

**Urban Transport Development
integrated with
the Urban Development**
~ Japanese Technology and Experience,
Outline of Overseas Projects ~

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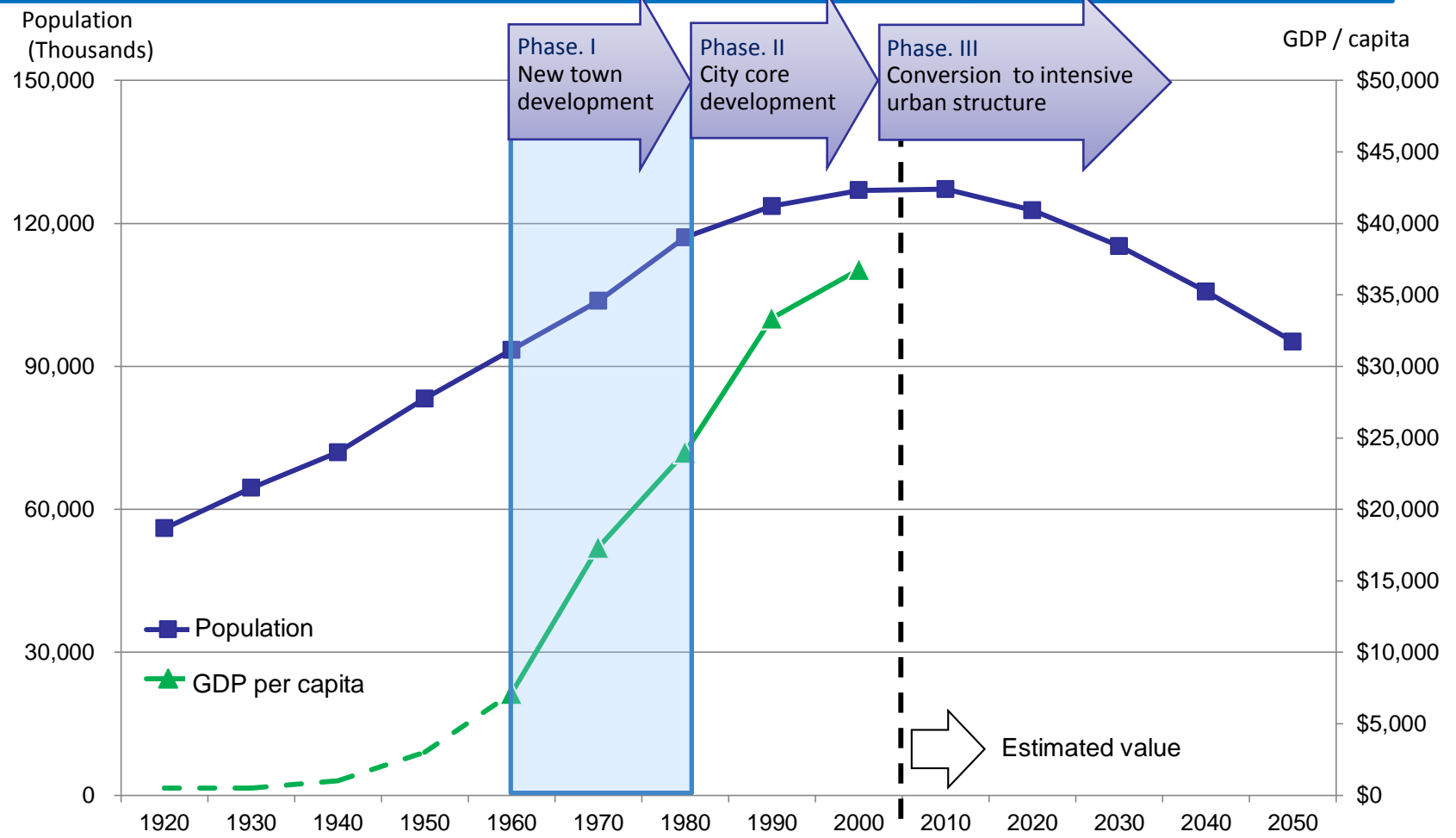
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- ① **History of Urban Transportation Development in Japan**
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History of Urban Transportation Development: Phase I

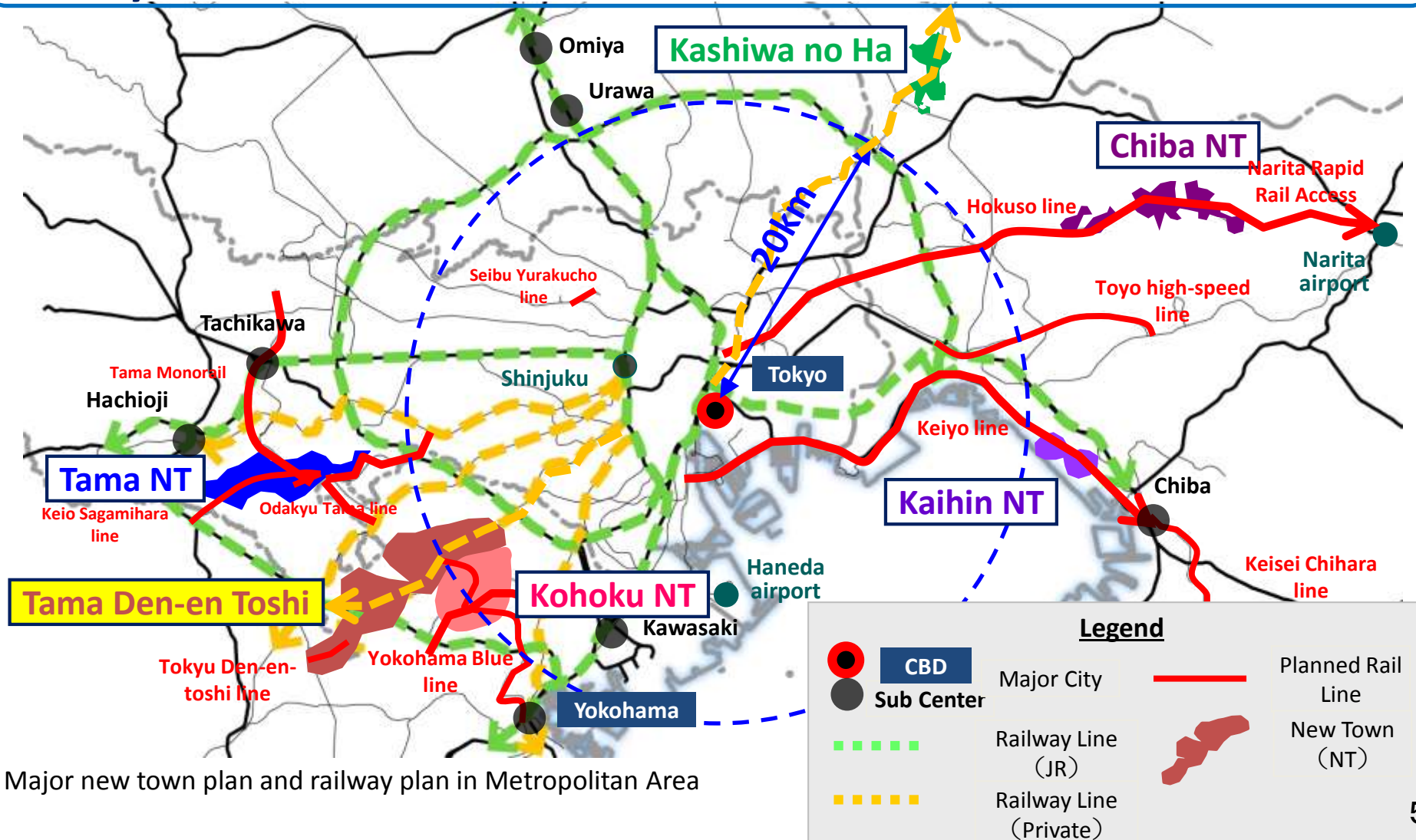
The urgent need was to develop new spaces to make room for an industry and a rapidly growing population during the high-growth period in Japan.



Source: Population as of October 1 of each year (median estimate) extracted from National Census Report of the Statistics Bureau, Ministry of Internal Affairs and Communications, and Estimated Population in Japan, National Institute of Population and Social Security Research (Estimate as of December 2006), and per capita GDP, data of World Bank (substantial conversion value).

Solutions for Urban Problem

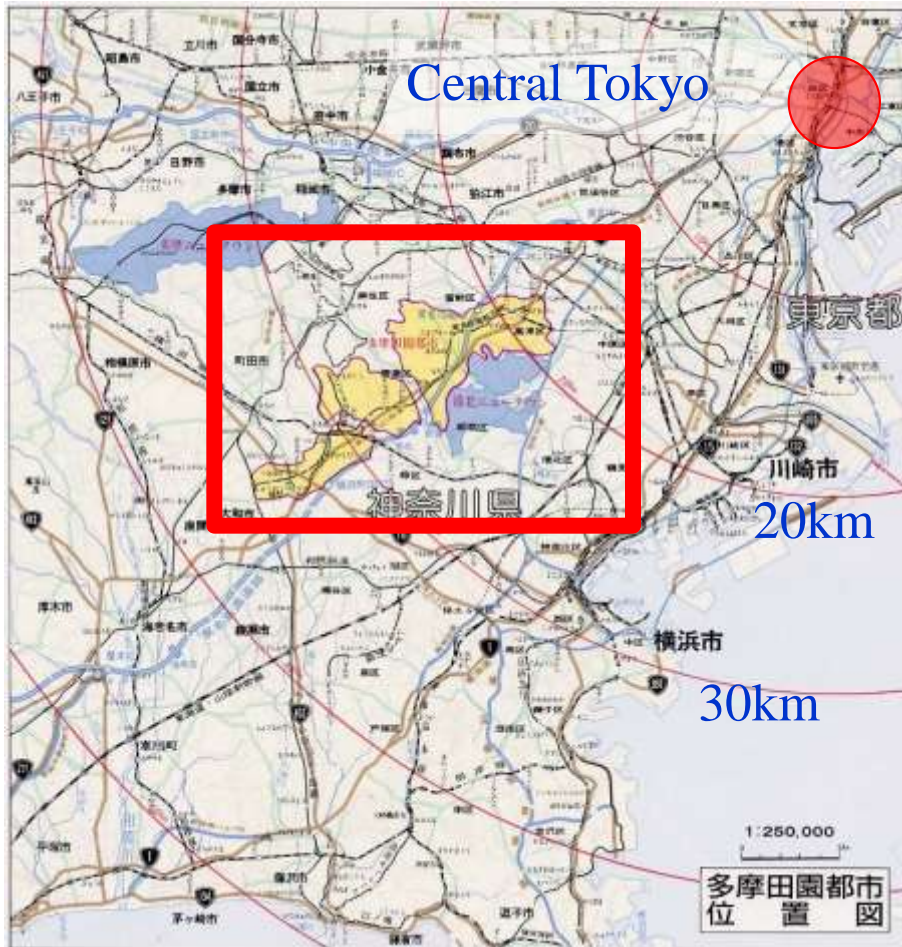
Metropolitan Area Development Plan to control sprawl of the city and urban development. ➡ Integrated plan to develop urban railway and new town in wide area.



Major new town plan and railway plan in Metropolitan Area

Tama Garden City (TGC)

1. Land acquired from land owners and leaseholders by a private railway company.
2. Land readjustment took place by development union, initiated by the private railway company.
3. Railway development by the private railway company.



- Location :
20~35km from Central Tokyo
- Area :
5,000 ha
- Former land use :
hilly forest and farm land
- Transportation :
Extension of existing rail line
- Planner :
Tokyu Corporation

TGC Development History

1956 : Master plan announced

(A)

1963 : Railway extension started

(B)

1966 : Phase I extension completed

(C)

1979 : Direct service to CBD

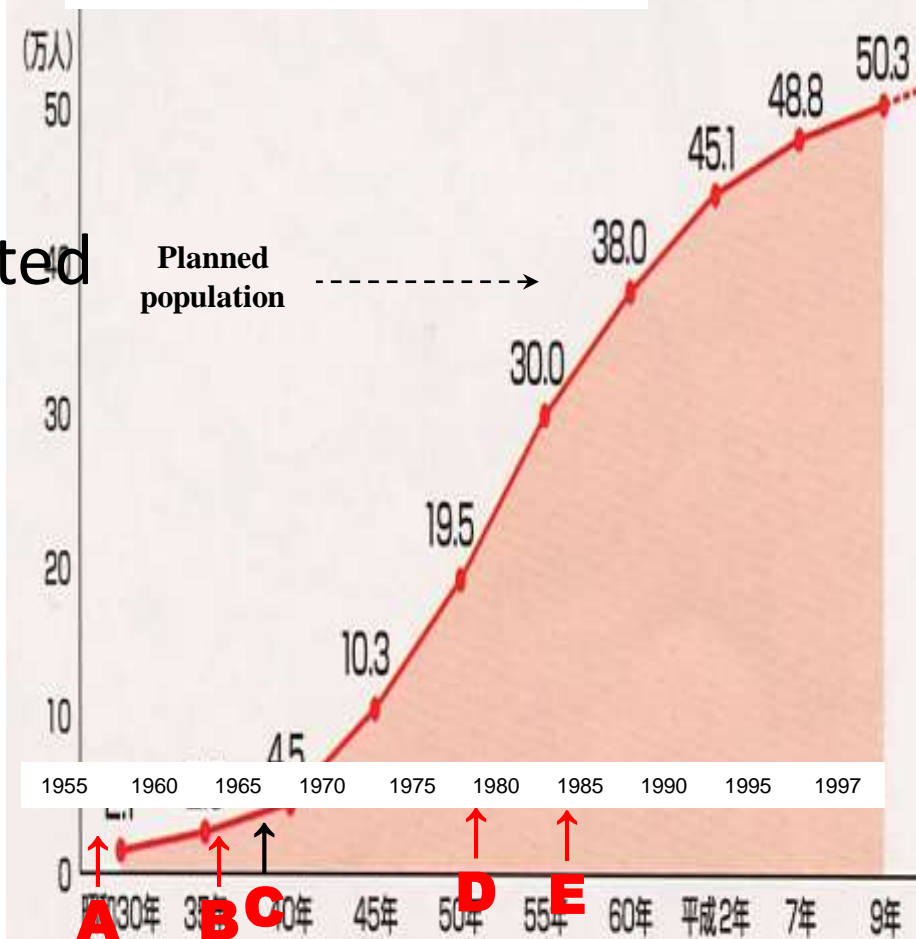
(D)

1984 : Extension completed

(E)

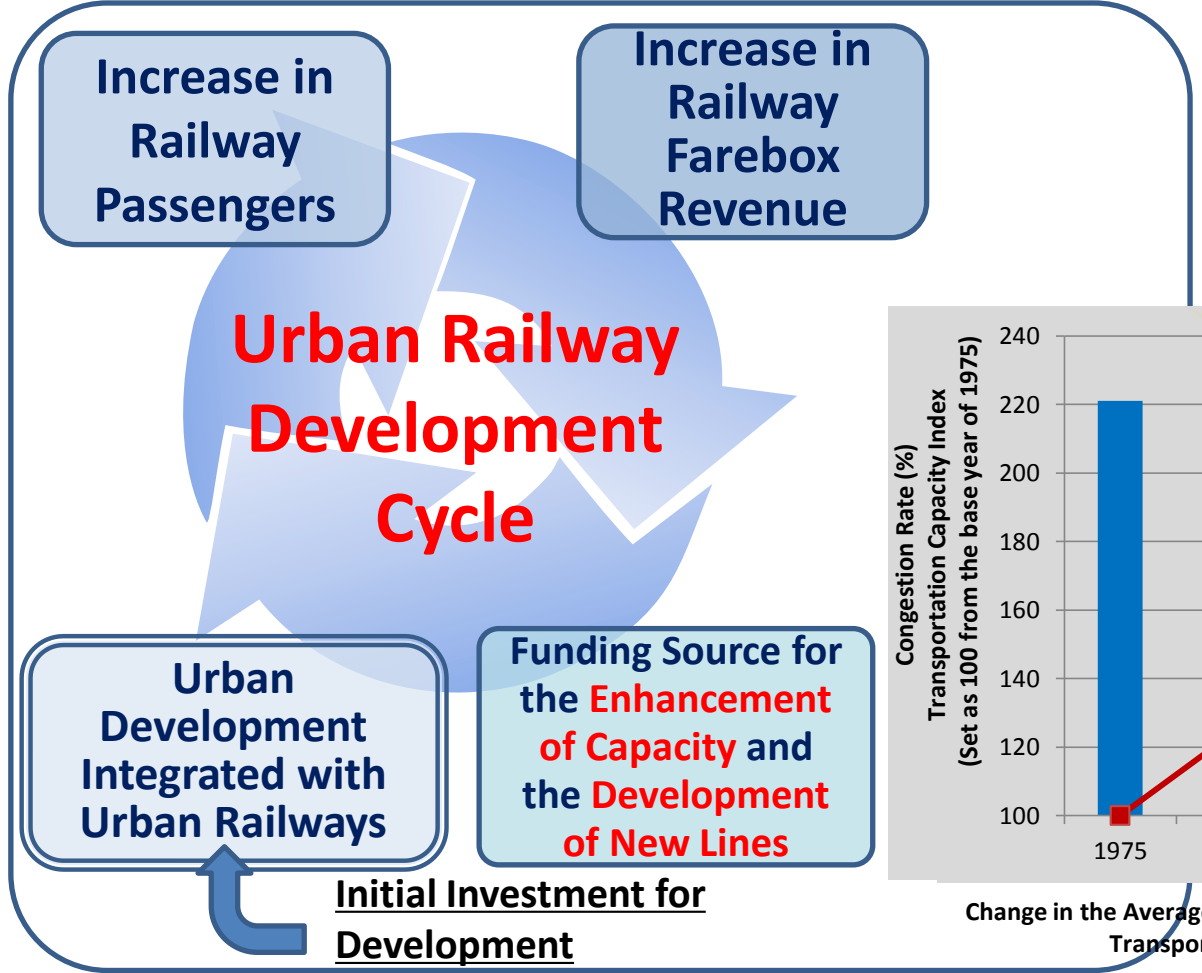
10,000
persons

Trend of TGC population

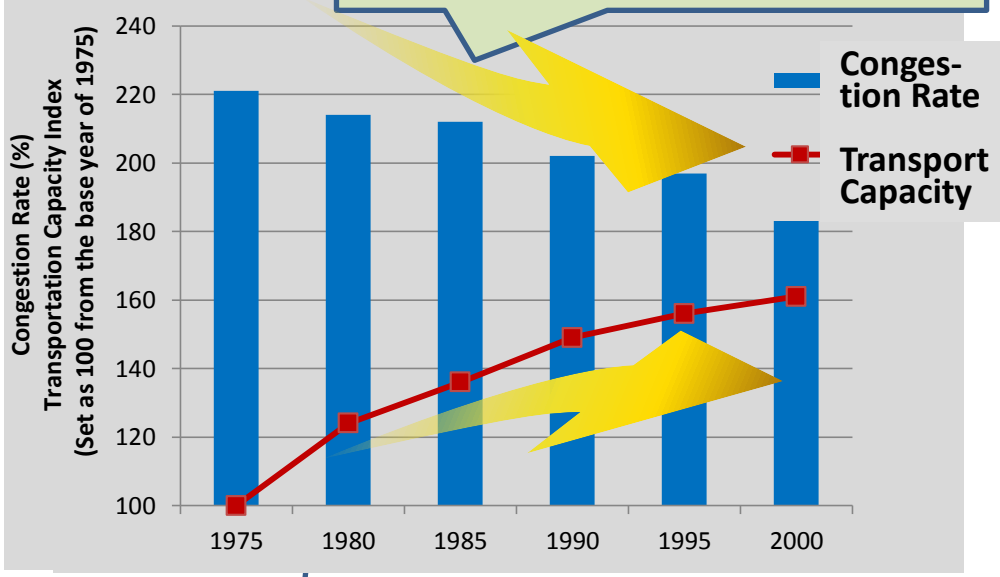


Mechanism of TOD (Transit Oriented Development)

- By integration “**a new railway construction**” and “**urban development projects**”, following effects are expected.
 - Increase in number of residents would **increase in passengers and fare box revenue**. -Residents could be satisfied with comfortable and convenient urban life in the new town.
 - Increase in railway fare box revenue would become a **funding source for the next railway investment**.



Enhancement of Transport Capacity due to an increase in fare box revenue, concurrently with the progress of urban developments, **could improve in the Commuting Environment**.



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

Tama New Town

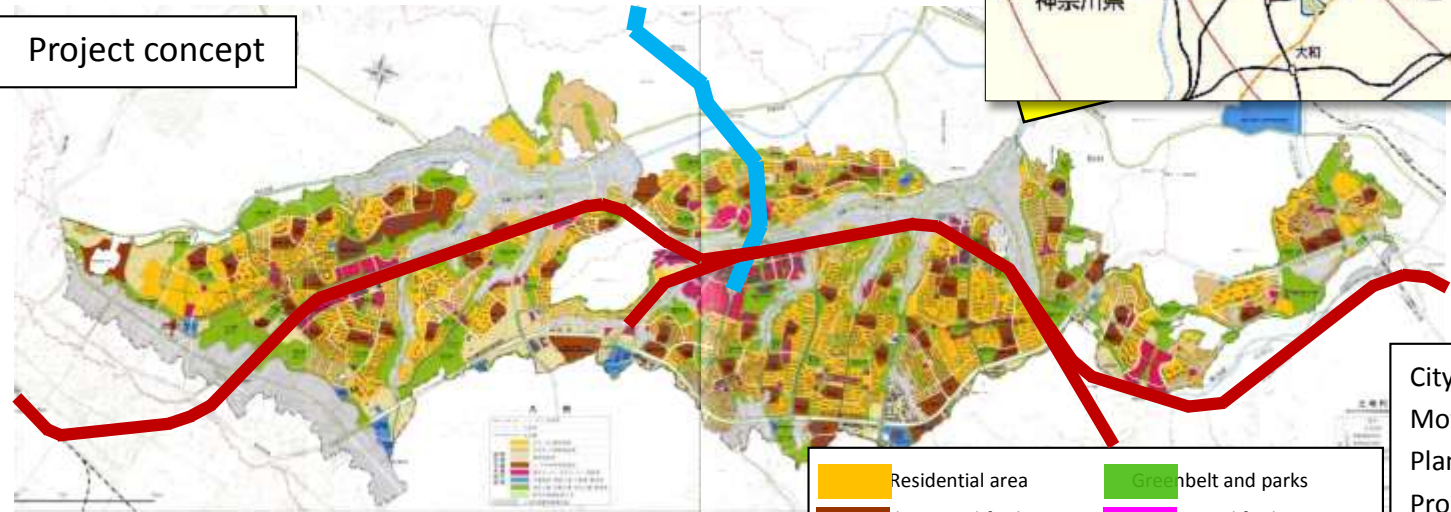
New town development during the high growth period: Tama New Town

- Urban development by public sectors was conducted
(by Urban Renaissance Agency, and Government of Tokyo)
- New construction of two radial private railways with direct connection to central Tokyo
- New construction of a loop of Tama Urban Monorail with connection to Tachikawa City

Development of Tama New Town



Project concept



Source: Materials submitted by UR

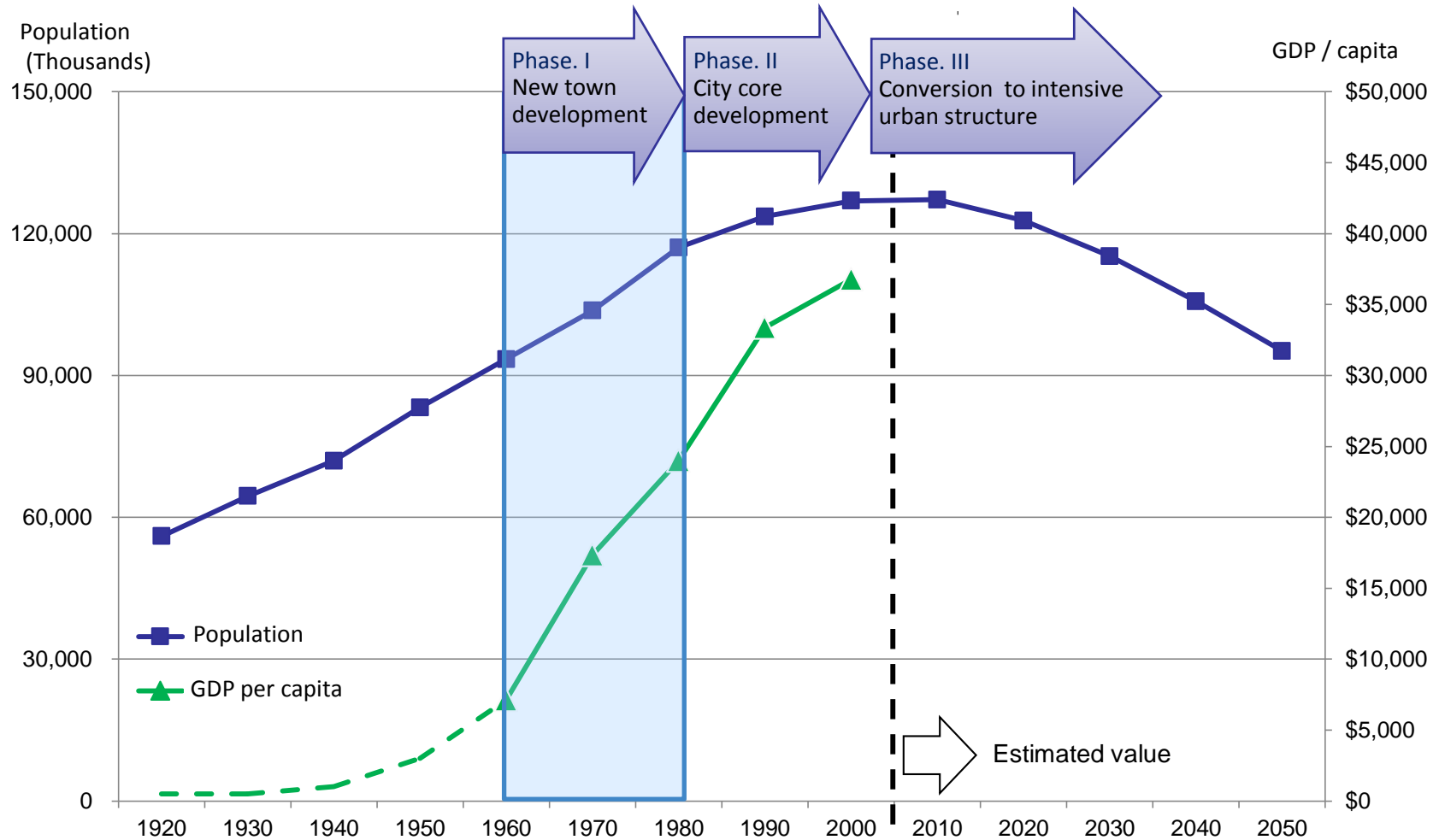


Source: City and Transportation, Vol. No. 65 (Japan Transportation Planning Association)

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

History of Urban Transportation Development: Phase II

Utilization of land with great potential for new development



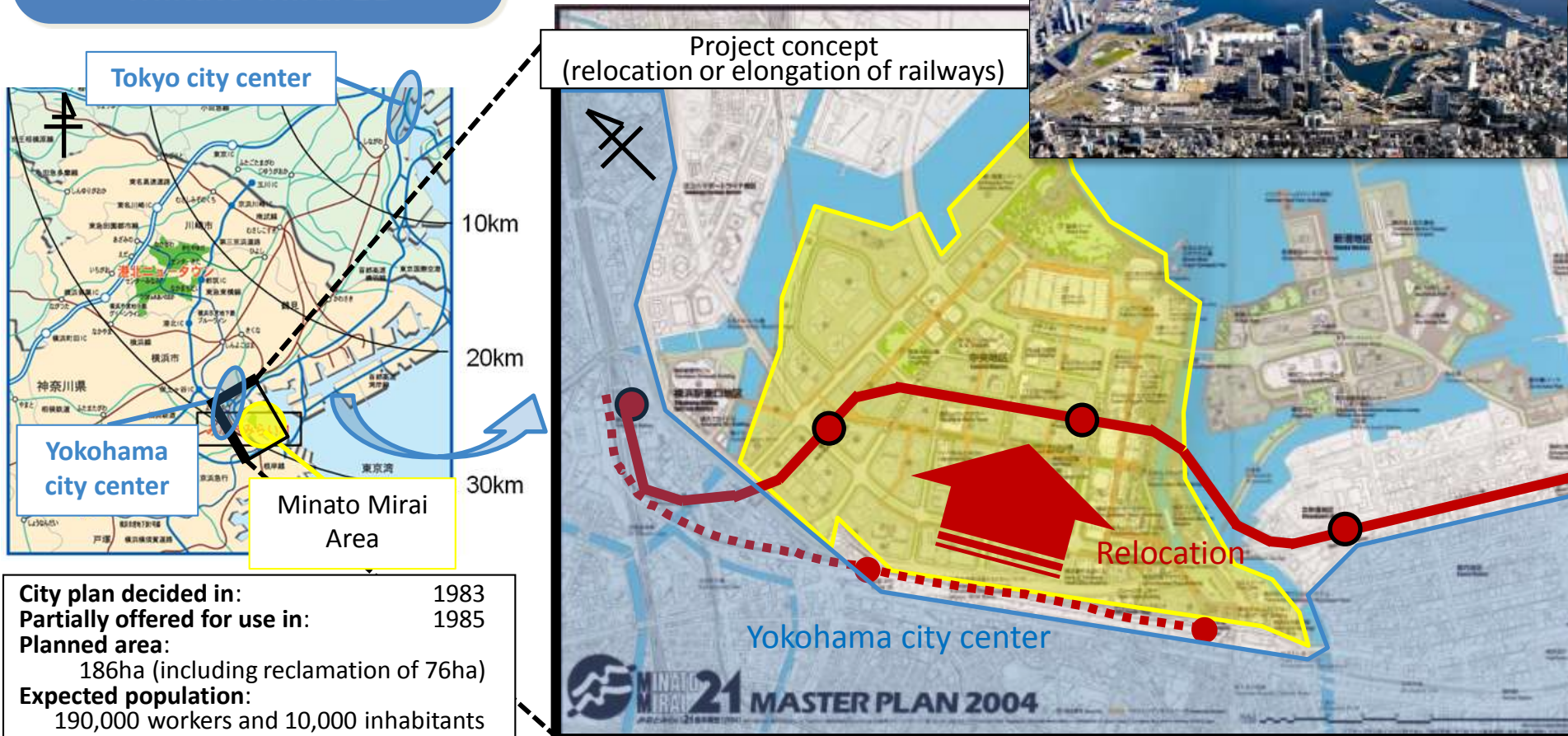
Source: Population as of October 1 of each year (median estimate) extracted from National Census Report of the Statistics Bureau, Ministry of Internal Affairs and Communications, and Estimated Population in Japan, National Institute of Population and Social Security Research (Estimated as of December 2006), and per capita GDP, data of the World Bank (substantial conversion value).

Yokohama Minato Mirai 21

Core development in the stable growth period: Ex.1

- Infrastructure development achieved by combining projects, including land readjustment to induce diverse development such as business, commerce and housing.
- Established new stations by relocating or elongating railways in the development districts

Minato Mirai 21



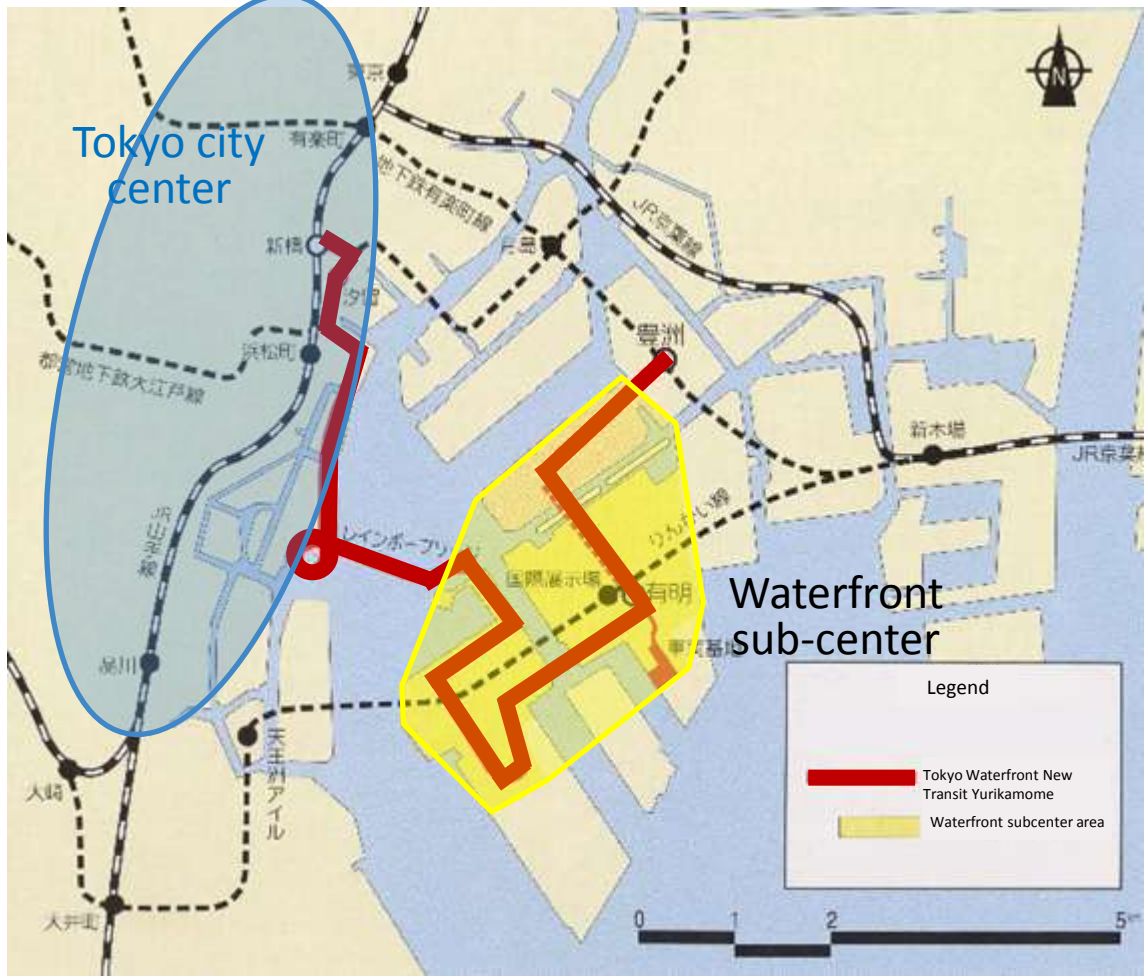
Tokyo Waterfront

Core development in the stable growth period: Ex.2

- Developed AGT (Automated Guideway Transit) to promote transportation convenience and regional development in the waterfront sub-center near central Tokyo.

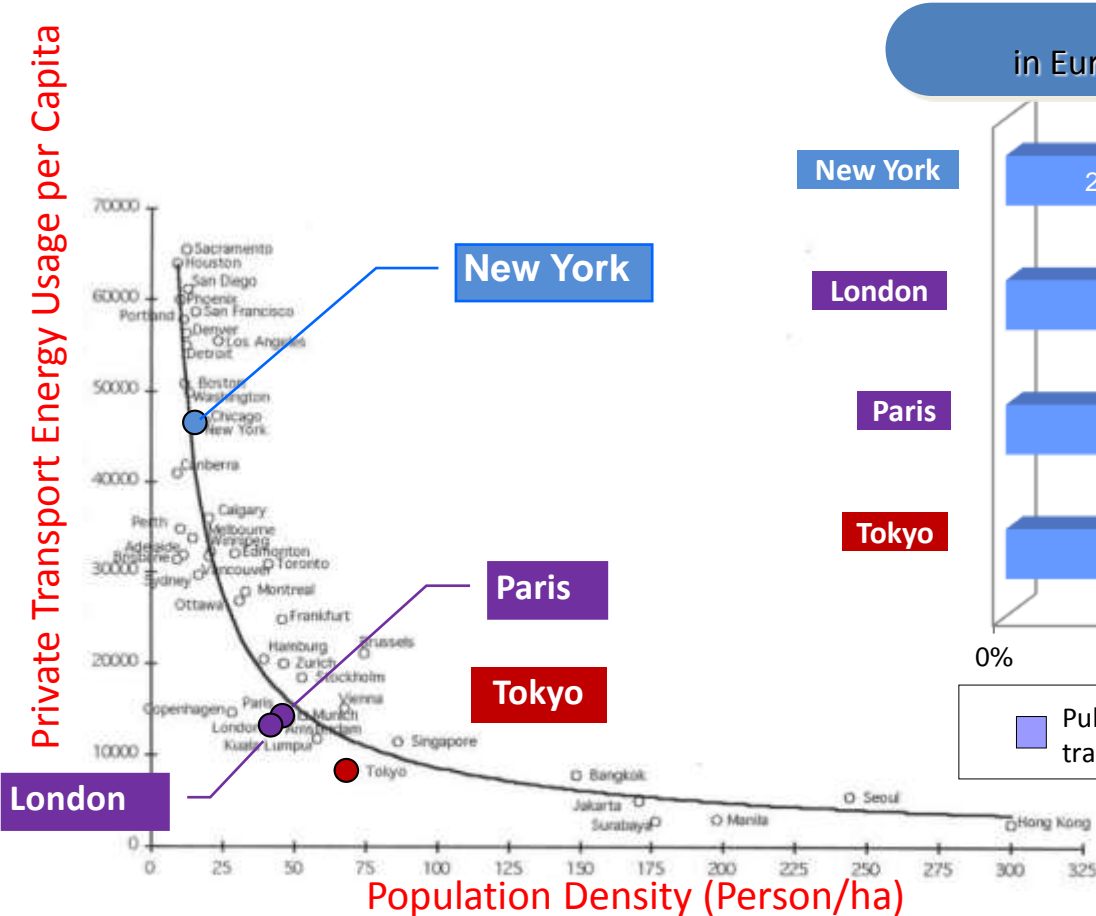


Source: Tokyo Port Museum (Tokyo Ports and Harbors Promotion Association)

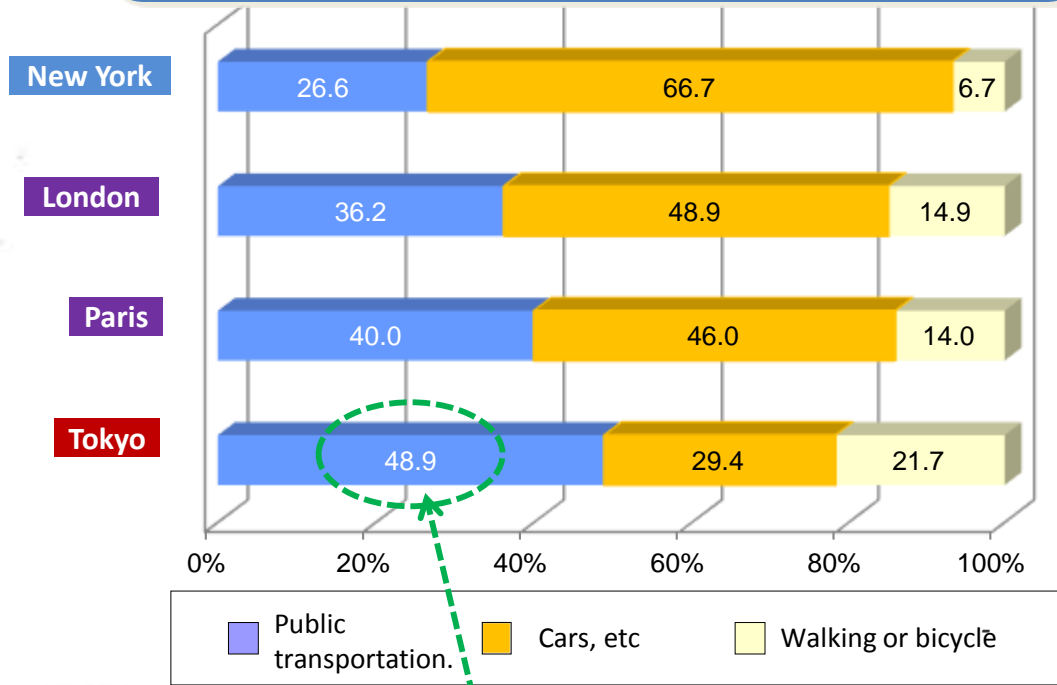


A high Share of Public Transportation

As a result of promotion of integrated city planning and urban transportation, the **population density** is **higher** than in other great cities of the world, and the **share of public transportation** as part of overall transportation **increased**.



Shares of transportation means in European and American big cities and in Tokyo

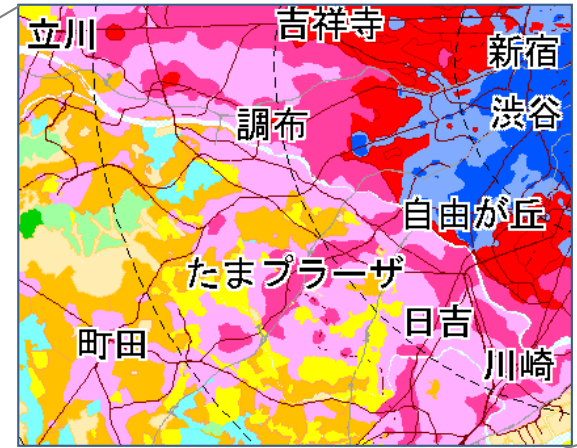
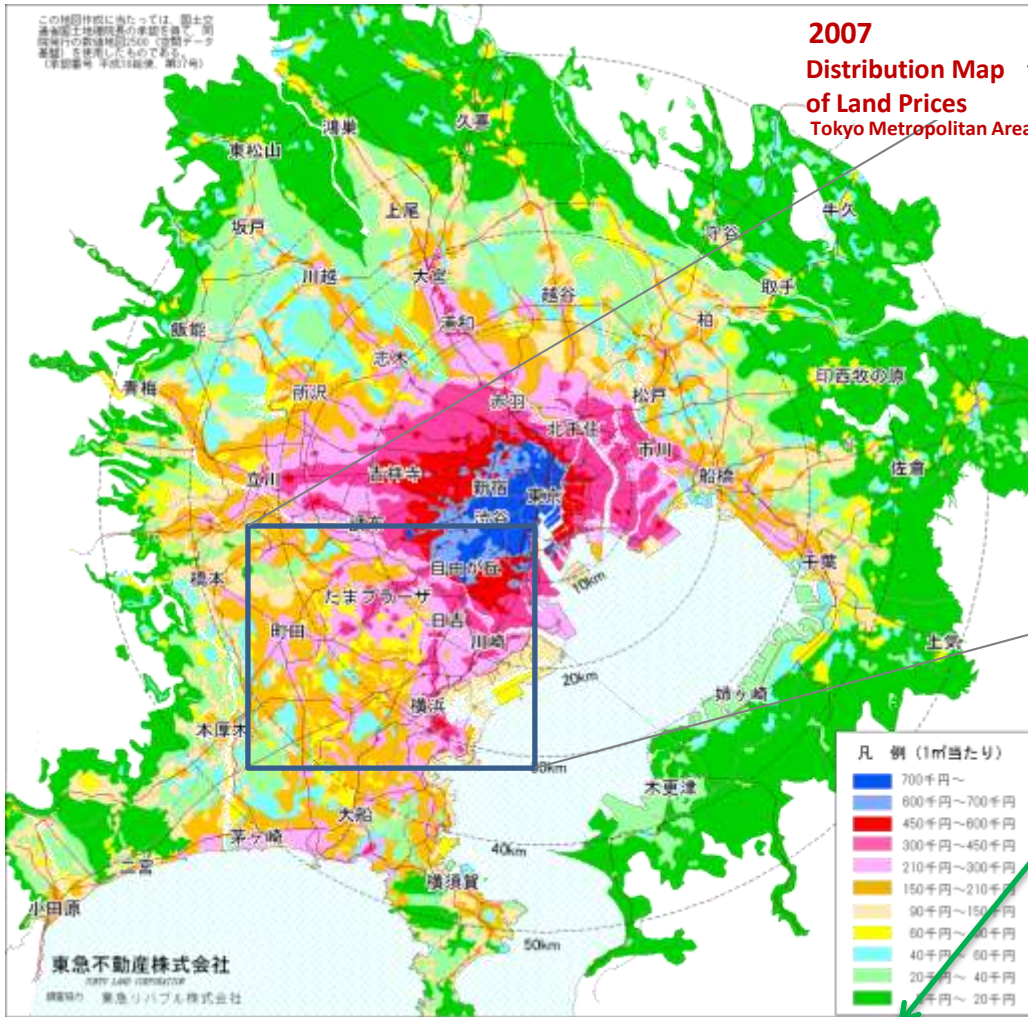


Beyond 80% for commutation

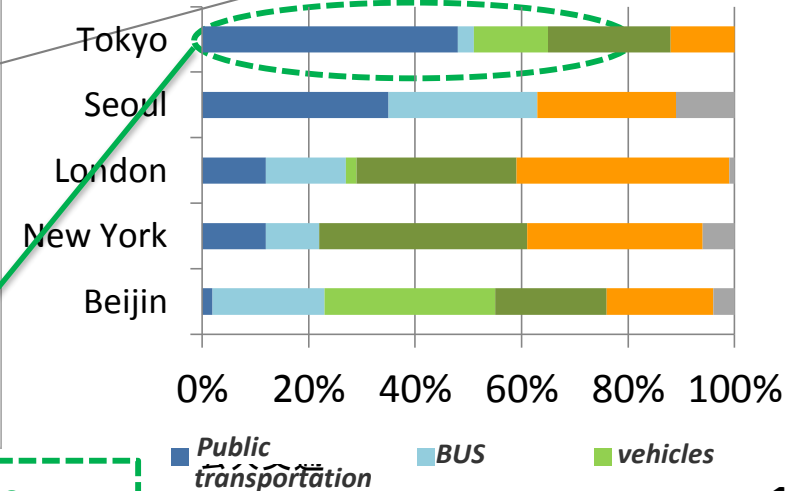
Figure 3.2. Energy use per capita in private passenger travel versus urban density in global cities, 1990.

Land price is highly depended on the level of public transportation.

■ The **real estate tax revenue** would increase through the TOD projects and become funding sources for following urban development projects.



Modal rates in major cities

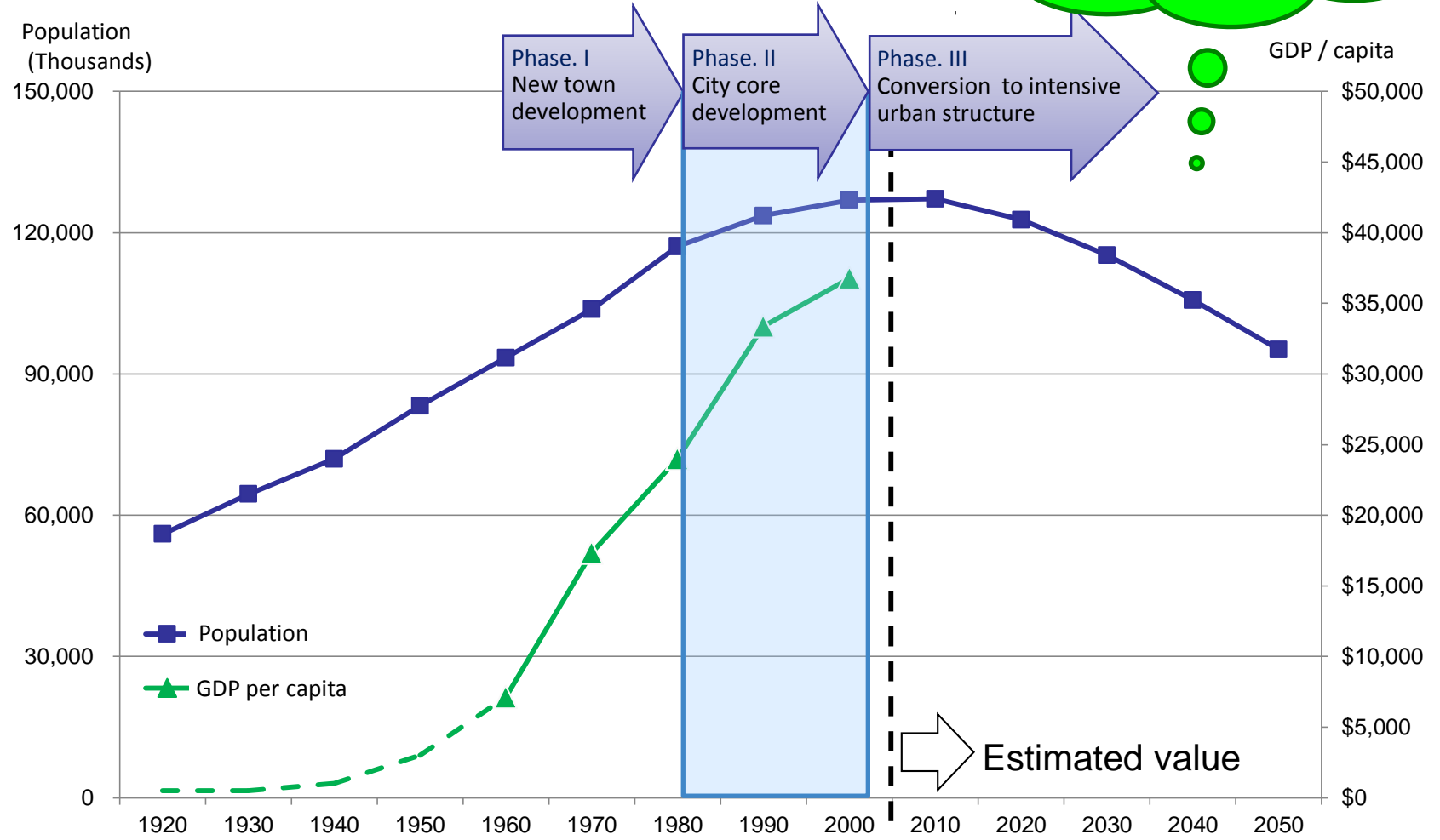


More than 80 % to go to office

History of Urban Transportation Development: Phase III

Intensive Urban Structure along the Axes of Public Transportation

Low – carbon society



Source: Population as of October 1 of each year (median estimate) extracted from National Census Report of the Statistics Bureau, Ministry of Internal Affairs and Communications, and Estimated Population in Japan, National Institute of Population and Social Security Research (Estimated as of December 2006), and per capita GDP, data of the World Bank (substantial conversion value)

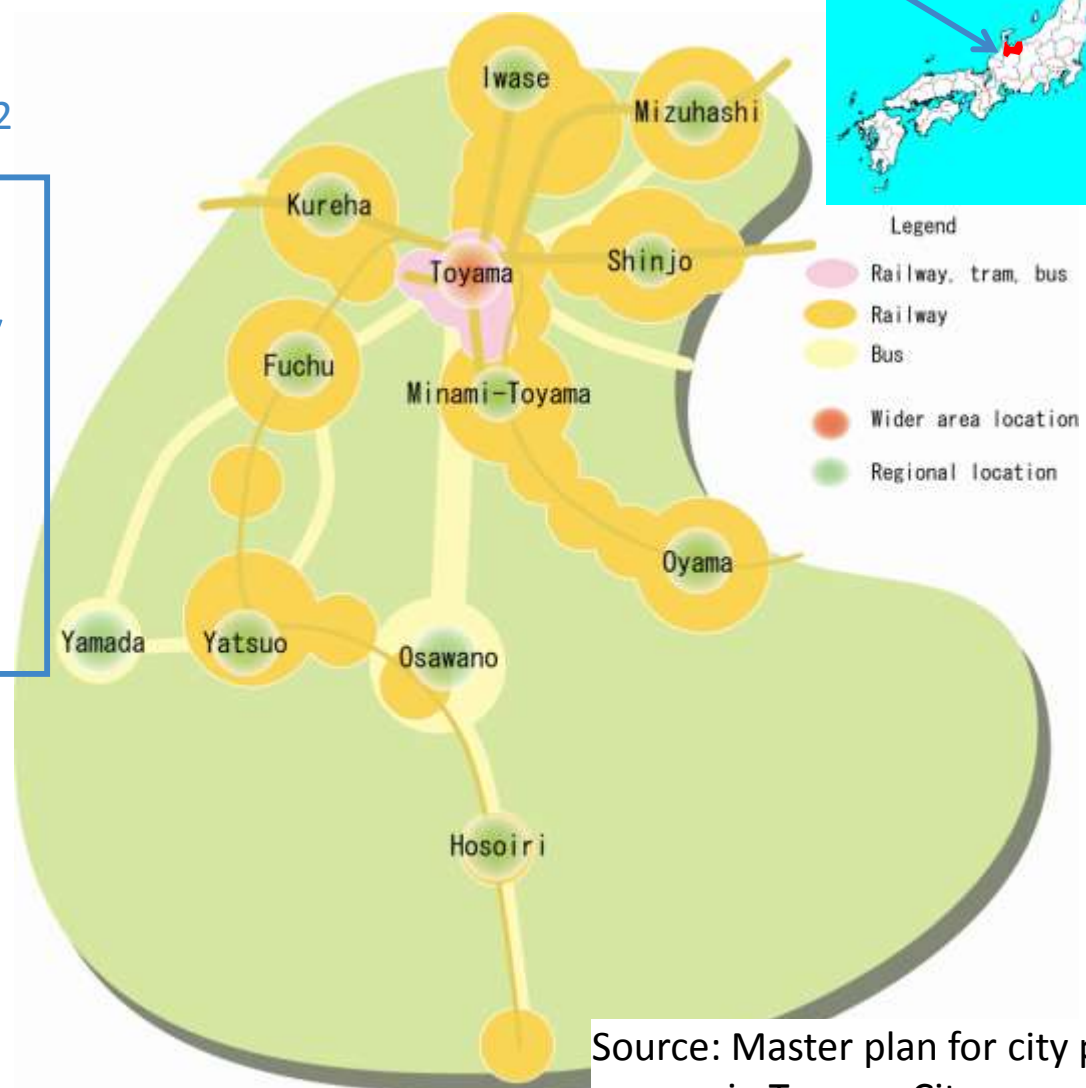
Dumplings and Skewers

Conversion to intensive urban structure during period of declining population: Toyama

Population: 417,046

Area: 1,241.85km²

intensive urban structure (“dumpling and skewer” pattern) developed along key axes of railways, existing and new LRT and core bus routes with incentives (housing subsidies) for residential development in vicinity of stations and bus stops.



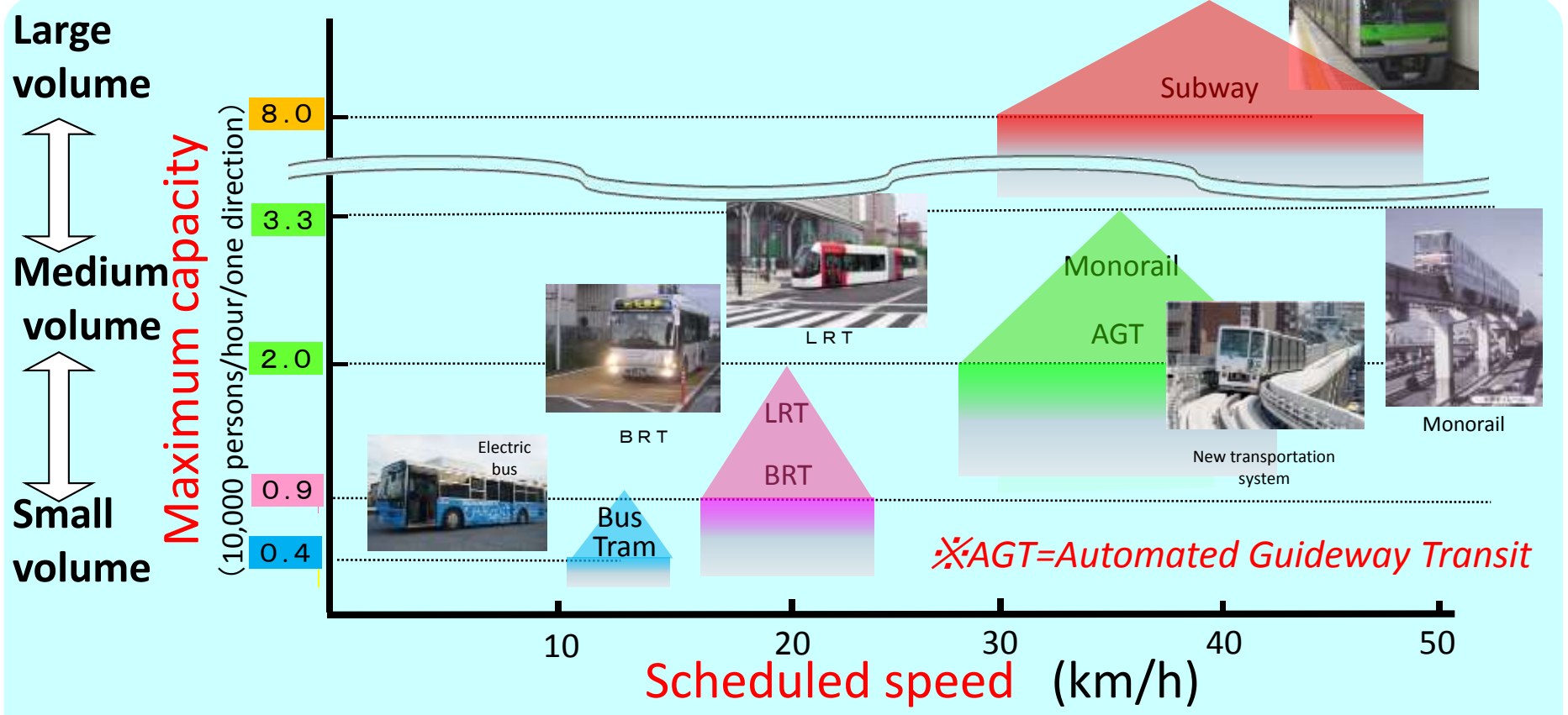
Source: Master plan for city planning in Toyama City 16

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Various modes of Urban Transportation System




It is important to introduce optimum transportation systems in each place, with due consideration for **city size**, **future passenger demand**, **conditions of use** and **topographical conditions**.

Public transportation






※ Maximum capacity and Scheduled speed estimate from the plural routes of metropolitan areas

Urban transport system and the size of the city

Urban Transportation System	Photo	Number of operators	Number of routes	Population of the major cities (thousands)
Subway		13	45	8, 592(Tokyo) 2, 543(Osaka) 2, 182(Nagoya)
Monorail, AGT, etc.		20	22	3, 629(Yokohama) 1, 512(Kobe) 1, 165(Hiroshima)
LRT, etc.		19	42	1, 164(Hiroshima) 691(Okayama) 416(Toyama)

✘ Caution : LRT means tramway, not elevated railway in the road space

Various Roles of Monorails/AGTs

	Supplementary transportation	Core transportation	Core transportation/ airport access
Case			
City	Special Wards, Tokyo	Hiroshima	Naha
Population	8,130,000	1,130,000	310,000

Feature of Monorail and AGT

Flexible Route Alignment

Minimum Curve Radius: 60m at main rain (50m at depot)

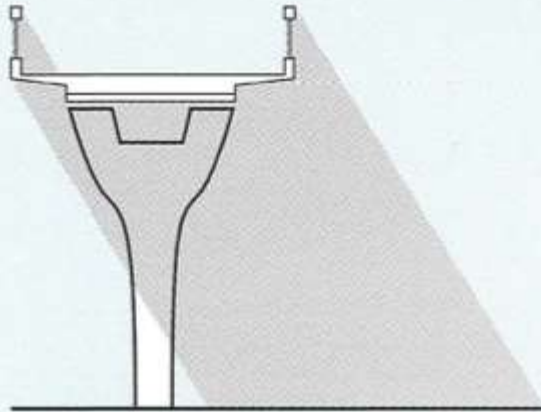
Maximum Gradient: 6%



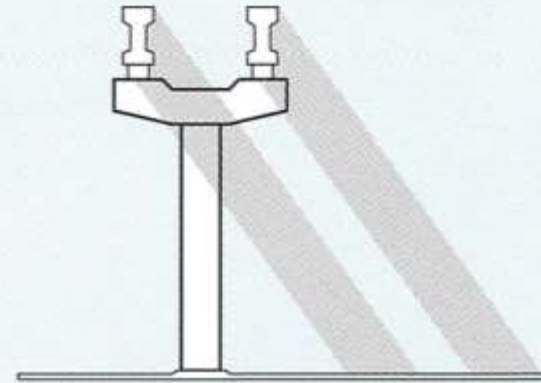
**Fits urban environment, avoids constraints of existing buildings and
Minimizes Civil Work and Cost Less eviction, less removal of
existing buildings and less land acquisition**

Smart appearance with slim track beam and columns

Slab type



Monorail type



Effects of introducing UTS

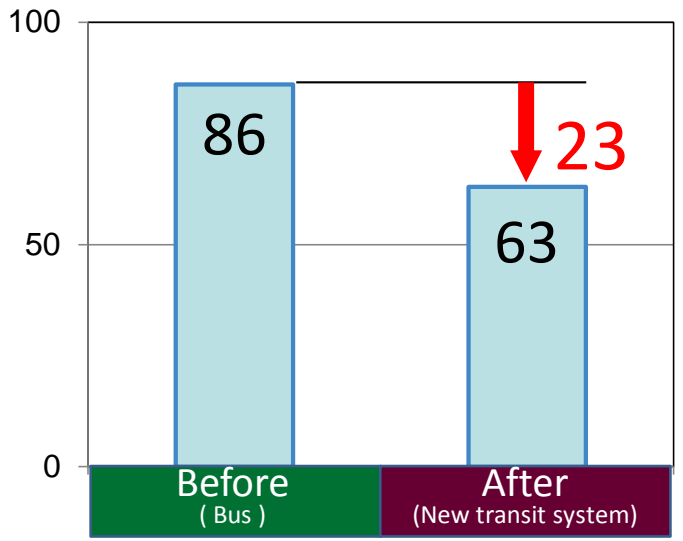
Rationalization of mode shares, traffic congestion eased

Astram Line in Hiroshima City

Mode Share



Required travel time min (Hiroshima suburbs to center of city)



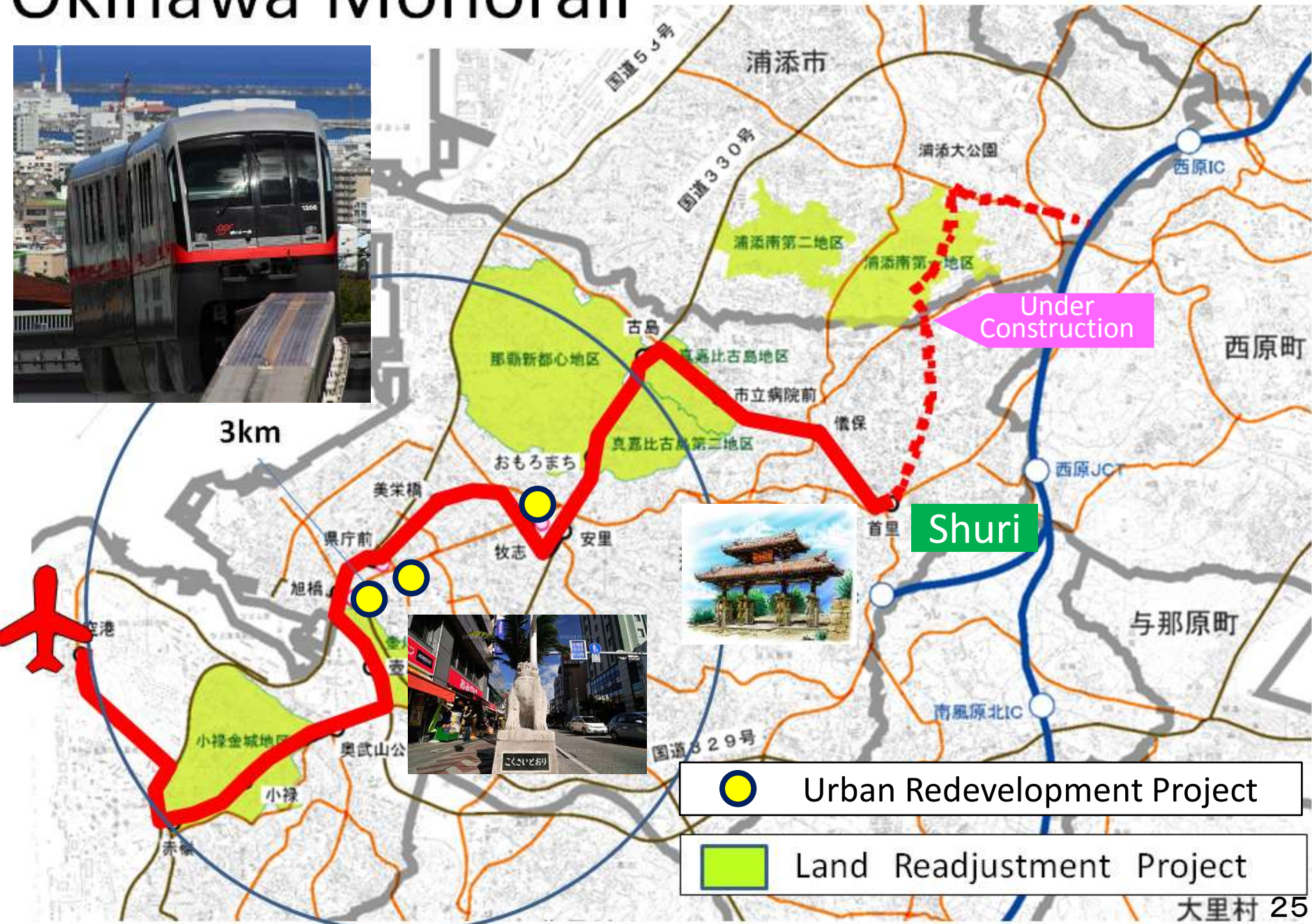
Details of Major Monorails Currently in Operation

Name	Tokyo Monorail	Tama Monorail	Osaka Monorail	Kita-kyushu Monorail	Okinawa Monorail	Chiba Monorail	Shonan Monorail
Operating Body	<u>Private</u>	Semi-Public	Semi-Public	Semi-Public	Semi-Public	Semi-Public	<u>Private</u>
Line Length (km)	17.8	16.0	28.0	8.8	12.9	15.2	6.6
Operating Years	<u>48</u>	14	22	27	9	17	42
Type	Straddle	Straddle	Straddle	Straddle	Straddle	Suspended	Suspended
Nominal Capacity (persons / car)	94 / 96 / 99 / 102 /	98 / 99 / 108	99 / 108	93 / 103	82 / 83	78 / 79 / 85	61 / 71 / 82
Number of Cars per Vehicle	6	4	4	4	2	2	3
Passenger Volume (persons / day)	120,700	122,700	100,000	30,600	36,700	43,200	26,100

Okinawa Monorail



3km



Tama Monorail and alongside Urban Development Projects



Land Readjustment Project
Area 58.8 ha

Land Readjustment Project
Area 28.2 ha

Land Readjustment Project
Area 5.7 ha

Land Readjustment Project
Area 46.4 ha

Land Readjustment Project
Area 127.2 ha



Land Readjustment Project
Area 19.7 ha

Land Readjustment Project
Area 5.7 ha

Land Readjustment Project
Area 16.8 ha

Land Readjustment Project
Area 17.7 ha

Tama New Town Project
Area 28.2 ha
Planned Population 300 thousand

Effect of Tama Monorail : Reduction of Trip Time



Reduction of Trip Time : section ①

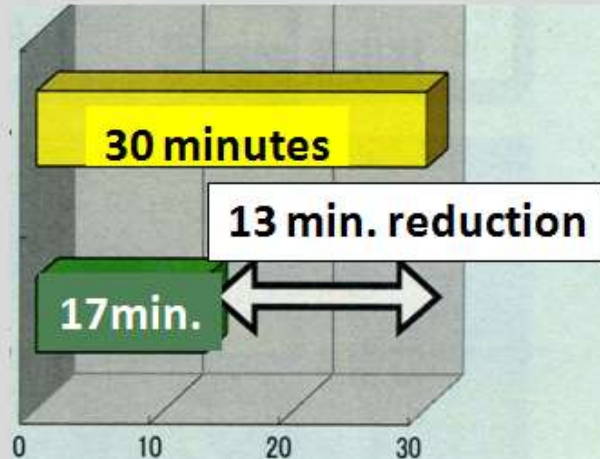
Before
(by bus)

30 minutes

13 min. reduction

Monorail

17min.



Reduction of Trip Time : section ②

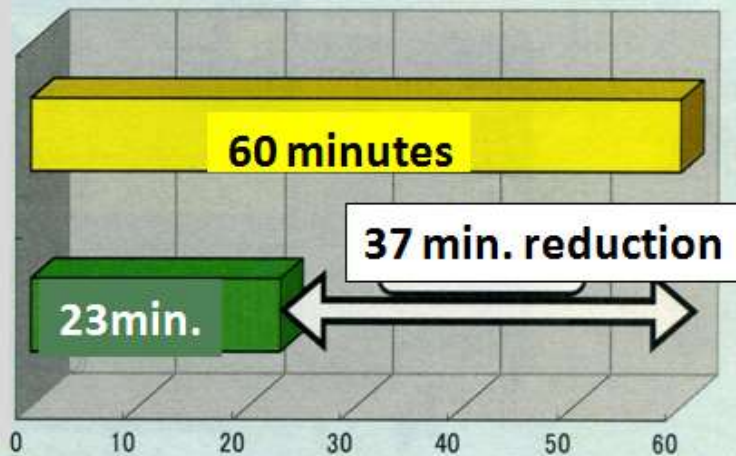
Before
(by bus)

60 minutes

37 min. reduction

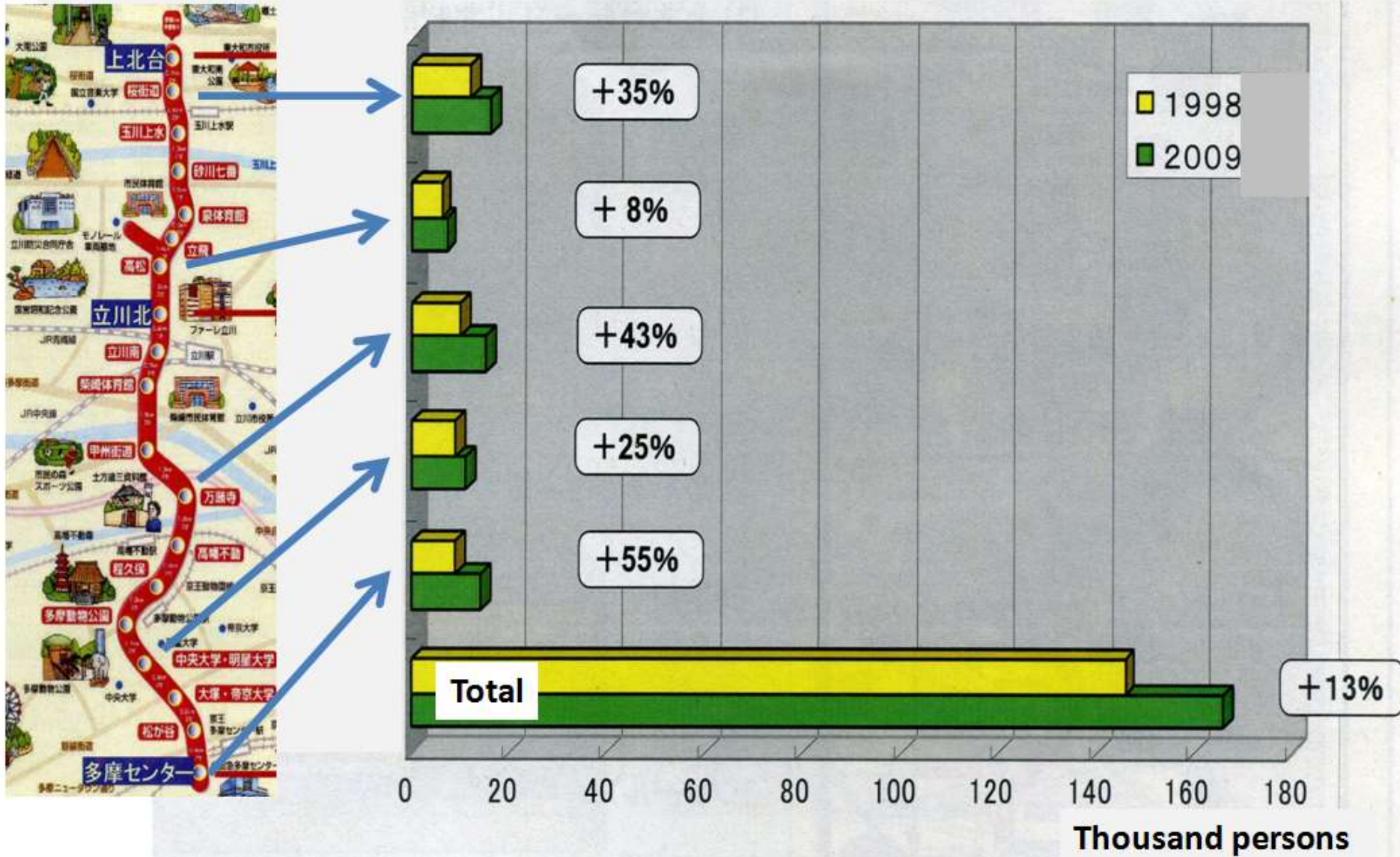
Monorail

23min.



Effect of Tama Monorail

Population Increase at the areas surrounding main stations



Improvement of modal shift point

- Easy transit system at the modal change stations of urban transport system to other modals such as bus and taxi

before



after



(city with 1million population)

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Role of Government in Urban Transportation Development

○ 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.

○ 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.

③-1 Study of Urban Transport

Person Trip (PT) Survey

Survey focused on the movement of people

Metro area level surveys are conducted **every 10 years** in 3 major metro areas.

Road Traffic Census

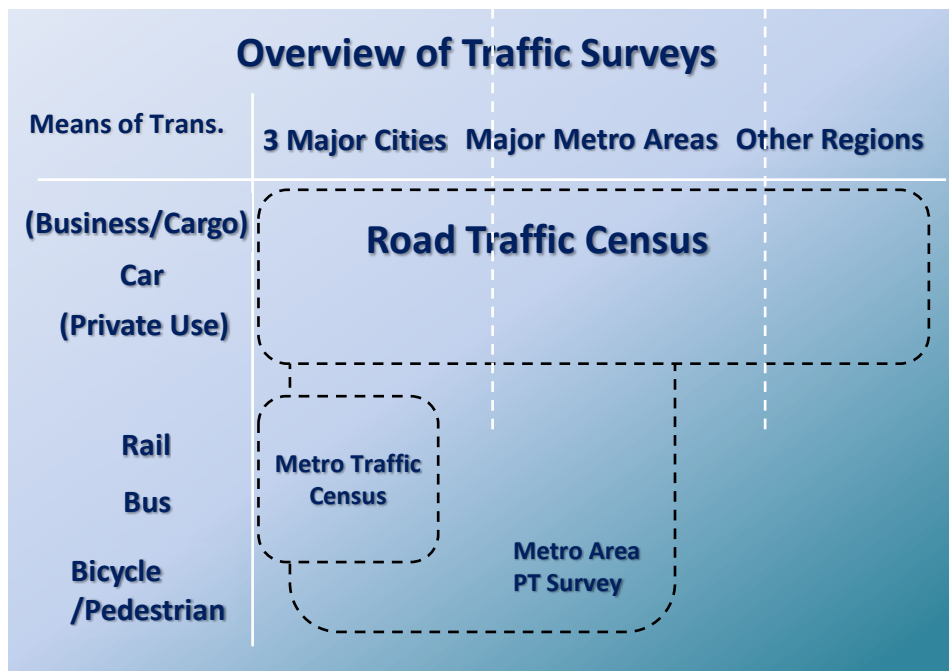
Survey focused on the movement of cars is conducted nationwide **every 5 years**.

Metro Traffic Census

Survey of rail and bus usage is conducted in 3 major metro areas **every 5 years**.

National Census

Commuting survey (national census item **every 5 years**)



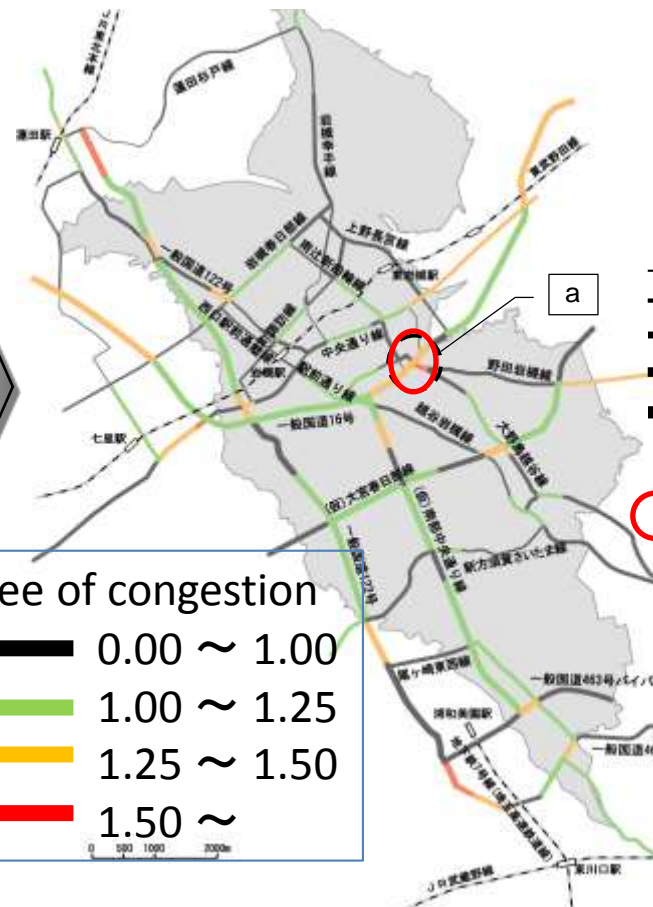
Urban Transport Survey Case Study

Traffic demand and road route development as learned from the survey can be used to calculate congestion on various routes.

○ Congestion in the road network

Case A: Without improvement from the current road network

Case B: With construction of the major highway



Daily Traffic – Weekdays (Units: 100 cars)

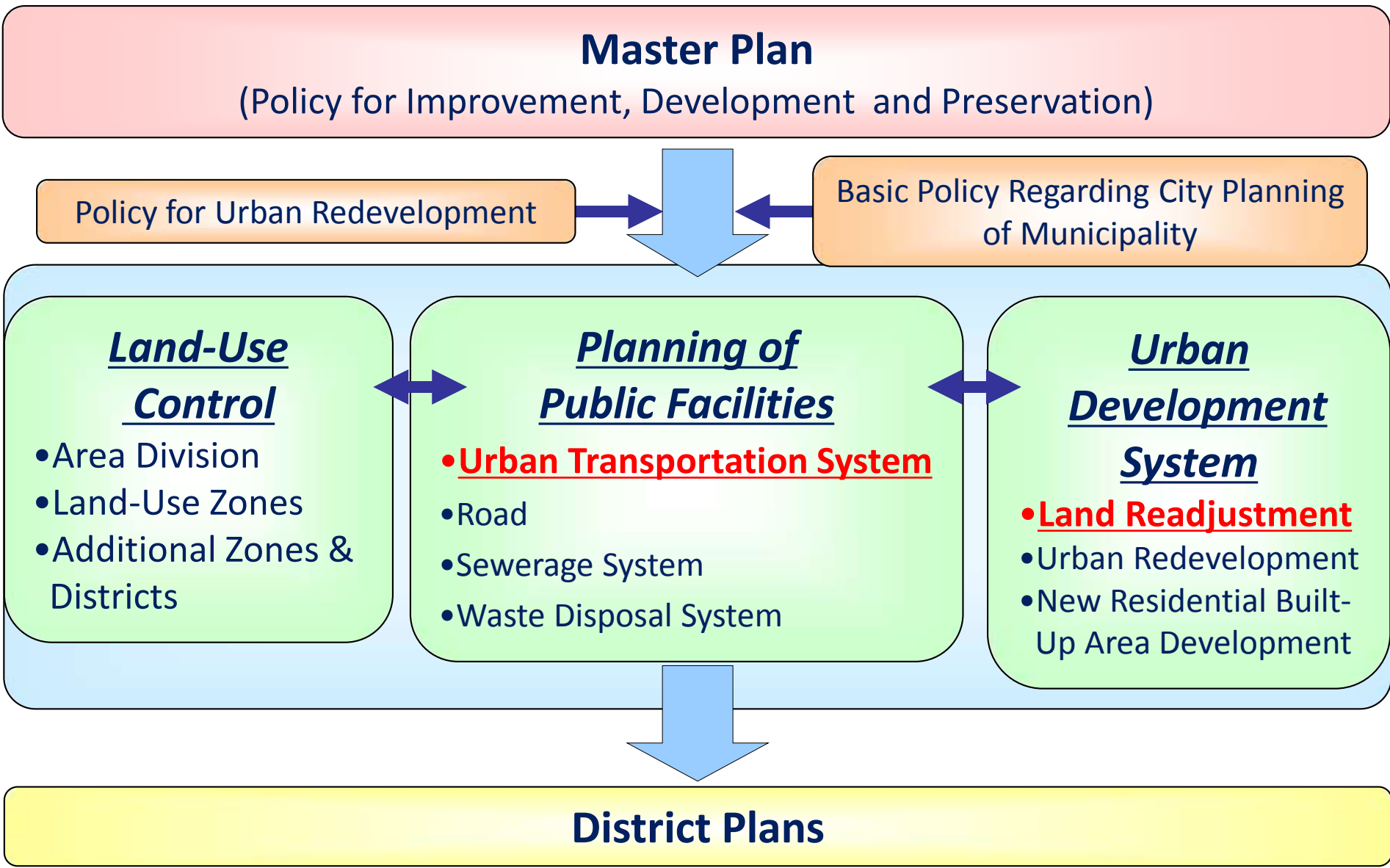
- 0 ~ 50
- 50 ~ 100
- 100 ~ 200
- 200 ~ 300
- 300 ~

○ Locations with particularly high congestion

Degree of congestion

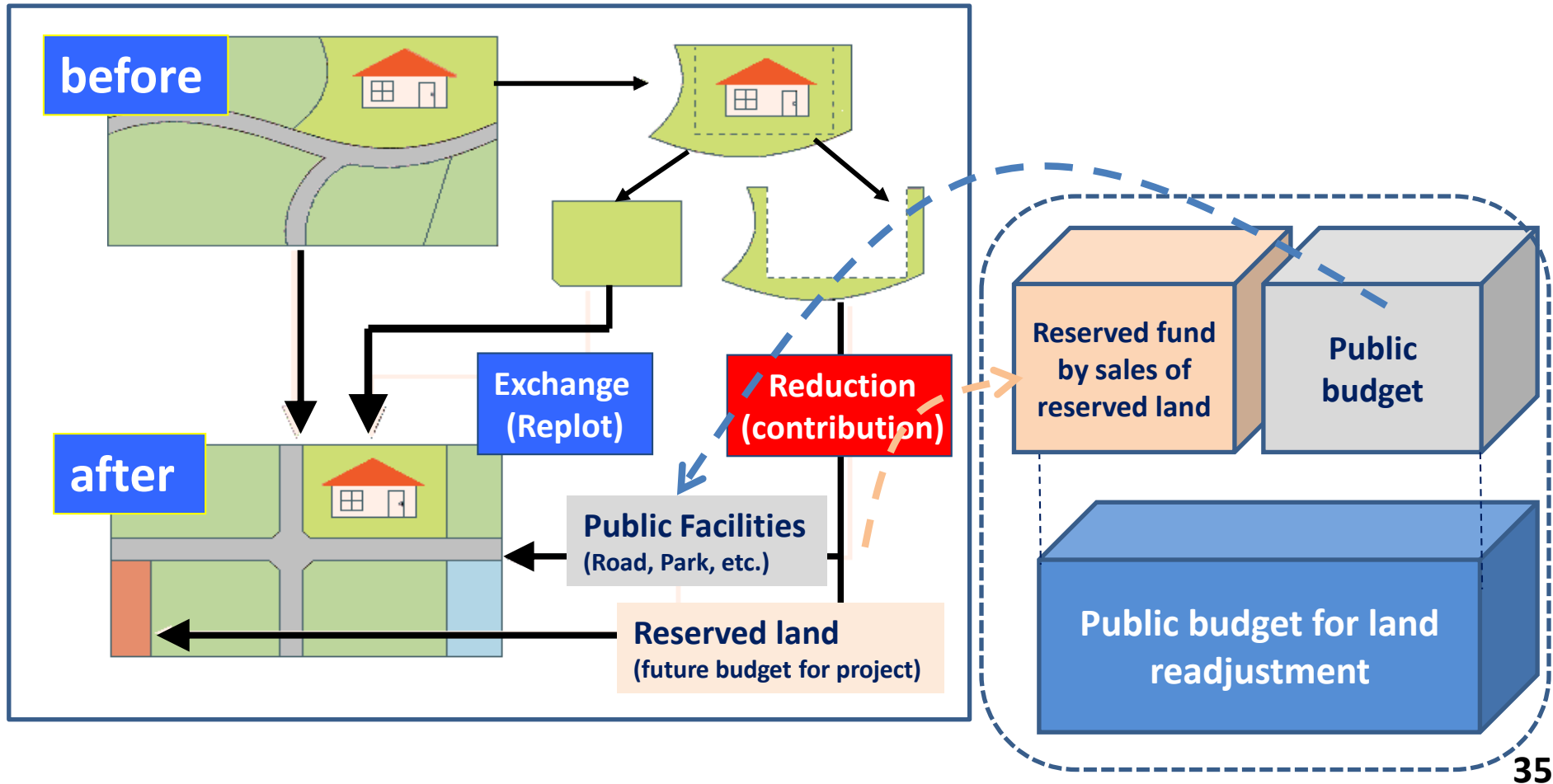
- 0.00 ~ 1.00
- 1.00 ~ 1.25
- 1.25 ~ 1.50
- 1.50 ~

③-2 Laws and Regulations



Outline of Land Readjustment Method

- LR method aims both to **construct public facilities** and to **improve residential environment** at once **in a Public –Private Partnership manner** .
- wilderness/ rice fields could be changed to a **new high quality town with small public budget** through LR projects.



Ex. Urban Development Projects integrated with the Railway Construction

Omiya Station West Exit area (Tohoku and Joetsu Shinkansen)

- A station square, roads and other public facilities were developed.
- An old and highly dense area in an inferior environment was renewed to the functional and beautiful area, harmonized with the new Shinkansen station.

- Overview of project
 - Land developed: About 16 ha
 - Period: 1970 through 2007
 - Contractor: Omiya City



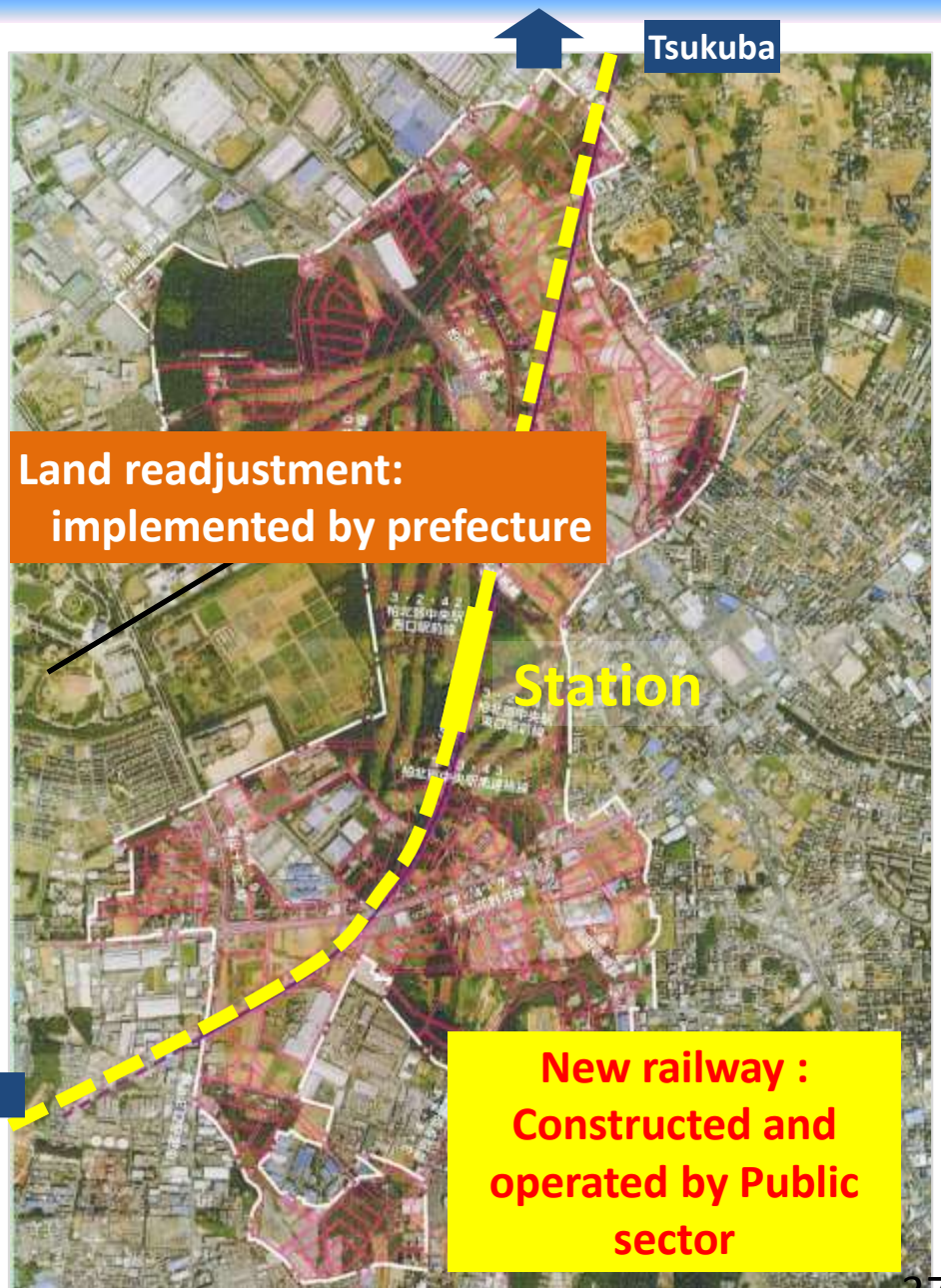
Ex. Urban Development Projects integrated with the Railway Construction

Tsukuba Express

- Several LR projects have been implemented around every new station by the public sector such as **UR, Tokyo** and **other prefectures**.
*Ibaragi, **Chiba**, Saitama

- Total development area is about **3,000ha**.
(Planned Population: about 250,000)

- New railway will be constructed by the public sector
(Railway operation started: **2005**)



Impact of Urban Development Projects on the railway business

Population increase in areas along Tsukuba Express

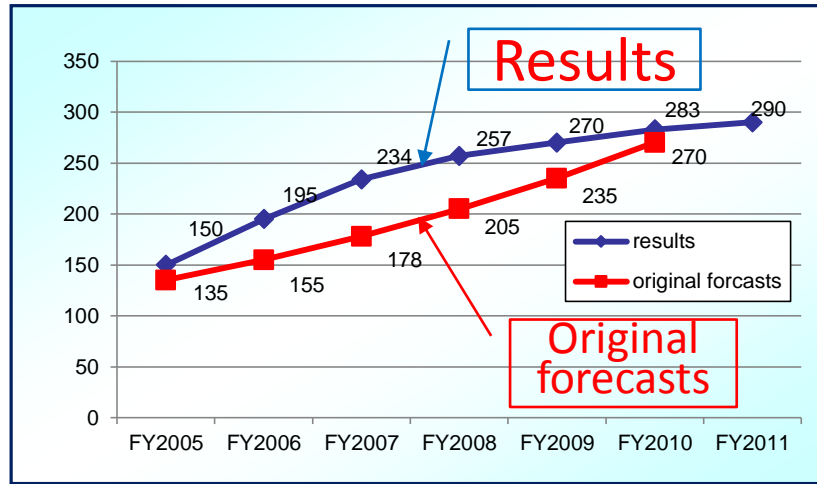
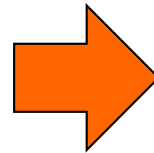
Number of annual population changes, Cities in Ibaraki Prefecture (person)

	2010	2005
Tsukuba city	14,062	8,714
Moriya city	8,782	3,338
Mito city	6,147	1,041
Ushiku city	4,461	3,965
Tsukuba-Mirai city	4,287	△ 358
⋮	⋮	⋮
Sakuragawa city	△ 2,727	△ 1,934
Inashiki city	△ 2,794	△ 1,595
Hitachi-ota city	△ 3,552	△ 2,067
Chikusei city	△ 4,054	△ 3,539
Hitachi city	△ 6,089	△ 7,371

: Tsukuba Express line exists

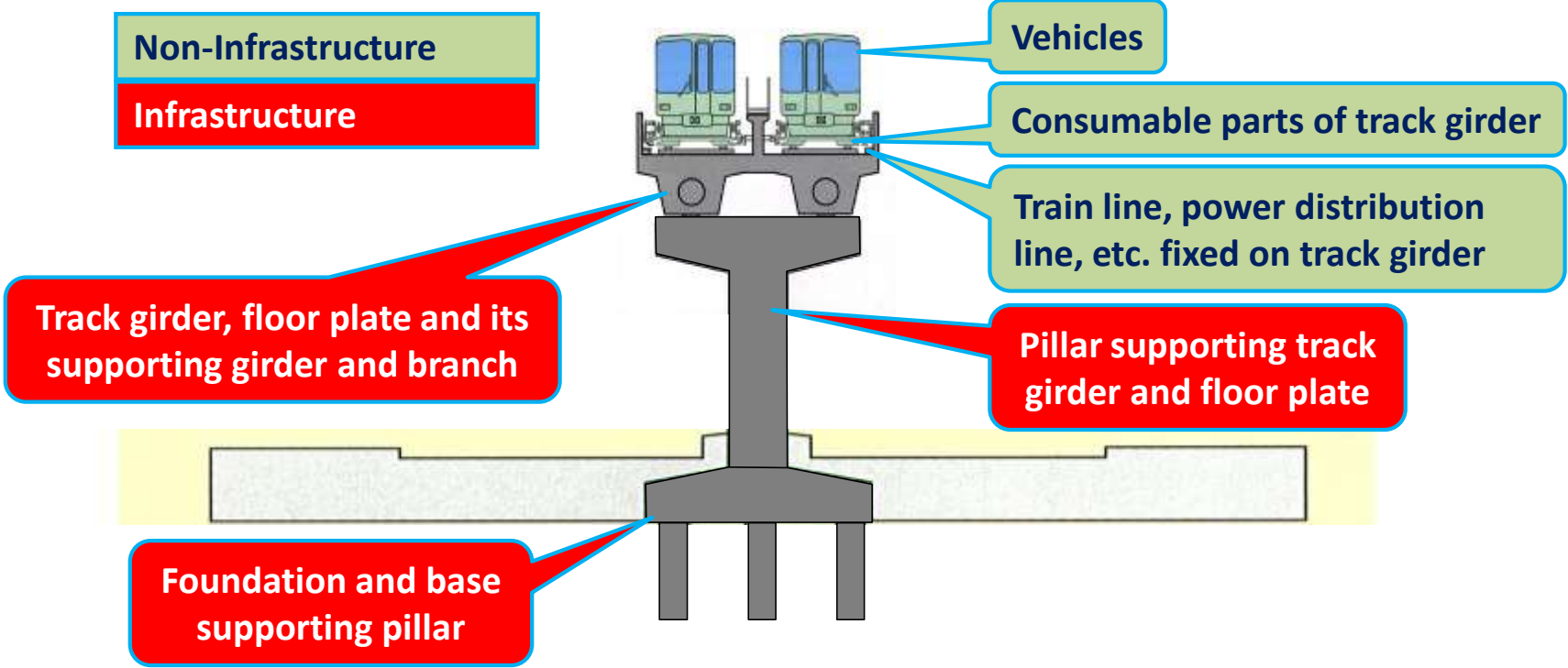
The number of passengers has exceeded the forecast since starting operation.

Average number of passengers carried (per day)



③-3 Financial Support

Monorail / New Transportation System(AGT) Development



Construction	<Cost>	Infrastructure		Non-infrastructure	
	<Financial Resource>	National budget (about 50%)	Subsidy Local budgets (about 50%)	Equity	Borrowing (Debt)

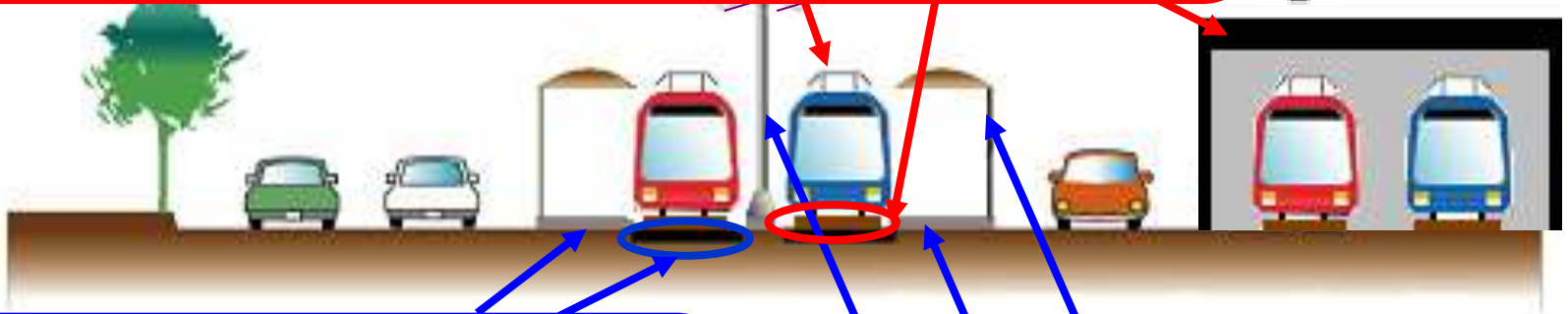
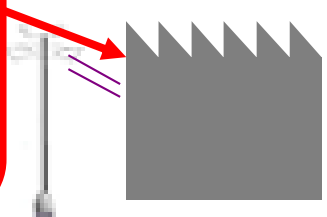
Measures to support public transportation

LRT Development

 Improvement by public entities

 Improvement by railroad operators

Low-floor vehicles, Stop facilities, Rails with vibration-controlled track, Reinforcement of substation, Construction of yard, IC Card System, etc.
Subsidize for: Railroad operators



Road board, Stops
Subsidize for: Executor for the road management

LRT facilities based on the Strategic Urban transportation planning(excluding vehicle)
Subsidize for: Local public bodies, etc.

Role of key players in Urban planning

Role in urban development, national and local government, private enterprise

National government

Local government

Private enterprise

Land use regulation		<p>City planning system Maintenance</p>	<p>The plan subject</p>	-
Sprawl A built-up area Re-maintenance		<ul style="list-style-type: none"> * Utilize UR city mechanism; a business operation * To the public body Assistance 	<ul style="list-style-type: none"> * The business subject * The assistance to the private enterprise 	<p>The business subject</p>
New city area maintenance	On a large scale	<ul style="list-style-type: none"> * Utilize UR city mechanism; a business operation * To the public body assistance 	<ul style="list-style-type: none"> * The business subject •The subject to the private enterprise 	<p>The business subject</p>
	Midle/ small scale	-	<ul style="list-style-type: none"> * The business subject •The assistance to the private enterprise 	<p>The business subject</p>

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Promotion of overseas projects by "package"

Packaging

It is very important to promote overseas projects by "package".

1. **Combine multiple projects** that are related to each other, in order to promote the convenience and profitability of each project
2. **Comprehensive support for each step** as a package from a planning step until management and operation step (Not only a construction)
3. **Support for a human resource development** through technical cooperation such as dispatch of experts and implementation of training course

Package 1

Combination of projects that are related to each other

Project A

+

Project B

+

Package 2

Formulation of Development Concepts

Plan materialization (Financial, Technology, Experience, ...)

Maintenance management and operation

+

Human resource development (Dispatch of experts, Training Course, etc.)

Package 3

Long-term Technical Cooperation for various aspects



Japan has provided technical assistance to solve urban problem such as urbanization and traffic jam caused by economic growth

○ Example: Improvement of urban transportation environment at the Manila Metropolitan area, Philippines

1984~1985 Transportation **MP** of Manila Metropolitan Area

1993~1994 **Improvement of LRT1 & construction of LRT2**

1996~1998 **Extension of LRT2** by Improvement of Transportation System at Greater Manila Metropolitan Area

1999 **Master Plan** of improvement of comprehensive transportation system at Greater Manila Metropolitan Area (Provide Yen loan to procure **rolling stocks for LRT1 project**)

2011~ Project for **capacity development** for comprehensive transportation planning

Urban problem
Traffic Jam



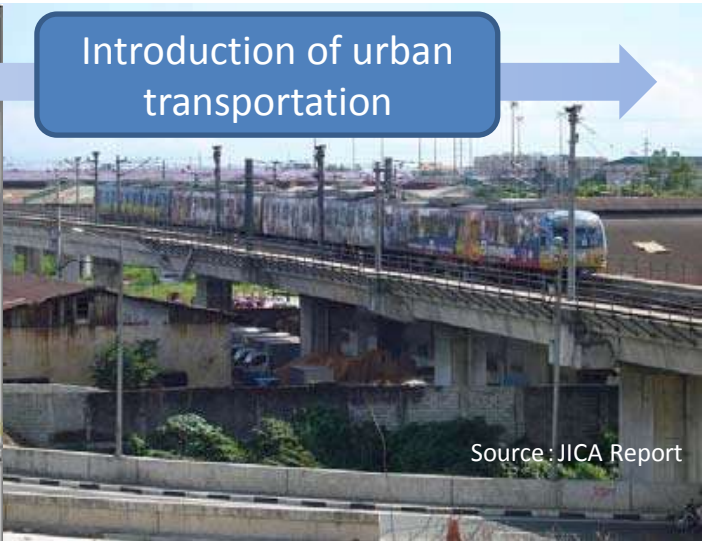
Source : Japan Foundation Report

Comprehensive
Transportation MP



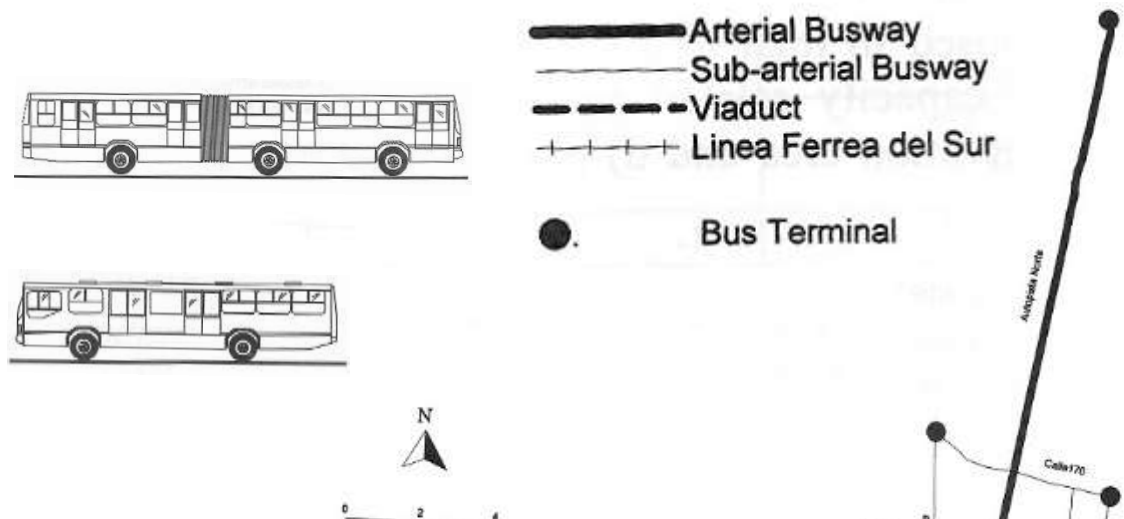
参照 JICA 報告書

Introduction of urban
transportation

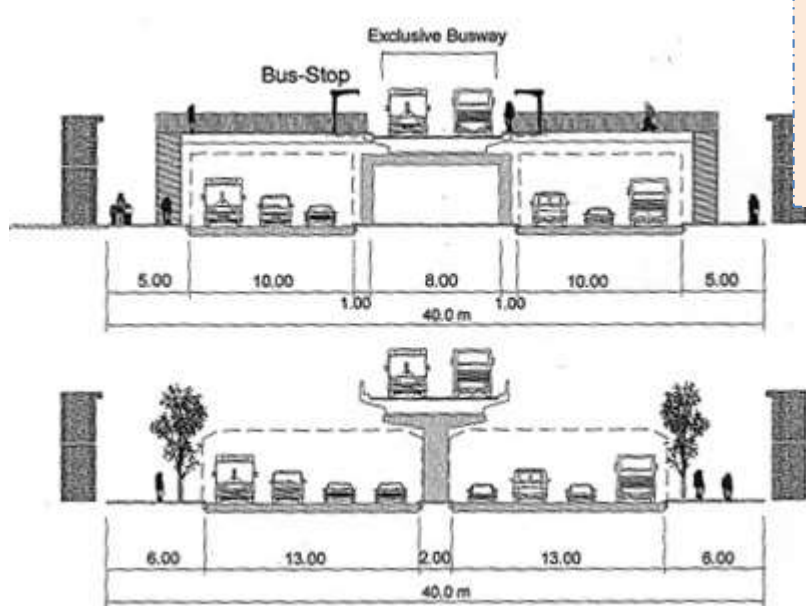
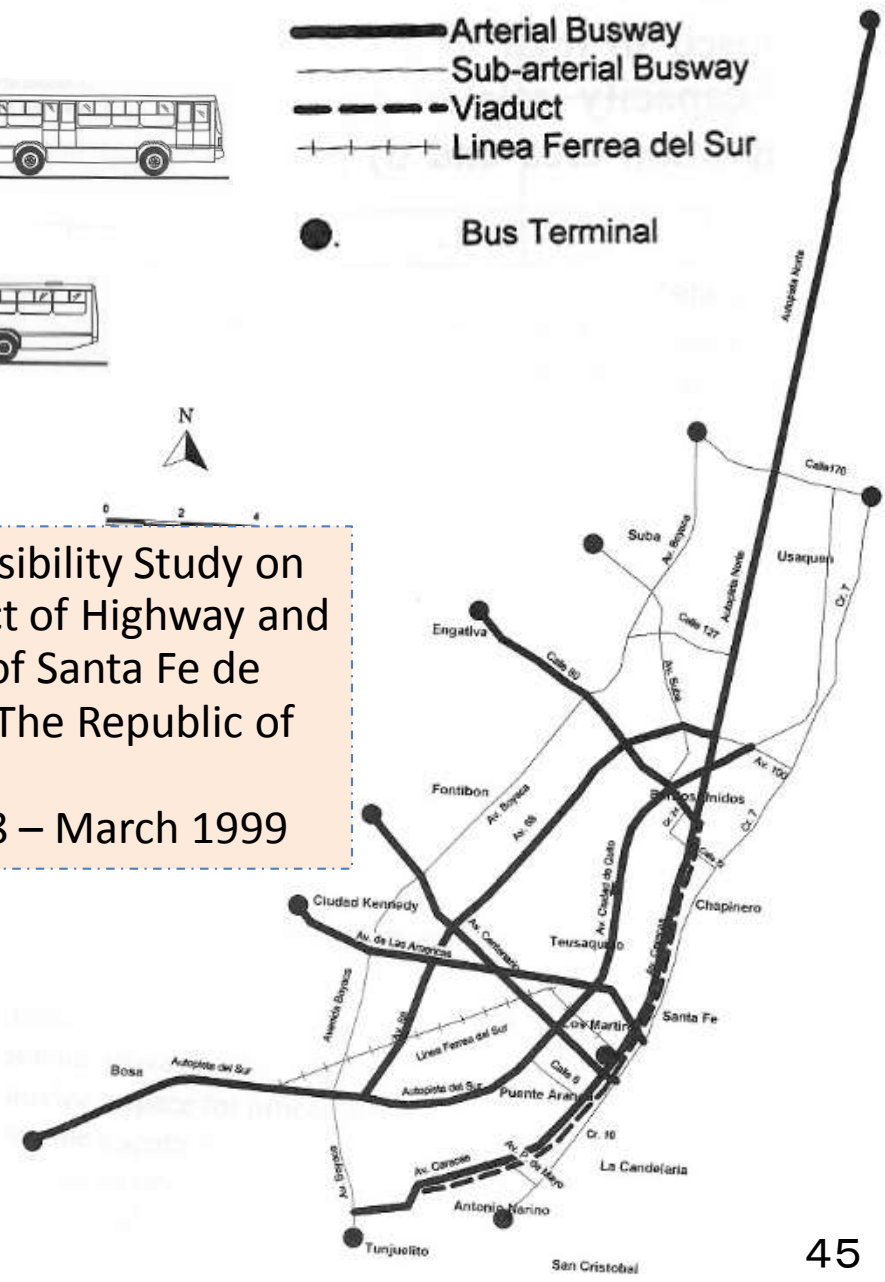


Source : JICA Report

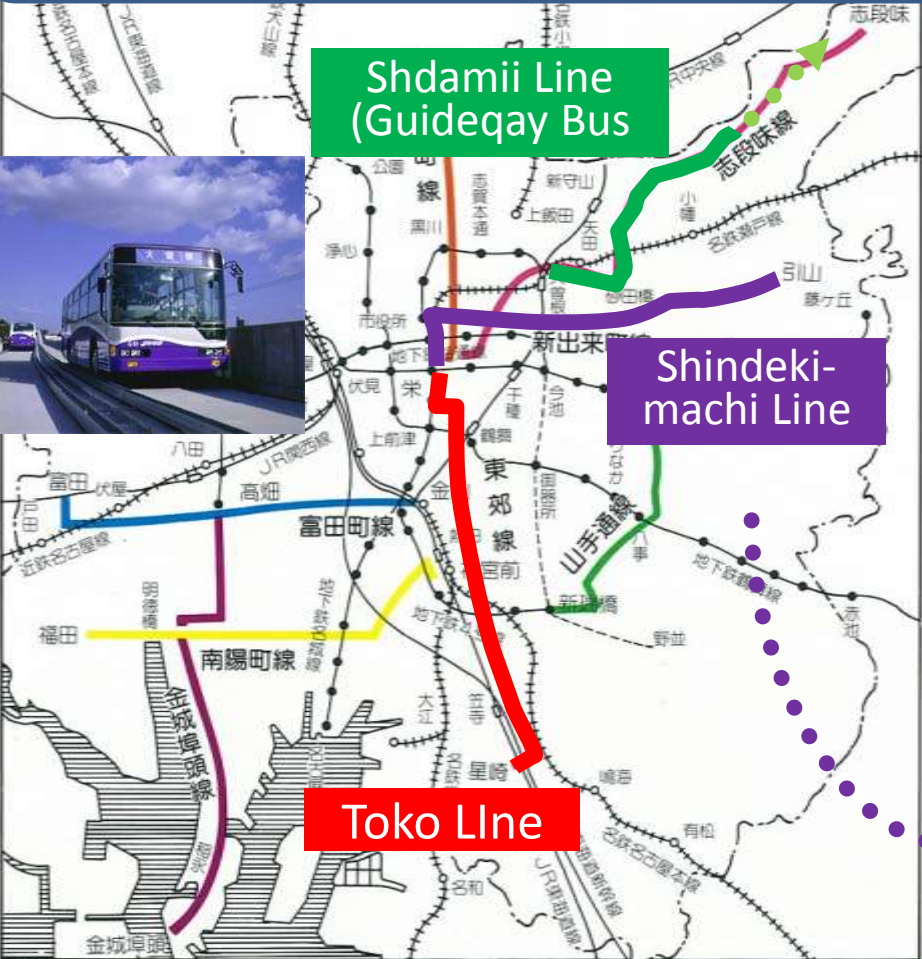
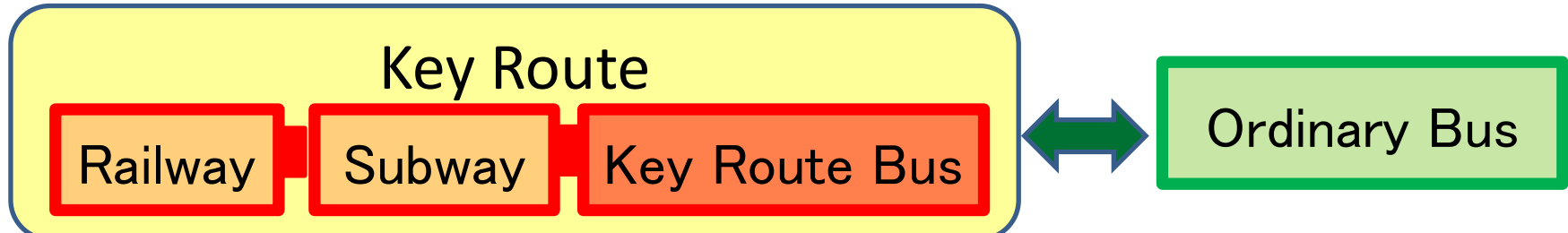
Trunk Busways Project (Santa Fe de Bogota)



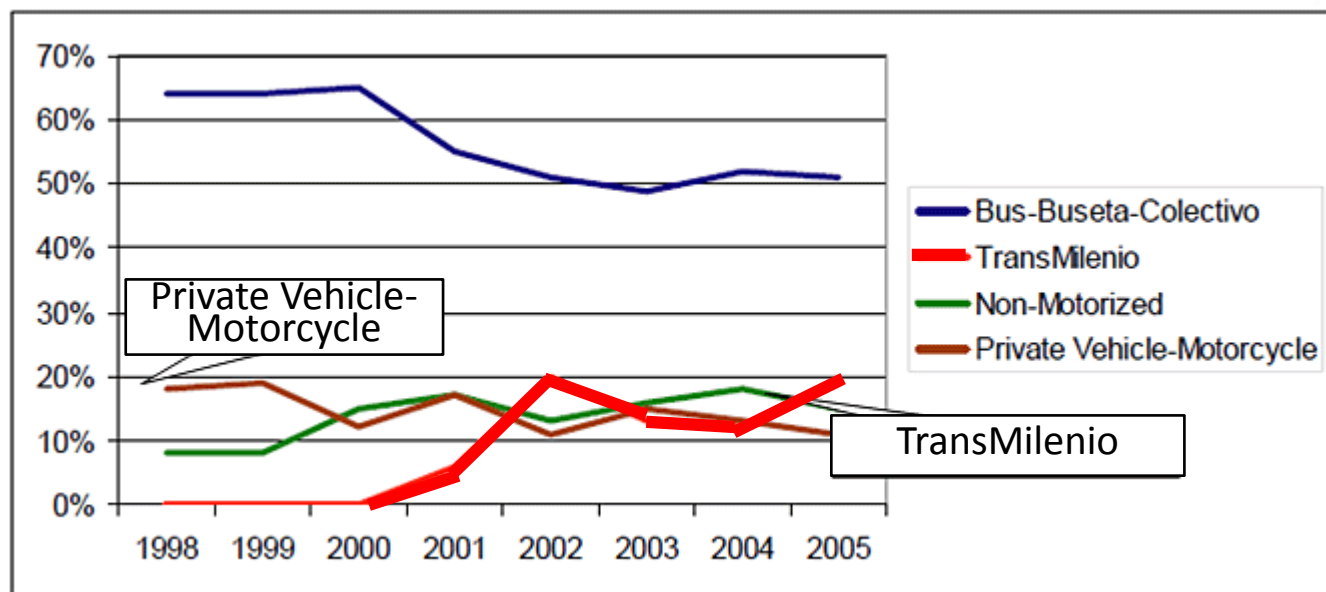
✂ The Feasibility Study on The Project of Highway and Bus-Lane of Santa Fe de Bogota in The Republic of Colombia
April 1998 – March 1999



Key Route Bus and Guideway Bus in Nagoya



TransMilenio (Santa Fe de Bogota)



Bus Operation Experiment (Phnom Penh)

Bus fleet: 23 air-conditioned minibus (29 seats)

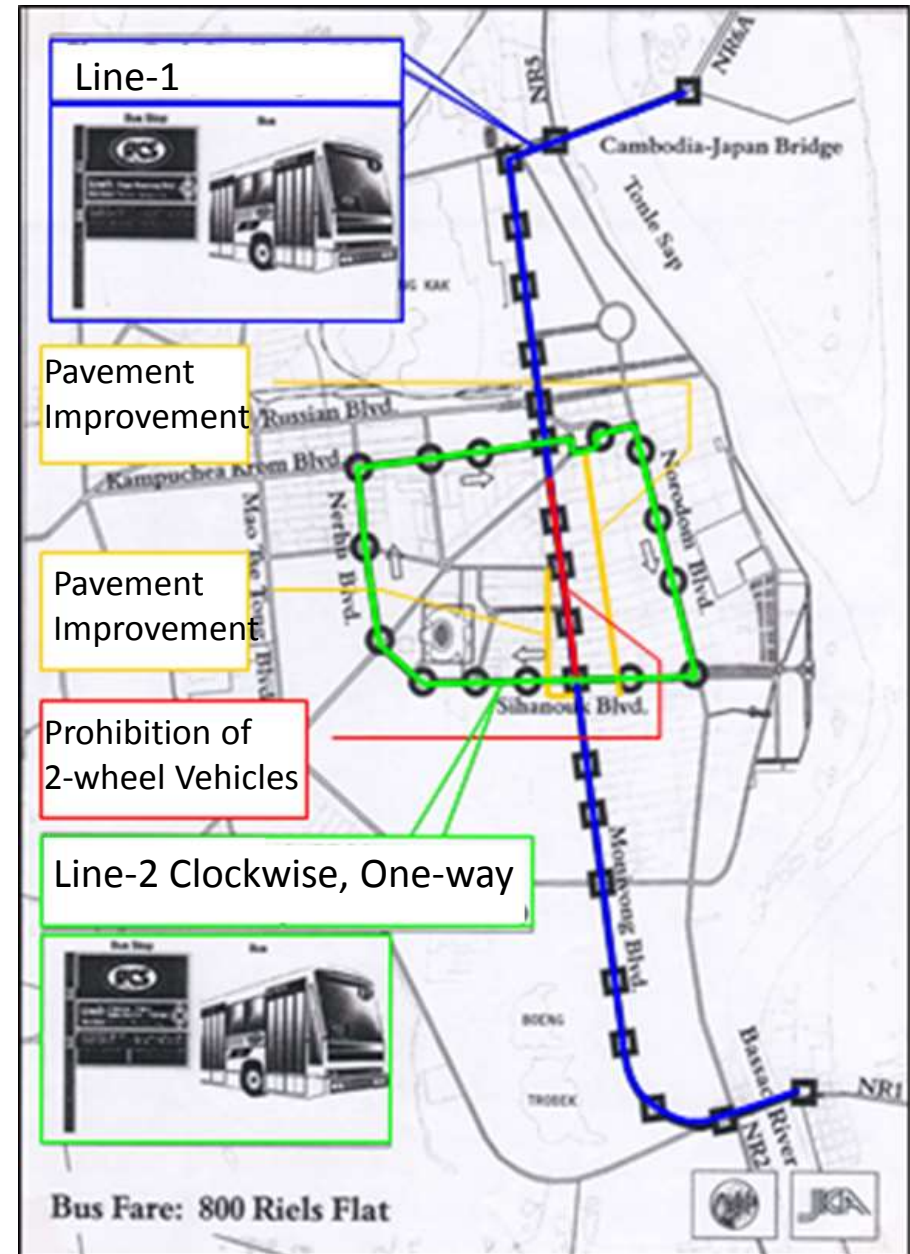
Fare system: 800 riels flat fare
(Cheaper fare of 500 riels for the first 5 days and the last 8 days)

Operation hours and frequency:
5:30-19:30 Every 6-10 minutes

Bus stop: Every 300-500m

Results: The total number of passengers from 1 to 30 June is 103,239 (3,441/day)

✂ The Study on The Transport Master Plan of The Phnom Penh Metropolitan Area in The Kingdom of Cambodia (April 2000 – October 2001)



Result of Social Experiment



Banners and Bus

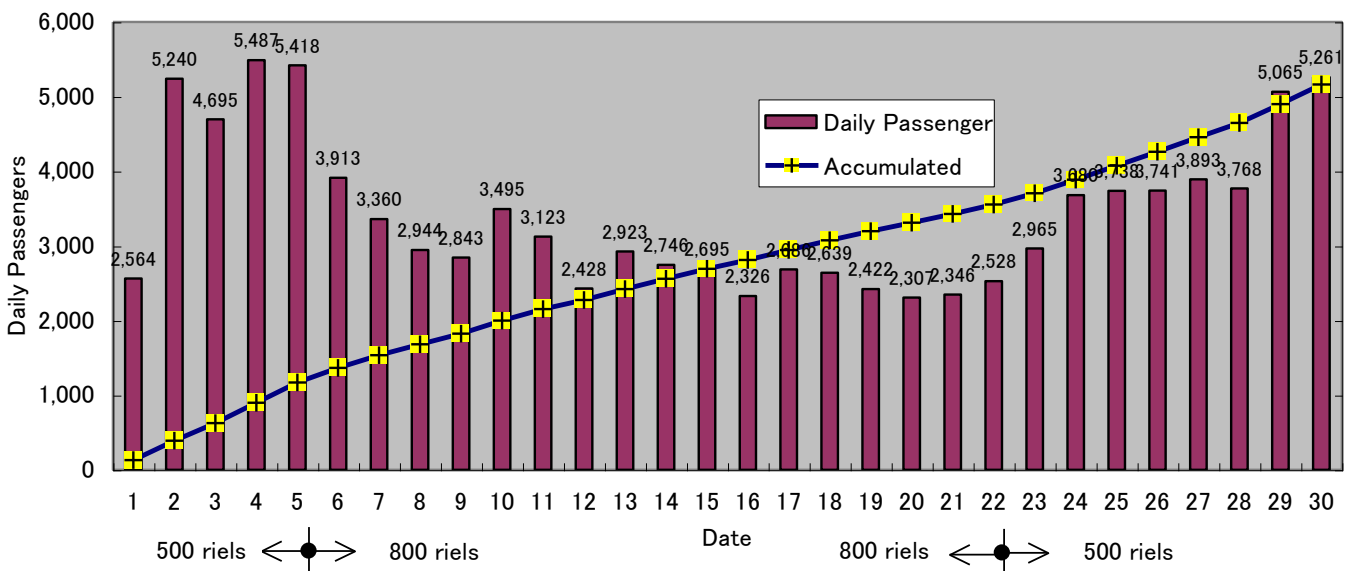


Conductor in the Bus



Students waiting for Bus

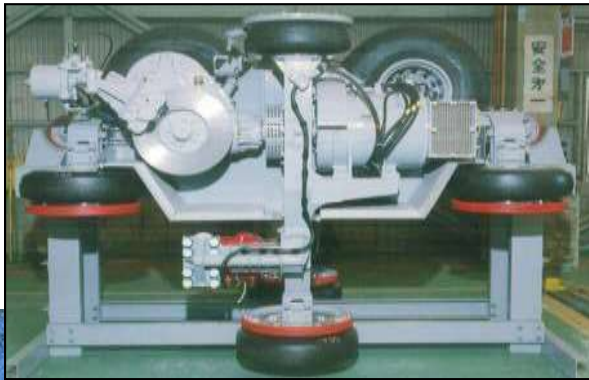
Daily and Accumulated Bus Passengers



ដើម្បីបំពេញតម្រូវការស្រាវជ្រាវក្នុងការងារសេវាដឹកជញ្ជូនសិស្ស
 ដំណើរការសាសនាច្រវែងយន្តក្រុងម៉ាដុង
 ពីថ្ងៃទី ០១ ខែ មិថុនា ឆ្នាំ ២០០១
 ដល់ថ្ងៃទី ៣០ ខែ មិថុនា ឆ្នាំ ២០០១

Bus body Sticker
103,239

Overseas Projects of Monorail



Sentosa Monorail



Dubai Monorail



Daegu Monorail

Chongqing Monorail Lines



 Rail line no. 2

 Rail line no. 3



Chongqing Monorail



- ① —— 1号線 (朝天门-双碑··壁山)
- ② - - - 2号線 (较场口-新山村-渔洞)
- ③ ····· 3号線 (渔洞-二塘 (交院)-空港)
- ④ - · - · 4号線 (海峡路-唐家沱··渔咀)
- ⑤ + + + + 5号線 (冉家坝-中梁山··江津)
- ⑥ = = = = 6号線 (长世桥-冉家坝··北碚)
- ⑦ ○ ○ ○ ○ 環狀線 (四公里-沙坪坝-江北客站-五里店-四公里)

Overseas Projects of AGT

13 lines have been introduced outside Japan.



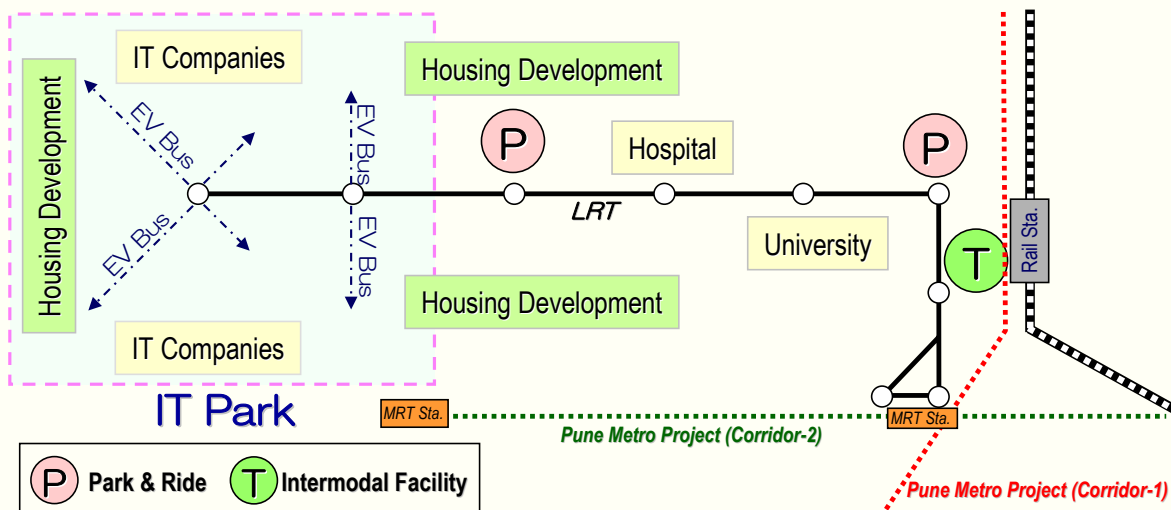
New Transport System (NTS) is Japan's standardized Automated Guideway Transit (AGT) System

JICA Preparatory Survey for Pune Urban Railway Project

Points of Consideration

- Development of Intermodal Transport Hub: **Seamless Transfer with Metro & Rail**
- Provision of **Feeder Bus Service** (EV Bus): Environmentally-friendly Feeder Mode
- Introduction of Park & Ride: Low Car Usage in CBD, Users from Extensive Area
- Introduction of **Catenary-free LRT System**: Urban Landscape Conservation
- Development of LRT Corridor Area: High Value-added Area along LRT Corridor

Proposed Development Concept



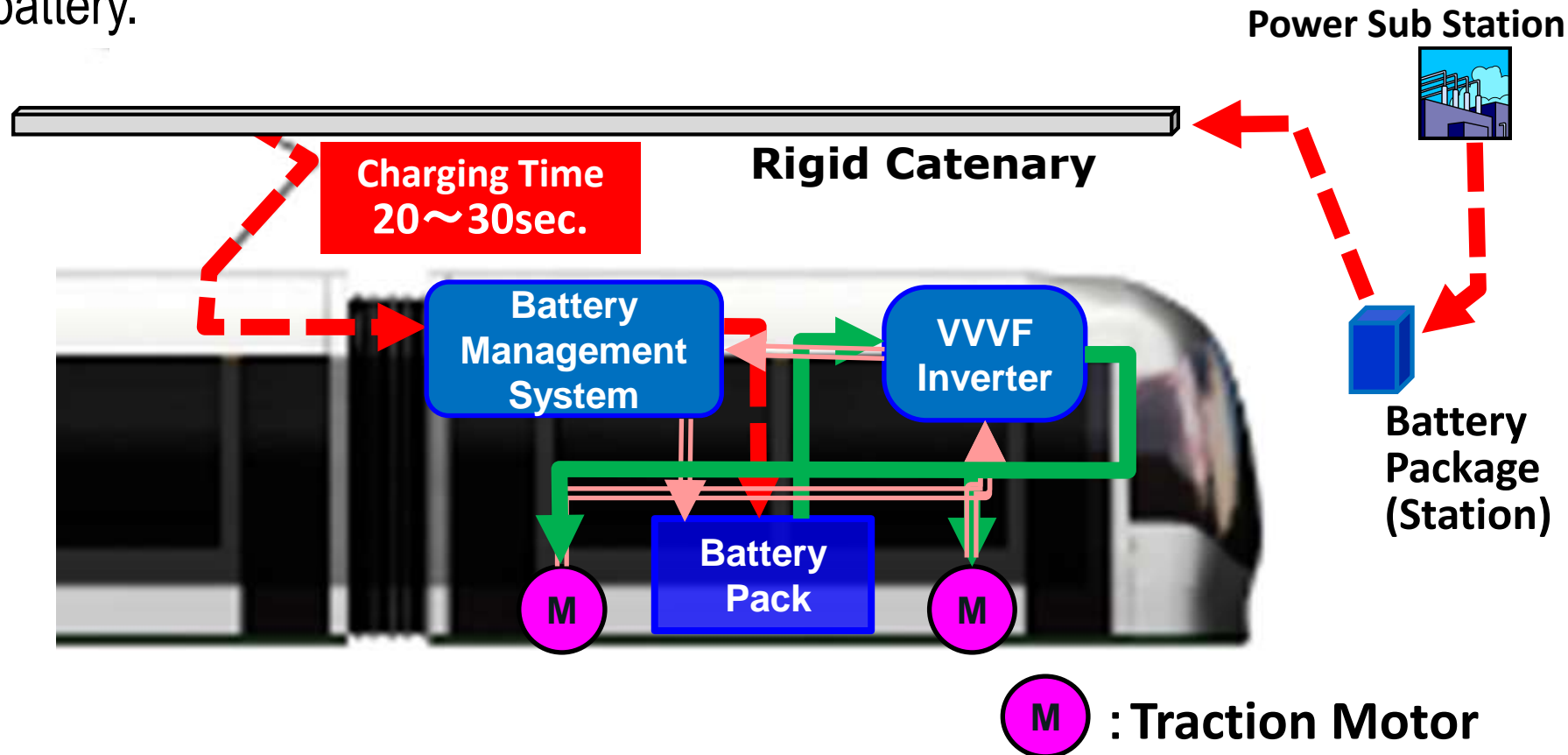
Concept Image



Concept of Catenary-free LRT System

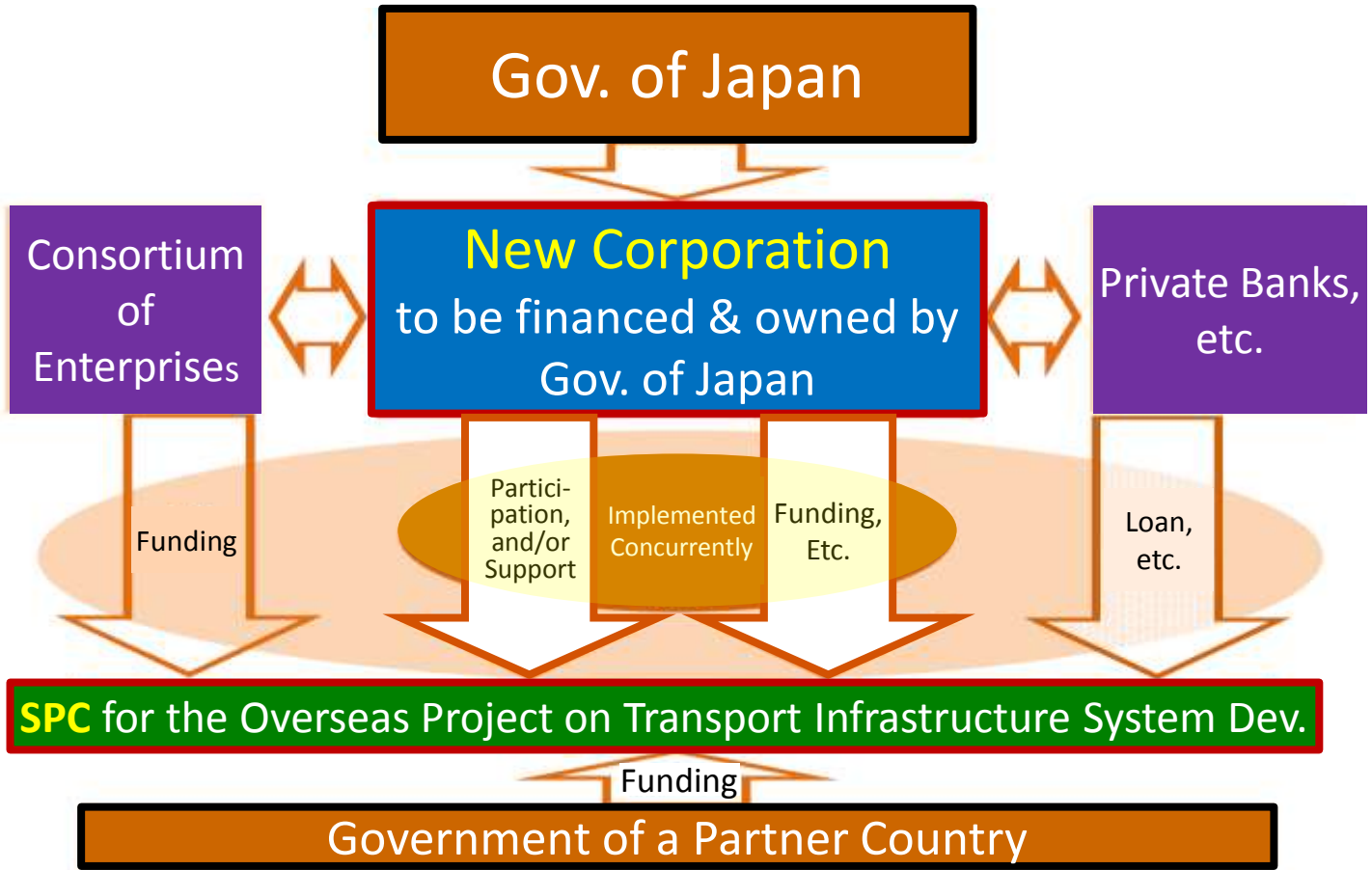
With a pantograph, Onboard Battery is charged during boarding and alighting time and through overhead rigid catenary equipped at every station.

This system captures regenerative energy and stored them into onboard battery.



Financial Support for SPC Project

MLIT's New Strategy for supporting SPC's Overseas Project for Transport Infrastructure System Development



“Oka-den”

**Continuing “Operating Profit Status”
for more than 25 years**

without O&M subsidy from the government

1. Streamline Operations

- Company’s Triple Role
- Efficient Operations

2. Enhancing user services

- Conformity of Urban Structure & Public Transport
- Cooperation with Municipality & Civic Association
- Provision of Operation Information
- Regional Activation

3. Diversifying Income Sources

- Advertising Train
- Full Reserved Train, Event Train

JICA has been utilizing a broad array of tools in human resources development that local needs which includes

- ① **Technical Cooperation Project,**
- ② **Dispatches of Individual experts, and**
- ③ **Training Programs.**



MLIT

Lecture,
Technical Visit,
etc.



Thai High Speed Train

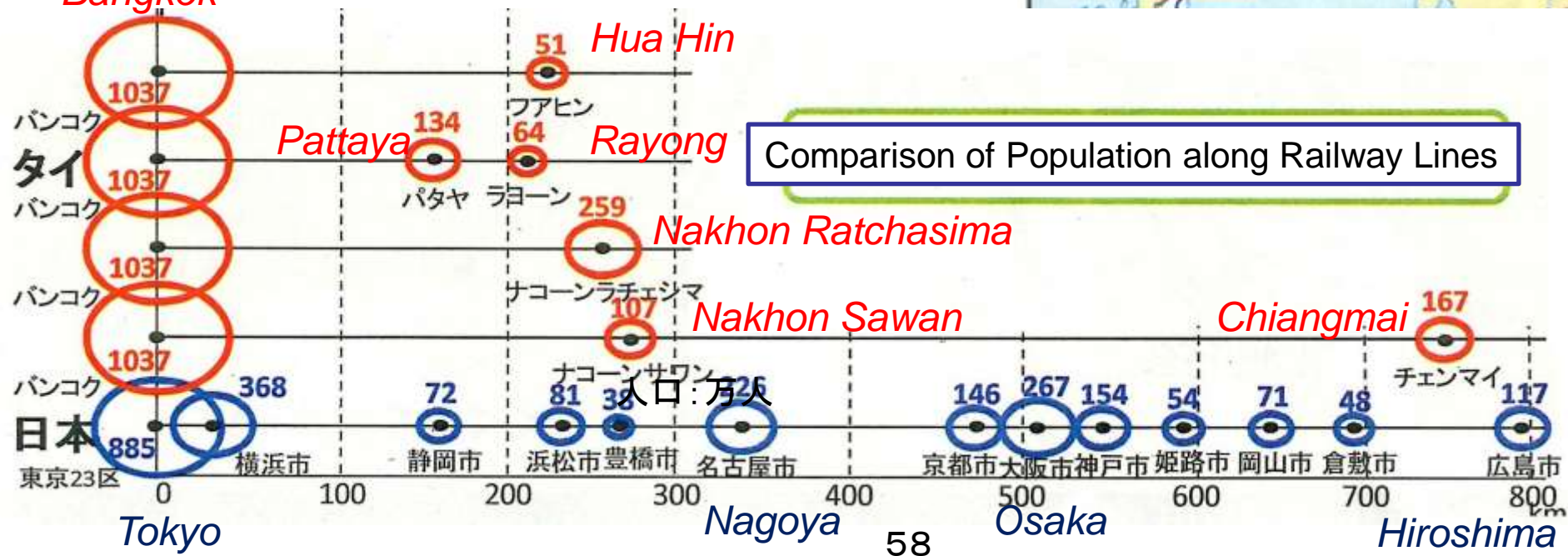
- Speed: 250-400 km/hr
- Planned Route

Bangkok

- ~Chiangmai 750km
- ~Nakhon Ratchasima 260km
- ~Rayong 210km
- ~Hua Hin 230km



Bangkok



ATRANS Seminar in Bangkok

- “Urban Development in Conjunction with Rail Transit: Experience of Japan”
- 18 March 2013, 09:00 – 12:30
- 80-120 persons from JAPAN Embassy, JPN delegates, MOT, MRTA, SRT, BTS, DOH, DOR, OTP, BMA, Academic and ATRANS members, etc.

※ATRANS: Asian Transportation Research Society

Historical view point of Urban Development with Railway System in Japan	Prof. Dr. Atsushi FUKUDA
Role of Government for Urban Development with Railway Station Area in Japan	MLIT
Efforts towards Sustainable Urban Development Integrated with Public Transportation in JAPAN	MLIT
Urban Development in Conjunction with Rail Transit: Case Studies in Japan (1)	Japan Railway East
Urban Development in Conjunction with Rail Transit: Case Studies in Japan (1)	Tokyu Cooperation

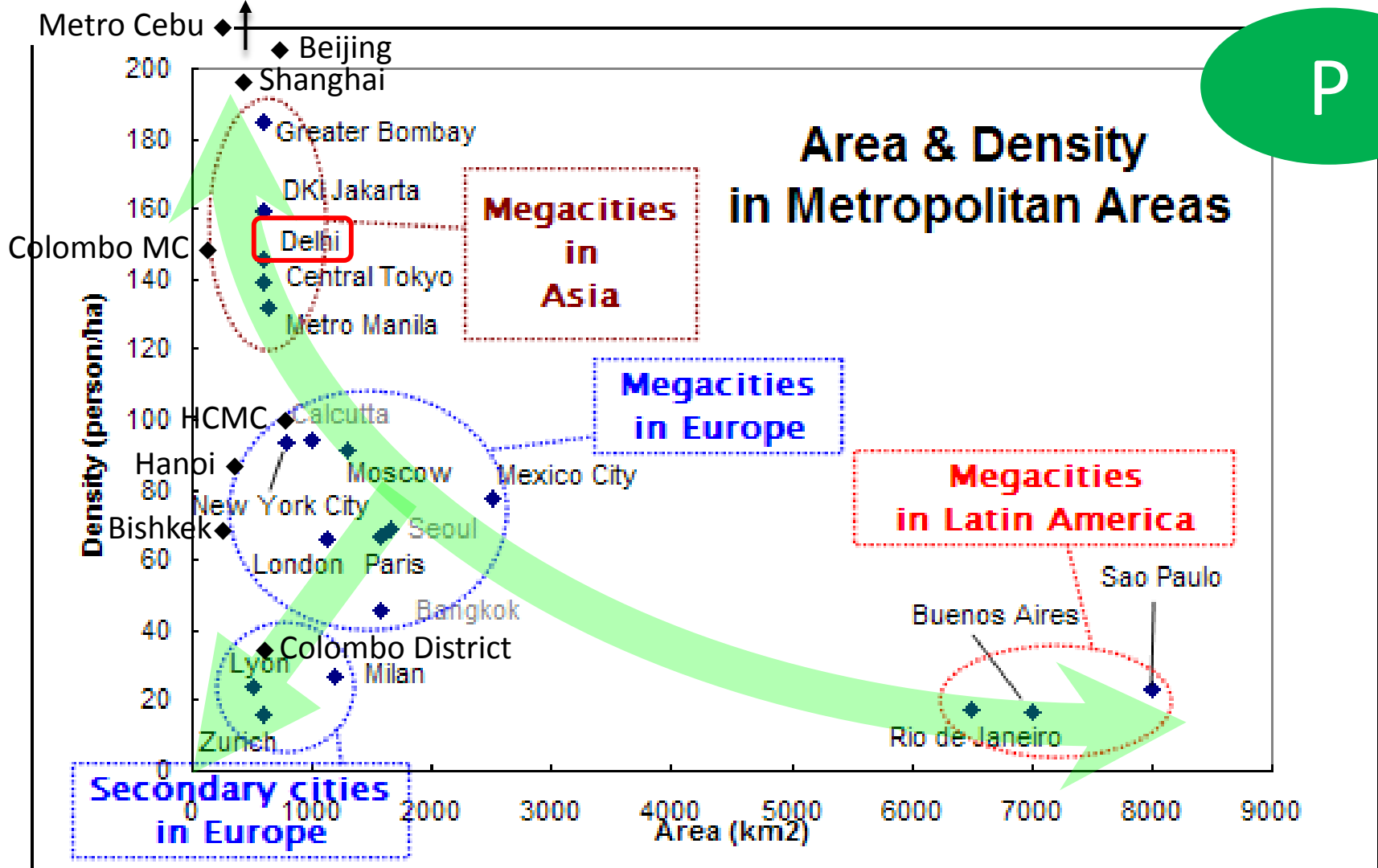
Conclusion

- 1. The key to develop the Tokyo metropolitan area as an efficient, convenient and safe metropolis, we believe, has been Transit Oriented Development (TOD).**
- 2. Urban transportation systems consisting of New Transportation Systems have been developed according to urban size (traffic demand), playing a key role in the urban development.**
- 3. Applying our experiences and technologies to creating cities in Foreign Countries, through technical cooperation and public-private exchanges, will contribute to development of sustainable cities.**

Thanks you for your attention!



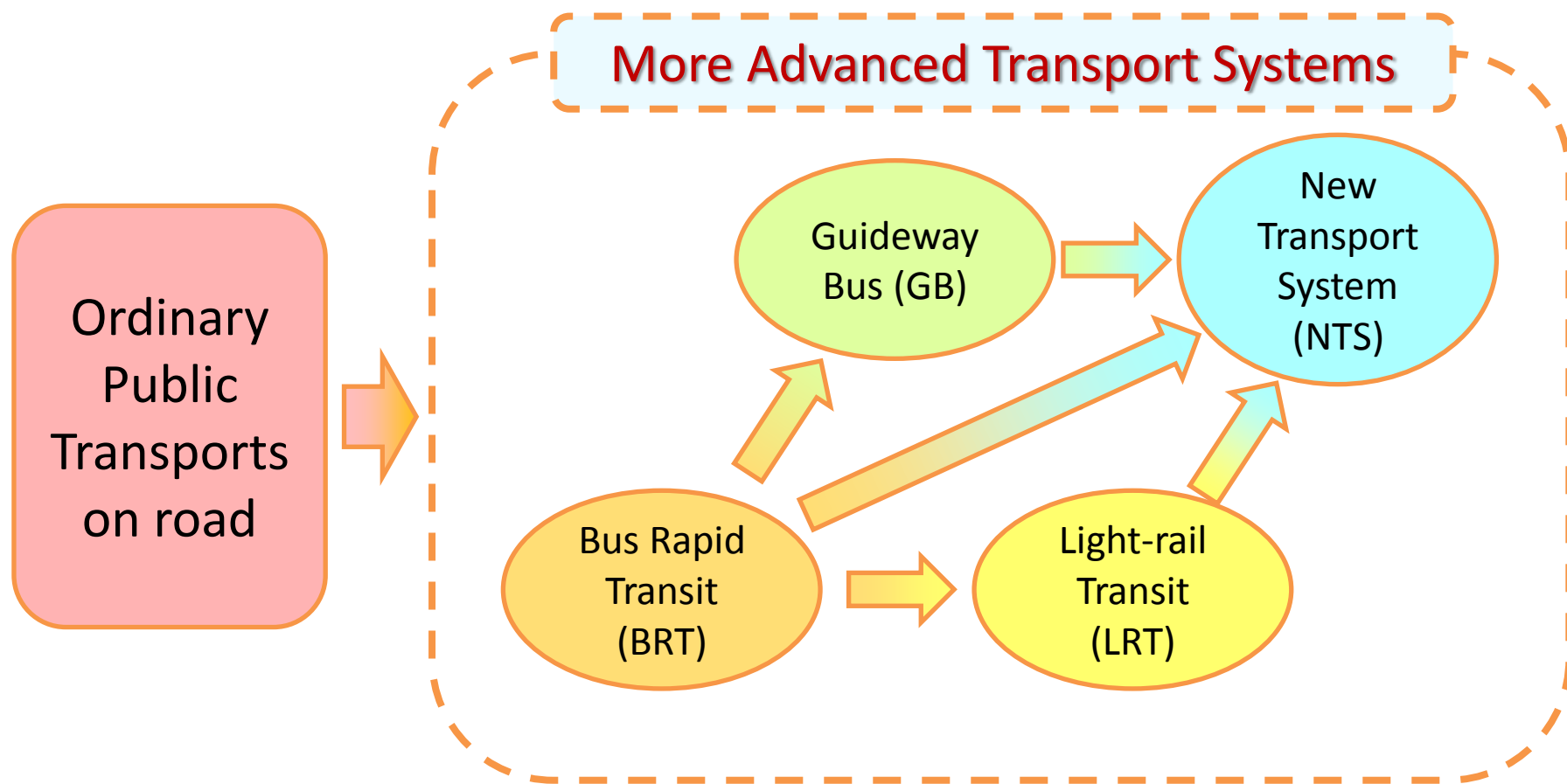
Thanks you for your attention!



Copyright ©Seiichiro AKIMURA, 1995-

- Source
- (1) Lyon, Milan & Zurich: Bonnel P. [1994]. *Urban car policy in Europe*, paper presented at the Conference on Car Free Cities, held in Amsterdam
 - (2) Paris: OCOTRAM. *Study ordered by UITP*
 - (3) Central Tokyo (23 Wards) & Tokyo Prefecture: Government of Japan. *National Sensus*
 - (4) Others: UNEP & WHO [1992]. *Urban Air Pollution in Megacities of the World*

Ideas for Shifting Transport Mode to More Advanced Systems following increasing in passenger needs



LRT grade separated

P

Manila MRT Line 3

Scope by Japan's maker:
System Integration,
Train, E&M System, Civil,
Maintenance



System Overview

Speed	Max 65km/h
Number of Cars	73 cars
Passenger Capacity	28,500 pphpd * (600 thousand/day)

* Passengers per hour per direction

Japan's Maker has:

- Completed Successfully a Full Turnkey Project
- taken a role as System Integrator
- Provided continuously Higher Service Availability since opening in 1999
- Provided more than 10 years of Maintenance by promoting Technical Transfer & Localization



JICA Preparatory Survey for Pune Urban Railway



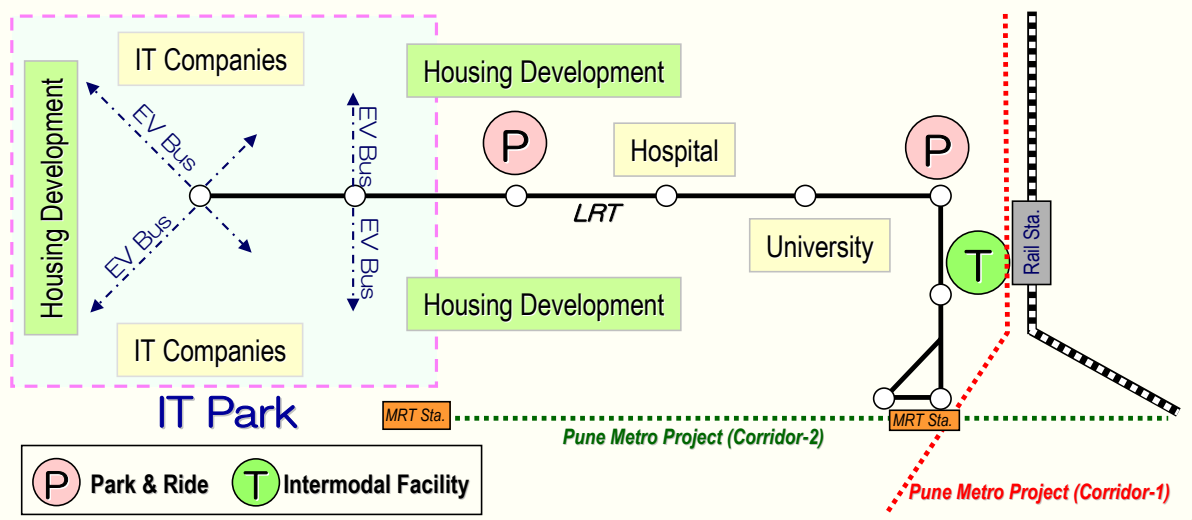
Objectives

- To Develop Eco-Friendly and Sustainable City
- To Provide Public Transport Mobility between CBD and IT Park
- To Introduce Symbolic Mobility and First-Ever LRT System in India

Points of Consideration

- Development of Intermodal Transport Hub: Seamless Transfer with Metro & Rail
- Provision of Feeder Bus Service (EV Bus): Environmentally-friendly Feeder Mode
- Introduction of Park & Ride: **Low Car Usage in CBD, Users from Extensive Area**
- Introduction of Catenary-free LRT System: Urban Landscape Conservation
- Development of LRT Corridor Area: **High Value-added Area along LRT Corridor**

Proposed Development Concept



Concept Image



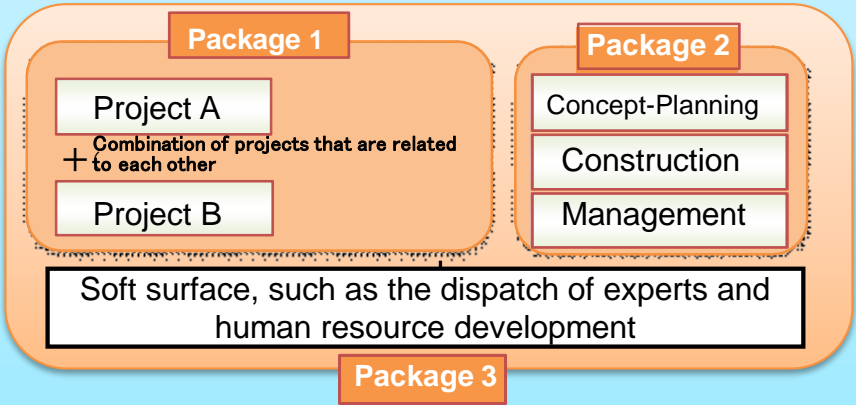
Promotion of overseas projects by "package"

○Development of infrastructure projects in the future

Packaging

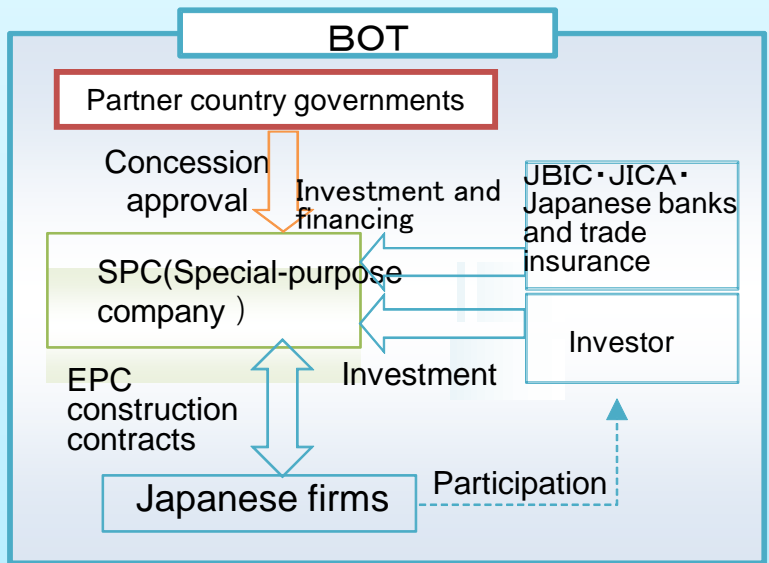
• Important that the "packaged" variety, we will expand the strategic infrastructure projects

1. Combine multiple projects that are related to each other, in order to promote the convenience and profitability of each project
2. Not only the construction, deployment comprehensively as a package from the planning stage to the management and operation concepts ands
3. Support the dispatch of experts in the field of software such as human resource development and Also implemented assistance



Finance

• Through various schemes such as BOT method utilizing private funds, we will implement.



PPP scheme (Combination of ODA and BOT)

(EX) ODA: the construction of the infrastructure portion
BOT: maintenance and administrative facilities

How to implement cooperation in the urban development

Apply Japan's experience that overcame rapid urbanization

Comprehensively support all steps from formulation of development concepts, materialization of plans and through to maintenance and operation

Formulation of development concepts

Develop spatial, organizational, and financial platform by preparing a **master plan**

Plan materialization

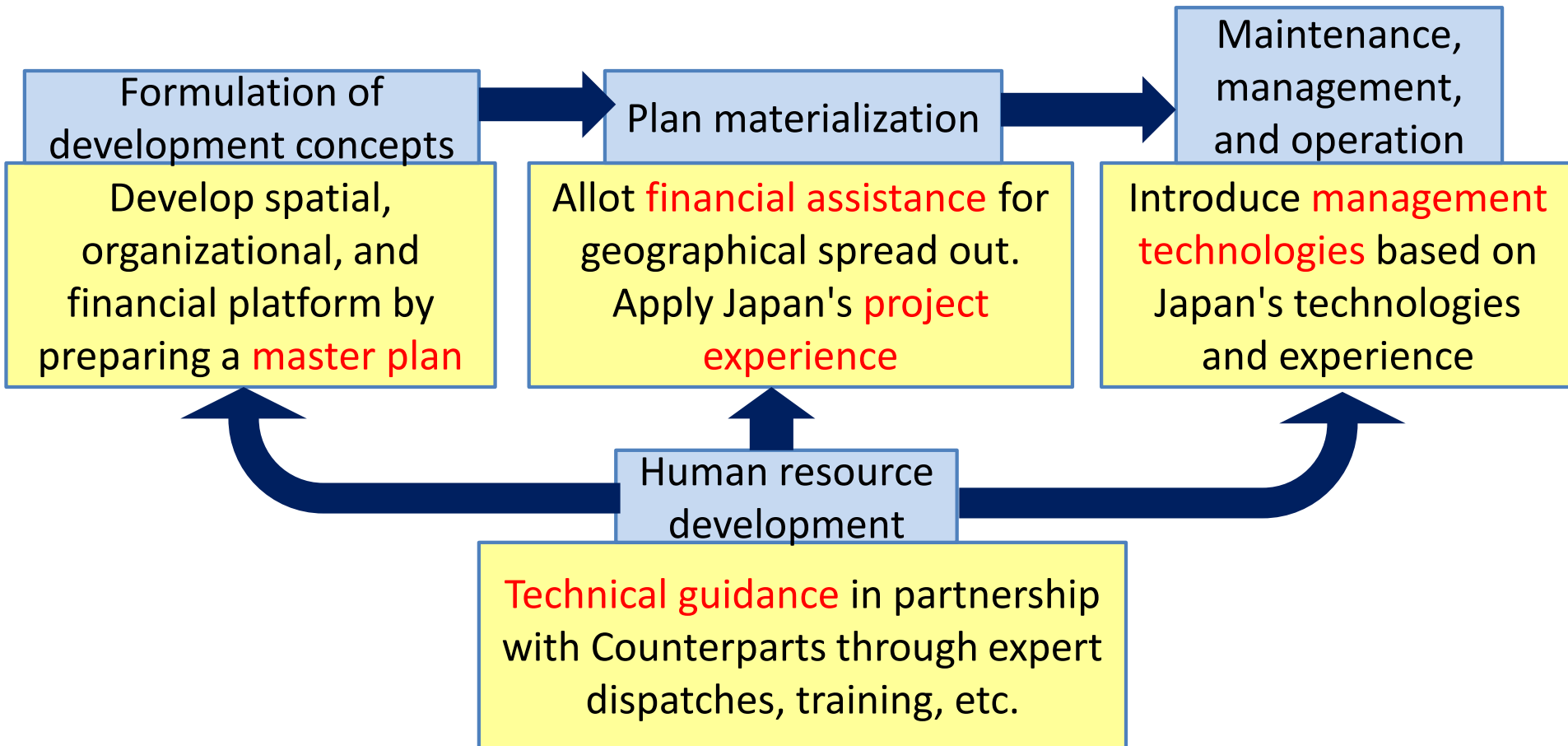
Allot **financial assistance** for geographical spread out. Apply Japan's **project experience**

Maintenance, management, and operation

Introduce **management technologies** based on Japan's technologies and experience

Human resource development

Technical guidance in partnership with Counterparts through expert dispatches, training, etc.



Urban Transportation Strategic System

- Strategic initiatives to attain optimal shares among walking, bicycles, cars and public transportation and to achieve smooth transportation, improved convenience and mobility.
- Integrated city functions in major transportation nodes.

