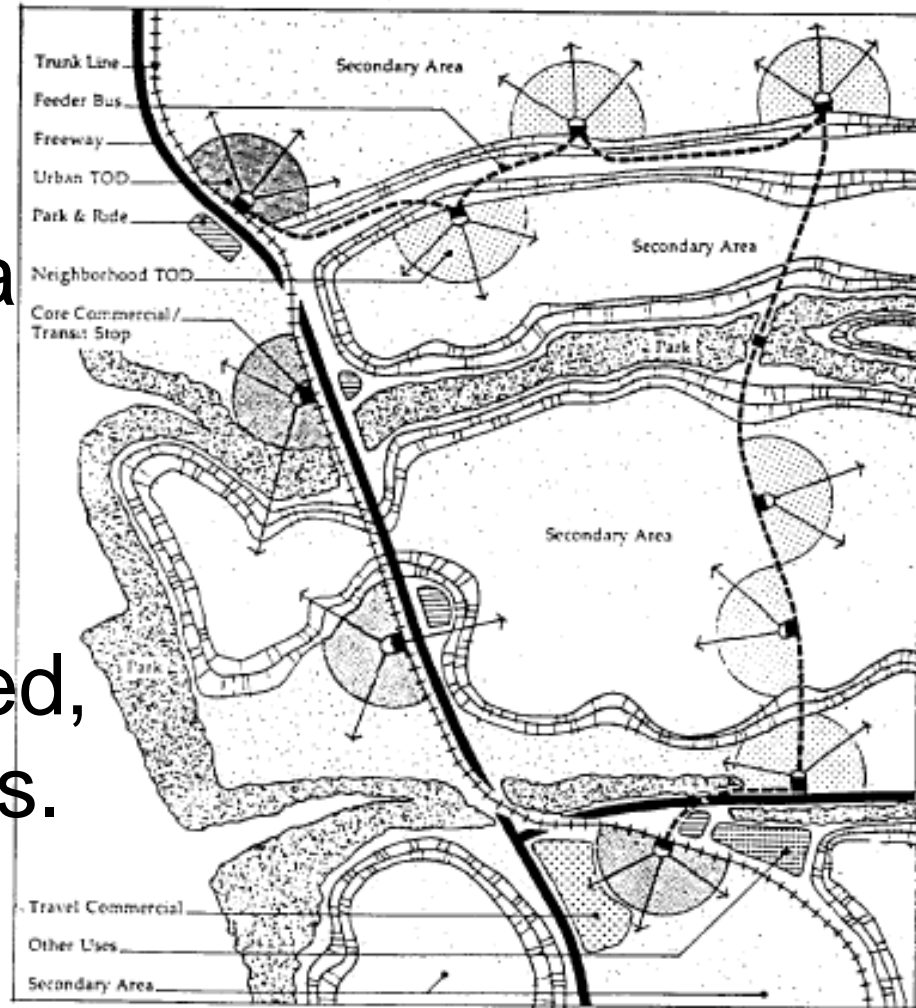
TOD



TOD in Orenco Station, Portland 28

Concept of TOD

The strategic application of the TOD will greatly help us in our efforts as a community to reduce automobile dependence, improve air quality, and create Pedestrian-oriented, interactive neighborhoods.





Proposed by Peter Calthorpe
in **1992** to San Diego City.

Tsukuba Express

Tsukuba NT

Legend

-  JR Line
-  Private Company Line

Akihabara

Shibuya

TOKYO



Tokyu Garden City Line

Ex.-1 Land Readjustment by Tokyu Railway Co.

Tokyu Garden City Line

31.5km, 27 stations

Opened in 1984 (1966 Partially

Opened in 1966)

Land Readjustment Projects (1959~)

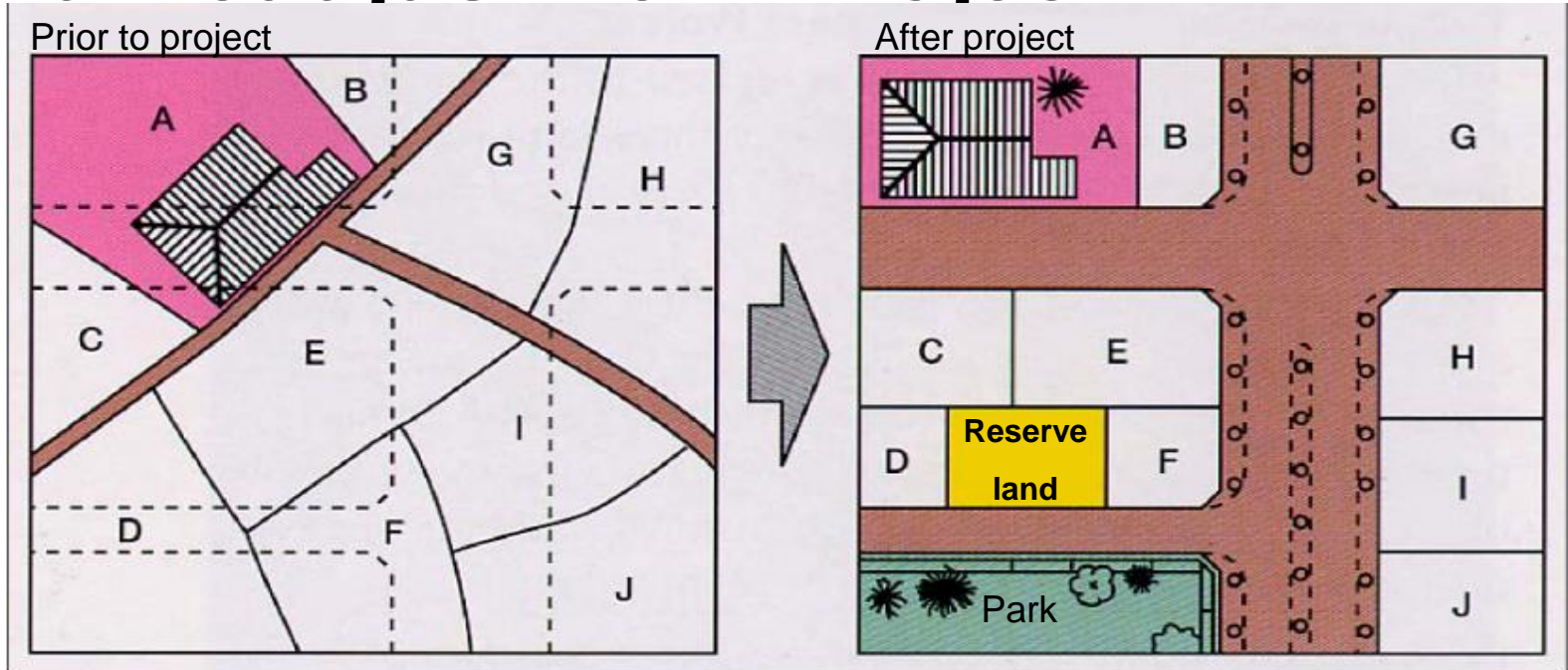
51 Cooperative LR Projects

including Tokyu Railway Co.

3,160ha

Kukaku-Seiri

= Land Readjustment Project



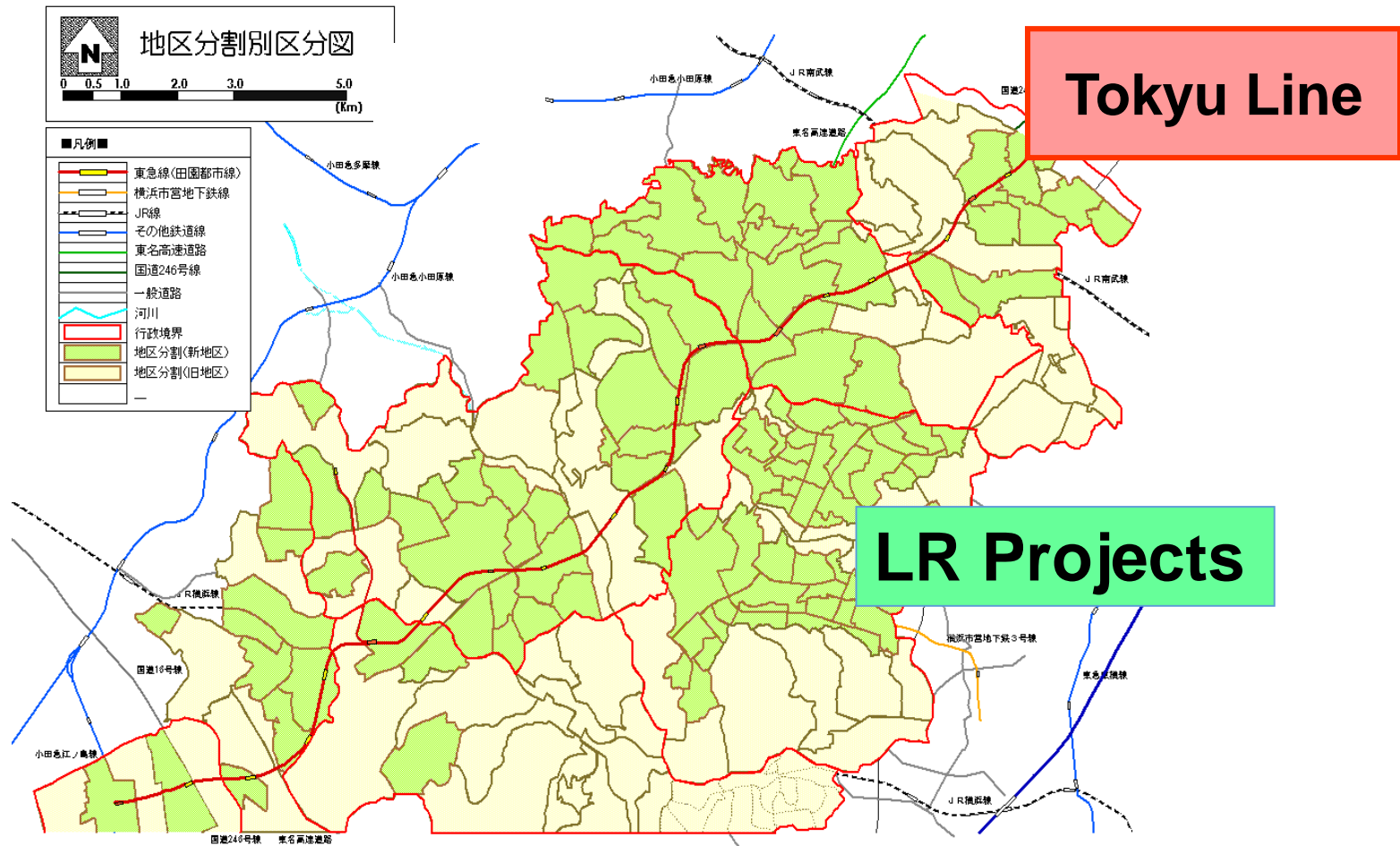
Contribution for Public Land and Reserve Land
Readjustment of Land Rights
Self-Finance by selling Reserve Land

LR Projects along Tokyu Garden City Line

Tokyu Garden City Line

31.5km, 27 stations

Opened in 1984 (1966 Partially Opened in 1966)



Ensen Kaihatsu New Town



Ex.-2 Tsukuba Express

Tsukuba Express

58.3km, 20 stations

Opened 2005

LR Projects

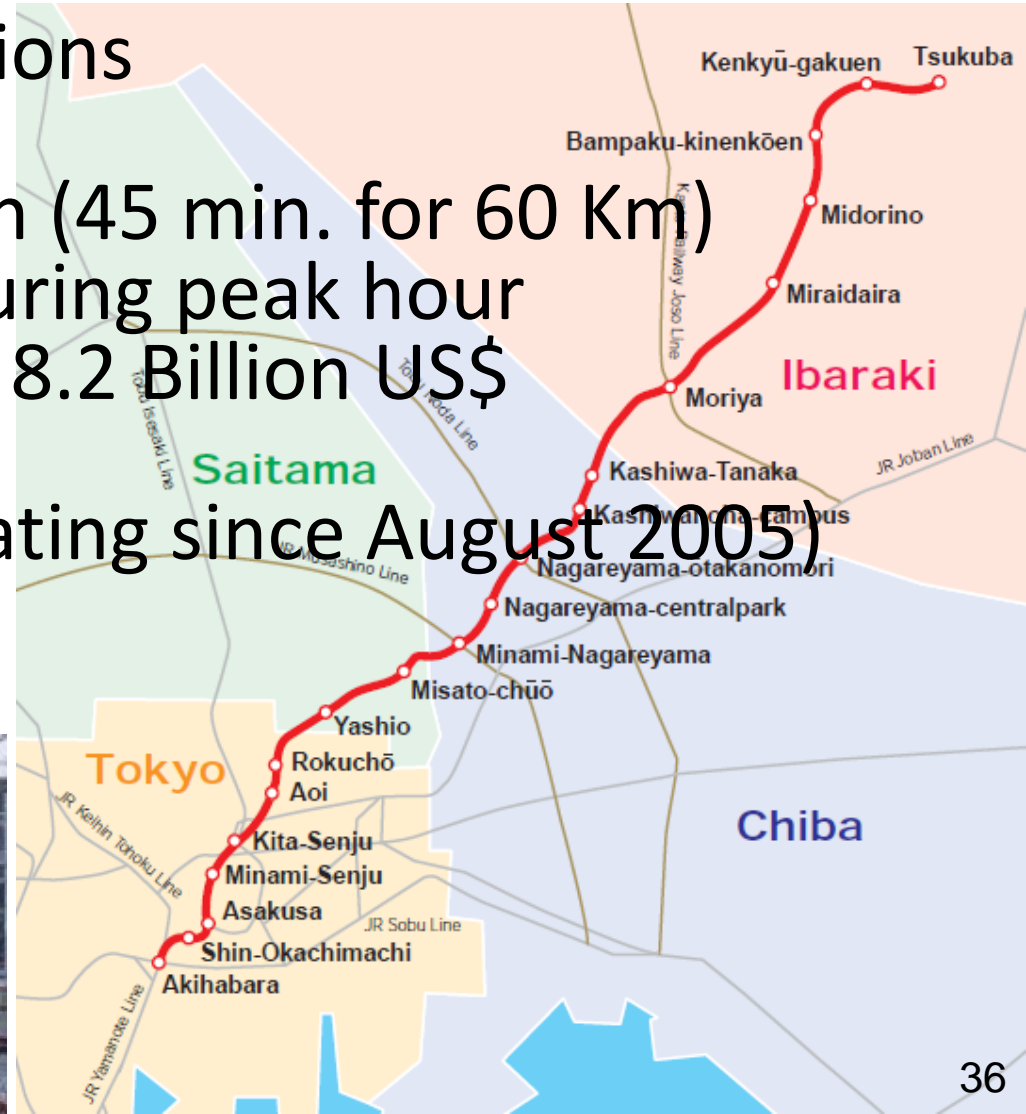
**18 LR projects by mostly Public
Body**

3,264ha

Japanese experience for coordinated development of “railway & residential area”, “railway company & local government” *Case of TSUKUBA EXPRESS*

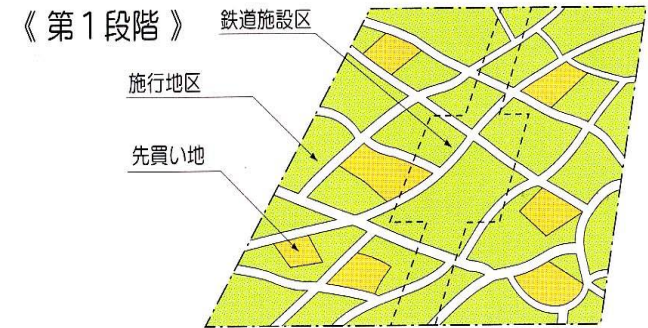
Length: 58.3 km, 20 stations

- Max speed: 130 Km/h
- Average speed: 77 Km/h (45 min. for 60 Km)
- Frequency: 16 trains during peak hour
- Total construction cost: 8.2 Billion US\$
- Term of Construction:
→ 1994 to 2005 (Operating since August 2005)

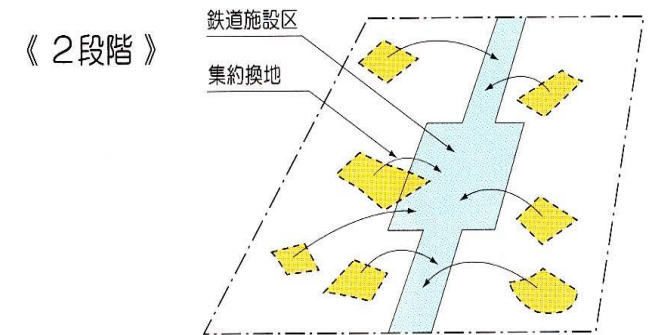


Special Measures Act for Integrated Development between Railroad and Residential Land

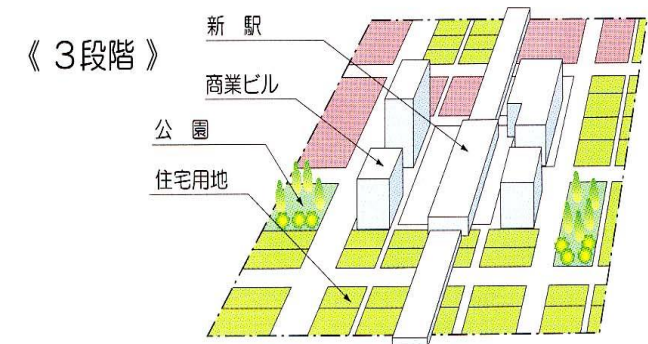
(1) Acquisition of land by request, for Railroads



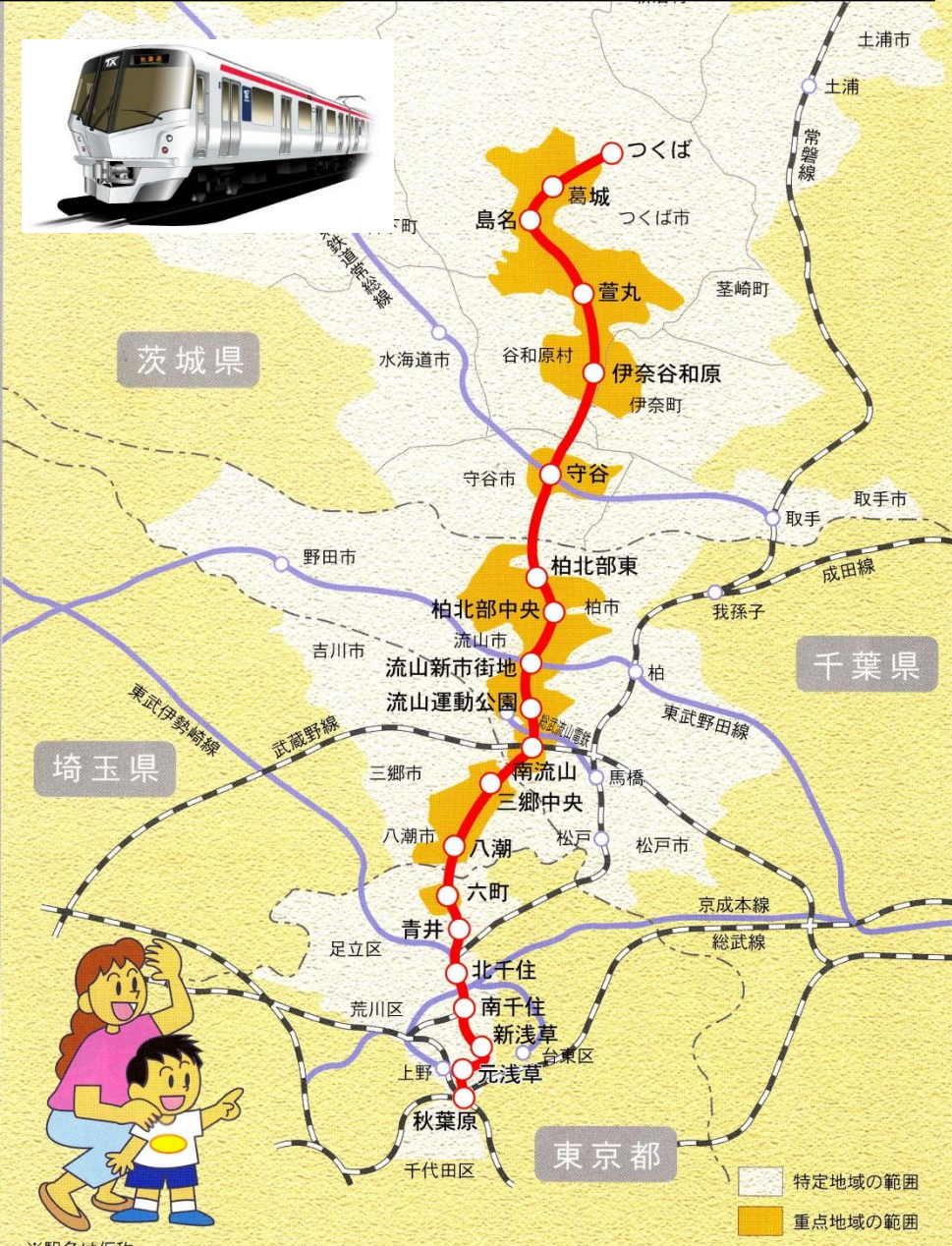
(2) Re-plotting to the planned Railroad



(3) New Towns with the Railway



LR Projects along Tsukuba Express



※駅名は仮称

Tsukuba Express(TX)

58.3km, 20 stations

Opened 2005

LR Projects

18 LR projects by mostly Public
3,264ha

Future Image

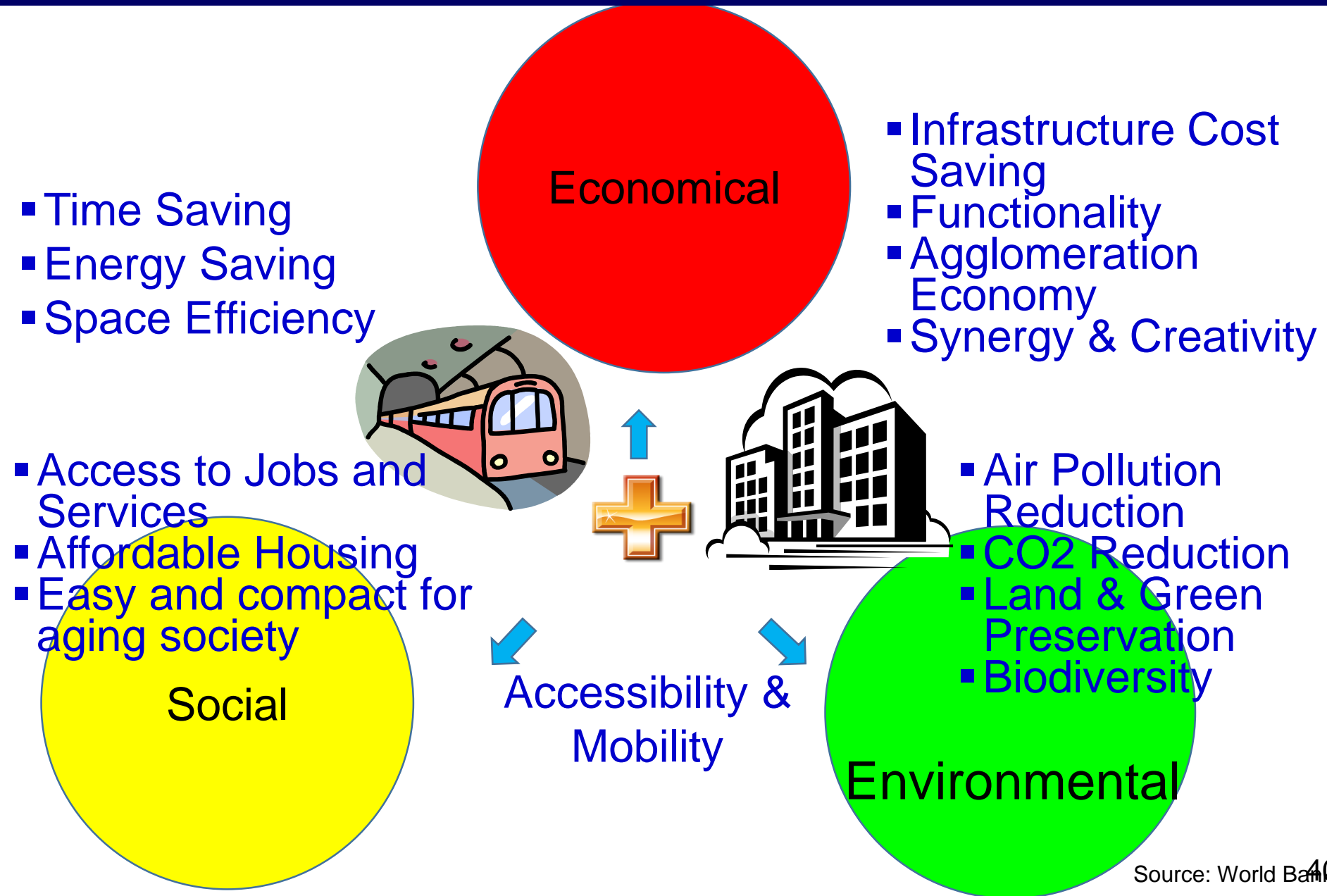


Source: Takayuki Kishii (Nihon Univ.)

Characteristics of TOD

- >> A True Smart-City Promotes Sound Economic Activities and Sustains Growth with Reducing Environmental Impacts and consequently Enhances 'QOL'.
- >> Most Large-scale Urban Development Projects in Metropolitan Area in Japan are 'TOD's. 'TOD' Greatly Contributes to materializing the Elements of Smart-City in Economical, Social and Environmental Aspects

Characteristics of TOD



3. Key Issues for Success

- 1) Value Capture
- 2) Coordination and Integration

From Japanese experience

- Urban railway can be profitable in long term.
- Main Revenue of railway company
 - 1st step (Population is limited) : housing, real estate
 - 2nd step (population increased) : high land price,
all business increased railway passengers
 - 3rd step (almost land was sold out) :
railway, urban renewal, etc.
- Profitability is essential for innovation of system.
- Railway Company is key factor of attractiveness of area (Attractiveness decides the land price)

For Value Capture from TOD project

- Profitability of Railway Company
- Agreement by land owners and citizens
 - Improvement of environment
 - Increase of property value
(higher land price of smaller space)
- Difference of land prices before and after the project
(Land use regulation, reasonable reduction of space)
- Speedy Implementation of the projects
(Role of government)
- Support by Central and Local Governments
 - Coordination of stakeholders, Subsidy for the project, Change the zoning of land-use, Deregulation for urban development and building, Investment for infrastructure

1) Legal level coordination

ex. ▪ **Urban Planning law**

Urban planning procedure for transport facility

- Environment assessment law
- Special law for the railway between Tokyo and Tsukuba
(Housing area and railway development law)

2) Institution level : Budget and system for coordination

ex. ▪ Subsidy for new town railway

- Subsidy for continuous vertical division of railroad crossing

3) Planning level coordination

ex. ▪ Coordination by local government

- **Planning experts:**

Related agencies (UR), Professors and stakeholders

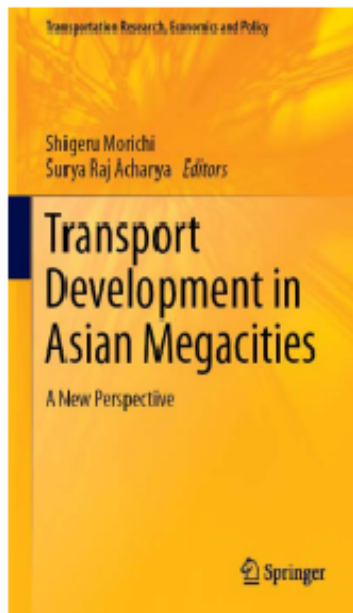
UR: Urban Renaissance Agency



4. Issues for Future Development



springer.com



Shigeru Morichi, National Graduate Institute for Policy Studies (GRIPS), Tokyo, Japan; **Surya Raj Acharya**, Institute for Transport Policy Studies (ITPS), Tokyo, Japan (Eds.)

Transport Development in Asian Megacities

A New Perspective

The rapid growth of the Asian urban population concentrates on a few large cities, turning them into giant megacities. Despite new theoretical insights into the benefits of megacities, the emerging Asia is facing a daunting challenge concerning the management of infrastructure and services in their megacities. The deteriorating urban mobility is the most difficult challenge with respect to the sharp increase in vehicle numbers and to inadequate and poorly managed road infrastructure. Public transport, a sustainable mode of mobility, is subjected to a vicious cycle of poor service, decreasing ridership and lower investment. Despite various policy initiatives, the situation has not improved. The scale and growth pattern of Asian megacities have distinctive features which generate a unique set of challenges and opportunities. New perspectives are needed to effectively address the transportation problems making the best use of available opportunities. This book, which is a result of an international collaborative

Public transport share is going down under the growing economy and motorization.

➔ What are key issues for this problem?

1. The urban railway system have to meet the future demand and land-use in mega-city.

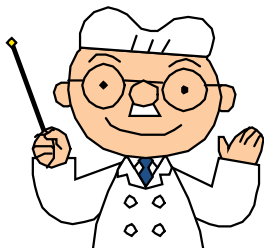
Master plan and its implementation are essential.

2. The timing of investment for urban railway is considered.
3. Hierarchy railway network is required for mega-cities as same as road network.
4. Transit Oriented Development (TOD)
5. Road policies related to urban railway such as Station plaza, car parking regulation, and cost for car usage are important.
6. Profitability of railway operators is necessary for the innovation of service and operation.

5. Conclusion

Key Issues for the success of urban railway and urban development

- 1) Master plan for railway network
 - Long term and coordination with urban plan
- 2) Support from public side
 - Establishment of institution (Value Capture)
 - Financial subsidies
 - Human resources
- 3) Strategic Plan for Transit Oriented City



TSUKUBA Science City

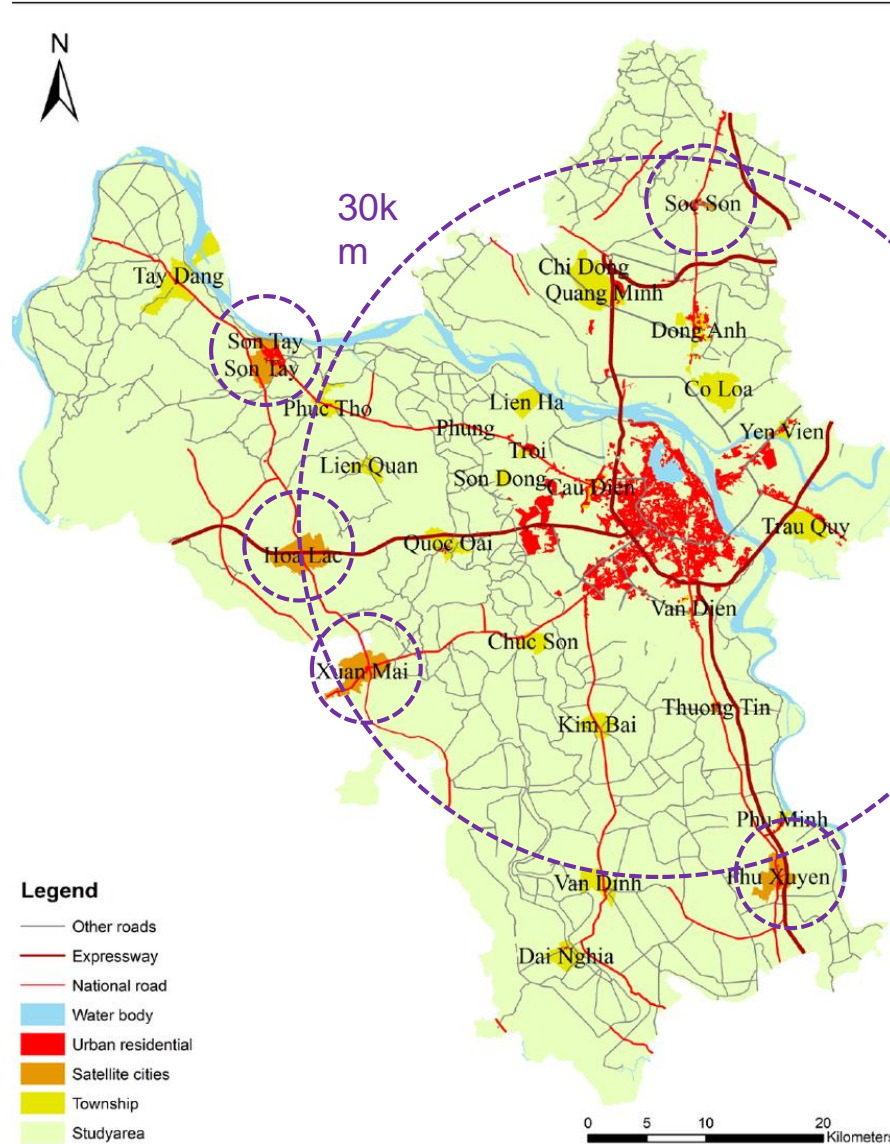


Tsukuba Science City

Tsukuba Science City was built in order to **ease congestion** of Tokyo and to conduct high-level **research and education** by transferring **national research and development, and educational institutions** systematically. The city is now **the largest science technology accumulation** site in Japan, where more than 300 public and private institutions and enterprises are located.

New City Development Plan

Hoa Lac, Son Tay, Xuan Mai, Phu Xuyen and Soc Son



References

- Shigeru MORICHI(2018):Public Investment and Public Private Partnership; GRIPS Program for the High Class Officials of Viet-Nam
- Hiroyuki YOSHIMURA(2018): Outline of TOD as a Comprehensive Solution for Smart City Development; EASTS-Japan seminar

Thank you for your attention!

Cám ơn vì sự quan tâm của bạn!

Self introduction

- 1966 Born in Saga
- 1988 Graduate, CE Dept. Tokyo Institute of Technology
- 1992 Research Associate, CE Dept. Tokyo Tech.
- 1996 Doctor of Engineering
- 1996 Researcher, Institute for Transport Policy Studies
- 1999 Assistant Professor, Univ. of Tsukuba
- 2003 Associate Professor, Univ. of Tsukuba
- 2004 Visiting Prof., Univ. of Philippines (JICA Expert)
- 2015 Professor, Univ. of Tsukuba
- 2019 Visiting Professor, VJU (from March.)

Fields: Transportation, Tourism, Logistics,
Port Transport