Recent Trends on Road Administration and Performance Measurement in Japan

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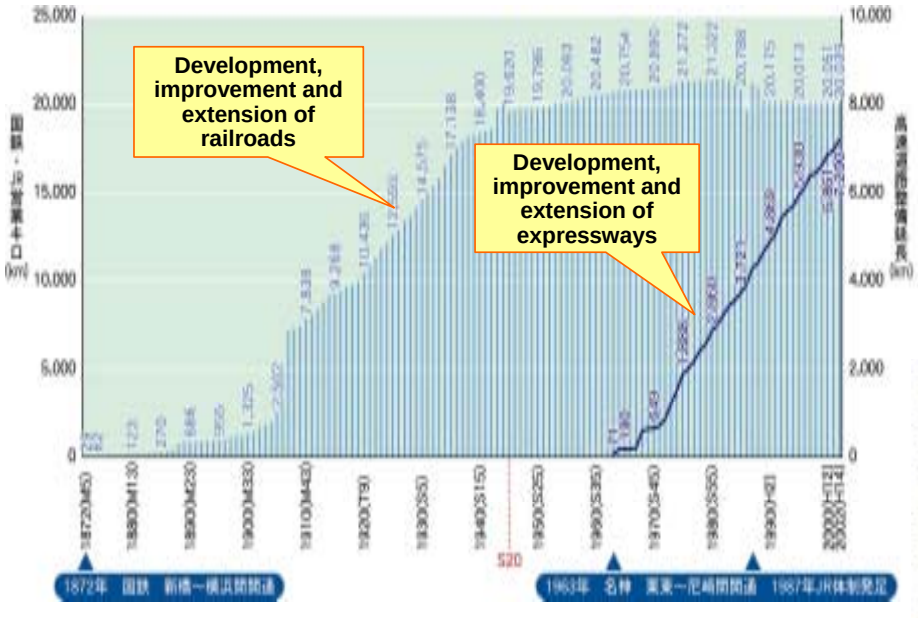
Current state of Road Investment

◆Japan's Full-fledged Attempts to Renovate Roads Began in the Wake of WWII.

- Full-fledged efforts for road planning and development did not begin until 1955.
- In the wake of the war, even national highways remained unpaved.



Changes in development and extension of railroads and expressways

Unpaved road 1953 (Itabashi-ku, Tokyo)

Traffic congestion and chaos (Intersection at Sankocho, Shinjuku)
(Source: October 1960 issue of *Shin-Toshi* (New Metropolis))

Sources:
For railroads: *Kokuyu-Tetsudo / Tetsudo Tokei Ruinenhyo* (Annual Statistics on Nationally Owned Railroads and Railroads) (up to 1986)
Sujidemiru Tetsudo 2004 (Railroads 2004 in Numbers) (1987 and onward)
Expressways: *A Handbook of Expressways 2002*

◆ Creation of Systems Addressing Road Development and Improvement

- Construction of expressways was needed to cope with rapid motorization.
- Efficient land transport was a bottleneck impeding the economic recovery.

Three core systems that accelerated road development and improvement:

1) The special funding source for road works

2) The toll road system

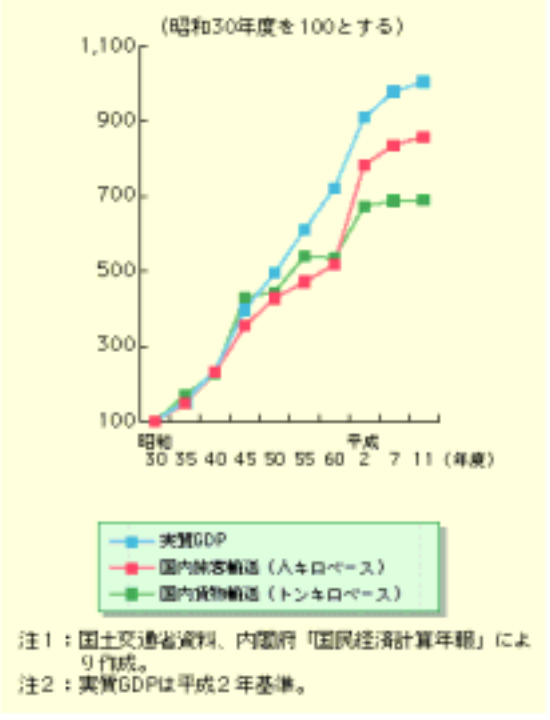
3) 5-year Road Improvement Programs

・From 1952 to 1953, the Road Law, the Law on Special Measures for Road Development and Improvement, and the Law on Temporary Measures Concerning Funding Sources, etc. for Road Development and Improvement Expenditures (which later became known as the Road Construction Emergency Measures Law) were enacted.
⇒ In FY1954, the first five-year program for road development and improvement began, and the designation of tax revenues reserved for road development and improvement was made.

・Japan Highway Public Corporation was formed in 1956, followed by the enactment of the National Development Longitudinal Expressway Construction Law and the National Expressway Law in 1957.
・Upon deliberation by the Council for the National Development Longitudinal Expressway Construction Law, the Japan Highway Public Corporation was mandated to carry out and launch projects.
⇒ In 1963, Meishin Expressway (71 kilometers between Amagasaki and Ritto) opened.

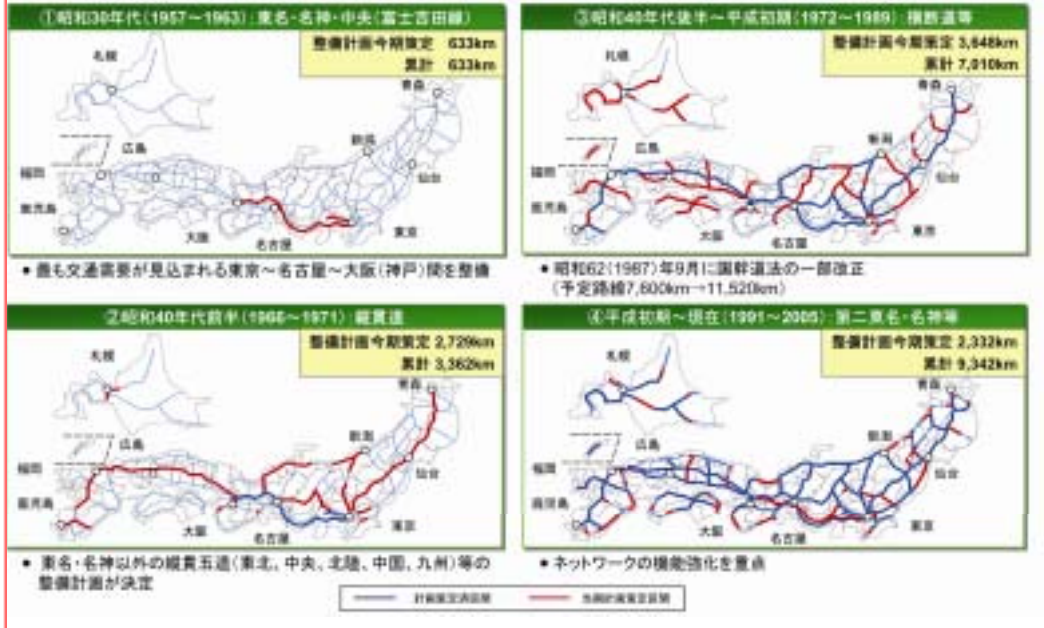
◆ Rapid Economic Growth and Motorization

- Parallel to rapid economic growth, waves of motorization spread through the nation quickly.
- To lessen the ‘quantitative insufficiency’ has been a priority task for road administration.



Change in GDP and volume of domestic transport

Source: *White Paper on Land, Infrastructure and Transport in Japan for FY2001*

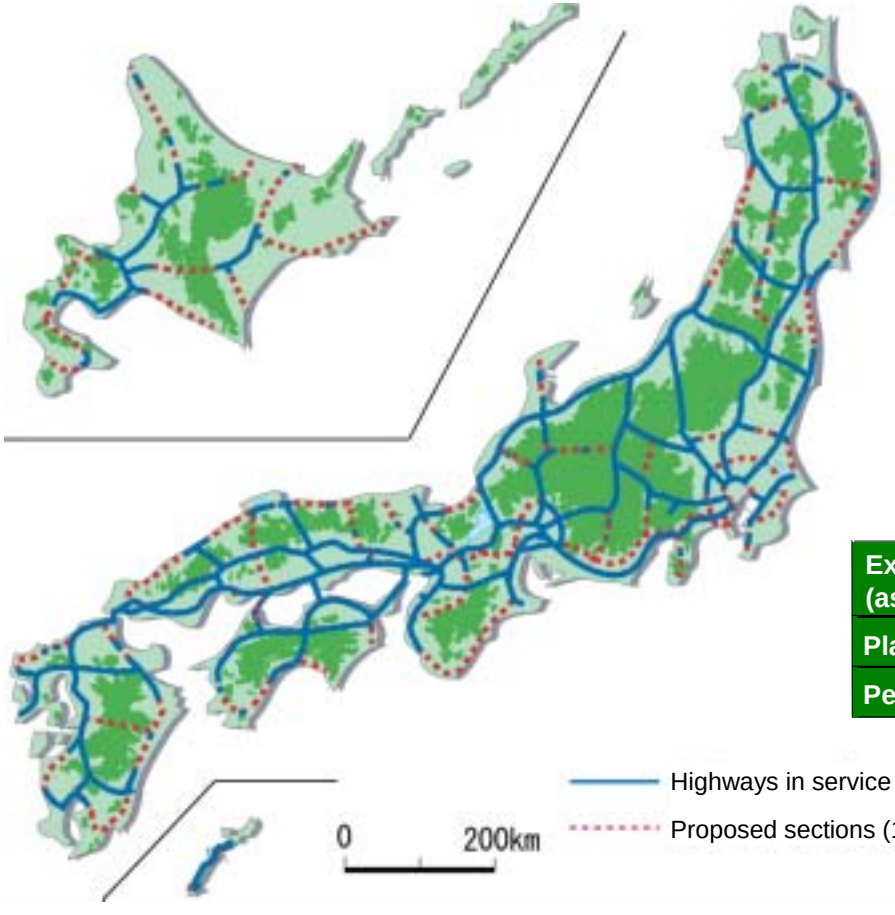


Evolution of Expressway network

Source: Prepared based on documents of the Promotion Committee for Privatization of the Four Highway-related Public Corporations

◆ Current State of Expressway Network

- About 60% of the planned Expressway have been completed.
- Future issues include utilization of the portion already in service and more efficient development of truly needed highways.



Exp.way extensions (as of April 2005)	**8,730km**
Planned extensions	**14,000km**
Percentage completed	**62%**

◆ The Priority Plan for Social Infrastructure Development (2003-2007)

- The Plan succeeds to 5-year Road Improvement Program since 2003.
- Corresponding to the plan, it has been endorsed by the cabinet, that investment volume for road should not exceed ¥38 trillion yen (national budget) for planning period.
- In FY2005, ¥9.3 trillion is annually invested for roads in Japan.

Work volume relating to road development for the five-year period beginning FY2003 (00 Millions of Yen)

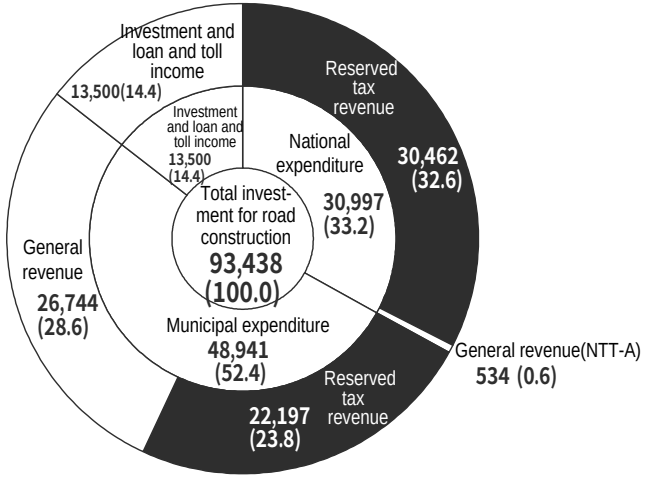
	Work volume for the 5-year period beginning FY2003	Twelfth 5-Year Plan			Multiples against Planned	Multiples against Actual
		Planned (A)	Actual (B)	Percentage achieved (B)/(A)		
Investment for road (public-sector only)	380,000	462,000	451,602	97.7%	0.82	0.84

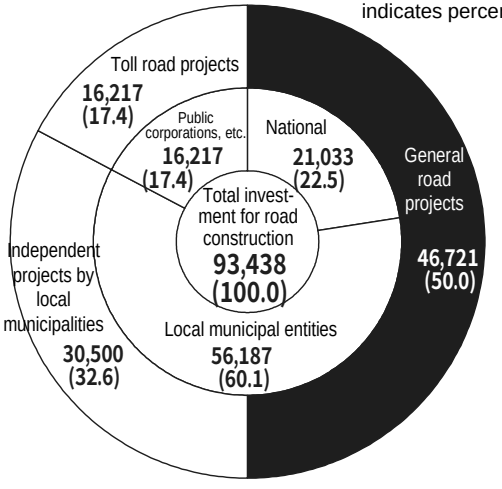
Note: An additional ¥19.0 trillion yen is expected for projects independently carried out by local municipalities.

FY2005 Road Investment by Source of Funds and by Project Type

(00 Millions of Yen)

Number in parentheses indicates percentage (%)





◆Sources Earmarked for Roads

		Tax	Earmarked percentage	Tax rate	Tax revenue (FY2005)
National		**Gasoline tax** Created in 1949; designated as reserved tax revenue in 1954	100%	**(Provisional tax rate)** **¥48.6 per litter** (2x basic rate) (Basic tax rate) ¥24.3 per liter	¥2,913.8 billion (¥2,962.9 billion)
		Motor Vehicle Tonnage Tax Created in 1971	About 80% (77.5%) of the tax revenue allocated to the nation (2/3 of total)	[Example: Passenger vehicles for home use] **(Provisional tax rate)** **¥6,300 per 0.5 metric ton per year** (2.5x basic rate) (Basic tax rate) ¥2,500 per 0.5 metric ton per year	¥585.1 billion
		Liquefied Petroleum Gas Tax Created in 1966	1/2 of tax revenue	(Basic tax rate) ¥17.5 per kilogram	¥15.0 billion (¥15.3 billion)
		Total			¥3,513.9 billion (¥3,563.3 billion)
Local		**Gas Oil Delivery Tax** Created in 1956	100%	**(Provisional tax rate)** **¥32.1 per liter** (2.1x basic rate) (Basic tax rate) ¥15.0 per liter	¥1,055.6 billion
		Automobile Acquisition Tax Created in 1968	100%	**(Provisional tax rate)** **5% of purchase price for private motor vehicles** (1.7x basic rate) (Basic tax rate) 3% of purchase price	¥465.5 billion
	Local transfer tax	**Local Road Transfer Tax** Created in 1955	100% of Local Road Tax revenue	**(Provisional tax rate)** **¥5.2 per liter** (1.2x basic rate) (Basic tax rate) ¥4.4 per liter	¥307.2 billion
		Motor Vehicle Tonnage Transfer Tax Created in 1971	1/3 of Motor Vehicle Tonnage Tax revenue	Please see Motor Vehicle Tonnage Tax	¥376.7 billion
		Liquefied Petroleum Gas Transfer Tax Created in 1966	1/2 of Liquefied Petroleum Gas Tax	Please see Liquefied Petroleum Gas Tax	¥ 14.7 billion
		Total			¥2,219.7 billion
Grand Total					¥5,733.6 billion (¥ 5,783.0 billion)

Examples of Major Undertakings

◆ Anti-seismic Reinforcement of Bridges

- Anti-seismic reinforcement of bridges (elevated highways) is under progress based on the three-year program (FY2005〜FY2007) for the anti-seismic reinforcement of bridges for emergency transportation routes and others

Damage caused by
the Great Hanshin Earthquake

•Concrete filling method for steel piers •Steel plate jacket method for RC piers

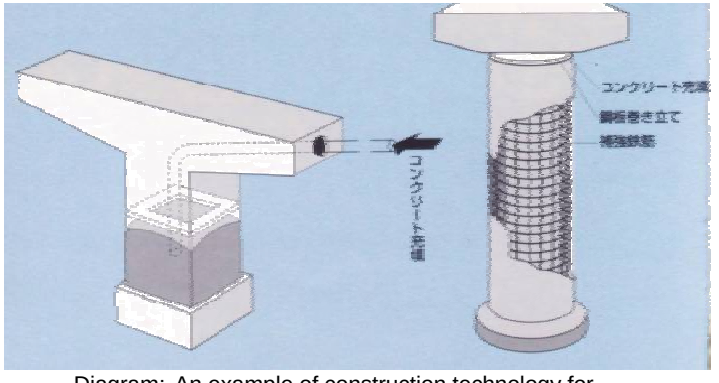


Diagram: An example of construction technology for anti-seismic reinforcement (for piers)

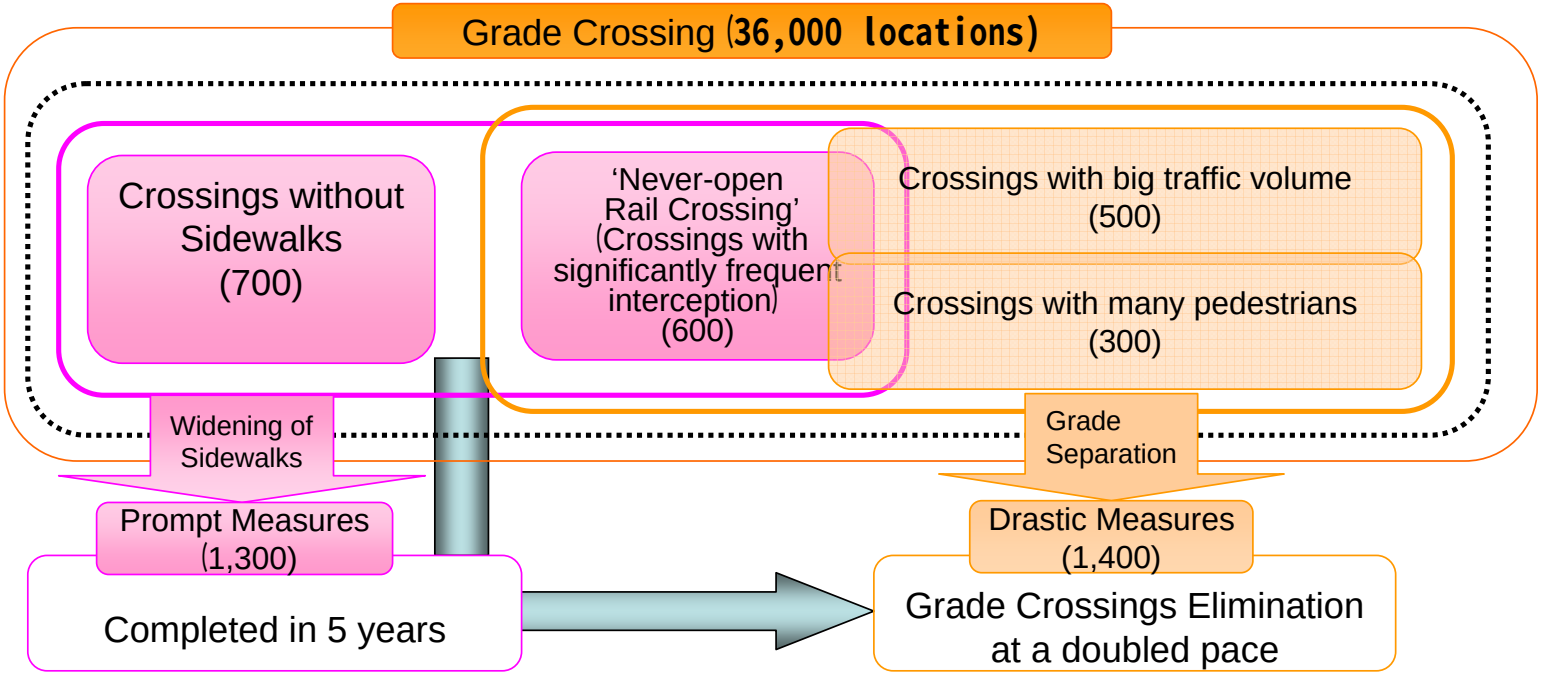
Mid Niigata Prefecture Earthquake (seismic intensity of 7) / Toka-machi, Nagaoka-shi

◆Acceleration of Measures for Grade Crossings

- Quick remedial measures should be administered at 1,300 locations in five years.
- Drastic measures will be administered at 1,400 locations, and the speed of implementation will be doubled.

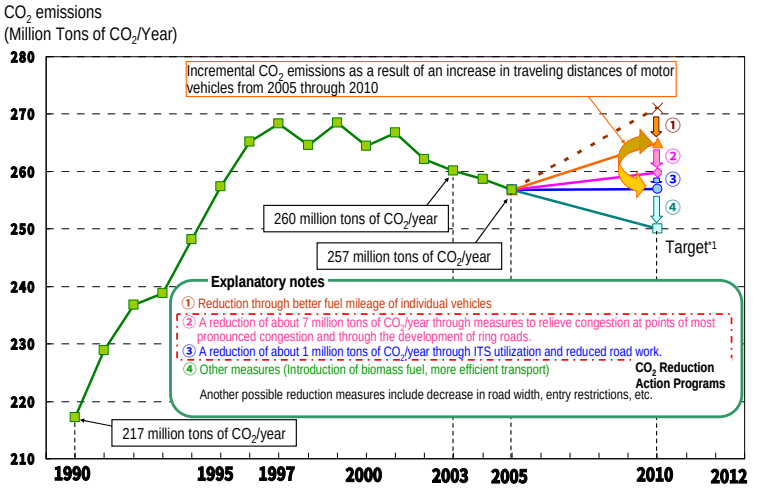
Crossings require urgent improvement (2,100locations)

Before measures were taken　　After measures were taken



◆Preservation of global environment

- The target for CO_2 emission reduction through the road policies shall be established to ensure the Kyoto Protocol target will be met.
- Urgent measures will be administered by 2012 at about 1,800 points noted for severe congestion.



* CO_2 emissions for 2004 through 2005 were estimates based on the emission trends established from 1999 through 2003.
*1 The target called for in the Kyoto Protocol

(1) Reexamination of the relationships between people and vehicles

- Creation of opportunities, through efforts to establish communication with local residents, to allow each individual to reflect on his or her car utilization pattern, which may lead to reduced use.
- Improved convenience offered by public transportation to encourage a shift from driving to public transportation.
- Promotion of eco-driving such as anti-idling and improved fuel mileage.
- Cargo transportation designed to minimize environmental burden to be encouraged by working together with shippers and distributors.

(2) Smoothly running traffic free of congestion

- Measures to relieve congestion to be introduced by primarily focusing on the ring roads in urban areas that benefit most from CO_2 emission control.
- Promotion of measures designed to reduce congestion at points of severe congestion, where CO_2 emissions are concentrated, and to remove railroad crossings, which serve as bottlenecks.
- Development of bypass routes, etc. and parallel measures to narrow the width of old routes and surrounding community roads to be carried out all in a single package.
- Redirecting motor traffic from ordinary roads to expressways where CO_2 emissions are low.
- Reduction in road construction work, as this is a major cause of traffic congestion.

(3) CO_2 Reduction through better utilization of road space and ingenious approaches

- Greening of road areas to maximize CO_2 absorption.
- Active introduction of water-retentive pavement to achieve higher uchimizu (water spraying for cooling down) effects.
- Active utilization of new energies such as solar energy and windmill power generation for road lighting.

(4) More efficient operation of motor vehicle traffic

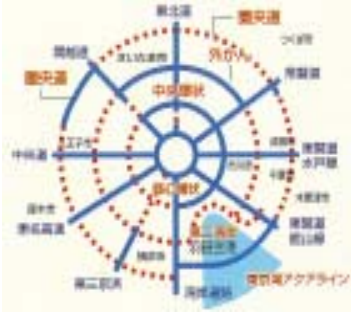
- Feasibility of road pricing and entry restrictions to certain roads to be studied to relieve congestion in urban areas
- Enhanced delivery of information on road traffic conditions through utilization of ITS (Intelligent Transportation Systems).
- Elimination of street parking violations, a major cause of congestion.

◆ Development of Ring Roads in Urban Areas

- Progress is being made in the construction of ring roads in Tokyo and other areas.
- Ring roads are expected to greatly contribute to congestion relief and bring other benefits equals to ¥4 trillion /yr. for the metropolitan area.

◆Ring roads in the Tokyo metropolitan area

●Current (as of April 2004)



State of construction: About 90% of radial roads and 20% of ring roads have been completed.

State of congestion: Major points of congestion inside the Metropolitan Inter-City Expressway amount to about 600 locations.

Losses caused by congestion:

Nationwide: About ¥12 trillion annually

Tokyo Metropolitan Area: About ¥2.8 trillion annually

Tokyo Prefecture: About ¥1.2 trillion annually

●Short-term objectives

(To be achieved in 10 years)

Construction to be completed: 90% of radial roads and 40% of ring roads

Effects:

- Congestion of the major points within the Metropolitan Inter-City Expressway will be relieved by 60%.
- Reduced traveling time and reduced fuel consumption will bring about ¥2 trillion in savings annually.
- Compensation for land requisition paid to landowners who in turn use it for real estate purchases and construction will bring about ¥2 trillion in effects.

●Completed network

Construction to be completed: 100% of radial roads and 100% of ring roads

Effects:

- Congestion of the major points within the Metropolitan Inter-City Expressway will be mostly eliminated.
- Reduced traveling time and reduced fuel consumption will bring about ¥4 trillion in savings annually.
- Compensation for land requisition paid to landowners who in turn use it for real estate purchases and construction will bring about ¥6 trillion in effects.

◆'Tsukaeru Highway'- Towards More Accessible and Functional Network

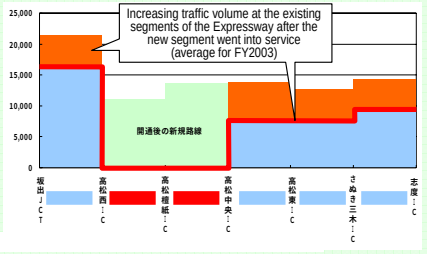
Building a network

- Building of a network that allows access to expressways in about 1hour from anywhere in Japan

Utilizing the network

- All roads ranging from community roads to expressways should be equipped to offer their intended functions.
  - ○ Society in harmony with the environment
  - ○ Resurrection of community roads
  - ○ Prosperous society allowing easy and dependable long-distance mobility

Elimination of missing links



Change in traffic volume after all segments of the Takamatsu Expressway went into service

Development of additional interchanges

Pilot program for a smart interchange (ETC-only interchange) connected to service and parking areas

Diverse and flexible pricing measures

Pilot program for toll pricing measures conducted in the segment of Niigata City and its vicinities of the Nihonkai-Tohoku (Nittodo) Expressway.

- **Reduction in losses caused by congestion**
  ¥896 million/12 hours (daytime on weekdays)
- **CO_2 reduction**
  1.4%/12 hours (daytime on weekdays)

◆ A New Society that Results from “Tsukaeru Highway”

Society in harmony with the environment

- CO_2 reduction through less congestion
- Environmental improvement for roadside areas

Prosperous society allowing easy and dependable long-distance mobility

Growth of high-standard arterial road networks and changes in required traveling time.

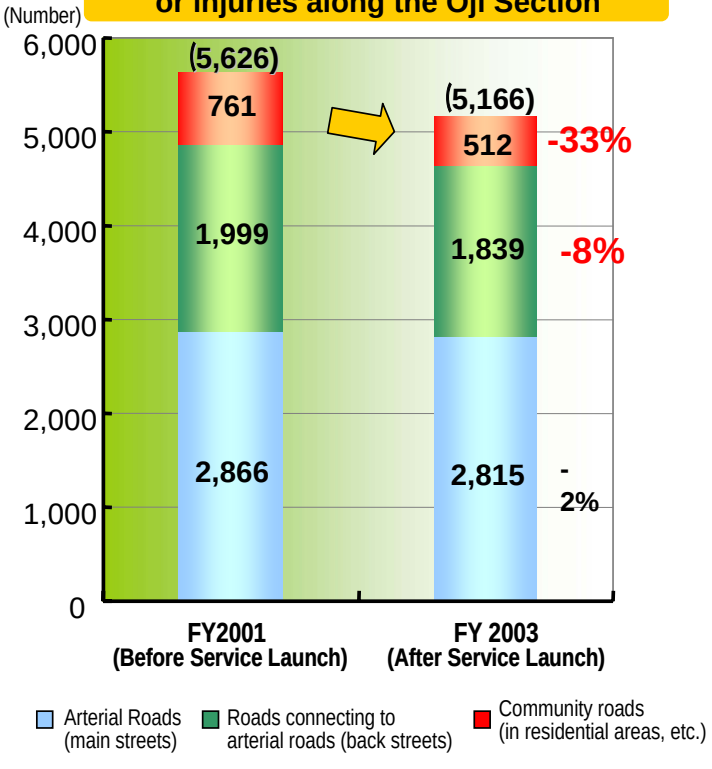
Resurrection of community roads

- Development of community roads that pedestrians can walk on with peace of mind

◆ Chain Effects of Ring Roads - A significant decline in traffic accidents on community roads

- The community roads along the Chuo Ring Road Oji Section (in service since Dec. 2002) saw a 30% decrease in the number of accidents compared to the period before the opening of the Line.
- The development of ring roads prompts a traffic shift from congested arterial roads to the ring road and, subsequently, a shift from community roads to arterial roads, which are no longer as crowded as before (chain effects).

Number of accidents involving deaths or injuries along the Oji Section



Sources: Statistics of Metropolitan Police Department

Chuo Ring Road Oji Section Length: 7.1 km
Went into service on December 25, 2002

◆ Enhanced Service through the Evolution of ITS:

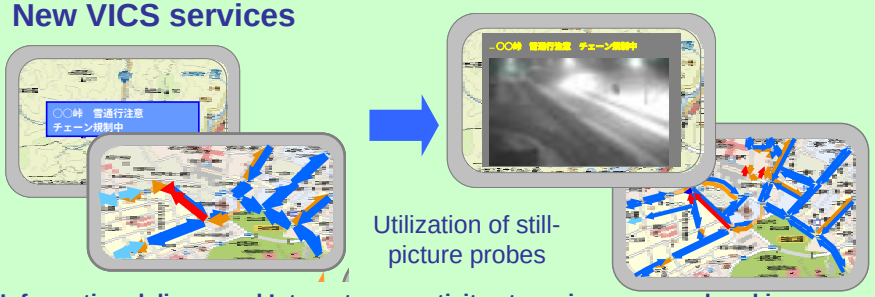
- Toward the Creation of Roads with Significant Added Values

- With the spread of VICS* and ETC**, ITS has become a practical tool to cope with traffic problems.
- A single onboard device allows access to diverse services in 2007.
- Enhanced services through assistance for safe driving

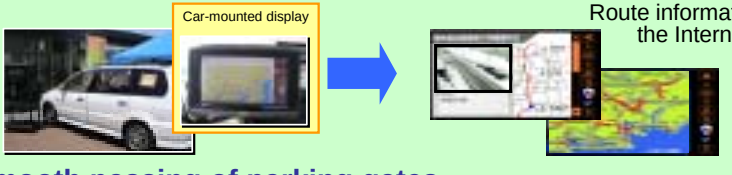
* Vehicle Information and Communication System
** Electronic Toll Collection System

Diverse array of services

New VICS services



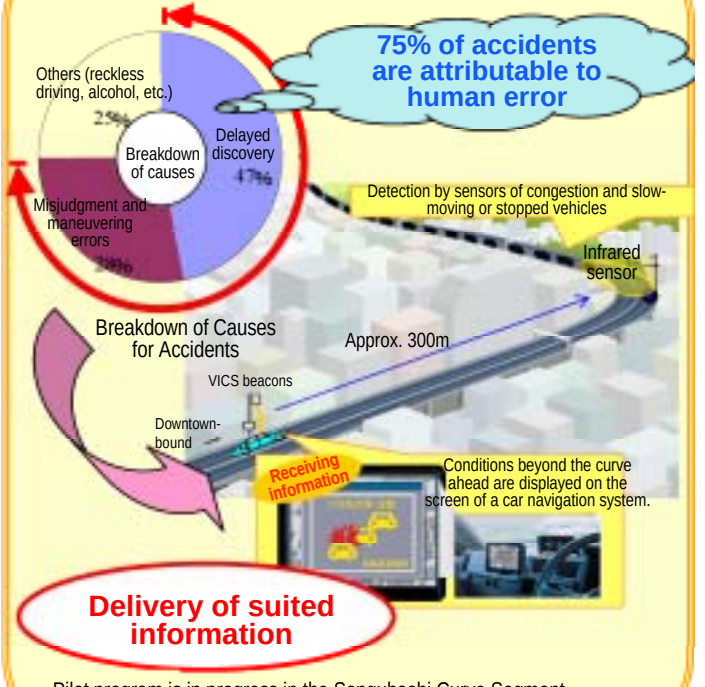
Information delivery and Internet connectivity at service areas and parking areas, which serve as "roadside stations"



Smooth passing of parking gates

Service launch is scheduled for 2007

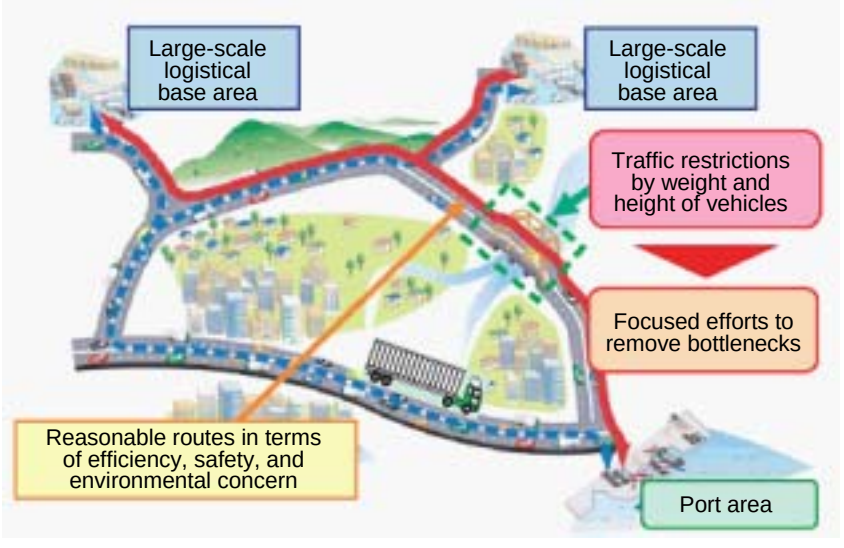
Assistance for safe driving



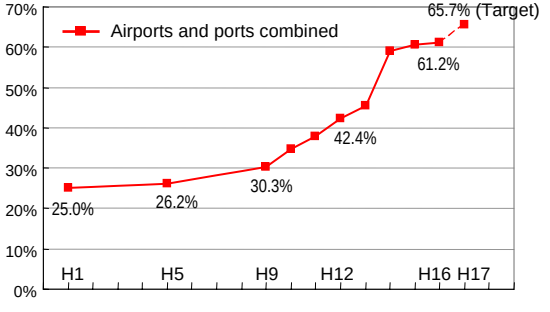
Pilot program is in progress in the Sangubashi Curve Segment (downtown-bound) of the Metropolitan Expressway No. 4 Shinjuku Line

◆ Efficient and Eco-friendly Logistic Measures

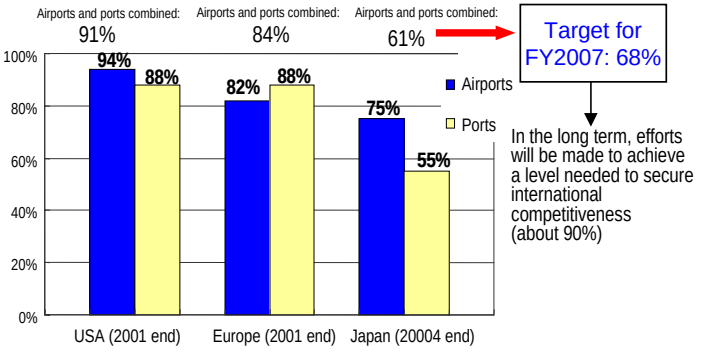
- More roads will be accessible to international-standard container trucks. (Removal of bottlenecks impeding the development of “Super Hub Ports” in about 5 years)
- Priority is placed on the construction and improvement of routes leading to major airports and ports.



1) Change in accessibility to major airports and ports from expressways as measured by the percentage of airports and ports accessible from expressways in 10 minutes or less



2) State of accessibility to major airports and ports from expressways (an international comparison)

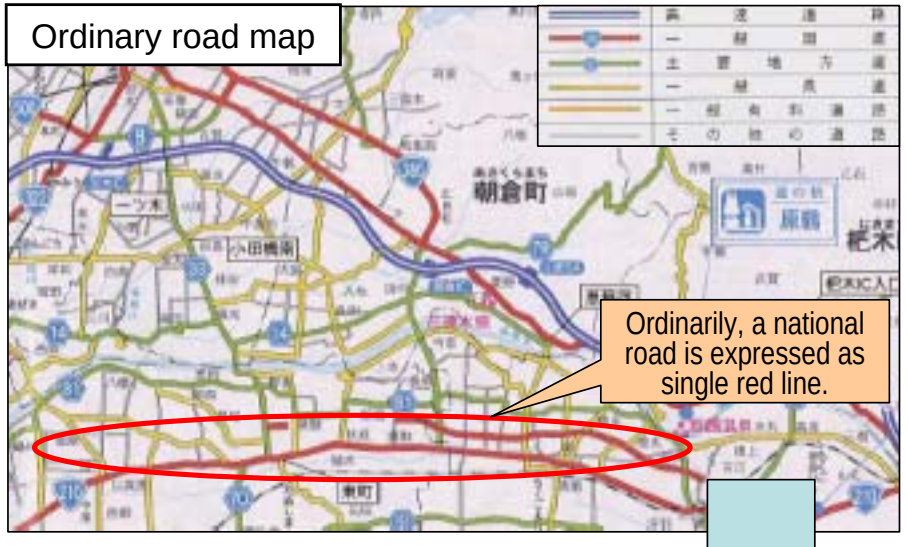


◆ Road Map with Ease-of-Drive Markings: Indication of Service Levels

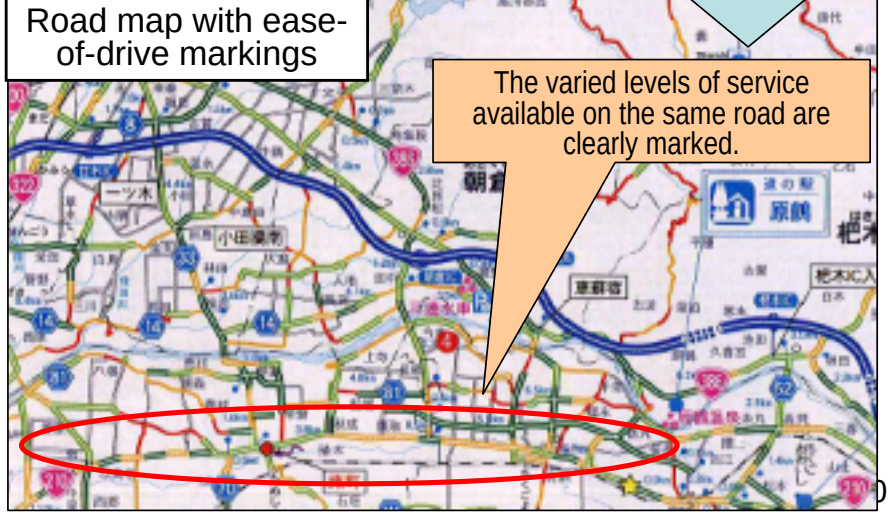
- Roads on the map are shown by the level of service and not by the type of roads.
- It is designed to offer more convenience assistance for travelers, leading to road evaluations and improvements.

Service level indicators

Ordinary road map



Road map with ease-of-drive markings



◆ Privatization of the 4 Road-related Public Corporations

- Ensure Repaying Interest-bearing Debts of ¥40Trillion ($350Billion) in 45 years.
- Expedite Construction of Necessary Roads with minimum cost while Respecting Companies' Own Decisions
- Provide Various and Flexible toll charge-setting and Services applying Know-how of Private Companies

[Outline of privatization]

Japan Highway Public Corporation

Metropolitan Expressway Public Corporation

Hanshin Expressway Public Corporation

Honshu-Shikoku Bridge Authority

[Companies] Construction, management, and toll collection for expressways

* Is scheduled to be merged into West Nippon Expressway Company when business is stabilized

East Nippon Expressway Company Limited

Central Nippon Expressway Company Limited

West Nippon Expressway Company Limited

Metropolitan Expressway Company Limited

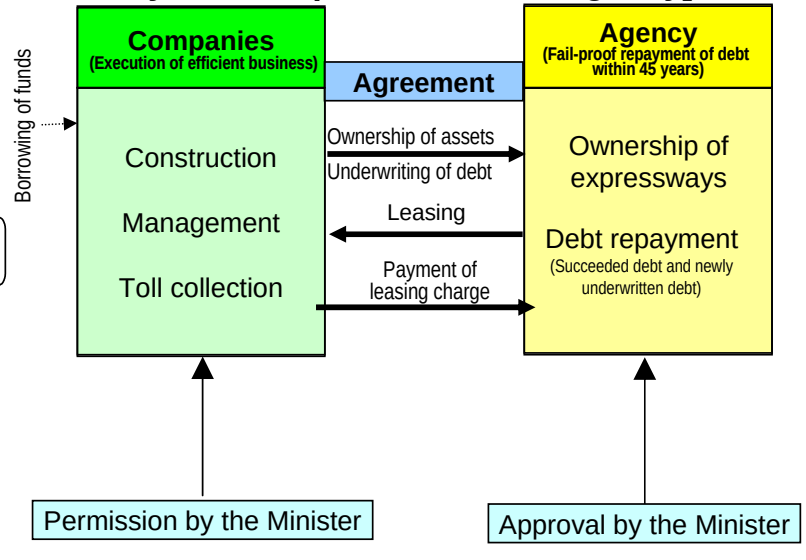
Hanshin Expressway Company Limited

Honshu-Shikoku Bridge Expressway Company Limited

[Agency] Holding of expressways and repayment of debt

Japan Expressway Holding and Debt Repayment Agency

[Action scheme for the execution of expressway business by the Companies and the Agency]



- Transfer to the Companies and to the Agency was completed in October 2005.
- Consultation between the Companies and the government will be carried out before April 2006 to set forth future plans to develop the network.

Efforts to Performance Measurement

The Undertakings of Road Administration Management

FY2003 (Start)	• **The numerical target is set up every year, such as reducing national traffic congestion time 3% in one year, and the "result-oriented" administration management which evaluates the achievement level subsequently started to be promoted.**
FY2004 (Performance)	• **The first "Achievement Report" was drawn up and the achievement level of the target declared one year ago was checked. The evaluation and the knowledge which were acquired by the "Achievement Report" were reflected to the following policies and following projects.**
FY2005 (Fixing)	• **Released the "Achievement Report" and the "Performance Plans" in June.** • **Hereafter, a road administration management will be familiarized to local areas, thus it will be certainly practiced.**

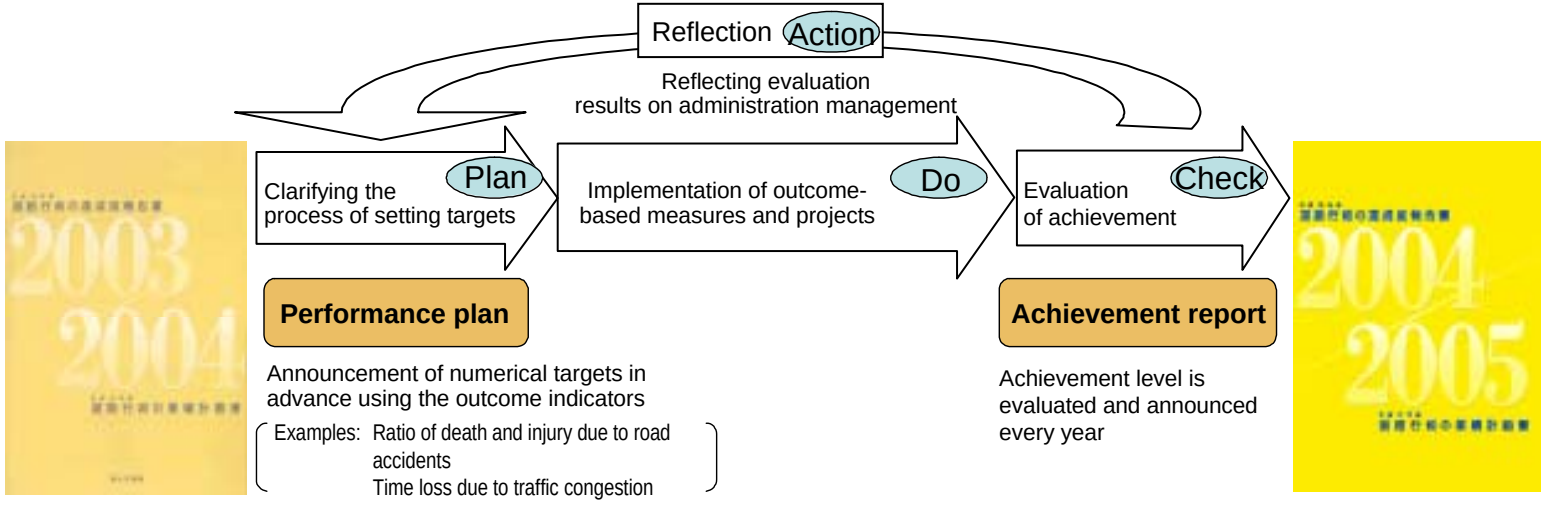


Figure: Flow of Road Administration Management

◆ Linking Outcome and Budget

Reforming the items in a budget of countermeasures for traffic accidents to link intended outcome and budget directly

① Shift from the budget allocation based on the type of road to that based on performance (budget for each policy)

Conventional budget based on the type of road	FY2004 budget based on performance (Budget for each policy)	Budget based on performance in and after FY2005 (Budget for each policy)
Repair costs for national highway under direct jurisdiction Subsidy for repair of ordinary national highways Subsidy for repair of local roads Subsidy for streets projects	Cost for traffic measures facilitation Cost for projects to promote cooperation with communities Cost for projects to improve roadside environment Cost for projects to improve traffic safety facilities for traffic safety	Cost for traffic facilities measures Cost for projects to promote cooperation with communities Cost for projects to improve the roadside environment Cost for priority measures dealing with traffic accidents ※ Cost for projects to improve traffic safety facilities for traffic safety etc.

※Revised in FY2005

② Proposed budget for FY2005

Budgets based on performance	Amount of 2005 budget (project costs)
Major Indicators	Target for FY2005
Cost for traffic facilitation measures	722.7 billion yen
Time loss due to traffic congestion	Approx. 3,620 million people-hr/yr
Cost for projects to promote cooperation with communities	1,922.8 billion yen
Ratio of high standard road usage (Targeted traffic that will be newly switched over to expressways)	14%
Ratio of roads with access to hub airports and ports	66%
Ratio of main cities in neighboring regions that are connected to each other by an upgraded national road	75%
Percentage of people who are able to have a safe and pleasant drive into the city (the center of daily living) in under 30 minutes	66%
Cost for maintenance and repair	238.2 billion yen
Percentage of cities that have rescue routes covering a wide area in the event of disaster	72%
Ratio of bridges receiving preventive maintenance	91%
Cost for projects to improve roadside environment	188.1 billion yen
Rate of NO_2 environmental goal achievement	81%
Rate of SPM environmental goal achievement	(Maintained 2004 standards) 100%
Achievement rate of required limits on night time noise	68%
Cost for priority measures dealing with traffic accidents	151.9 billion yen
Road traffic accident causalities rate	112 accidents/100 million vehicle-kilometers
Cost for projects to improve traffic safety facilities	322.2 billion yen
Percentage of barrier-free main roads in the vicinity of passenger facilities with an average daily user volume of more than 5,000	35%
Cost for projects to prepare for common utility duct	198.3 billion yen
Percentage of trunk roads in urban areas without telephone poles	11%

◆ An Example of Measures to Relieve Congestion

Indicator:
Time loss due to traffic congestion

Based on the time loss due to traffic congestion as indicator, medium-term numerical targets are set up and are followed up on each fiscal year.

○Time loss due to traffic congestion (FY2002):

- **3.81 billion person-hours (nationwide)**

FY2007: 10% reduction will be achieved

Actual results for FY2003: 3.76 billion person-hours
Target for FY2004: 3.69 billion person-hours

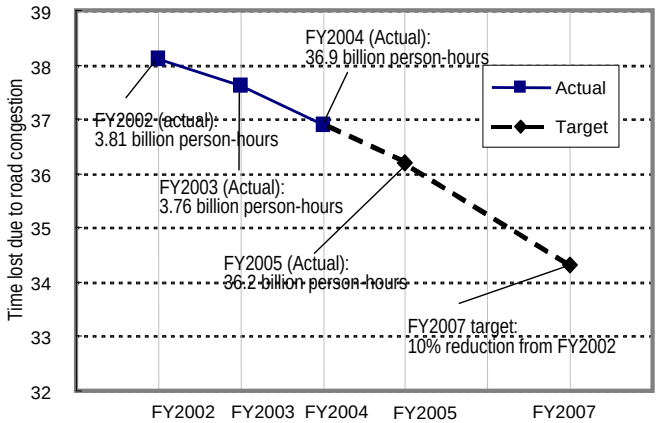
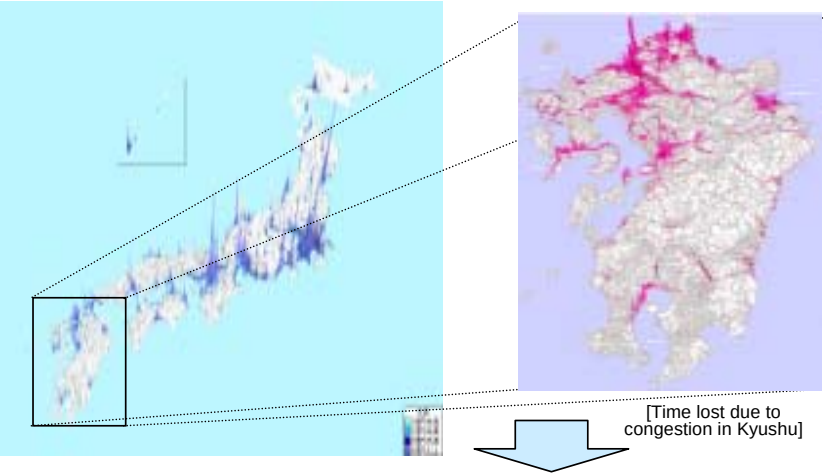


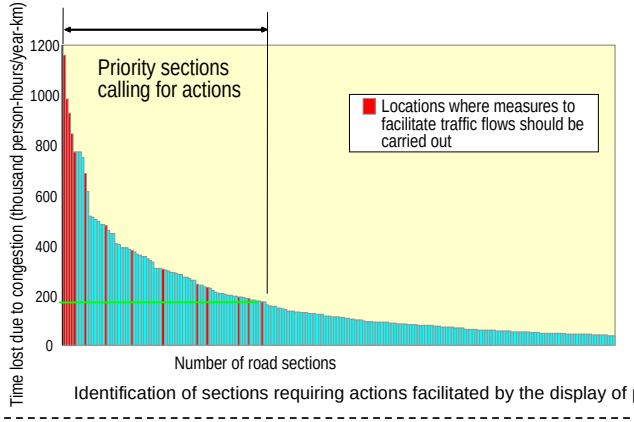
Figure: Time Loss due to Road Congestion

■Understanding the degree of congestion



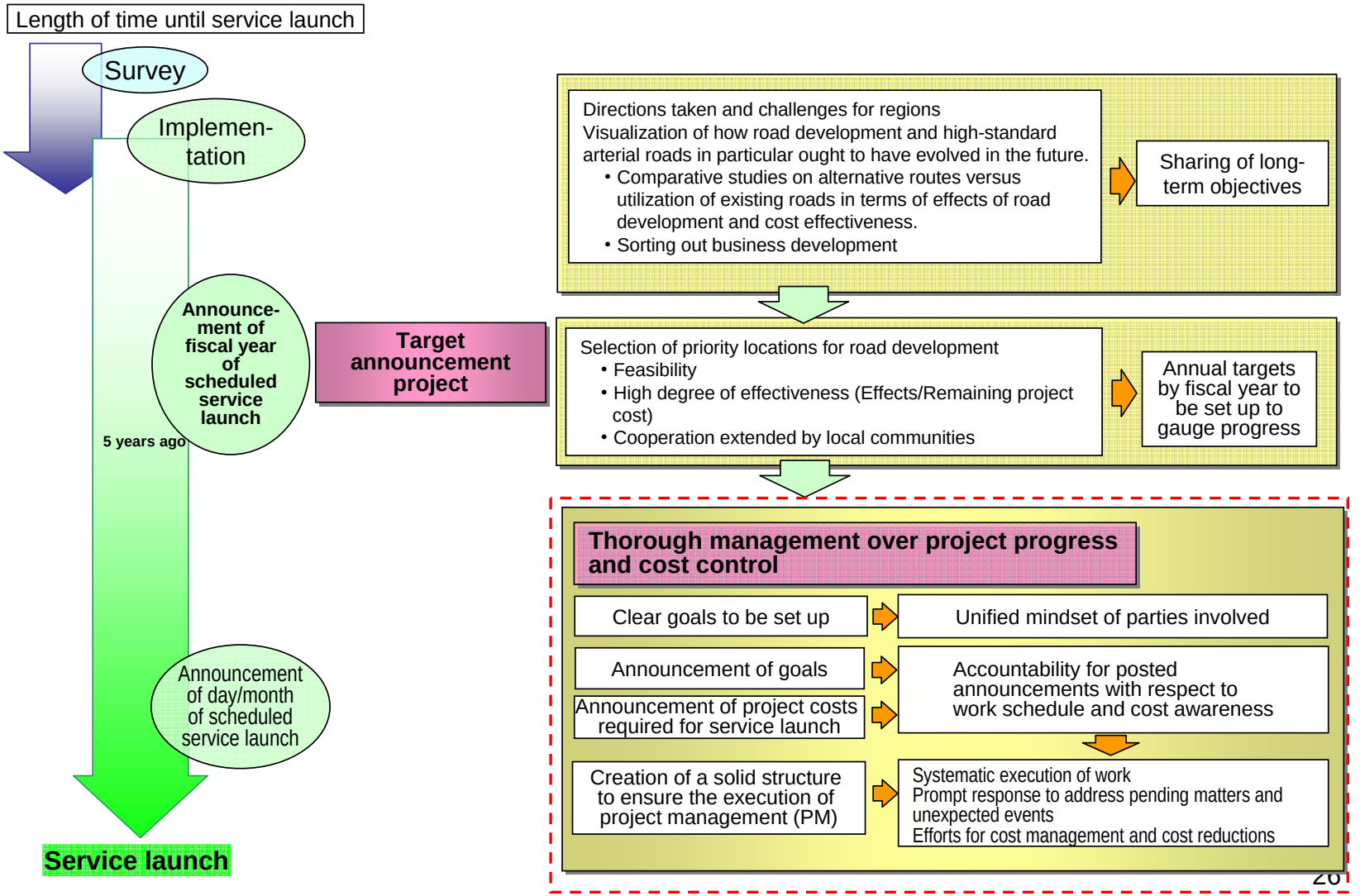
■Display of road sections in the order of congestion intensity (time loss due to congestion) from severest to mildest for clear identification of priority sections

Actions combining hard and soft measures are administered to sections noted for severe congestion



Identification of sections requiring actions facilitated by the display of priority areas

Project Management



◆ 道に関する言葉

(ルートンファーツァイ)

- **開道発財**　道を造って、沿道地域の経済を活性化することにより、地域住民の生活が豊かになる。

(イートンバイトン)

- **一通百通**　1本の道路を連結することで、ネットワークの連結性がよくなり、たくさんの箇所との連絡が格段に向上される。

(シャオダオシャオファン　ダダオダファン)

- **小道小豊大道大豊**　小さな道路より、高速道路など主幹線道路ネットワークを作った方が経済発展により役立つ 。

(スダオスファン)

- **速道速豊**　速い道路 (高速道路) を作ることにより、速く豊かになる。

(シアンダオツォファン)

- **想豊作道**　豊かになりたければまず道路ネットワークの完成が先決である。

End of Presentation

Thank you.

Enjoy your stay in Japan.

Ministry of Land, Infrastructure and Transport