

# WHITE PAPER ON LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM IN JAPAN, 2007

(Outline)



Ministry of Land, Infrastructure, Transport and Tourism

**WHITE PAPER ON LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM IN JAPAN, 2007**  
**(Outline)**

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## ***Preface***

While global warming is an issue of worldwide scale, it is at the same time an immediate issue closely related to public life in Japan. The emissions of carbon dioxide, one of the causes of global warming, has increased as our life has become more affluent. Furthermore, it is feared that climate change caused by global warming may lead to an increase in the occurrences of natural disasters and seriously affect public life.

The Ministry of Land, Infrastructure, Transport and Tourism, responsible for the areas of administration closely related to our everyday life through residence and community development, the maintenance of transportation networks, disaster prevention and the provision of meteorological information and also information on global warming, is fully promoting measures to cope with global warming.

In Part I of this White Paper, by taking up the theme of “Global Warming in Progress and Public Life in Japan,” we have tried to plainly demonstrate the effect of global warming on public life in Japan as well as identify issues concerning the counter measures to be taken in public life. From the viewpoint of putting the measures against global warming into practice on a long-term basis, emphasis is being placed on the measures to enable a lifestyle that, without sacrificing quality, is as friendly to the global environment as possible.

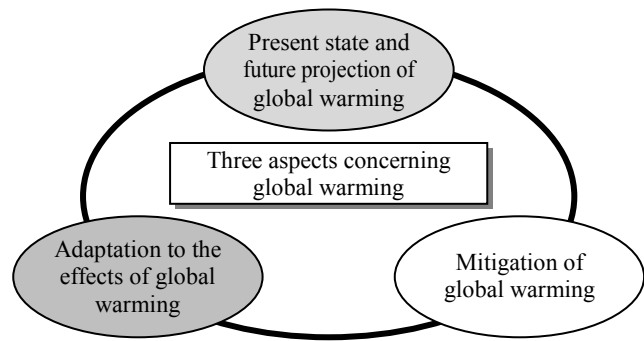
In Part II, trends in the fields of the MLIT’s policies are reported in terms of their respective political issues.

## **Part I**

### **Global Warming in Progress and Public Life in Japan**

~ Development of MLIT Policies toward  
Measures against Global Warming ~

Global warming greatly affects our life. It is being discussed in terms of the following three aspects: 1) the present state and future projection of global warming, 2) “adaptation” in order to avoid and decrease the effects caused by global warming including the increasing occurrence of natural disasters, and 3) the “mitigation” of global warming through the reduction of greenhouse gas emissions. Accordingly, in Part I of the White Paper, the issues of global warming are organized and analyzed especially from the viewpoint of public life based on these three aspects.



In Chapter 1, first the outlines of 1) the present state and future projection of global warming, 2) the effects of global warming, and 3) the necessity of measures taken in public life to mitigate global warming are discussed. Then, in Chapter II, a detailed analysis of the issues in the fields of land, infrastructure, transport and tourism administration is made with special emphasis given to the mitigation of global warming within these three fields. Finally in Chapter III, the direction of the administrative efforts by the MLIT, including the Japan Meteorological Agency and the Geographical Survey Institute, is organized based on these three fields.

<p>Chapter 1: Global warming and public life in Japan</p>	<p>Chapter 2: Issues concerning the mitigation of global warming in public life</p>	<p>Chapter 3: Direction of MLIT administration in the age of global warming</p>
<p><b><u>Section 1, Present state and future projection of global warming</u></b></p> <ul style="list-style-type: none"> <li>* Global mean temperature has risen by 0.74°C in the last 100 years.</li> <li>* In the worst scenario, it will rise by another 4.0°C during the next 100 years.</li> </ul>	<p><b><u>Section 1, Issues in the area of transport</u></b></p> <p><b>I. Domestic Transport</b></p> <ul style="list-style-type: none"> <li>* Driving distance and fuel consumption of private automobiles analyzed. Diffusion of fuel-efficient cars and driving found to be vital.</li> <li>* Traffic flow trends analyzed. Measures against traffic congestion, and promotion of the use of highways found to be vital.</li> <li>* Trends in the use of public transport analyzed. Revitalization and restoration of regional public transport found to be vital.</li> <li>* Physical distribution trends analyzed. Improvement of transport efficiency of trucks, promotion of modal shift and measures involving consumers found to be vital.</li> </ul> <p><b>II. International Transport</b></p> <ul style="list-style-type: none"> <li>* International air and marine transport not subject to Kyoto Protocol are the points of international contention.</li> </ul>	<p><b><u>Section 1, Monitoring and projection of the climate change caused by global warming</u></b></p> <ul style="list-style-type: none"> <li>* Contribution to the debate on a global scale through climate, greenhouse gas and oceanographic monitoring and projection.</li> </ul>
<p><b><u>Section 2, Effects of global warming on public life</u></b></p> <ul style="list-style-type: none"> <li>* Possibility of increased risk of floods and sediment related disasters caused by an increase in concentrated downpours accompanying global warming.</li> <li>* Possibility of increased risk of drought damage caused by annually widening fluctuation ranges in rainfall and decreasing snowfall.</li> <li>* Possibility of increased risk of storm surge disaster and erosion of beaches caused by rising sea water levels and increased strength of tropical cyclones.</li> </ul>	<p><b><u>Section 2, Issues in housing and construction</u></b></p> <ul style="list-style-type: none"> <li>* Energy consumption by buildings analyzed. Improvement of energy conservation capabilities of the buildings themselves found to be vital.</li> <li>* Energy consumption by buildings in terms of their use and type of user’s business analyzed. Promotion of energy conservation through improved efficiency of facilities and equipment as well as ingenious use thereof also found to be vital.</li> <li>* Total energy consumption from construction to disposal analyzed. Diffusion of houses usable for a long period of time with excellent environmental capabilities found to be vital.</li> </ul>	<p><b><u>Section 2, Efforts to adapt to the effects caused by climate change</u></b></p> <ul style="list-style-type: none"> <li>* Measures to adapt to disaster risk increased by global warming found necessary. Studies to be conducted in Japan also.</li> </ul>
<p><b><u>Section 3, Necessity of measures to be taken in public life</u></b></p> <ul style="list-style-type: none"> <li>* Global greenhouse gas emissions have increased by about 70% in the last 30 years. Greenhouse gas emissions in Japan have increased by 6.4% since 1990.</li> <li>* Emissions in business and household areas have greatly increased. Emissions in the area of transport have also greatly increased but have begun to decrease in recent years.</li> </ul>	<p><b><u>Section 3, Issues in urban and regional developments</u></b></p> <ul style="list-style-type: none"> <li>* Cities with more scattered urban areas analyzed and found to have more CO<sub>2</sub> emissions by motor vehicles. Integration of urban functions found to be vital.</li> <li>* Effects of urban afforestation analyzed. Need to reduce CO<sub>2</sub> emissions through improved urban heat environment.</li> <li>* Effects of efficient use of energy analyzed at district and street levels. Need to reduce CO<sub>2</sub> emissions through improved urban energy environment.</li> </ul>	<p><b><u>Section 3, Efforts to mitigate global warming</u></b></p> <ul style="list-style-type: none"> <li>* Efforts toward medium and long term issues to be made along with achievement of the Kyoto Protocol targets.</li> </ul>

Legend:  Present state and future projection of global warming  Adaptation to the effects of global warming  Mitigation of global warming

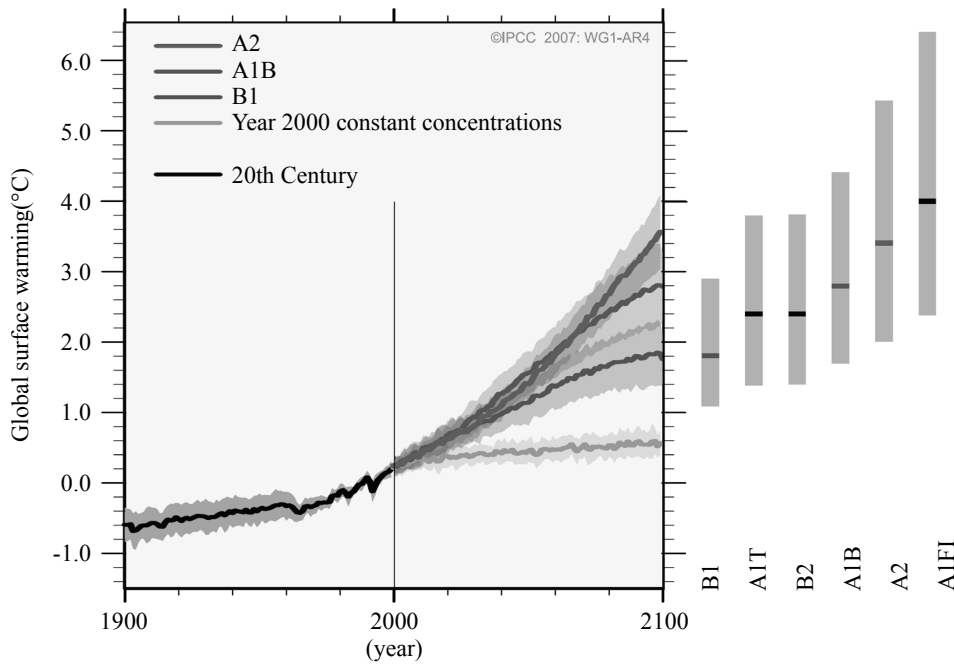
# Chapter 1 Global Warming and Public Life in Japan

## (1) Present state and future projection of global warming

### ○State of global warming on a global basis

According to the Intergovernmental Panel on Climate Change (IPCC), the global mean temperature has risen by 0.74°C in the last 100 years. The Panel has shown multiple projections of surface temperatures. For example, the global temperature is expected to rise by another 4.0°C during the next 100 years in the scenario with the largest volume of greenhouse gas emissions and by another 1.8°C even in the scenario with the smallest volume of emissions, leading to the conclusion that the rise in global average temperature cannot be avoided in either of the scenarios.

Projections of Surface Temperature in the 2000—2100 Period Based on the Scenarios for Greenhouse Gas Emissions



Note: IPCC Fourth Assessment Report shows following six scenarios.

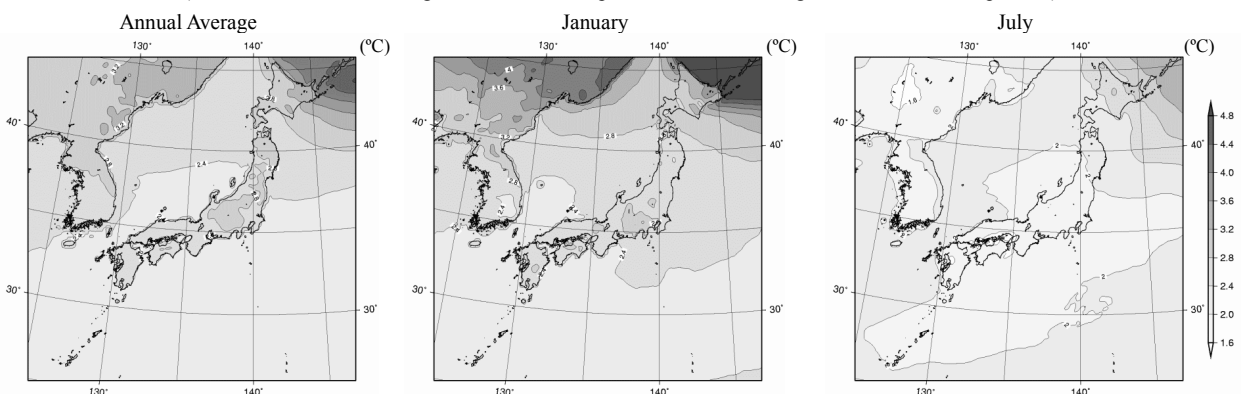
A1: Society of very rapid economic growth (A1F1: fossil energy intensive, A1T: non-fossil energy intensive, A1B: balance-across-all resources intensive)  
 A2: Heterogeneous society, B1: Society of sustainable growth, B2: Society of regional coexistence

Source: Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report

### ○State of global warming in Japan

According to the observation data of the Japan Meteorological Agency, the annual mean surface temperature in Japan has risen by 1.07°C in the last 100 years. The annual mean surface temperature in Japan 100 years from now is projected to be 2 to 3°C higher than present. The temperature increase is projected to be larger in higher latitudes and larger in winter than in summer.

Mean Surface Temperature Increase in the A2 Scenario  
 (Difference between “Average in the 2081-2100 period” and the “Average in the 1981-2000 period”)



Source: “Global Warming Projection Vol.6,” Japan Meteorological Agency, Ministry of Land, Infrastructure, Transport and Tourism Japan

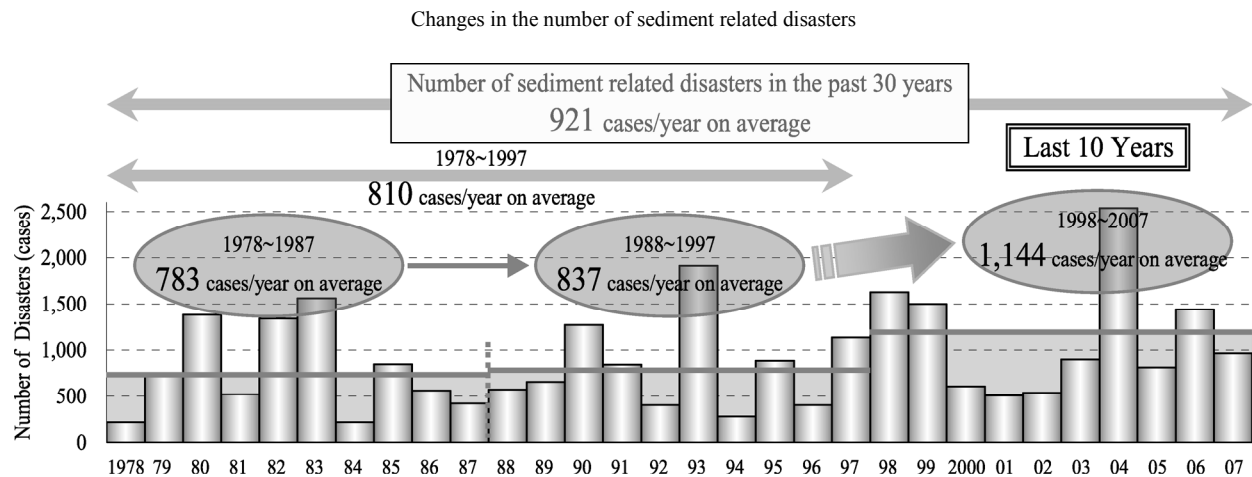
## (2) Effect of global warming on public life

### ○Increasing risk of flood and sediment related disasters

#### (A country that is vulnerable to flood and sediment related disasters)

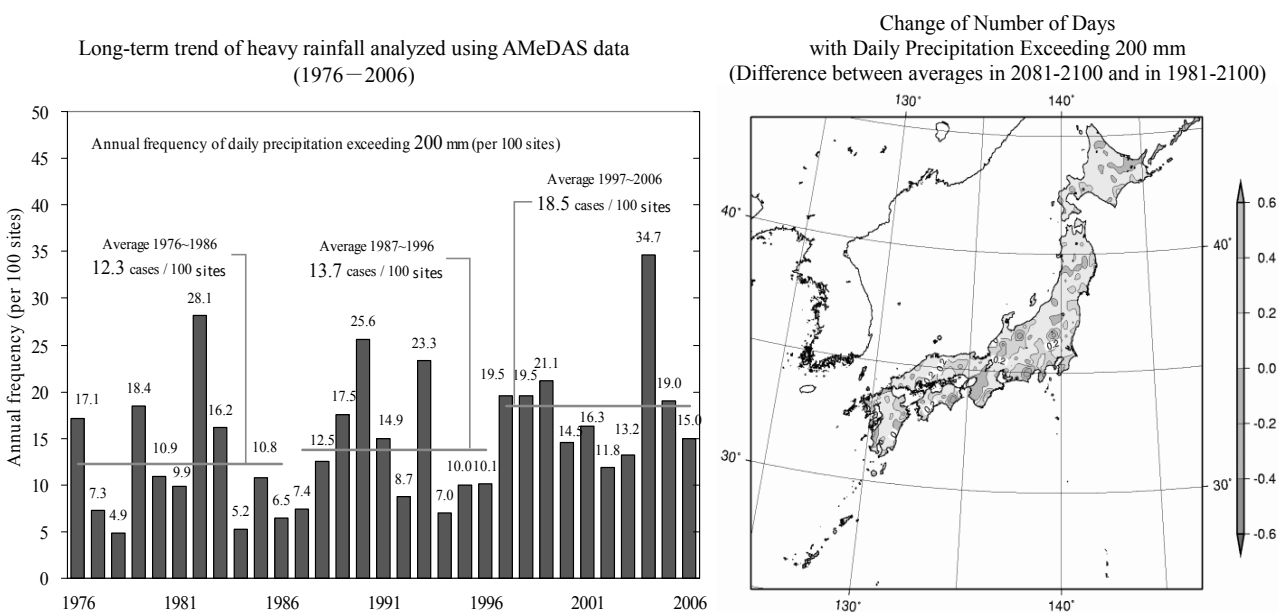
With approximately 70% of its total area occupied by mountainous regions and hilly terrain, Japan's land area is the site of considerable volcanic and seismologic activity and is also vulnerable to typhoons and heavy rain. Furthermore, it is easily affected by flooding, as approximately one half of the total population and three quarters of the total assets are concentrated in about 10% of the total area, which would be below water level if rivers overflowed.

An increasing number of areas have become more vulnerable to sediment related disasters because of residential area developments. As a result of the geological weakness, an average of about 1,000 cases of sediment related disasters occur in Japan each year, the number of which has been increasing in recent years in comparison.



### (Increasing Heavy Rainfall)

Flood and sediment related disasters are caused by concentrated downpours and other heavy rain. Rainfall measurements in the last 30 years reveal that the number of heavy rainfall with daily precipitation exceeding 200 mm has been increasing. A projection made by the Japan Meteorological Agency shows that in comparison between the present and 100 years from now, the annual number of days with daily precipitation exceeding 200 mm a day will increase in almost all areas of Japan and that the maximum daily precipitation (the volume of rainfall of the day with the largest daily precipitation in a year) will increase by 10 to 30% in a large number of areas.



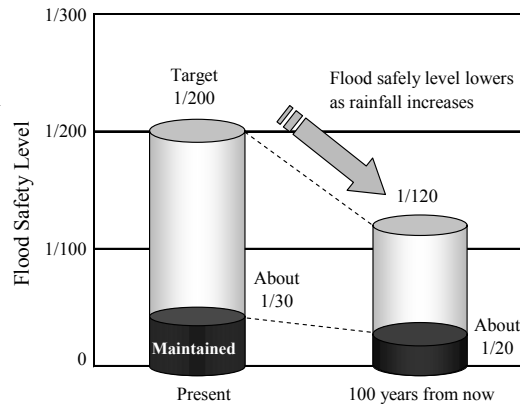
### (Future increase of flood and sediment related disaster risk owing to the increase in concentrated downpours)

Fluctuation in rainfall affects the flood safety level of rivers. The Arakawa River, for example, is maintained to attain a flood

safety level (1/200) capable of coping with rainfall that could happen only once every 200 years. In the Kanto area, however, the maximum daily rainfall is expected to increase by 10% in 100 years from now and the flood safety level at that time will be lowered to 1/120. Furthermore, with respect to sediment related disasters, occurrences of disasters outside of the sediment related disaster hazard areas, an increase in the volume of sediment as well as an expansion of the areas where there is a fear of reaching by debris flow.

Effects of Fluctuation in Rainfall 100 Years from Now on the Flood Safety Level of the Arakawa River

Regional rainfall		
1	Hokkaido	1.24
2	Tohoku	1.22
3	Kanto	1.11
4	Hokuriku	1.14
5	Chubu	1.06
6	Kinki	1.07
7	Southern Kii	1.13
8	San-in	1.11
9	Setouchi	1.10
10	Southern Shikoku	1.11
11	Kyushu	1.07



Note:

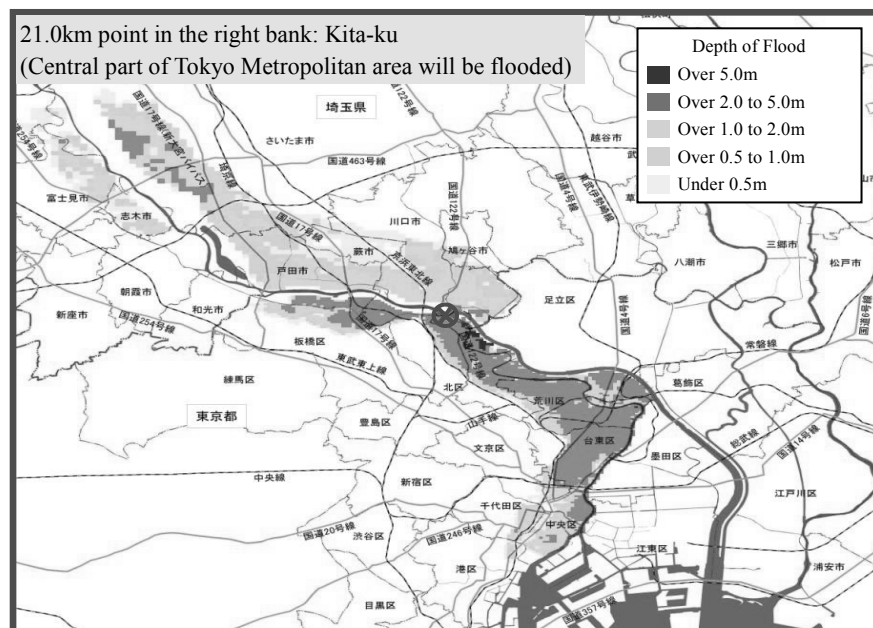
The prospective future rainfall has been obtained by applying the quotient (median) of (2080 – 2099 Average) / (1979 – 1998 Average). Safety level 1/200 is the level calculated from the annual maximum daily rainfall of the respective research points derived using the climate model GCM20 (IPCC's A1B scenario) with the calculation area covering the entire globe.

Notes:

- Flood maintenance capable of coping with rainfall that could happen only once every 200 years.
- Trial calculation of variation of the currently targeted safety level (1/200) and currently secured safety level (1/30) in the situation where the rainfall is increased by 10% in Arakawa River. (Maintenance to be performed in the future is not considered.)

On the other hand, the Central Disaster Prevention Council calculates that if the Arakawa River were to burst its banks, in the worst case, the central part of the Tokyo metropolitan area could be affected.

Floods Envisioned in the Case of the Arakawa River Bursting its Banks



	Extent of floods due to burst banks	Including floods due to overflow of the river
Flooded area (ha)	5,300	12,000
Flooded population (people)	710,000	1,300,000
Inundation above floor level (households)	310,000	480,000
Inundation below floor level (households)	12,000	82,000

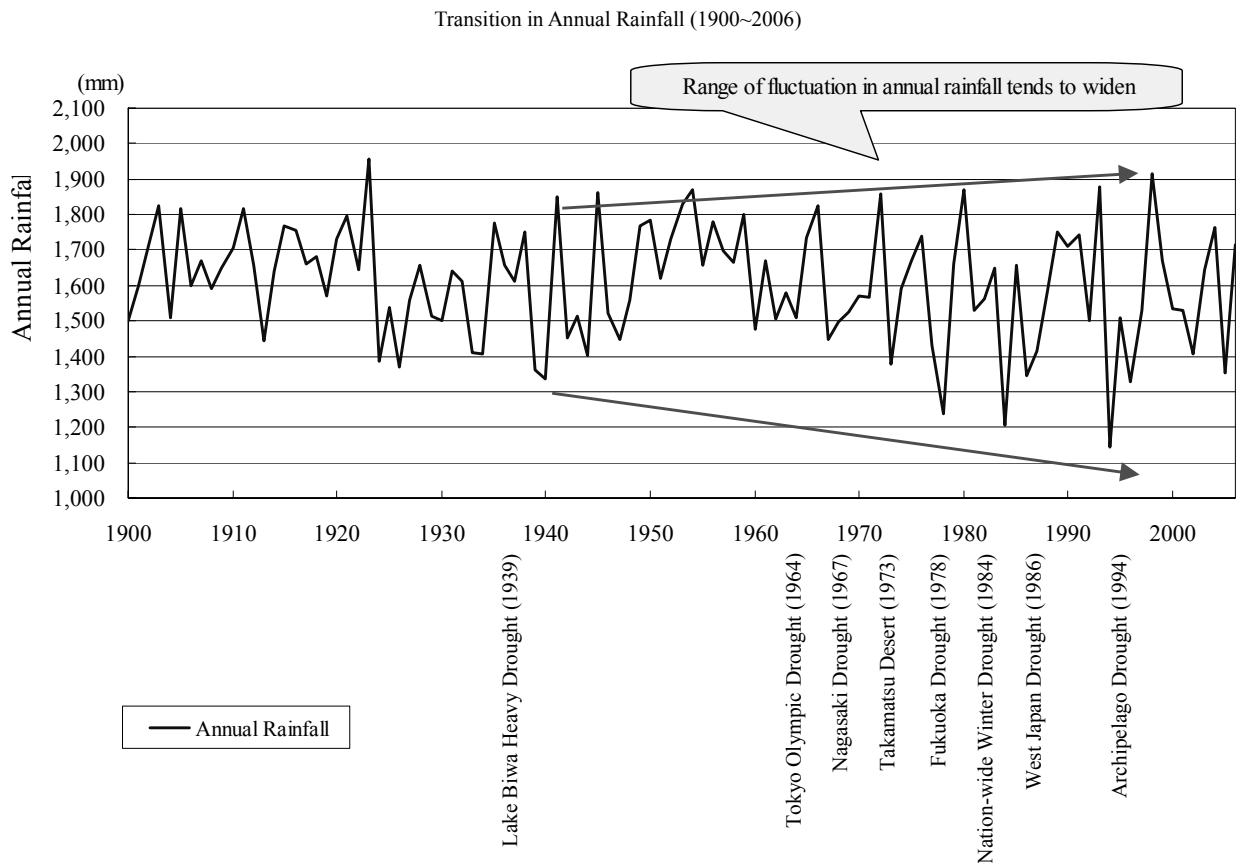
Note: Projected flood damage based on the assumption of the Arakawa River's right bank bursting at the 21.0km point (Point ⊗ at Iwabuchi, Kita-ku, Tokyo) in a scale of overflowing water that is likely to happen only once every 200 years.  
Source: Expert Panel on Measures against Large Scale Floods, Central Disaster Prevention Council (published in October 2007)

### ○Increasing risk of drought

Looking at the fluctuation in the rainfall in Japan reveals that the gaps between the years with a larger amount of precipitation



and those with a smaller amount of precipitation tend to widen. As the range of fluctuation in annual rainfall is projected to continue to increase, the risk of drought as well as that of floods are considered to become higher.



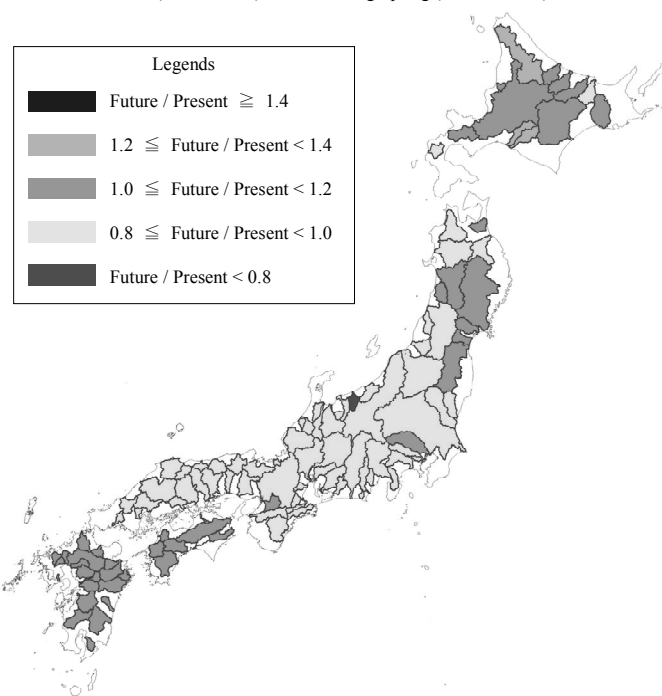
Source: Compiled from the materials of the Japan Meteorological Agency, Ministry of Land, Infrastructure, Transport and Tourism Japan

### ○Increasing Risk of Tidal Wave Disaster

Furthermore, snowfall is expected to decrease especially in the areas along the Japan Sea as the warming continues. The volume of water from melted snow and rainfall put together reaching the land surface may possibly decrease, particularly in spring, and dams may become dry if rainfall after spring is not sufficient.

The increasing risk of drought coupled with a rise in temperature may possibly affect food production and the state of land use in our country. Also, there is concern that a rise in the temperature of enclosed waters, including lakes, resulting from drought and global warming, will cause deterioration of their water quality.

Comparison of Water Volume of the 1st Grade Water System Reaching the Land Surface in the Present (1979–1998) and Future (2080–2099) Periods during Spring (March–June)



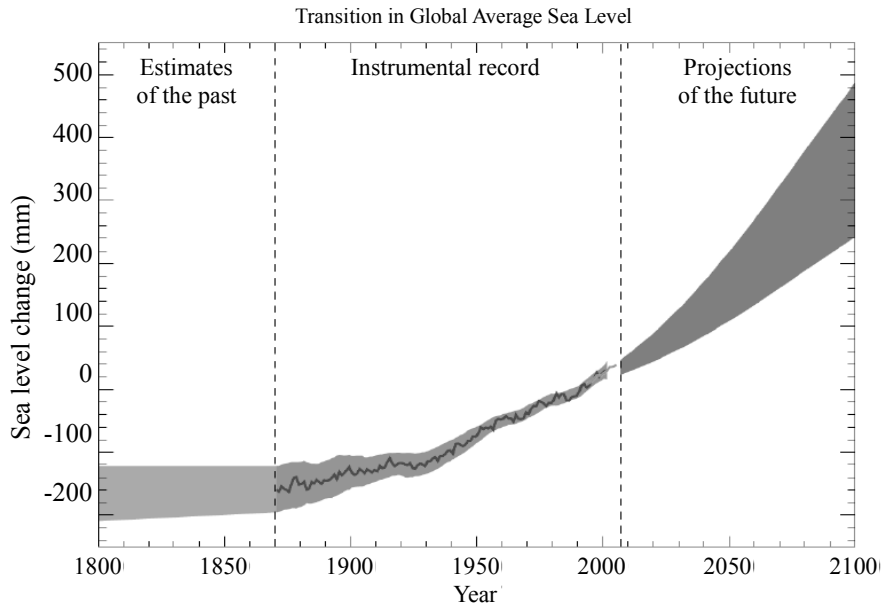
Source: "Water Resources in Japan, 2007," Ministry of Land Infrastructure, Transport and Tourism Japan

### ○Increasing risk of storm surge disaster

According to IPCC, the sea level in the last decade of the 21st century (2090–2099) is projected to exceed the average sea

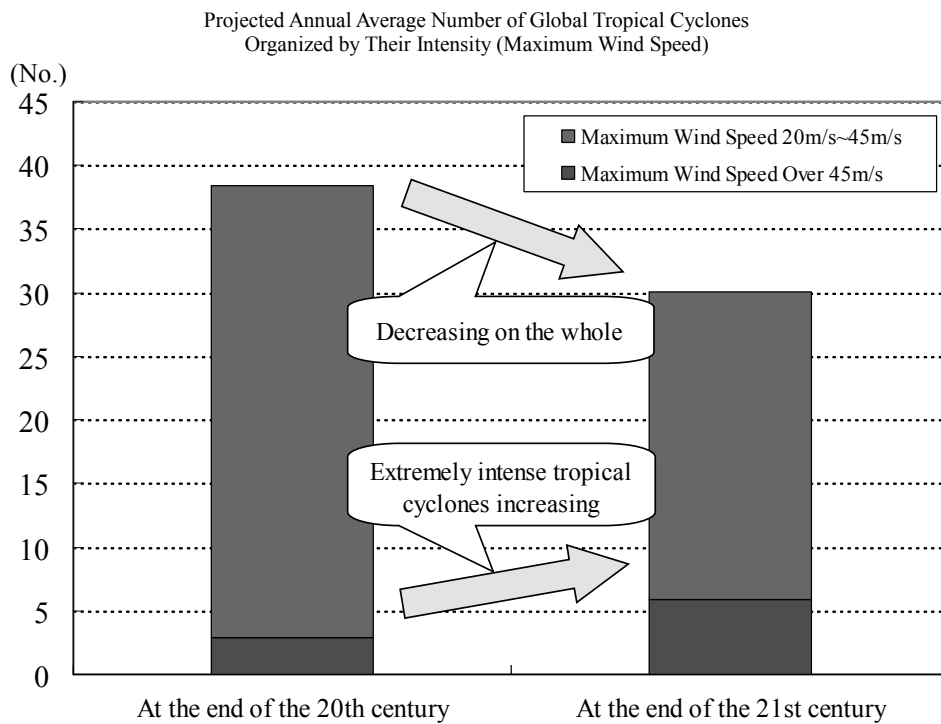
level of the period from 1980 to 1999 by up to 59cm.

On the other hand, the Japan Meteorological Agency reports that near-20-year (bidecadal) variation dominates the sea level variation around Japan for the last 100 years. Since the middle of the 1980s, however, the sea level has continued to rise and in 2004 reached a level 71 mm higher than the average of the period from 1971 to 2000, marking the highest level since 1960.



Source: Report of Working Group I in the IPCC Fourth Assessment Report

An analysis by study groups including those of the Meteorological Research Institute of the Japan Meteorological Agency has revealed that while the number of developing tropical cyclones was projected to decrease by 30% on a global average in the future, extremely intense tropical cyclones with a maximum wind speed of over 45m/s were projected to develop more frequently.

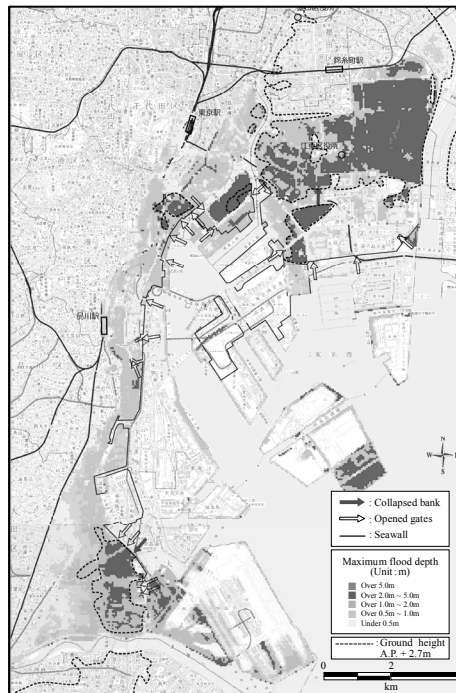


Source: Compiled from "Tropical cyclone climatology in a global-warming climate as simulated in a 20km-mesh global atmospheric model: Frequency and wind intensity analysis" J. Meteor. Soc. Japan Vol.84, pp. 259-276 (2006) by Ouchi et al.

The rise in sea level and increasing strength of the tropical cyclones as mentioned above will result in an increased risk of storm surge disasters. Assuming the sea level rises by 59cm, the area and population of sea-level areas of the three major bays of Japan will increase by about 50%. Simulation of a Muroto-class typhoon striking the metropolitan area in such a situation shows

severe flood damage caused by storm surge.

Envisaged Storm Surge Floods in the Port of Tokyo (Calculation)



Note: Simulated under the conditions of a Muroto-class typhoon passing along a course that will raise the sea level in the inner part of Tokyo Bay to its maximum height while the sea level has already risen by 60cm through global warming. (The Muroto Typhoon hit the island of Shikoku in September, 1934, with a pressure of 911.6hPa observed at Cape Muroto, near the strike point.)

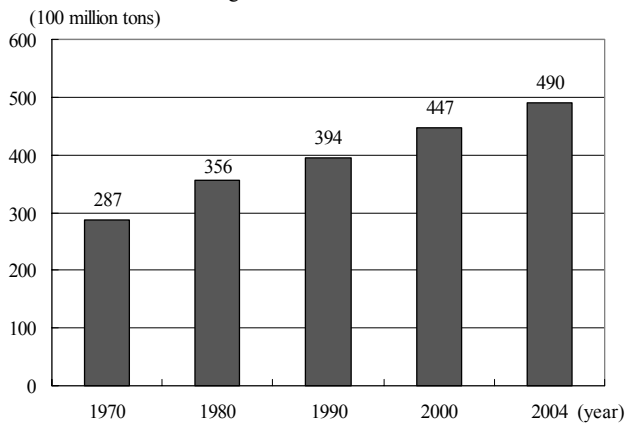
Source: Ministry of Land, Infrastructure, Transport and Tourism Japan

### (3) Measures required in daily life

#### ○ Transition in greenhouse gas emissions throughout the world

Global emissions of greenhouse gases through human activities have been on a continuous increase, and the emissions of CO<sub>2</sub>, which claims the majority share of the human-generated greenhouse gases, in particular, have increased by approximately 80% during the period from 1970 to 2004. In terms of emissions volume by country, Japan ranks fourth after the USA, China and Russia.

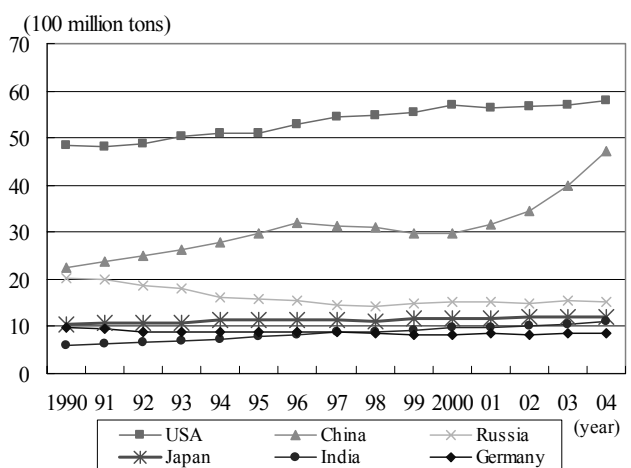
1970—2004 Annual Global Emissions of Human-generated Greenhouse Gases



Note: Emissions of six other kinds of greenhouse gases subject to the UN Framework Convention on Climate Change (UNFCCC) have been converted into CO<sub>2</sub> emissions according to their capabilities to cause global warming and added together. (Unit: one million CO<sub>2</sub>-converted tons each year)

Source: Compiled from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.

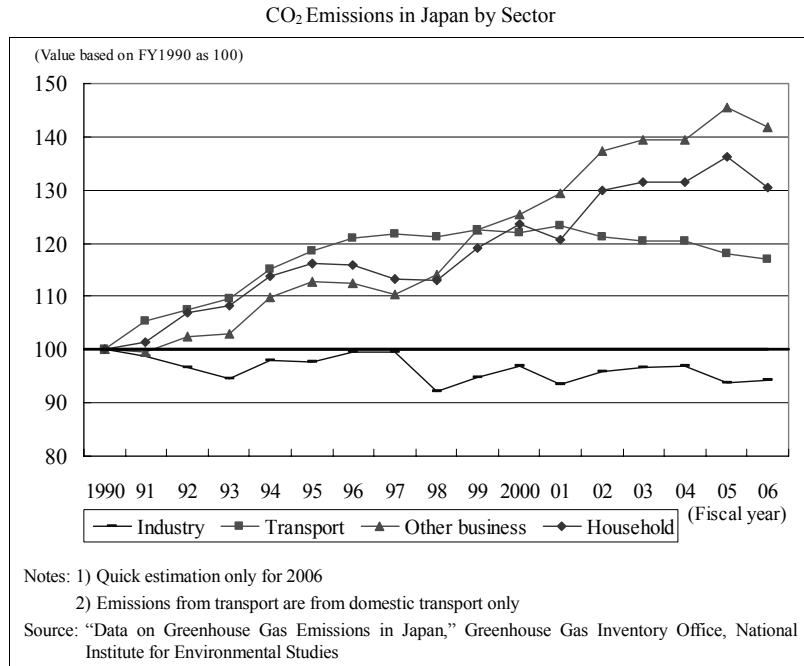
Transition in CO<sub>2</sub> Emissions by Major Countries



Source: "CO<sub>2</sub> Emissions from Fuel Combustion," International Energy Agency

### ○Transition in greenhouse gas emissions in Japan

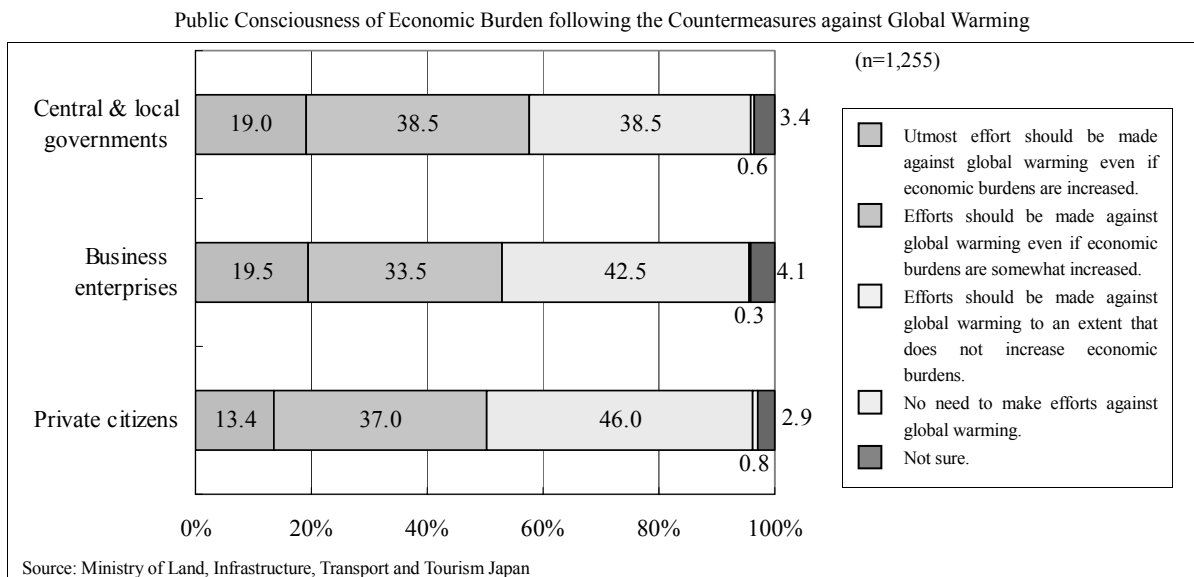
In Japan, the emissions of greenhouse gases have been on the increase since FY1990. The emissions of industrial sectors, responsible for about 35% of total emissions, have been on the decrease since FY1990, while emissions of the household and other business (office and commercial facilities) sectors have shown an increase of 30 to 40%. The transport sector has shown an increase of about 17% since FY1990 although this has turned to a decrease in more recent years.



### ○Public awareness of global warming

According to the "Opinion Polls on Countermeasures against Global Warming" conducted by the Cabinet Office in 2007, more than 90% of Japanese citizens are interested in global environmental issues, including global warming. This percentage is higher than that from the previous poll (in 2005). On the other hand, the opinion poll on global warming conducted by MLIT in December 2007 has revealed that when the central and local governments, business enterprises and private citizens were all asked how much effort they should make for the countermeasures against global warming, more private citizens than those of the central and local governments and business enterprises replied that the efforts should be made to a extent that does not increase the burden placed upon themselves.

The household, business and transport sectors that have each increased CO<sub>2</sub> emissions are all related to public life, and the efforts to reduce the emissions need to be continued now and in the future by each and every Japanese citizen. Accordingly, it is important to adopt an attitude to make our everyday lives environmentally friendly while securing the convenience, amenity and other qualities of life.

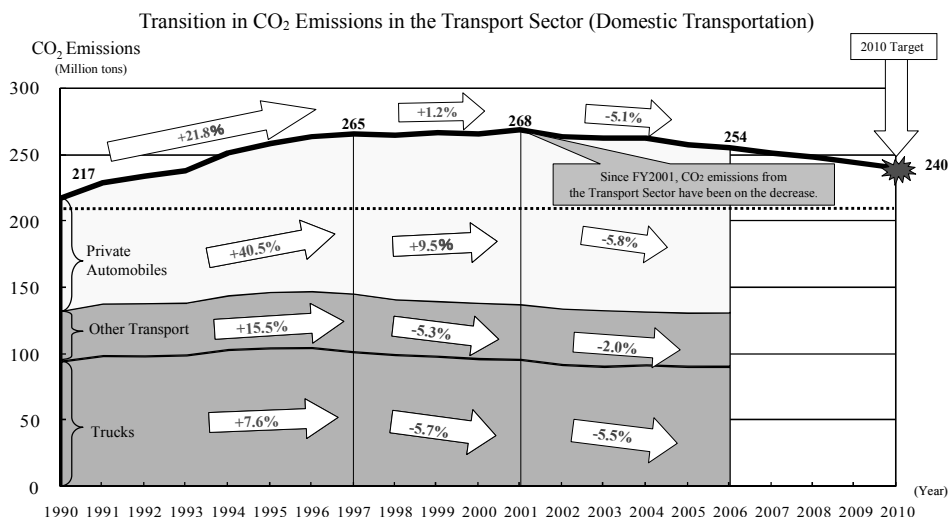


## Chapter 2 Issues Concerning the Mitigation of Global Warming in Daily Life

### (1) Issues in the transport sector to mitigate global warming

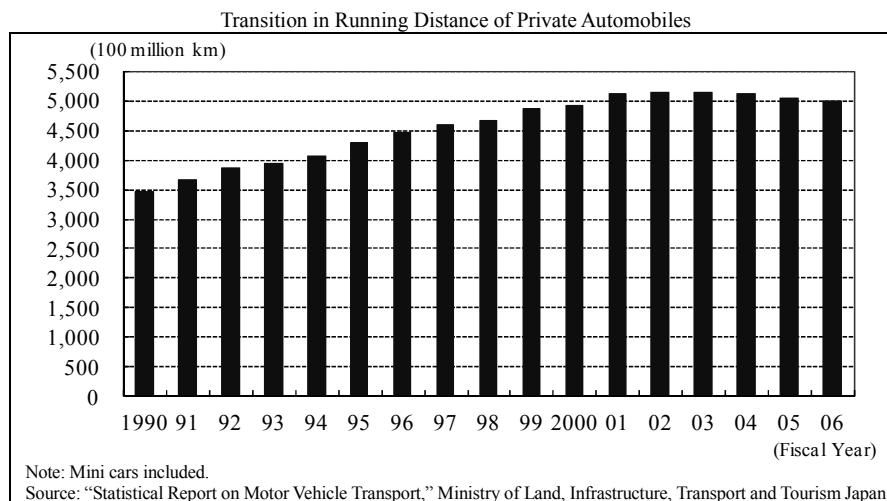
#### I. Issues concerning reducing CO<sub>2</sub> emissions in domestic transportation

CO<sub>2</sub> emissions in the domestic transportation sector, which account for about 20% of the total emissions of Japan, increased by about 23% during the period from FY1990 to FY2001 but have turned to a decrease since then.



#### ○Issues concerning reducing CO<sub>2</sub> emitted by private automobiles (Trends in driving distance of private automobiles)

The total running distance of private automobiles has been on the increase. It increased by about 40% in the period from 1990 to 2006 but has remained level in recent years. One of the background factors behind the trend is the swift popularization of private automobiles. The number of private automobiles increased by more than 60% in the above period but the pace of increase has been calming down in recent years.

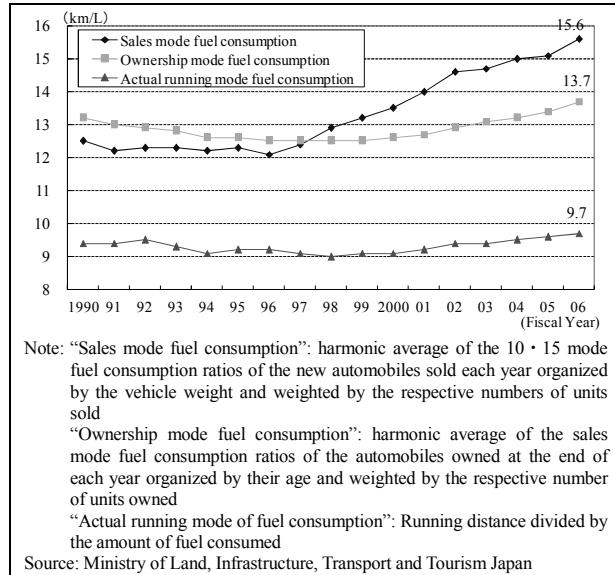


**(Trends in fuel consumption of private automobiles)**

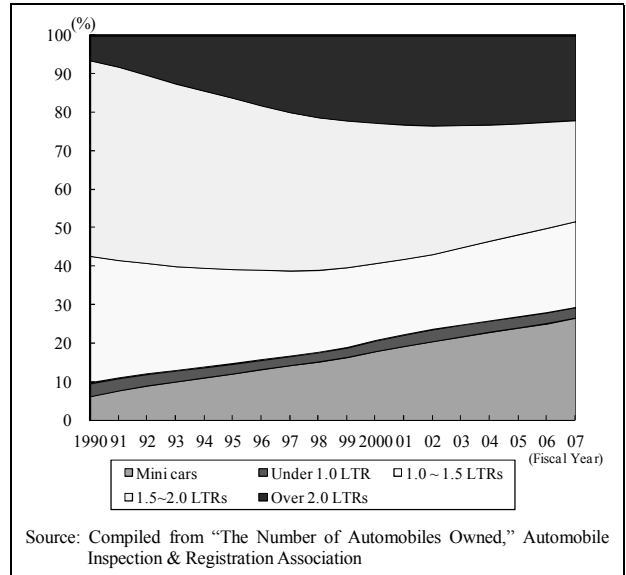
Improved fuel consumption will lead to reduced CO<sub>2</sub> emissions. The average fuel consumption of gasoline passenger automobiles actually driven (running fuel consumption) has improved since FY1998.

As a general rule, the larger the engine displacement is, the worse the fuel consumption becomes. The share of the automobiles with engine displacement of 2000cc or more was increasing but this increase has come to a stop in recent years, while mini car ownership has shown a considerable increase.

Transition in Average Fuel Consumption of Gasoline Automobiles



Shares of Automobile Ownership Organized by Engine Displacement



The average fuel consumption of gasoline automobiles has been improving through the leading runner approach, green taxation plan for automobiles, etc. under the "Law concerning the Rational Use of Energy" (Energy Conservation Law).

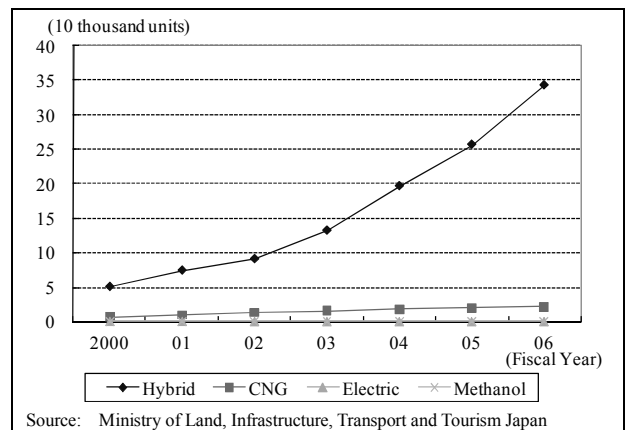
Furthermore, hybrids and other highly fuel-efficient vehicles are becoming popular, showing that automobile buyers are becoming more interested in the fuel efficiency performance of their vehicles and the environment.

**(Issues concerning the further improvement of fuel consumption)**

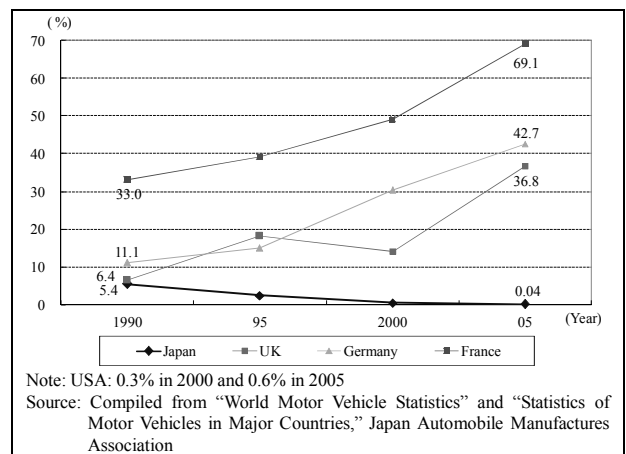
Further efforts should be made for the improvement of fuel consumption and diffusion of low-fuel consumption vehicles. Diesel vehicles, for instance, are 20 to 30% more fuel efficient than gasoline vehicles and are therefore excellent in terms of CO<sub>2</sub> emissions. The number of diesel vehicles used in Japan is still small while the number has been increasing in Europe and the USA. When the new fuel efficiency requirement to be implemented in 2015 has been attained as scheduled, the fuel consumption of automobiles is expected to be improved by 23.5% compared with that of 2004.

Furthermore, the amount of CO<sub>2</sub> emitted while the vehicles are running can be reduced by changing how they are driven. Smoother driving with less acceleration and deceleration, for instance, will improve fuel consumption by approximately 15%. Efforts for further diffusion and promotion of economic driving must be made.

Diffusion Status of Low-emission Vehicles



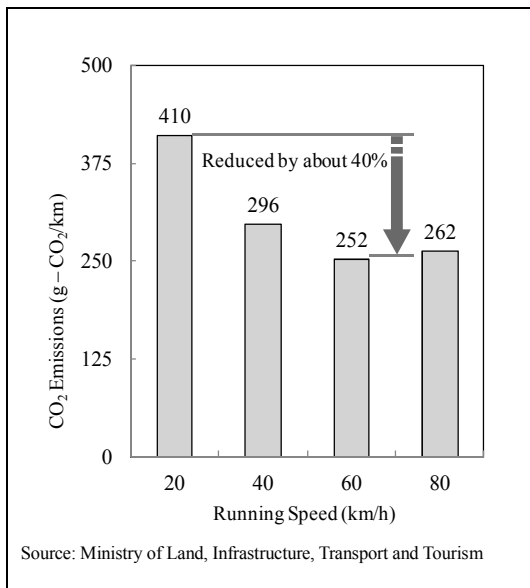
Share of Diesel Vehicles in the New Car (Automobile) Registrations



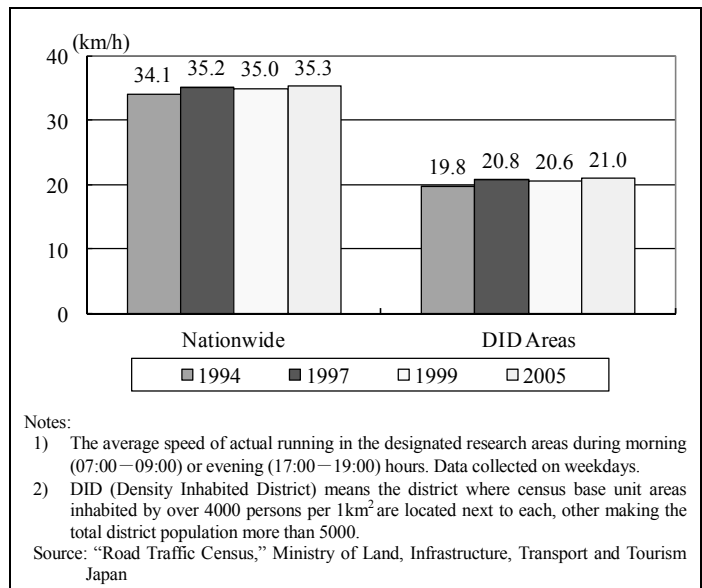
**○Issues for reduction of CO<sub>2</sub> emissions through smoother traffic flow**

When vehicle running speed is increased from 20km/h to 60km/h, for instance, fuel consumption is improved and CO<sub>2</sub> emissions are reduced by about 40%. Running speeds are now on the track for improvement with the speeds improving by about 3% in the period from 1994 to 2006.

Relationship between Running Speed and CO<sub>2</sub> Emissions



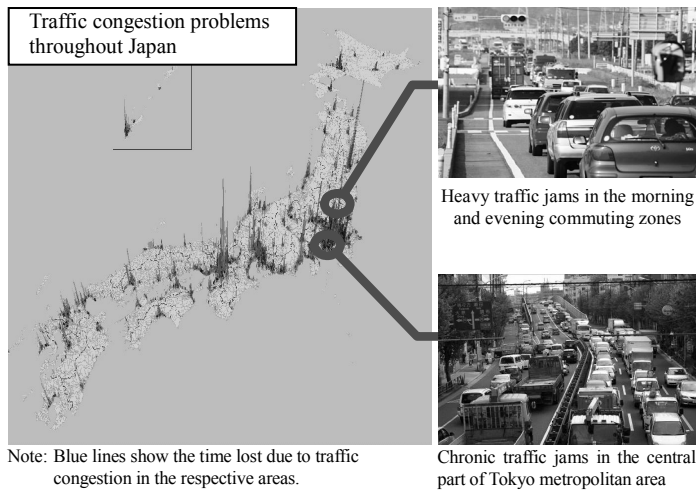
Transition in Traveling Speed during Congested Hours



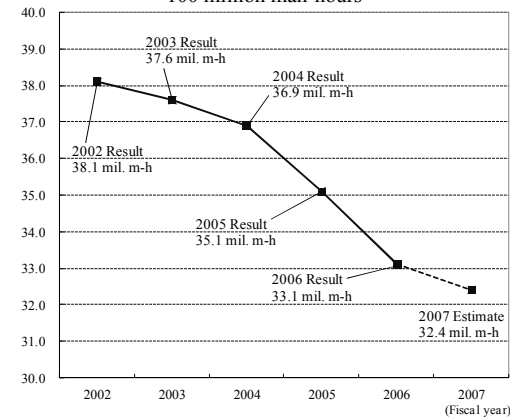
**(Solution for traffic congestion)**

Time lost due to traffic congestion around the country amounted to 3.31 billion man-hours (equivalent to approximately 10 trillion yen when converted into a monetary value) in 2006, although it has been decreasing year by year recently. It is necessary in the future to reduce the volume of traffic going through the central part of the Tokyo metropolitan area by introducing beltways and other effective and efficient measures that will be able to cope with the causes of congestion of the respective points.

Road Traffic Congestion



Time lost due to Traffic Congestion <100 million man-hours>



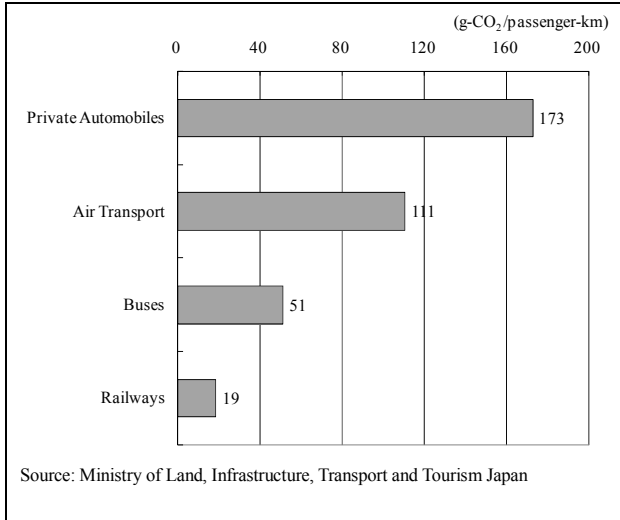
**(Promotion of the use of highways)**

Compared with the use of ordinary roads, the use of highways is generally superior in terms of traveling performance and is characterized by smaller amounts of CO<sub>2</sub> emissions. In Japan, however, it is difficult to say that highways are being fully utilized compared with the USA and European countries. It is necessary to solve the problems of inconvenience in entering and exiting highways due to the long distances between interchanges and relatively high tolls, so that highways, with less environmental load, may be made more convenient.

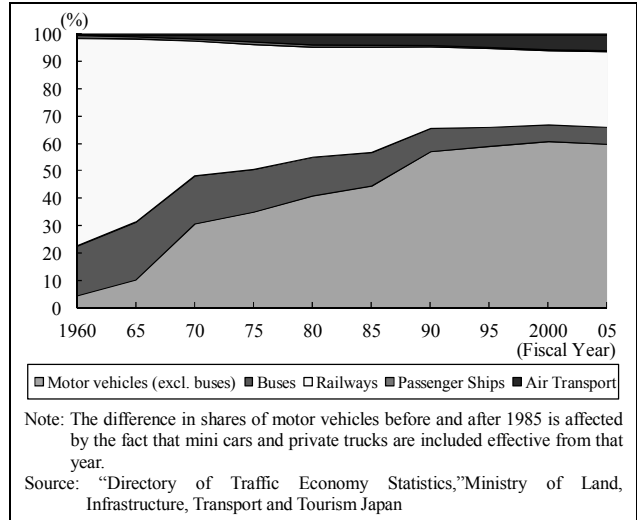
**○Issues concerning the reduction of CO<sub>2</sub> emissions through the promotion of the use of public transport  
(Increasing reliance on private automobiles)**

When people begin to use public transport, including railways, buses, etc., rather than private automobiles to move from one place to another, CO<sub>2</sub> emissions will be reduced. The changes in distribution of passengers according to transport facilities reveal, however, that reliance on automobiles has increased as motorization has progressed.

CO<sub>2</sub> Emissions per Transportation Volume (2005)



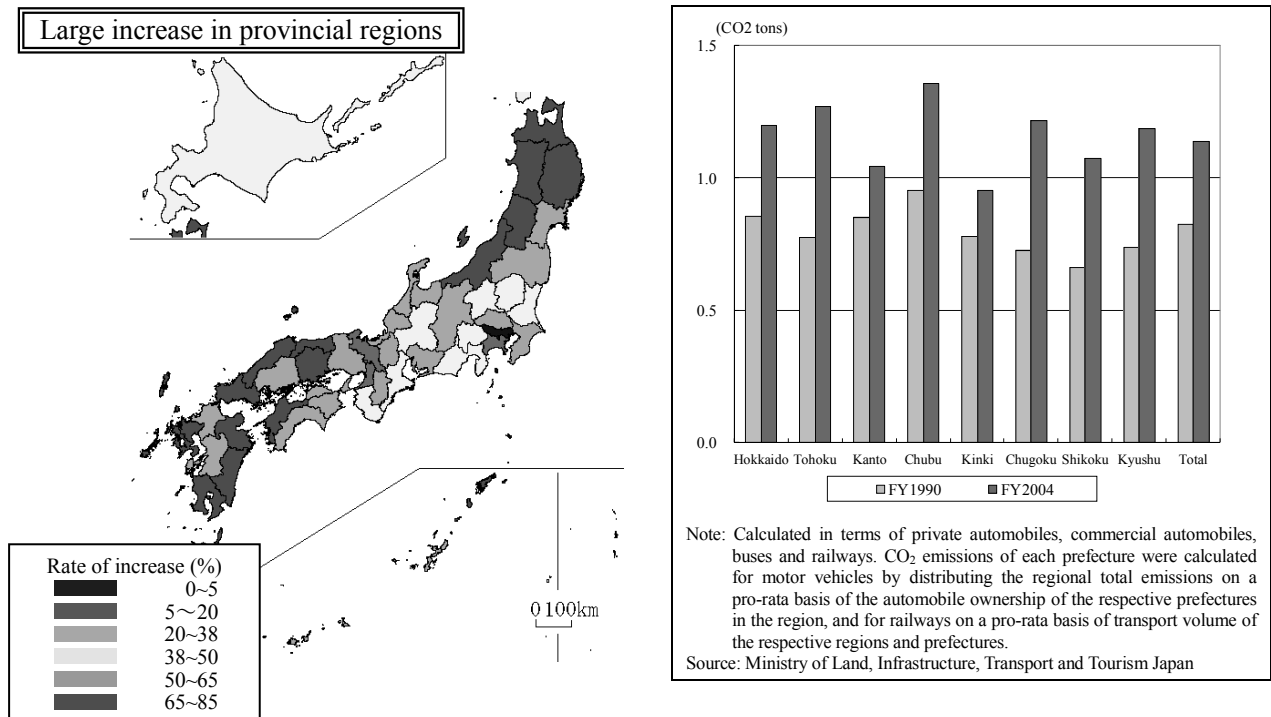
Transition in Passenger Transport Shares (in passenger-km)



**(Regional difference in amount of increased CO<sub>2</sub> emissions)**

In the fluctuations of CO<sub>2</sub> emissions (comparison between FY1990 and 2004) per passenger in the passenger transport sector calculated for each prefecture, the CO<sub>2</sub> emissions show an increase of about 38% on national average while most of the prefectures within the three major metropolitan areas remain below the average. Almost all the prefectures in the provincial regions show an increase above the average, evidence that the trends of CO<sub>2</sub> emissions vary greatly between the major cities and provincial regions.

Transition in Estimated CO<sub>2</sub> Emissions per Passenger (in Passenger Transport)  
(Comparison between 1990 and 2004)



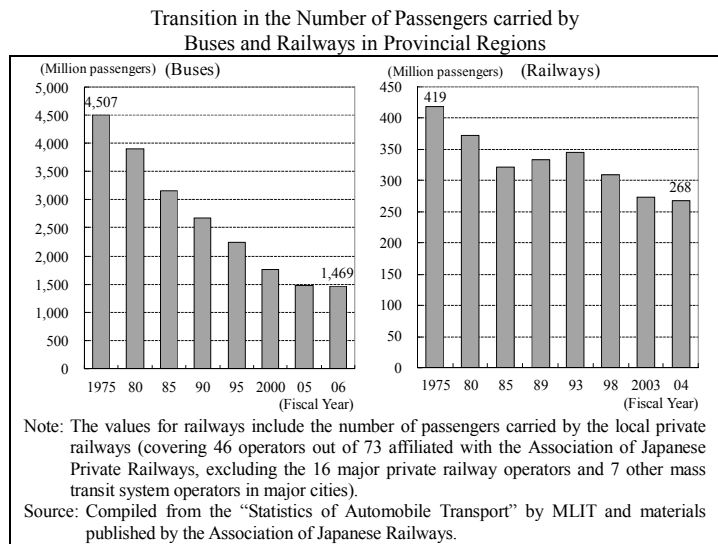
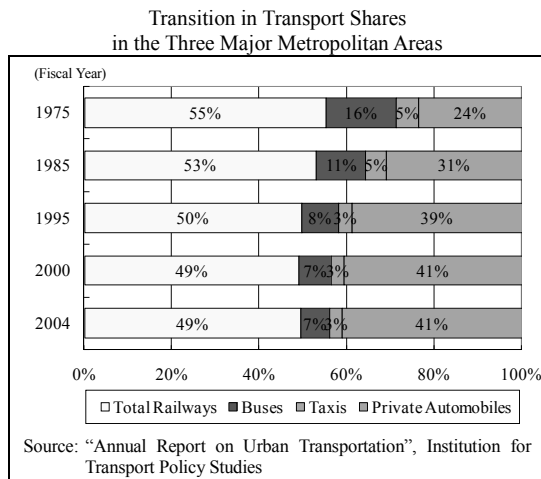


**(Trends in the three major metropolitan areas)**

The rate of increase in emissions is lower in the three major metropolitan areas, but this is partly due to the fact that the share of public transport remains at a high level. The number of railway users in the Tokyo metropolitan area, in particular, has remained stable in recent years although it decreased once in the past.

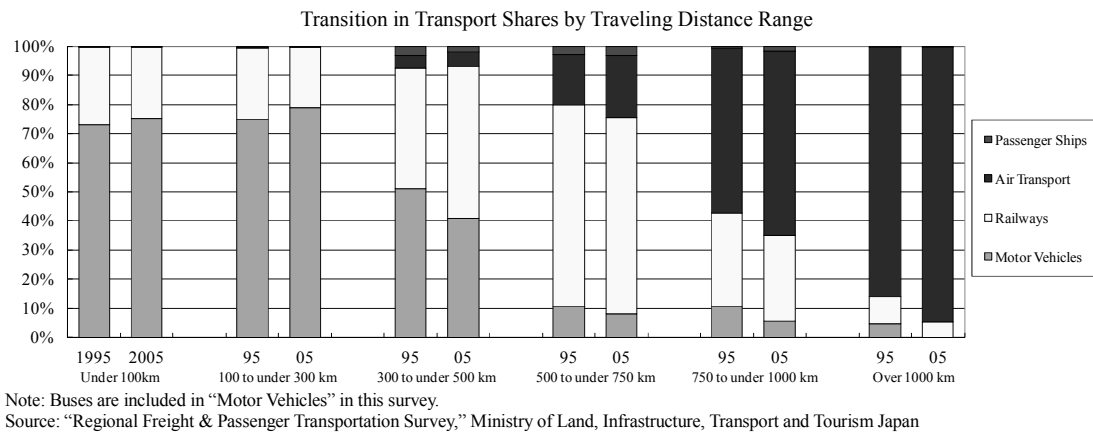
**(Trends in provincial regions)**

The emissions in provincial regions show a sharp increase, but this is partly due to the increasing dependence on private automobiles. The number of railway and bus users, on the other hand, shows a drastic decrease. This has come to weigh on the management of the public transport operators and has led to their successive withdrawals in some regions from unprofitable service routes. Securing of means of transportation for local residents of areas that have lost public transport facilities has now become a serious issue.



**(Trends of traveling along main lines)**

The trends of passenger transport shares by distance with respect to traveling along main lines among cities and among regions reveal that the use of motor vehicles to travel a distance of less than 300 kilometers has increased. Increasing shifts from motor vehicles to railways in traveling distances over 300 to 500 kilometers and from other means to air transport in traveling distances over 500 kilometers are also noted.

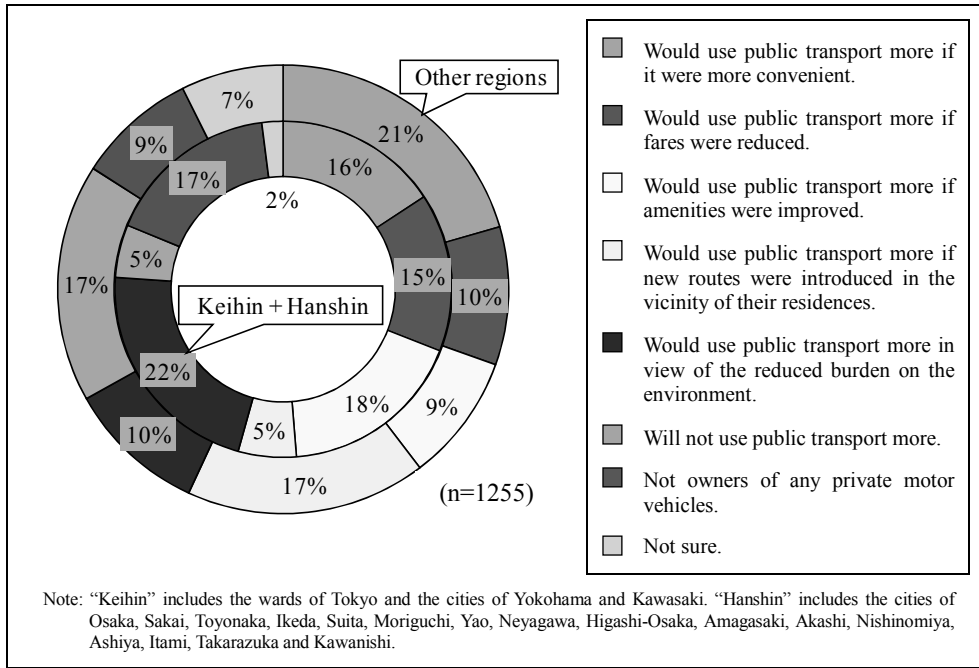


**(Issues concerning the enhancement of the use of public transport facilities)**

In order to establish transport facilities with reduced environmental load, it is necessary to promote a shift from private automobiles to public transport. An opinion poll conducted by the MLIT has revealed that an increasing demand for comfortable railway and bus services exists in the Keihin and Hanshin districts with a prerequisite condition of their immediate availability. In other regions, the poll revealed a situation where the use of private automobiles is induced by the absence of readily available railways or the inconvenience in using the existing facilities due to their low service frequencies.

Making regional public transport facilities more convenient, as well as revitalizing and restoring them will lead to a reduction of environmental load through an enhanced use of public transport. In addition, the facilities will also support the independent lives of residents by securing their means of traveling, securing and enriching the quality of their lives and contributing to the development of regional economies.

Opinion Poll on Global Warming (MLIT)



Issues to reduce CO<sub>2</sub> emissions through the improved efficiency of distribution

The amount of CO<sub>2</sub> emitted in the freight transport sector has been decreasing since 1996, and it decreased by about 5% in the period from 1990 to 2006. The volume of CO<sub>2</sub> emissions through transportation by trucks has also been decreasing from the peak figures recorded in 1996.

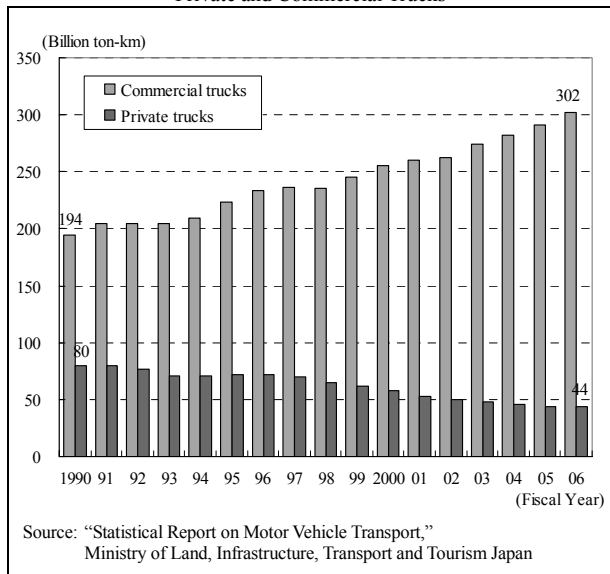
(Trends in truck transportation)

The volume of freight carried by trucks increased by about 25% on a ton-kilometer basis in the period from 1990 to 2006, while the volume on a tonnage basis decreased in the same period. This is due to the fact that freight transportation distances have been increasing.

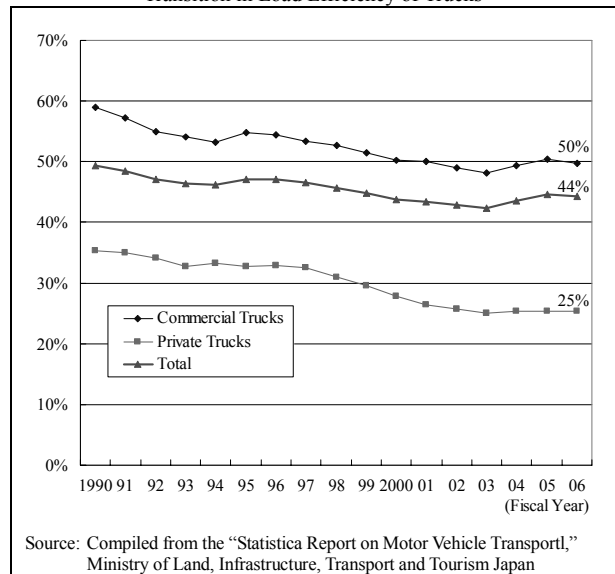
The shift to independent operations seems to have contributed to the fact that CO<sub>2</sub> emissions are on the decrease while transportation volume is increasing. Load efficiency was on the decrease but marked a recovery to a level of approximately 44% (in 2006) as a result of joint transportation and delivery by several operators working in cooperation with one another.

Fuel consumption of trucks and other heavy-weight vehicles is expected to be improved by 12.2% by 2015, when the new fuel consumption requirements will have been enforced and attained, compared with the level of 2002.

Transition in Transportation Volume of Private and Commercial Trucks

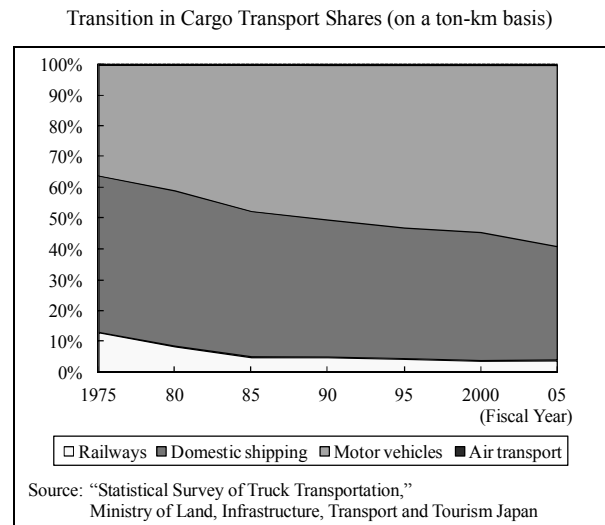
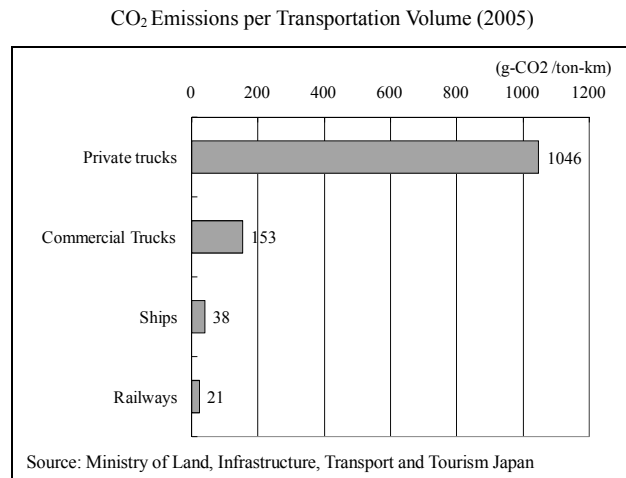


Transition in Load Efficiency of Trucks



**(Issues concerning a modal shift)**

A modal shift from trucks to railways and ships must be promoted as one of the effective measures to reduce CO<sub>2</sub> emissions in cargo transportation. The changes in transport distribution by means of transport reveals, however, that the share of motor vehicles has increased from 50.1% (1990) to 59.9% (2006).

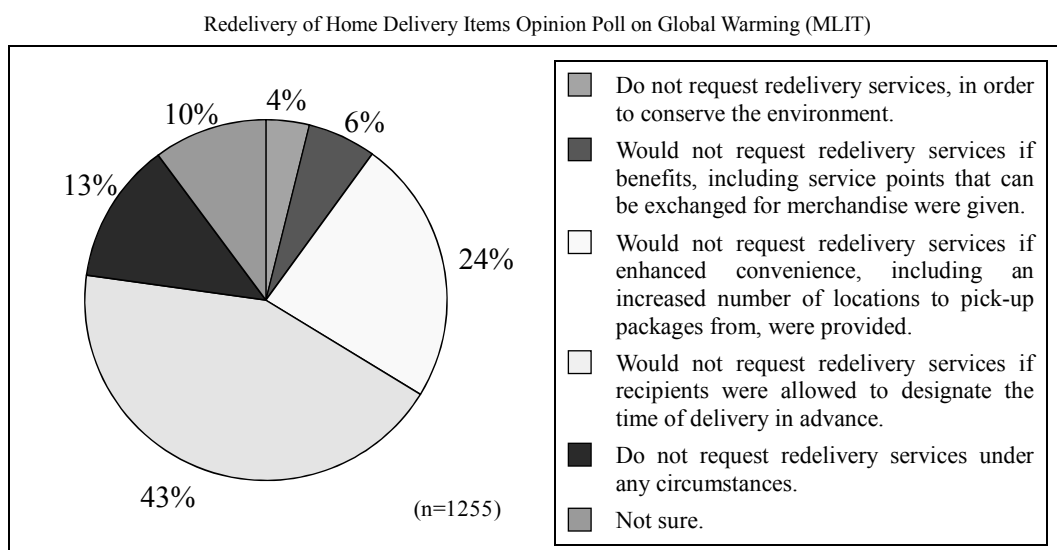


While the overseas deployment of production bases by manufacturers following the development of international divisions of labor is in progress, changes are noted in the trends of international distribution as well as domestic cargo transportation in Japan. While, for instance, the volume of daily necessities commonly carried by trucks has marked a sharp increase, the volume of mining products, which is the major transport item of the domestic shipping industry, has remained level. This kind of change has resulted in the reduced share of domestic shipping and increased share of motor vehicles. Furthermore, it is possible that the share of motor vehicles is increasing as truck transport, which is shorter in lead time and more suitable for the operation of low quantity and high frequency transportation, is employed to meet the requirements of transportation enterprises that are moving forward with complete supply-chain management.

Following the amendment to the Energy Conservation Law (enforced in April 2006), certain shippers are expected to enhance their efforts to reduce the amount of CO<sub>2</sub> emitted in transportation through the modal shift and switch to joint transportation and commercial trucks, as they are required under this law to take measures for energy conservation. Accordingly, it is necessary to advance the establishment of circumstances where ship and railway transportation may be actively utilized to ensure the acceleration of the modal shift.

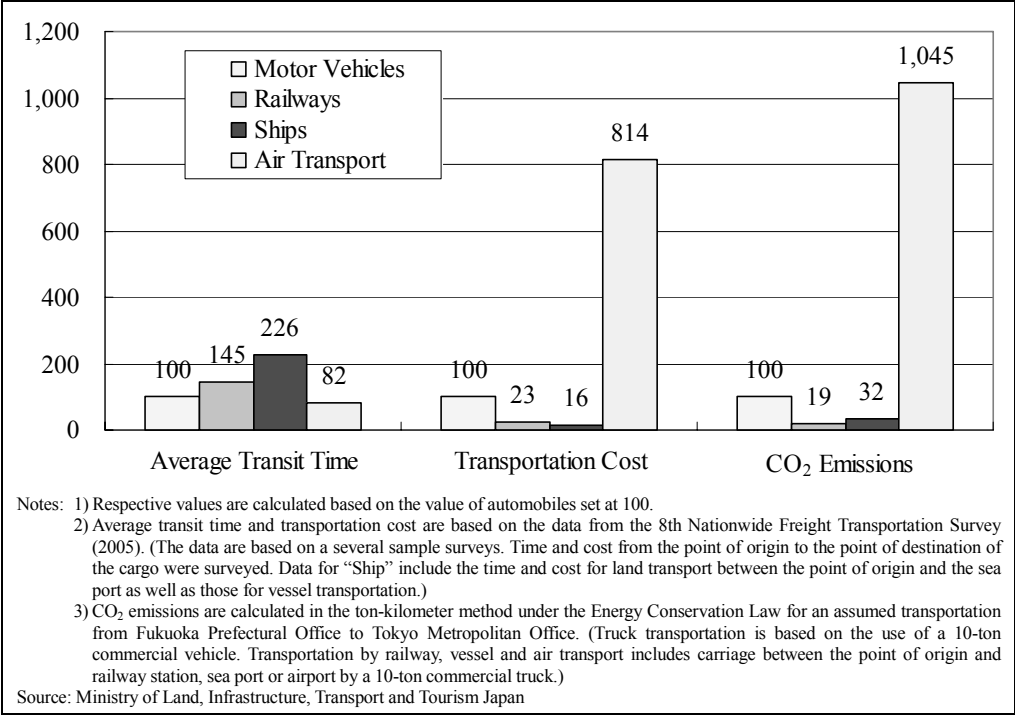
**(Reduction of CO<sub>2</sub> emissions in home delivery services and merchandise transportation and consumer awareness)**

Redelivery of home delivery items increases the traveling distance of delivering trucks and may possibly lead to increased emissions of CO<sub>2</sub>. The opinion poll conducted by the MLIT has revealed a consumer attitude of avoiding placing a burden on the environment so long as a certain level of convenience is secured in redeliveries.



As for the transportation of merchandise including daily necessities and provisions, faster delivery as well as low quantity and high frequency services contribute to the convenience of consumers, but at the same time, they lead to increased reliance on truck transportation with heavier environmental load. Depending on the areas of transportation, truck transport transit time is shorter but causes more CO<sub>2</sub> emissions compared with railway and ship transportation. In a trial calculation using the transportation of goods from Fukuoka to Tokyo, air transport and trucks had shorter transit times but emitted more CO<sub>2</sub> than railways or ships.

Trial Calculation of Transit Time, Transportation Cost and CO<sub>2</sub> Emissions in Transportation from Fukuoka Prefecture to Tokyo Metropolitan Area by Transportation Mode

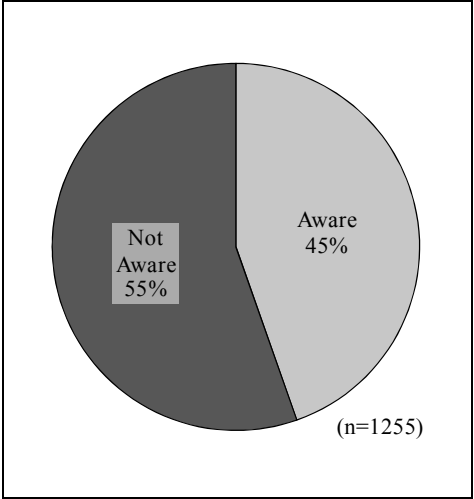


The opinion poll conducted by the MLIT revealed that the difference in CO<sub>2</sub> emissions resulting from the use of different modes of transportation for given merchandise is not widely recognized by consumers.

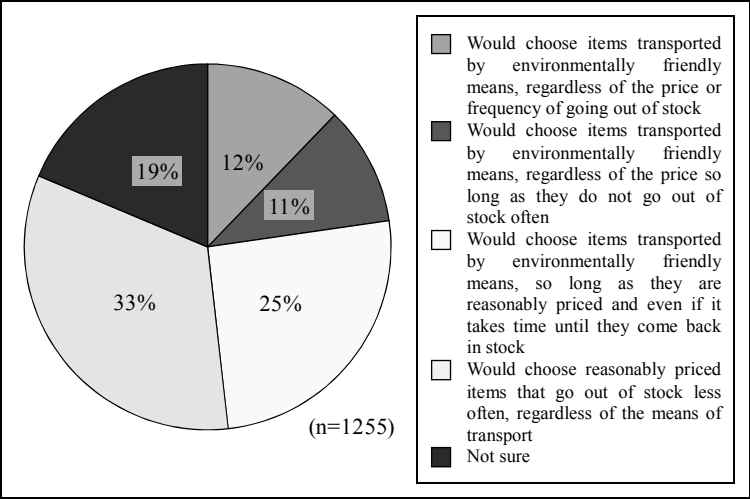
The poll also revealed that consumers will show more interest, subject to the satisfaction of certain conditions, in the merchandise transported by environmentally friendly means when they are asked to choose merchandise on sale in a shop and displayed with information on whether environmentally friendly transportation means were used.

In order to induce the consumers to choose merchandise with less environmental load, it is necessary to show them simply which items of merchandise are transported using means more friendly to the environment. Further diffusion and enhanced awareness of the “Eco-Rail Marks” among consumers is expected to contribute to the promotion of the modal shift to railway transport through a choice of merchandise by the consumers.

Awareness of Different CO<sub>2</sub> Emissions by Different Means of Transportation Opinion Poll on Global Warming (MLIT)



Choice of Merchandise When Environmental Impacts of the Transportation are Known. Opinion Poll on Global Warming (MLIT)



## II. Reducing CO<sub>2</sub> emissions from international transport

The reduction of CO<sub>2</sub> emissions from international transportation (aviation and shipping) is being studied by the International Civil Aviation Organization (ICAO) and the International Marine Organization (IMO). International transportation is not covered under the reduction of greenhouse gases in the Kyoto Protocol.

### ○ Reduction of CO<sub>2</sub> emissions from international aviation

#### (Shift in CO<sub>2</sub> emissions from international aviation)

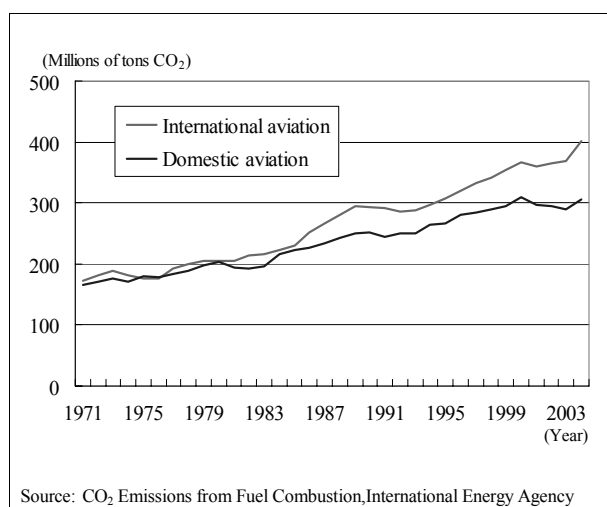
The amount of CO<sub>2</sub> emissions from international aviation worldwide is 400 million tons and is greater than the worldwide total amount of CO<sub>2</sub> emissions from domestic aviation. Emissions have increased between 1990 and 2004 by 35% and are predicted to continue to increase.

#### (The situation of international aviation by region and international discussion )

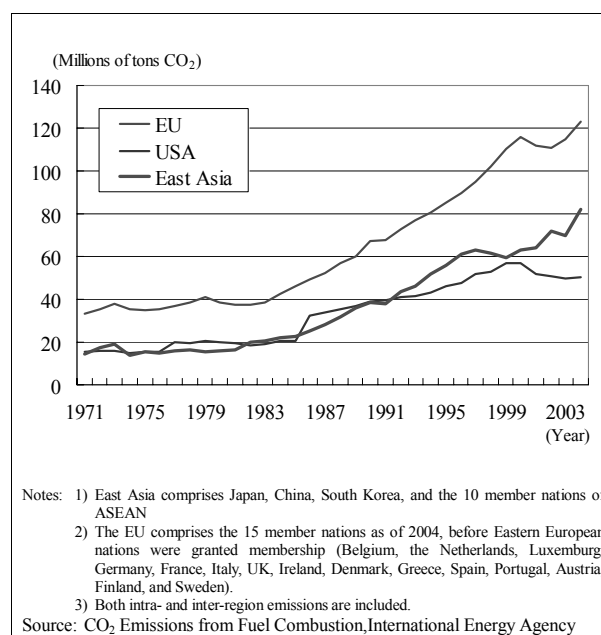
Looking at shifts in CO<sub>2</sub> emissions from international aviation sector by region, emissions have increased 80% in the EU from 1990 to 2004, and it is being considered that including not only intra-region but also inter-region aviation in the EU emissions trading scheme . On the other hand, in East Asia, CO<sub>2</sub> emissions have more than doubled in the same period due to rapid economic growth. Therefore discussion about reducing CO<sub>2</sub> emissions from international aviation, at global level including East Asia which economies have been rapidly grown, is necessary.

With this background, the 36th ICAO Assembly in 2007 resolved developing ICAO Programme of Action including a comprehensive measure against global warming and global goals in the form of fuel efficiency for international aviation, by the end of 2009. Japan will also study measures against global warming for international aviation and needs to respond appropriately to international discussion at the ICAO and others.

Shifts in CO<sub>2</sub> Emissions from International and Domestic Aviation



Shifts in CO<sub>2</sub> Emissions from International Aviation (by Region)



### ○ Reducing CO<sub>2</sub> emissions from shipping

#### (Changes in CO<sub>2</sub> emissions from the shipping sector)

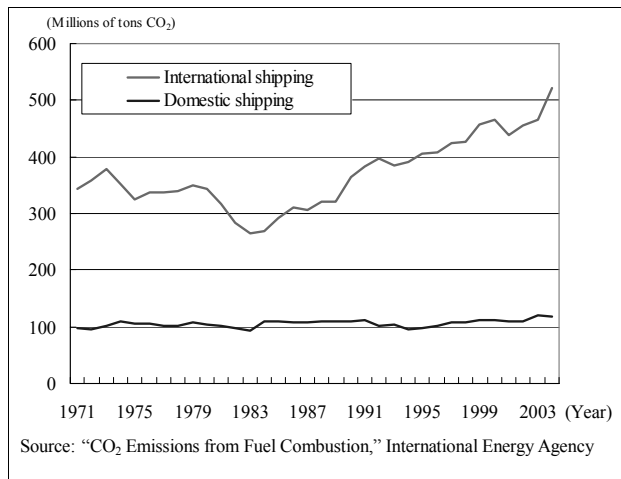
CO<sub>2</sub> emissions from international shipping account for 3% of the total amount of emissions worldwide and have increased by 40% between 1990 and 2004. As the amount of freight will increase, it is therefore believed that CO<sub>2</sub> emissions from shipping will also increase.

**(State of regional shipping and international debate)**

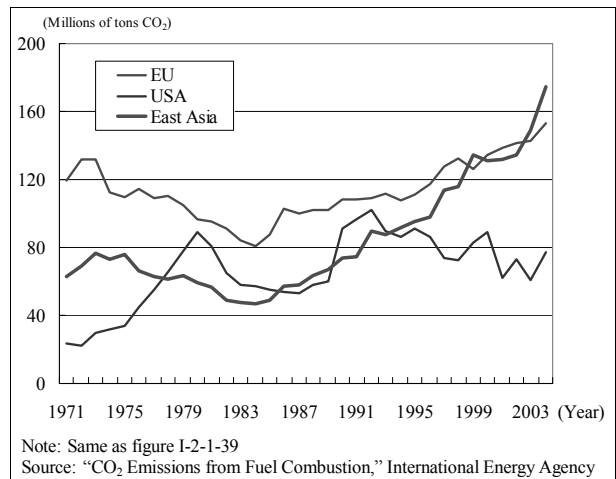
CO<sub>2</sub> emissions from shipping have increased by more than 2.3 times between 1990 and 2004 in East Asia, as freight shipping has increased dramatically due to rapid economic growth.

Debate on the reduction of CO<sub>2</sub> emissions from international shipping is currently being conducted at the IMO. However, we believe that replacing ships with new, energy efficient ships, manufactured in Japan, is an effective countermeasure. Ship building companies are pursuing optimal energy on calm seas but even ships that maintain a constant speed on calm waters change speed dramatically in rough weather. Japan is therefore working on developing a performance indicator (actual fuel consumption indicator) that shows energy efficiency while the ship is running and has proposed international standardization and the introduction of an actual fuel consumption indicator to the IMO. Through development of this actual fuel consumption indicator and other technological developments, it is necessary for Japan to aggressively pursue the reduction of CO<sub>2</sub> emissions from shipping and demonstrate an international initiative.

Change in CO<sub>2</sub> Emissions from Worldwide International and Domestic Shipping



Change in CO<sub>2</sub> Emissions from International Shipping (by Region)

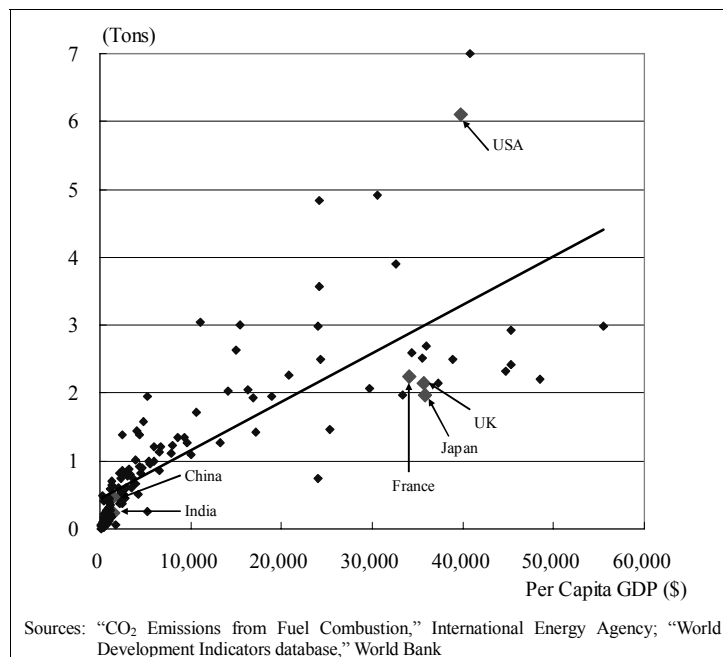


**○ Rapid increase of CO<sub>2</sub> emissions in Asia**

Compared to developed nations, per capita CO<sub>2</sub> emissions from Asian domestic transportation are still low. If economic development progresses and per capita CO<sub>2</sub> emissions grow through increased transportation, it is predicted that there will be a huge global impact from CO<sub>2</sub> emissions, in particular due to the large population of Asia.

Japan, in comparison to other developed nations, has constructed a transport system that has a small carbon footprint. It is necessary for Japan to apply its progressive technology, systems and experience, and demonstrate the initiative to drive international cooperation.

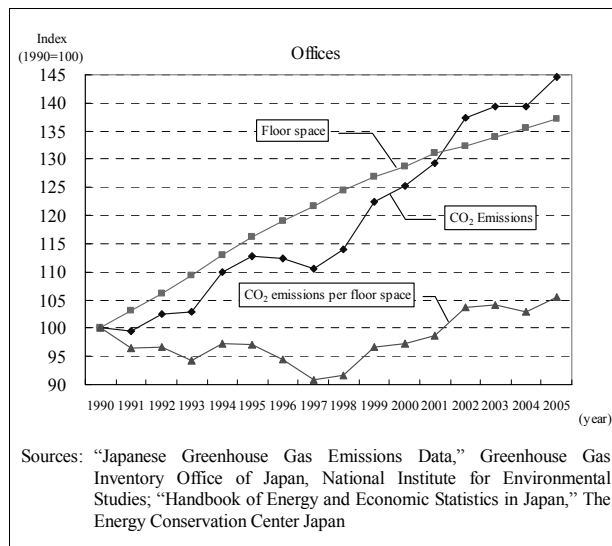
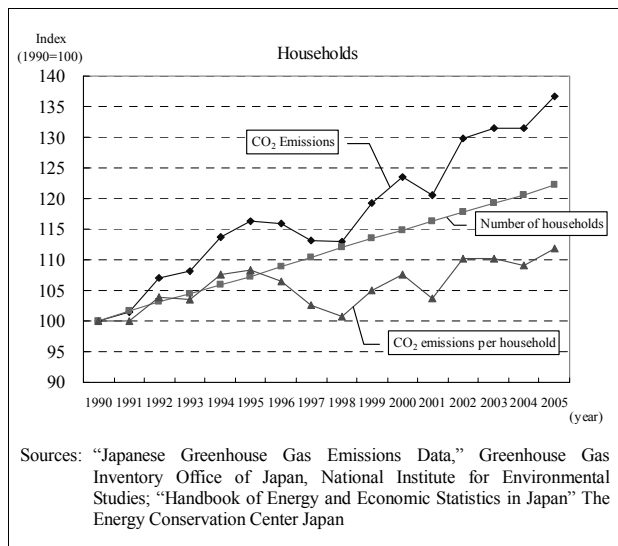
Relation between Per Capita GDP and Per Capita CO<sub>2</sub> (Transportation; 2004)



## (2) Easing global warming in the housing and construction industries

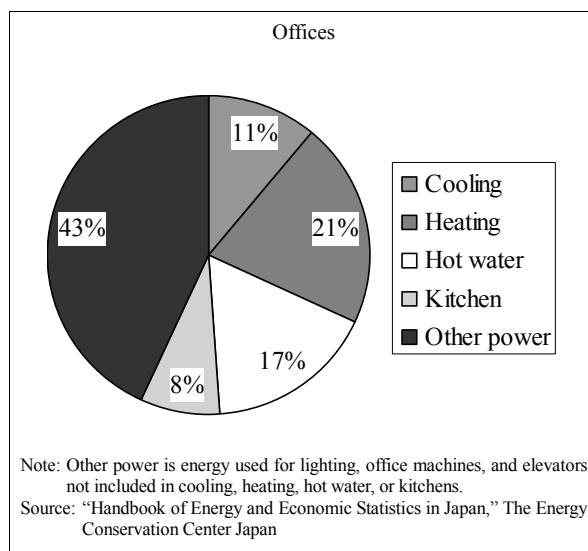
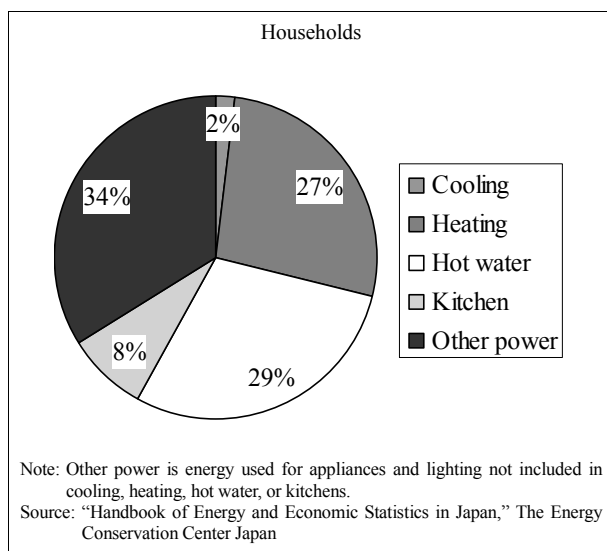
Household CO<sub>2</sub> emissions increase as the number of households increase, and office CO<sub>2</sub> emissions increase as floor space increases. Between 1990 and 2005, the amount of CO<sub>2</sub> emissions has increased 1.37 times and 1.45 times respectively. Therefore, it is vital to reduce CO<sub>2</sub> emissions from both households and offices in order to alleviate global warming.

CO<sub>2</sub> Emissions from Households and Offices



Looking at energy consumption from households and offices reveals that cooling, heating, and water heating together account for roughly half the total consumption. Therefore, to reduce CO<sub>2</sub> emissions in the future, it is necessary to have a comprehensive approach using such methods as improving building insulation and installing efficient equipment to make buildings energy efficient.

Breakdown of Energy Consumption in Households and Offices (2005)



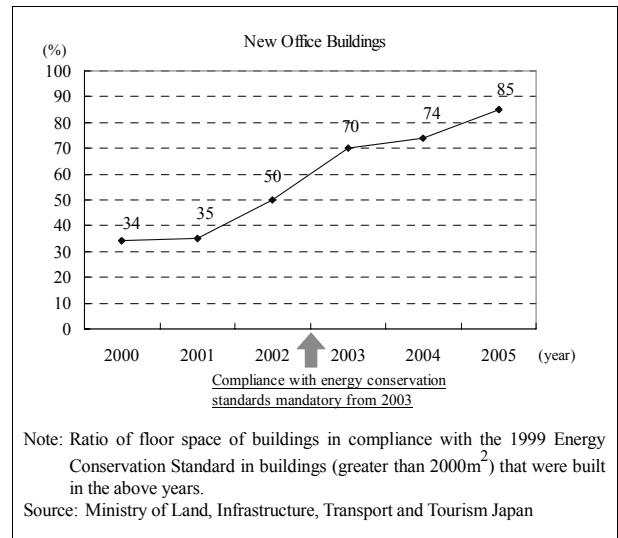
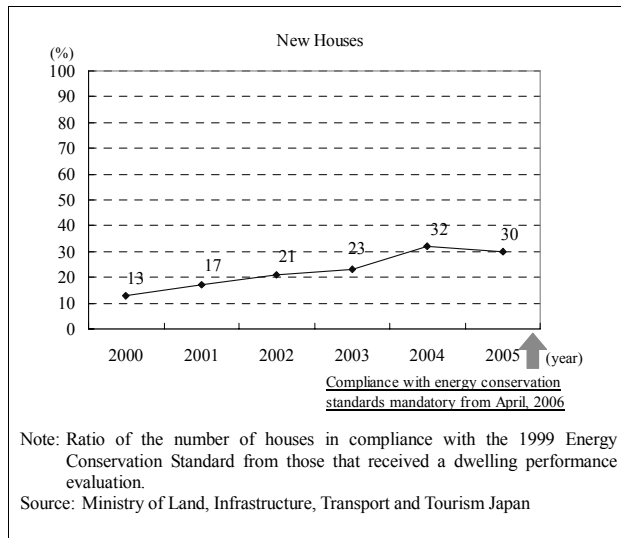
### ○ Energy conservation through improving building insulation and increasing efficiency of building facilities

#### (Increasing the number of new homes and buildings that meet energy consumption standards)

The energy consumption standards for houses and buildings (offices, commercial facilities, etc.) has been repeatedly strengthened and the yearly energy consumption for heating and cooling in houses that meet the latest energy consumption standards is 40% less than in houses without insulation. The energy consumption for offices that meet the criteria is 75% less than for those that do not.

The percentage of houses that have received a dwelling performance evaluation and meet the energy conservation criteria rose to 30% in 2005 from 13% in 2000. Furthermore, the ratio of buildings with floor space of more than 2,000m<sup>2</sup> that meet the standard rose to 85% in 2005 from 70% in 2003.

Change in Energy Consumption Standards Compliance Rate for New Houses and Buildings



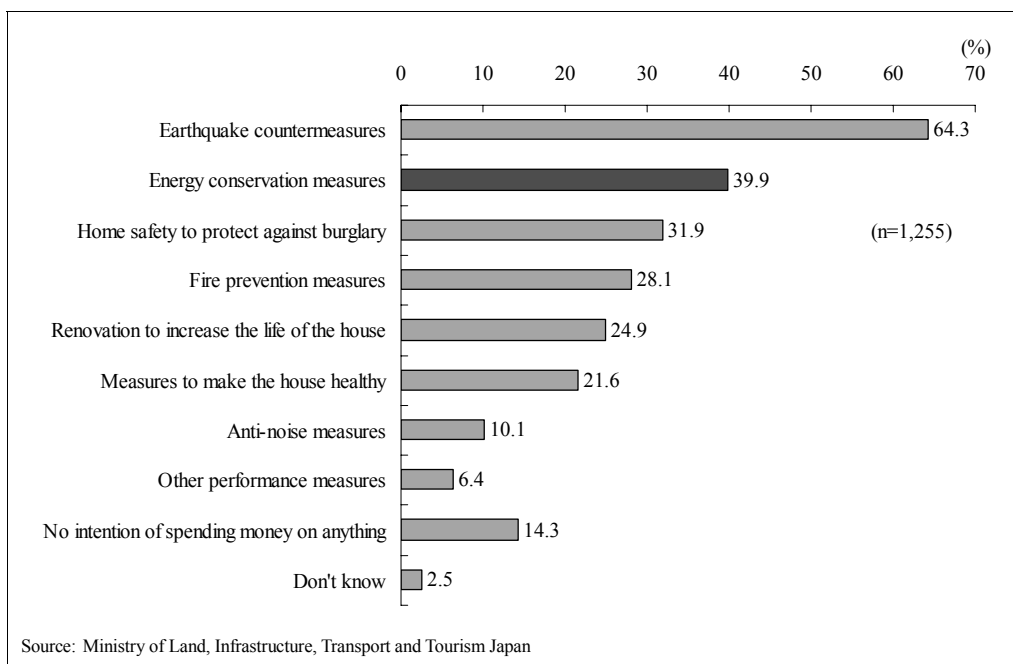
On the other hand, houses built in 2005 do not exceed the existing stock of houses by even a few percent in terms of floor space. As the energy conservation performance of the current stock is lagging behind, in order to greatly reduce CO<sub>2</sub> emissions in this area in the future it is necessary to improve the energy consumption performance of the existing stock in conjunction with energy conservation methods for new houses.

**(Necessity of energy conservation improvements through visualization)**

To see how focused people are on energy conservation performance amongst the various housing capabilities, we asked the question, “If you were to spend money on housing for something other than size and location, what would it be?” Next to earthquake countermeasures, energy conservation had the highest priority. From this result, we believe that there is a strong awareness of energy conservation performance for houses.

Focus on Housing Performance (multiple responses)

Survey of the awareness of global warming (Ministry of Land, Infrastructure, Transport and Tourism Japan)

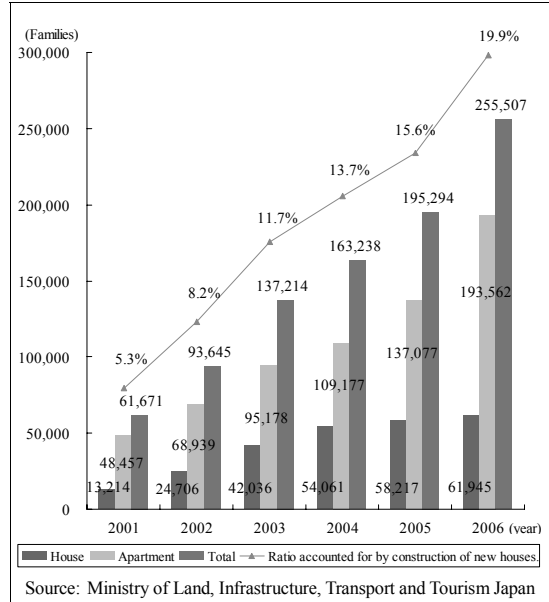


To reflect this awareness in actual efforts, it is important to provide information that is easy for regular people who are not experts to understand, and to make accurate evaluations of energy conservation performance.

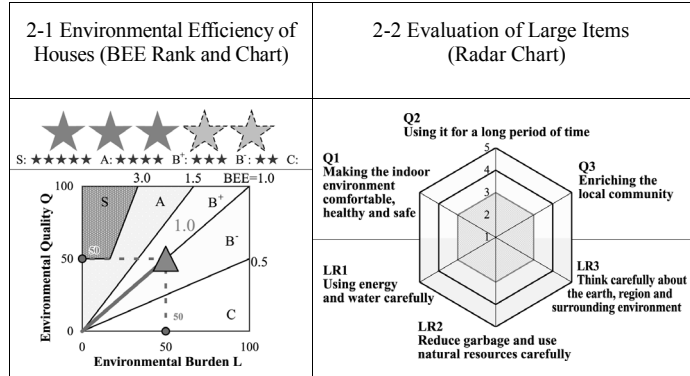


For example, we have implemented a system called, the “Housing Performance Display System” that shows 10 categories of housing performance as grades and numeric values. We have also introduced a system called, the “Comprehensive Assessment System for Building Environment Efficiency (CASBEE),” which comprehensively evaluates the environmental performance of buildings and houses, and ranks them in 5 levels: 1 star to 5 stars. It is necessary for systems like these to be understood and be put into greater practical use.

Result of Housing Performance Evaluation from the Housing Performance Display System



Example of the Comprehensive Assessment System for Building Environment Efficiency (CASBEE)



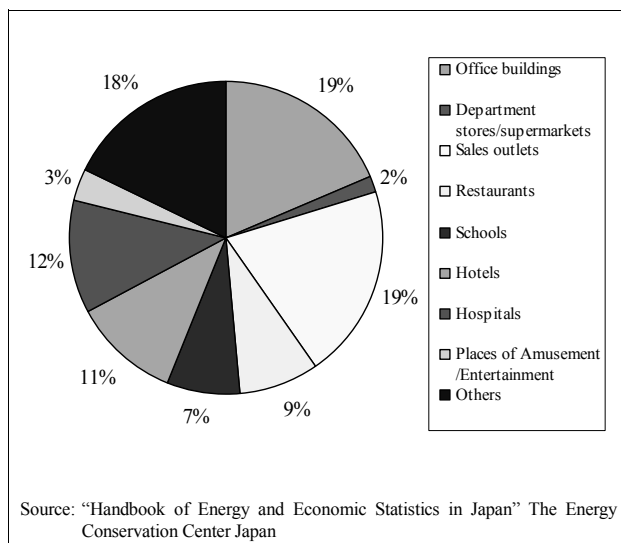
### ○ Implementation of energy consumption through the way buildings and facilities are used

Looking at the increased energy consumption of households and offices separately, the power ratio (electric appliances, office equipment, lights, elevators, etc.) for both has increased. Therefore, it is necessary to implement energy conservation through more efficient appliances and innovative use.

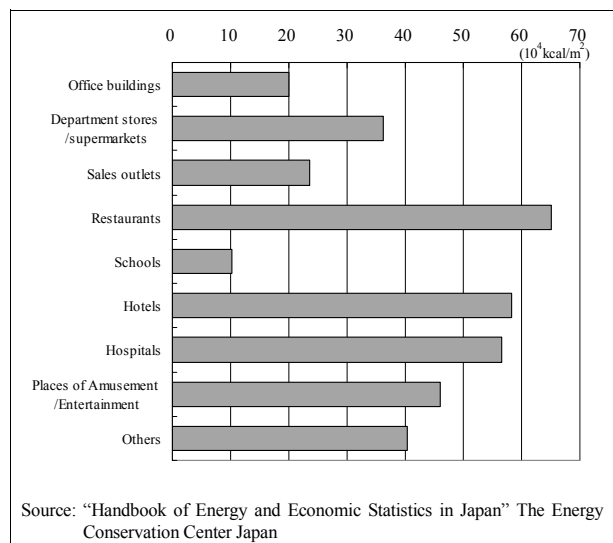
### (The necessity of implementing energy conservation for office buildings)

Energy consumption differs greatly depending on the type of building, industry, and building dimensions. Looking at energy consumption by industry, energy consumption by amount is greater for office buildings and sales outlets, but energy consumption by floor space is greater for restaurants, hotels, and hospitals. Therefore, measures that take into consideration the characteristics of each industry are necessary.

Energy Consumption by Industry (FY 2005)



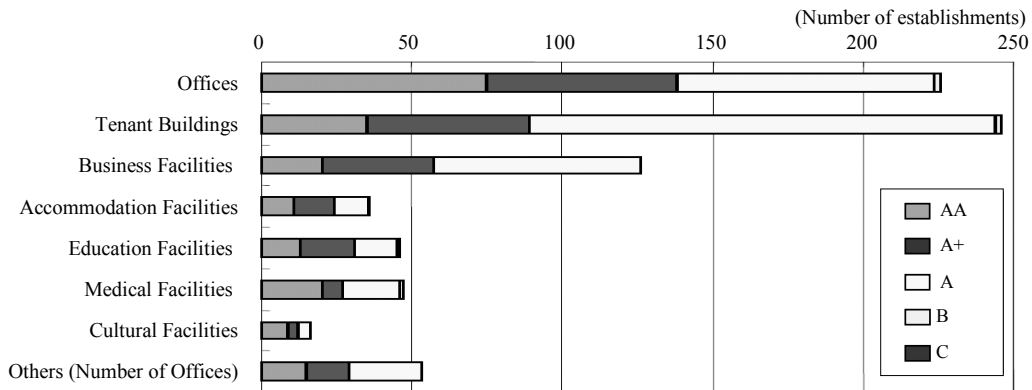
Energy Consumption by Industry and Floor Space (FY 2005)



For example, looking at office buildings, a survey concluded that tenant buildings haven't progressed as far as owner occupied buildings (listed as offices in the figure on the right) in terms of energy conservation measures. Therefore, building owners and tenants need to work together to create guidelines for the operational management of the building's energy.

Furthermore, on top of measuring how much energy a building uses, it is necessary to carry out energy conservation refurbishment and diagnosis through the introduction of a building energy management system that optimizes the operation of facilities.

Evaluation Results of the Tokyo Global Warming Plan System



Based on the countermeasures plan for global warming of the Tokyo Metropolitan area, a greenhouse gas reduction plan for 5 years from 2005 to 2009 in about 1,000 offices/facilities was submitted, and this plan was ranked according to the following 5 categories, depending on the content:

- AA: More than 5% reduction over and above basic countermeasures.
- A+: More than 2% reduction over and above basic countermeasures.
- A: All basic countermeasures are included in the plan.
- B: Not enough consideration for basic countermeasures; only operational improvements are planned.
- C: Not enough consideration for basic countermeasures; operational improvements are not planned.

\*Basic Countermeasures: General countermeasures that the metropolitan government suggested to be taken so that investment can be paid off within 3 years.

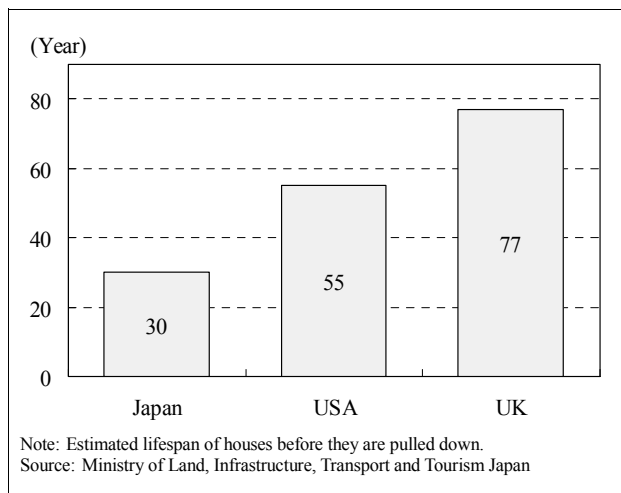
Source: Bureau of Environment Tokyo Metropolitan Government

### ○ Promotion of total energy conservation of buildings from construction to destruction by extending their lifespan

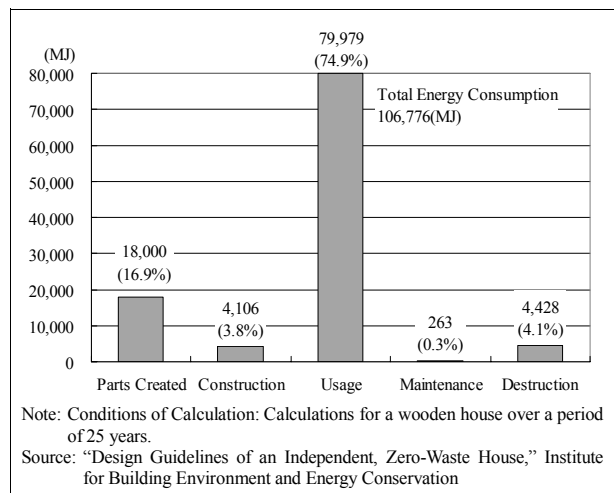
It is necessary for the total energy consumption amount to be considered during all procedures from construction to destruction as houses and buildings consume energy at each stage of their lifecycles. From this point of view, it can be expected that extending the life of buildings can contribute to the reduction of CO<sub>2</sub> emissions through the decrease in energy consumption.

The current average lifespan of houses in Japan is 30 years, which, compared to the USA and Europe, is very short. Therefore, it is important to build houses that last a long time (200-year houses) and have superior environmental functions by considering the construction, maintenance, logistics, and capital flow of houses from not only the aspect of good housing stock, but also from the environmental point of view.

International Comparison of the Average Lifespan of a House



Example of Estimated Energy Consumption of Houses from Construction to Destruction



### (3) Challenges concerning easing global warming in the development of cities and regions

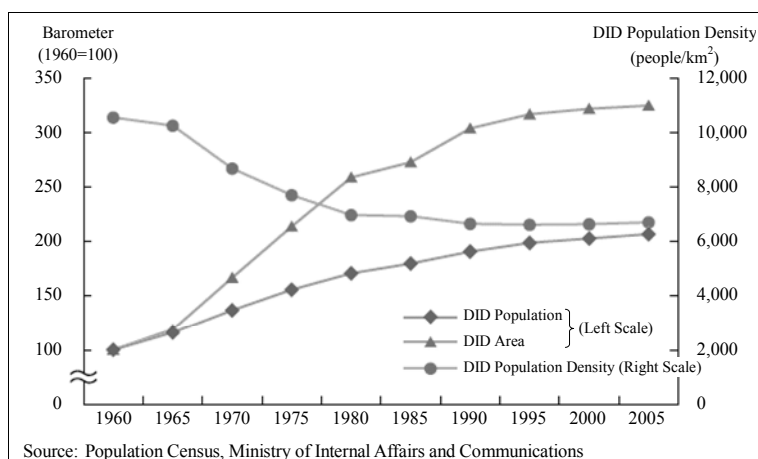
#### ○ Developing concentrated cities and regions

##### (The change of city structures in Japan and challenges)

The DID area\* shows that city areas expanded by a factor of 2.6 from 1960 to 1980. On the other hand, the DID population increased by a factor of 1.7; the DID population density rapidly decreased during this period of high growth.

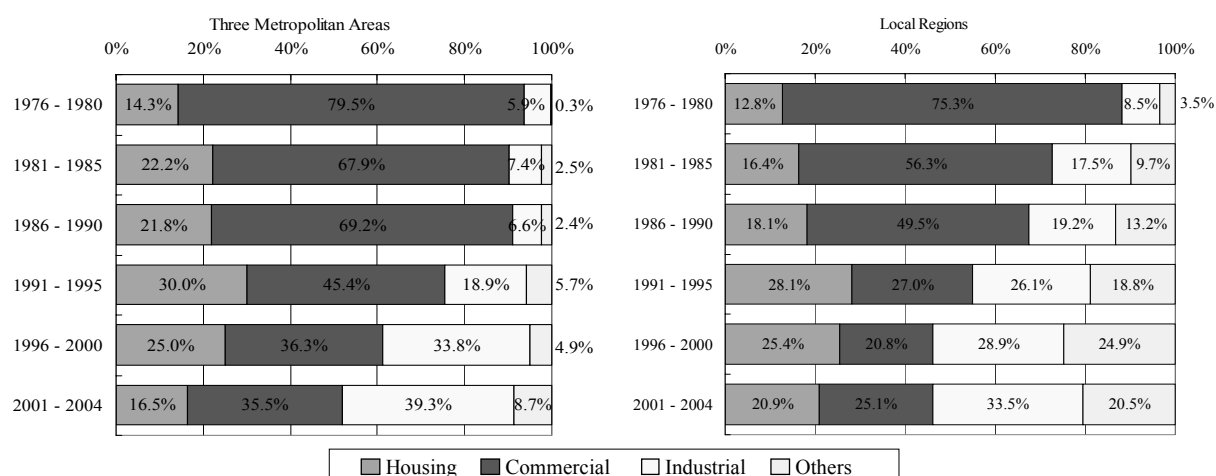
This indicates that the DID population density decreased and the population dispersed, while population concentration increased and city areas expanded.

DID Population, Areas and Population Density Shift



In addition to this population dispersion, city facilities such as those with commercial functions, and public and common facilities, have been suburbanized in recent years. For example, looking at the location of large scale commercial facilities, in both the 3 major city regions and local regions they are more often located in industrial areas, outside of built-up areas than in commercial areas. This indicates that commercial facilities tend to locate themselves somewhere other than the center of commercial areas where the population used to gather.

Relocation of Large Scale Commercial Facilities (gross floor area more than 3,000 m<sup>2</sup>)



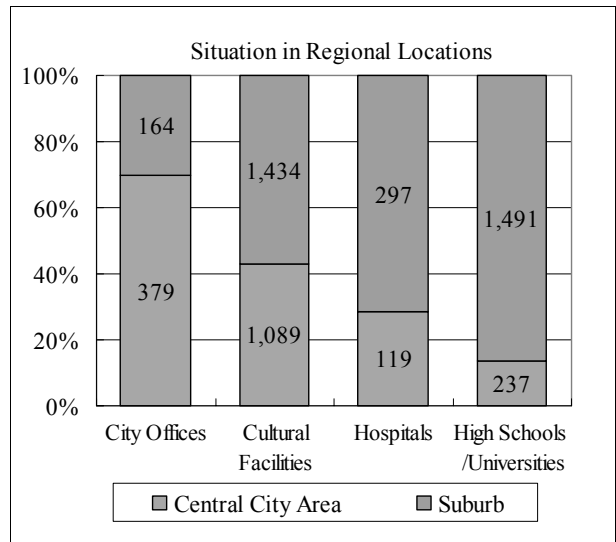
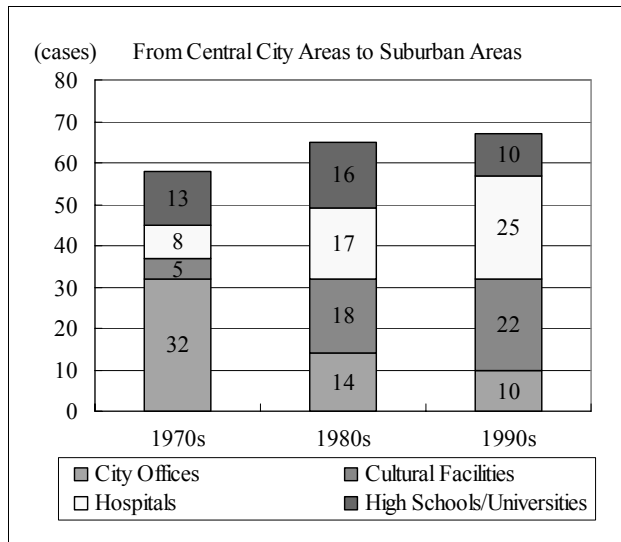
Notes: 1) Living: First Class Low-Rise Residential Area, Second Class Low-Rise Residential Area, First Class Mid-to-High-Rise Residential Area, Second Class Mid-to-High-Rise Residential Area, First Class Residential Area, Second Class Residential Area, Sub-Residential Area  
 Commercial: Neighborhood Commercial Area, Commercial Area  
 Industrial: Sub-Industrial Area, Industrial Area, Specialized Industrial Area  
 Others: Urbanization Control Area, Area with no Restrictions on Use, Area Not for Urbanization  
 2) Facilities that sell products, with a gross floor area of more than 3,000 m<sup>2</sup> based on the Building Standards were calculated  
 3) The three Metropolitan Areas consist of: Tokyo, Saitama Prefecture, Chiba Prefecture, Kanagawa Prefecture, Aichi Prefecture, Kyoto, Osaka, Hyogo Prefecture, and Nara Prefecture. Local regions are prefectures other than those listed on the table on the left.  
 4) As of the end of 2004

Source: Ministry of Land, Infrastructure, Transport and Tourism Japan

\* Densely Inhabited District (DID): Indicates a region where more than 5,000 people live in areas adjacent to each other where more than 4,000 people live within 1km<sup>2</sup>, meeting the basic unit for the national census and is considered a "city region." Occasionally places such as airports, factories, and schools that occupy a large area may be included in the DID even if the population density is less than 4,000 people.

Furthermore, public and common facilities, in particular hospitals and universities, are in recent years becoming suburbanized. In 2004, approximately 70% of hospitals and 90% of universities were located in suburban areas.

### Relocation of Public and Common Facilities



Notes: 1) Responses received from 551 cities out of 666 cities surveyed (except for government-decreed cities)  
Survey Period: January 19 to February 20, 2004

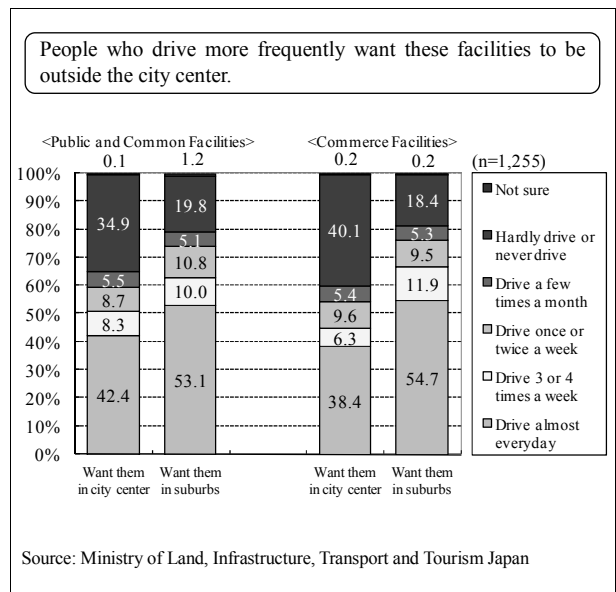
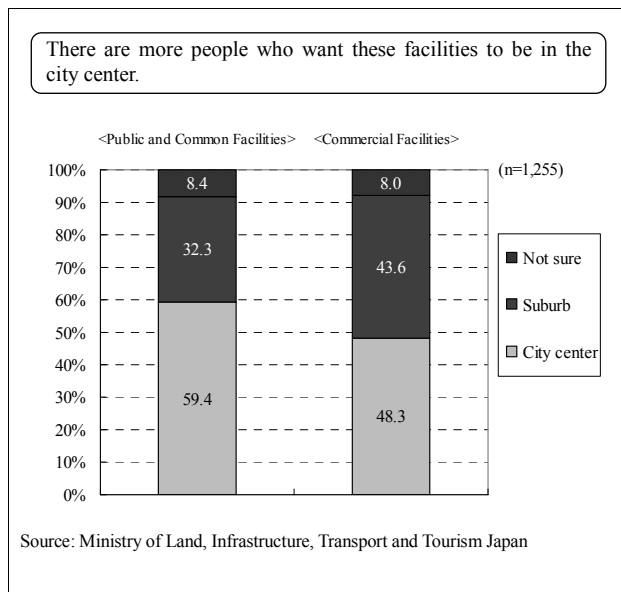
2) A central city area is an urban area that has a considerable number of retail businesses and a considerable degree of city facilities, and is functioning as the main area of the city. A suburb is an area other than the central city area.

Source: "Survey on the Demographic shifts, other Socioeconomic Trends and Land Use 2004," Ministry of Land, Infrastructure, Transport and Tourism Japan

According to a survey of attitudes conducted by the MLIT, in response to the question, "Where do you think public/common and commercial facilities should be located: in the center of the city or the suburbs?" more people wish to have these facilities in the center of the city rather than the suburbs. However, when looking at the responses, people who drive more frequently tend to wish to have these facilities outside the city center.

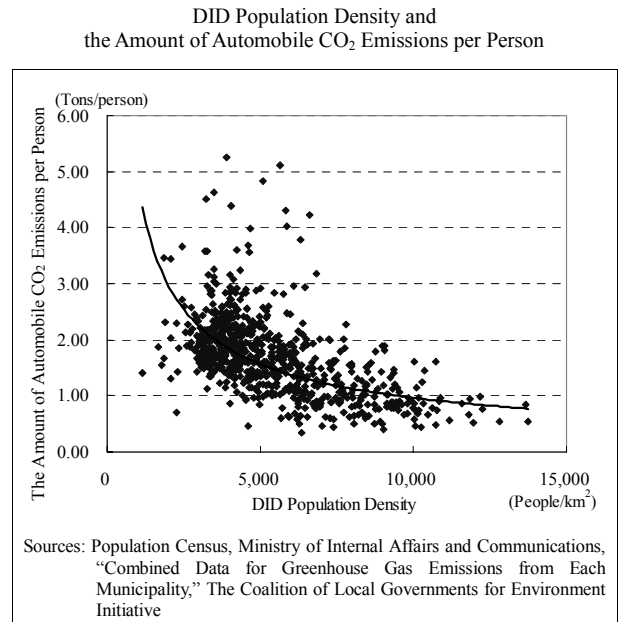
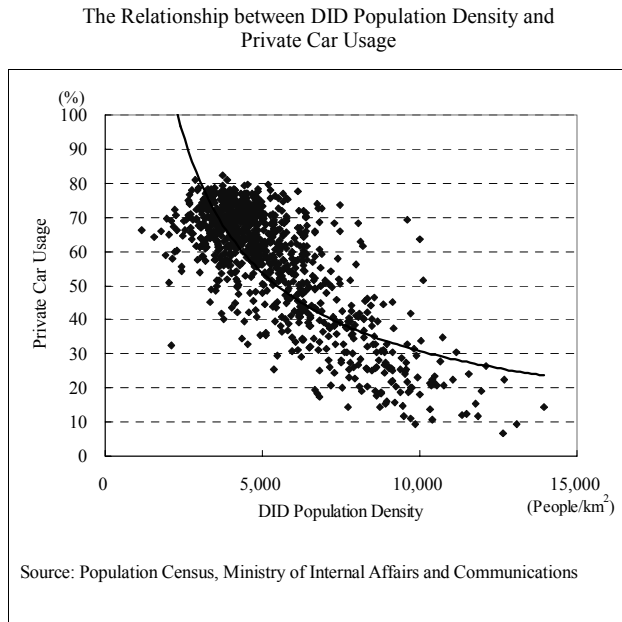
### Favored Locations for Public/Common and Commercial Facilities

### The Relationship between Frequency of Driving and Favored Locations



**(The relationship between DID population density and private car usage, and carbon dioxide emissions from automobiles)**

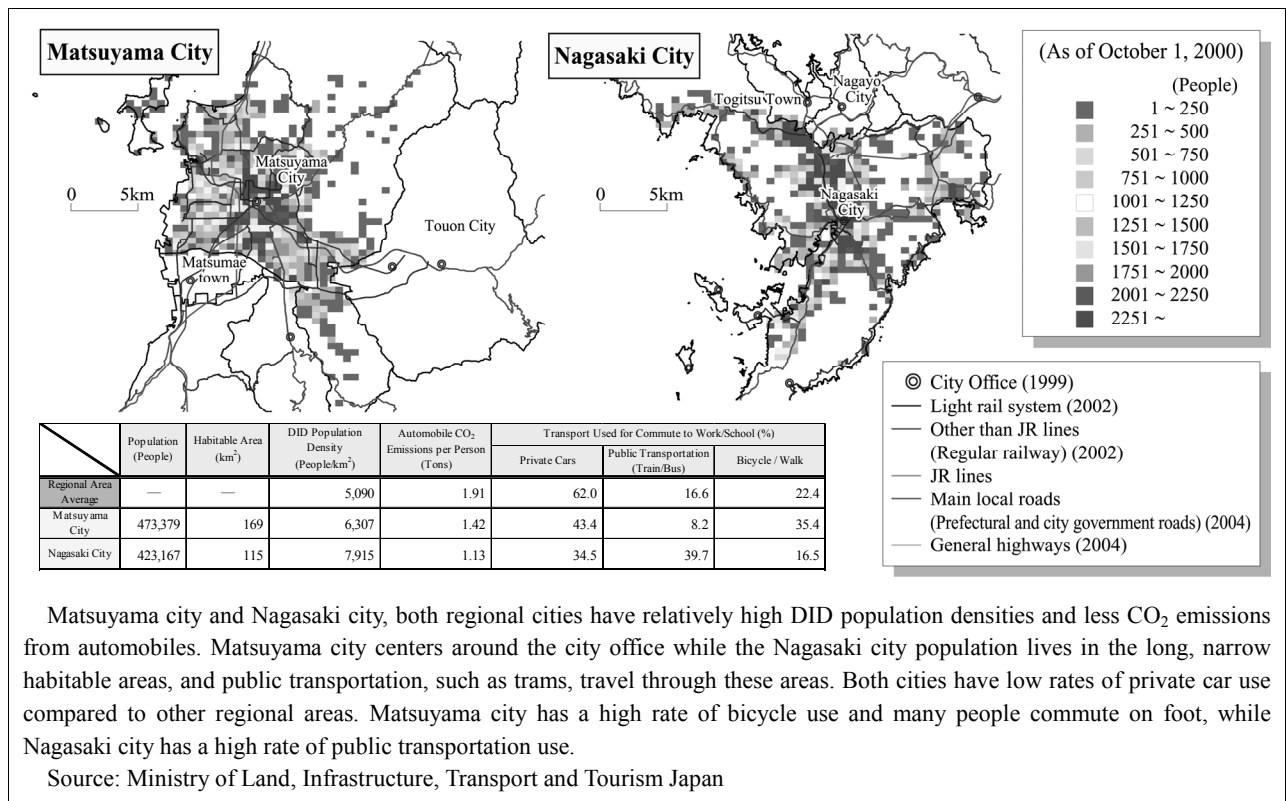
In general, it is presumed that in cities with a dispersed population and city functions the rate of use of private cars, which offer greater freedom and convenience for a small number of people, would be higher than that of mass public transportation systems, such as railways and buses. The relationship between DID population density, private car use, and public transportation use in DID cities and regions shows that cities with higher DID population density use private cars less and public transportation more. Furthermore, CO<sub>2</sub> emissions tend to be less.



**○ Characteristics of cities that emit less carbon dioxide from automobiles**

Cities that have less CO<sub>2</sub> emissions from automobiles have population groupings that are dispersed and have a city center. Alternatively, they have public transport that follows the population dispersion, limiting resident's dependence on cars for transportation.

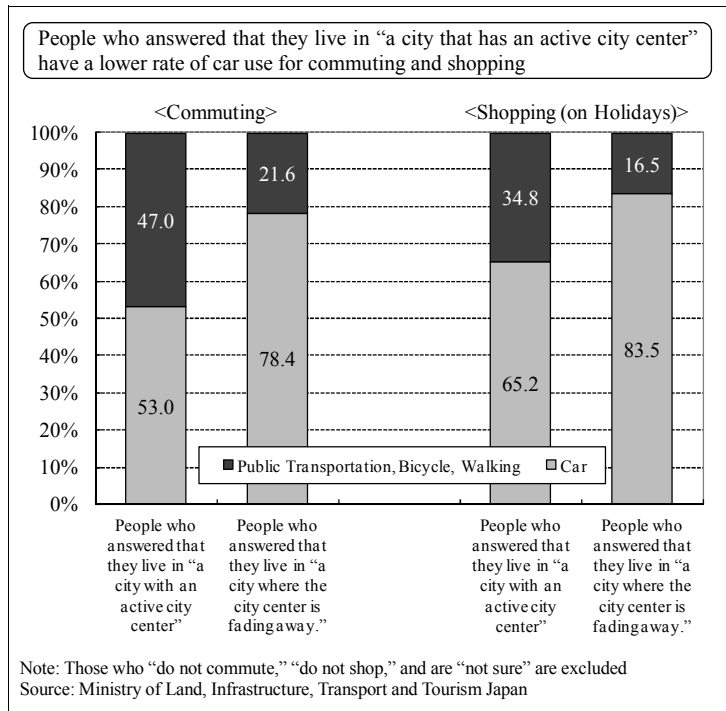
"Population Distribution of Matsuyama and Nagasaki" and "The improvement of public transport."



**(Active city center and people's movements)**

According to the previously mentioned survey on attitudes, people who answered that they live in "a city that has an active city center" had a lower rate of car use for commuting compared to people who answered that they live in "a city whose city center is fading away." Furthermore, the two cities mentioned above had a lower rate of people going to the suburbs from the city center and a higher rate of people going to the city center from the suburbs. This indicates that there is a relationship between the activeness of city centers and people's transportation methods.

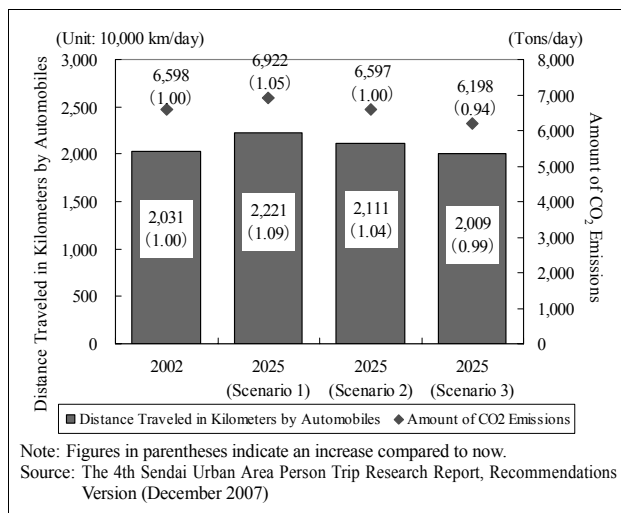
Transportation Method for Commuting to Work/School and Shopping (on Holidays)



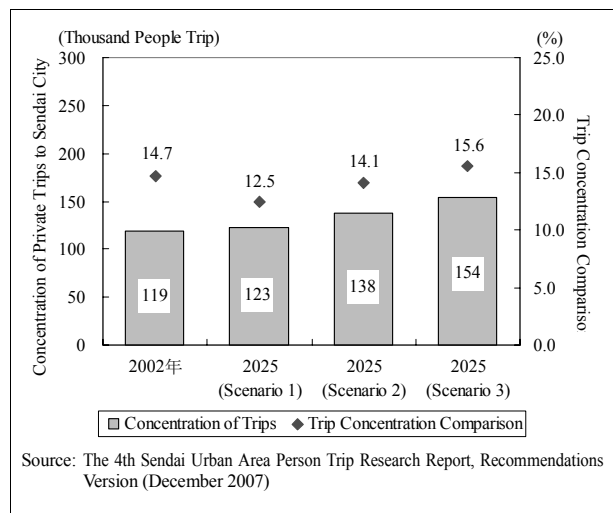
**(Effect when cities are built around public transportation)**

To estimate the effect on reducing CO<sub>2</sub> emissions in cities that are easily accessed by public transportation, the increase or decrease of CO<sub>2</sub> emitted from automobiles now and in 2025 in the Sendai urban area were estimated under the following 3 scenarios: 1) Expansion of low density population at the current rate, 2) Urban areas built based on the current urban plan and 3) Building cities around public transportation. As a result, the amount of CO<sub>2</sub> emitted from automobiles increased under scenario 1); stayed the same under scenario 2); and decreased under scenario 3). Furthermore, private trips to the cities were most frequents under scenario 3), indicating the contribution to the revitalization of city centers.

Distance Traveled in Kilometers by Automobiles in Each Scenario and Amount of CO<sub>2</sub> Emissions



Concentration of Private Trips to Sendai City and Concentration Comparison



**(Making compact cities and local regions)**

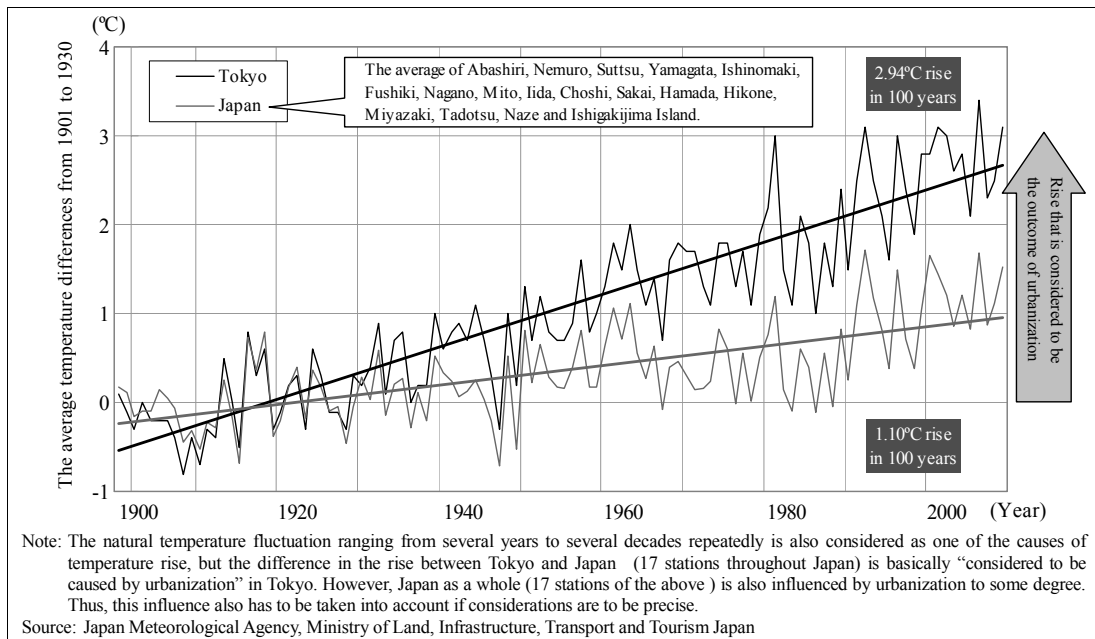
With the population falling and aging, and to control the unregulated dispersion of cities, compact cities and local regions that have commercial, business and public facilities in their centers are favorable not only for environmental aspects but also for contribution to the revitalization of city centers, securing a convenient life for the elderly, and decreasing city management costs. To make attractive cities and local regions where the city functions are centered, it is important not only simply to increase the number of residents in the central parts of the cities but also to design cities compactly so that residents can take run their errands on foot, and create public transportation so that residents do not depend on driving for transport.

○ Conservation, revival and creation of green land and waterfronts

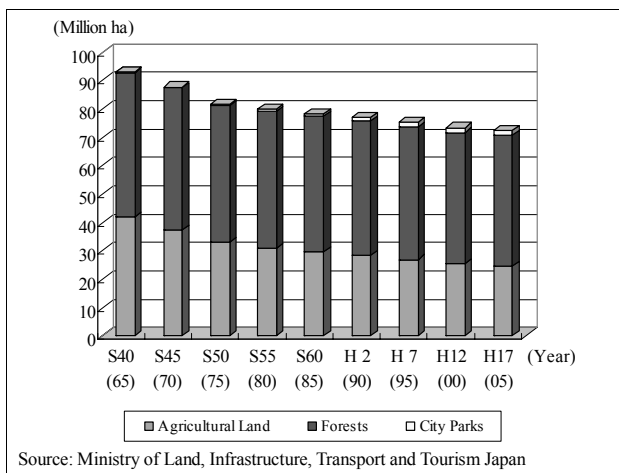
Green land contributes to easing global warming by absorbing CO<sub>2</sub>. When we develop national land, the maintenance and conservation of forests and city afforestation needs to be promoted. In particular, comprehensive afforestation in city areas contributes to reducing the temperature and the heat island phenomenon that are caused by the increase of artificial heat generated from city activities and the increase of artificial land surface due to the building of structures and pavement. Therefore, it is necessary to plan to reduce the burden on the environment through the conservation, revival, and creation of green land and waterfronts.

As possible spaces to increase green land, roofs and walls of buildings are being examined. Afforestation of buildings is not only to increase the number of green areas, but also to contribute to conserve energy used for air conditioning during summer by reducing the amount of sunlight and controlling the heat coming into the building.

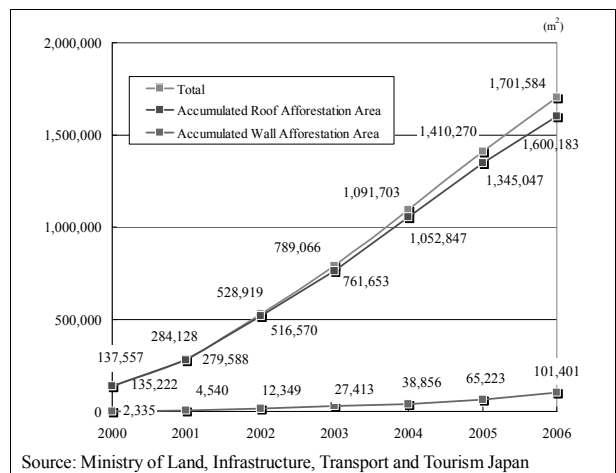
Long Term Temperature Change in Tokyo (1898–2007)



Decrease of Green Land in the Tokyo Metropolitan Area (Tokyo and 3 prefectures)



Enforced Areas of Roof Afforestation and Wall Afforestation in the Nation



Road watering using treated sewage water



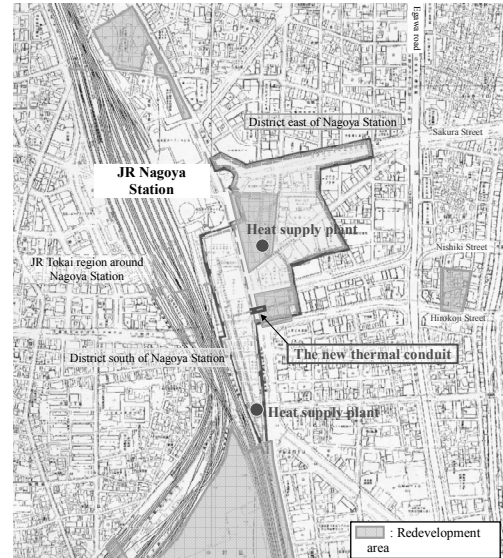
Combined with afforestation, it is also important to secure the water flow of rivers and channels. It is necessary to use not only water from rivers but also ground water, rain water and treated sewage water to revive the waterfront and for road watering.

○ **Promotion of effective energy use and using unutilized energy**

If several buildings in regional areas and cities use energy together, it is possible to streamline energy use and reduce the amount of energy used. For example, the Harumi area in Tokyo made energy conservations of 28% by introducing area air conditioners. Shin-Yokohama in Yokohama city reduced energy use by 18.2% by renovating several buildings to share heat amongst them.

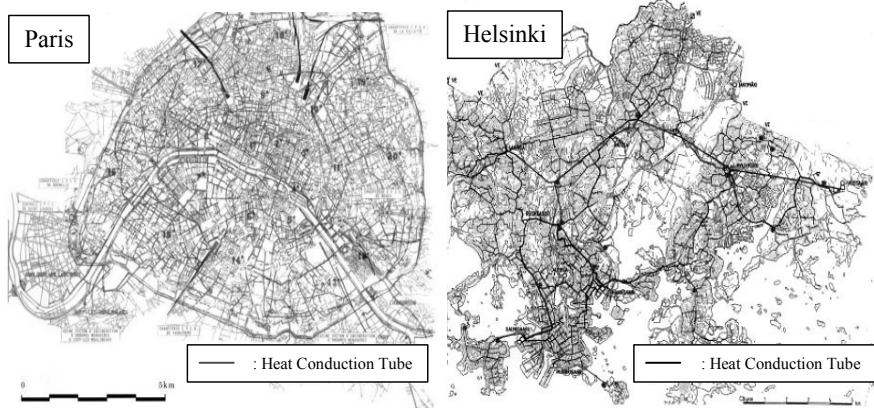
Major cities in Europe have heat conduction networks that use steam and hot water to share heat among cities. Japan also has begun to connect several areas to share energy.

**Ecology City Network Equipment Project around Nagoya Station**



Source: Ministry of Land, Infrastructure, Transport and Tourism Japan

**Heat Conduction Network in Other Countries**



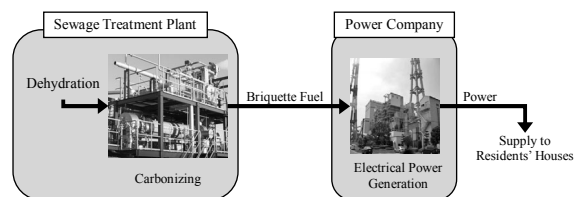
Source: “Research of Equipment Project for Effective Energy Use in Existing City Areas,” Ministry of Land, Infrastructure, Transport and Tourism Japan (March 2006)

It is also possible to reduce the environmental burden even further by taking advantage of heat waste from factories and using waste incineration, briquette fuel or biogas derived from sewage water, the energy from temperature differences of rivers and sewage, and natural energy generated from sunlight or wind.

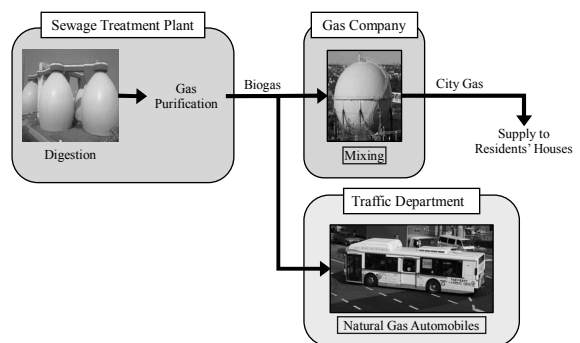
It is necessary to implement city projects that emit less CO<sub>2</sub> and improve the city energy environment by promoting the use of several kinds of energy sources and unused energy.

**Application Example of Using Unutilized Sewage Energy**

Electrical Power Generation in Collaboration with a Power Company by Making Coal Replacement Fuel from Carbonized Sewage Fuel (Tokyo Metropolitan)



Supplement of Purified Biogas as the Raw Material of City Gas and Fuel for Natural Gas Automobiles Collaborating with Gas Company and Traffic Department (Nagaoka City, Kobe City)





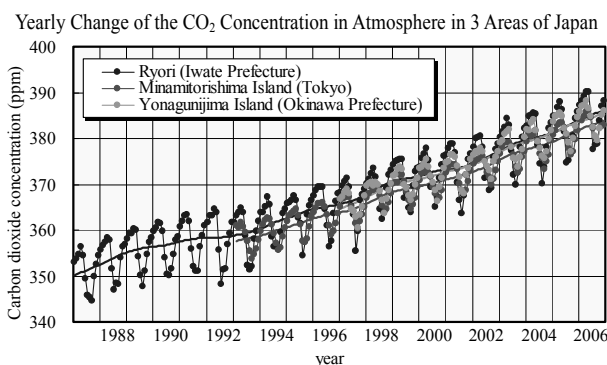
# Chapter 3 The Direction of the Land, Infrastructure, Transport and Tourism Policy in the Global Warming Era

## (1) Monitoring and projection of climate change caused by global warming

### ○Monitoring and projection of climate change

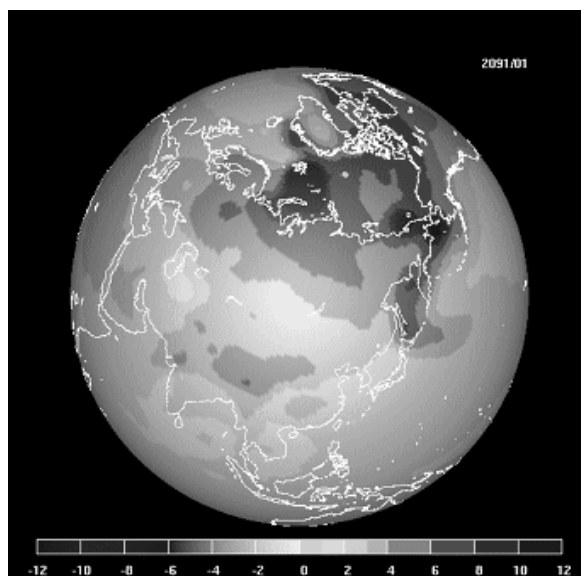
The Japan Meteorological Agency is continuously observing issues related to the global environment such as greenhouse gases concentrations. Furthermore, the Japan Meteorological Agency analyzes the environment by methods such as precisely reproducing world weather of the past, and projects the climate change caused by global warming at the end of the 21<sup>st</sup> century, with the global climate model and the regional climate model with finer resolution around Japan developed by the Meteorological Research Institute .

These accomplishments contributed to the IPCC Fourth Assessment Report. They are also used as a basic resource for the evaluation of the effects of global warming, and efforts to adapt to and mitigate global warming, not only in Japan but all over the world.



Source: Japan Meteorological Agency, Ministry of Land, Infrastructure, Transport and Tourism Japan

Projection Example Based on the Global Climate Model of the Meteorological Research Institute  
(Annual Average Surface Temperature Change between Present and 2081-2100)



Deploying the instruments from the research vessel to measure water temperature, salinity, CO<sub>2</sub> etc. at various depths in the sea.

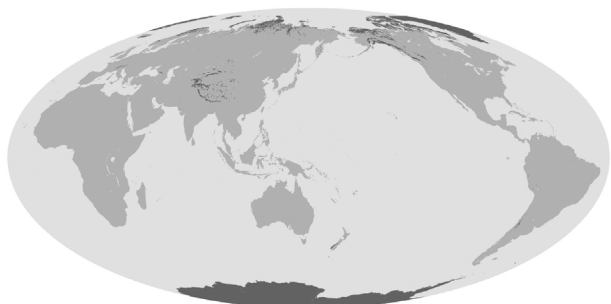


### ○Development of the geographic information contributing to global environmental issues understanding

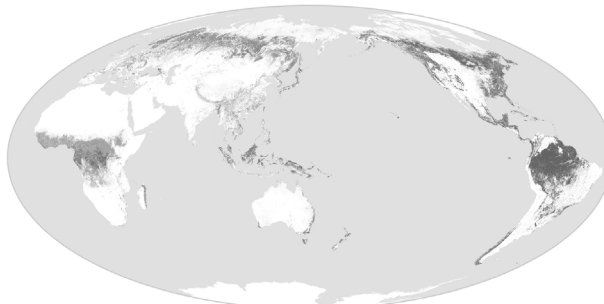
The Geographical Survey Institute is promoting a “Global Map” of worldwide land that clearly shows geographical information including vegetation and land cover, so that the current environment and its changes can be easily seen. In March 2008, it developed the “Global Map Version1” based on the cooperation of National Mapping Organizations from more than 170 countries.

<Global Map Data> (Arranged in January 2008)

(Snow Ice)



(Percent Tree Cover)



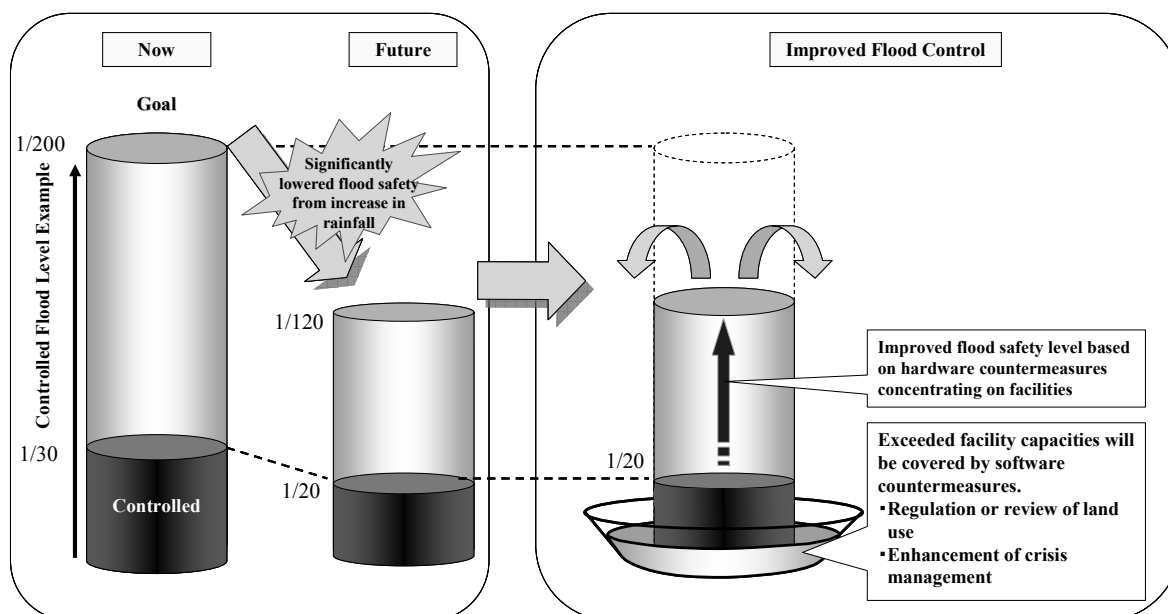
## (2) Activity to adapt to the effects of climate change

### ○ Necessity of adaptation methods based on climate change

There have been reviews and activities overseas about adaptation methods based on climate change. The Organization for Economic Co-operation and Development (OECD) summarized the progress of adaptation methods in developed nations in May 2006. European nations such as the UK, France, and the Netherlands have been promoting and reviewing the adaptation methods as has the USA and Australia.

It is necessary for Japan as well to handle the effects of climate change and to plan adaptation methods, and implement them early, sharing the roles among related organizations, in order to make a strong, safe and comfortable country that endures natural disasters with a long-range perspective. At the Ministry of Land, Infrastructure, Transport and Tourism, we have started reviewing ways to deal with floods, storm surge, and water resource control.

Climate Change Adapting Flood Control Vision



### ○ Enhancement of international ties

On December 2007 in Beppu City, Oita Prefecture, the “1st Asia-Pacific Water Summit” was held, and the “Beppu Message” was announced to “urge immediate action to support developing nations adapt to climate change.” Based on this message, the MLIT started to consider strengthening support given to developing nations. For example, in March 2008 the Japanese government sent a team to Tuvalu to inspect the sea level increase and the water resource problems caused by climate change. The MLIT also sent personnel to consider support necessary to aggressively conduct climate change adaptation methods.







Activities to Ease Global Warming (Sri Lanka in December 2007)



Source: Japan Water Agency

### **(3) Activities to achieve the goals of the Kyoto Protocol**

According to the Kyoto Protocol, Japan's target for the reduction of greenhouse gas emissions during the first commitment period is 6% from the base year. The MLIT is also taking action to achieve this target.

<b>Outline of MLIT's Countermeasures to Ease Global Warming</b>		
<p><b>* Use of Public Transport</b> </p> <ul style="list-style-type: none"> <li>- Vitalize regional public transportation systems.</li> <li>- Establish a flexible system to comprehensively support taking advantage of the laws that concern the activation and regeneration of the local public transportation system and were made by various regional committees to ensure independent local daily activities.</li> </ul>	<p><b>* Efficient Logistics</b> </p> <ul style="list-style-type: none"> <li>- Support (subsidiary budget, etc.) the implantation of efficient logistics, taking advantage of the clean partnership logistics meetings.</li> <li>- Support to establish committees to exchange information between a variety of attendees from various areas for efficient city logistics.</li> </ul>	<p><b>* Smooth Traffic Flow</b> </p> <ul style="list-style-type: none"> <li>- Activities to smooth traffic flows, such as the promotion of ITS, reduction of road construction, implementation of various and flexible highway systems, measures to prevent bottle-necks at railroad crossings, etc.</li> </ul>
<p><b>* Low Fuel Consumption of Automobiles and Ships</b> </p> <ul style="list-style-type: none"> <li>- Greening of automobile tax, special measures on the automobile acquisition tax for low fuel consumption and low emission vehicles, and also for diesel trucks and buses.</li> <li>- Promote the reduction of CO<sub>2</sub> emissions from marine transportation by developing and disseminating the CO<sub>2</sub> emissions standard for boats and ships (10 modes for oceans).</li> </ul>	<p><b>* Improvement of Energy Saving Functions in Houses and Buildings</b> </p> <ul style="list-style-type: none"> <li>- Enhance the bond measurement for large scale houses and buildings.</li> <li>- Subject the buildings of small and medium-size businesses to compulsory compliance.</li> <li>- Promote improving energy saving functions for individual houses through housing companies.</li> <li>- Promote the construction of houses and buildings with high energy saving functions.</li> <li>- Promote the displaying of easy-to-understand energy saving functions.</li> <li>- Establish special incentive measures to promote energy saving improvements for existing houses.</li> </ul>	<p><b>* Building Cities with Less CO<sub>2</sub></b> </p> <ul style="list-style-type: none"> <li>- Realization of compact cities where various city functions and public transportation are concentrated in order to reduce environmental load in cities and regional areas; greening of cities; efficient use of resource energy from sewage systems, etc.</li> </ul>

#### **○ Medium to long-term goals to counter global warming with international framework after 2013**

The “21st Century Environmental Nation Strategy” employs a long-term target to reduce worldwide greenhouse gas emissions to half of the current amount by 2050. To realize this target, it also employs long-term visions of “development of innovative technology” and “creating a low carbon dioxide society.” The MLIT is to take the following actions to objectify these visions.

#### **(The development of innovative technology)**

1) Electric and fuel-cell powered cars that do not emit CO<sub>2</sub>. 2) Using biofuel technology for automobiles, boats and ships, and airplanes. 3) CO<sub>2</sub> emissions standard for boats and ships (10 modes for oceans). 4) Idling stop technology that uses utility power for trucks, boats and ships, airplanes when they're stopped. 5) Development and promotion of houses that have a comfortable inside environment and high energy functions.

#### **(Framework for low carbon dioxide society)**

Making a low carbon dioxide society means to lead a fruitful life and to achieve the reduction of CO<sub>2</sub> emissions at the same time. In order to change our nation to a low carbon society, it is necessary to fundamentally change our lifestyles and how cities and transportation. With this point of view, MLIT is to take actions from 2 aspects: regional development and transportation system structure.

## **Part II**

### **Trends in MLIT Policies**

# Chapter 1: New MLIT Policies Accommodating the Needs of the Times

## (1) Result-oriented policy development

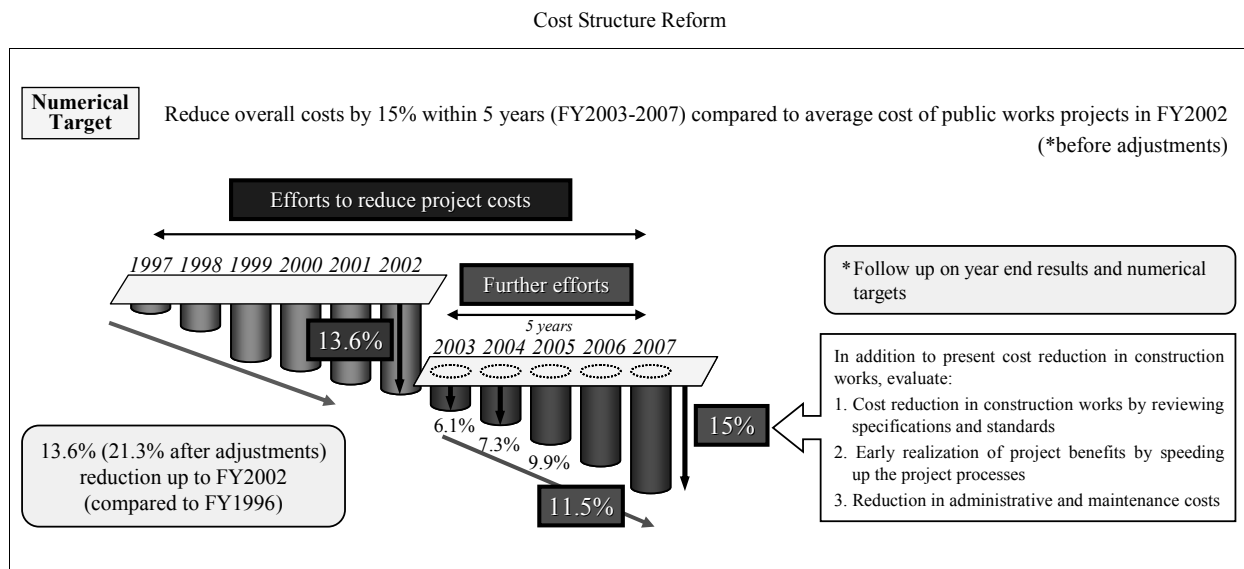
MLIT implements policy assessment (i.e. ex ante evaluation), policy checkup (i.e. performance measurement), and policy review (i.e. program evaluation) and so on. In August 2007, the evaluation process was reviewed so that the units of policy evaluation (measures) and those of the items shown in the budget and account settlement documents will be amended to correspond to each other.

As for the individual public works, the integrated project evaluation system, including the evaluation at project approval, reevaluation and ex-post evaluation after project completion, has been established. Also, examinations are being made for further sophistication of the evaluation technique.

## (2) Efficiency and competitiveness-oriented policy initiative

### ○ Promoting reform of the cost structure of public works projects

MLIT and its affiliated organizations attained a reduction rate of 11.5% in their total cost reduction efforts in FY2006. Starting from FY2008, efforts will be made to promote “Cost Structure Reform” that includes additional evaluation items, putting an emphasis on the optimization of VFM.



### ○ Ensuring quality of public works and implementing appropriate tender contracts

Expanded trials for adding-up methods in construction works and experiments for the comprehensive evaluation method in construction consultant operations were conducted in order to ensure the enhanced quality of public works.

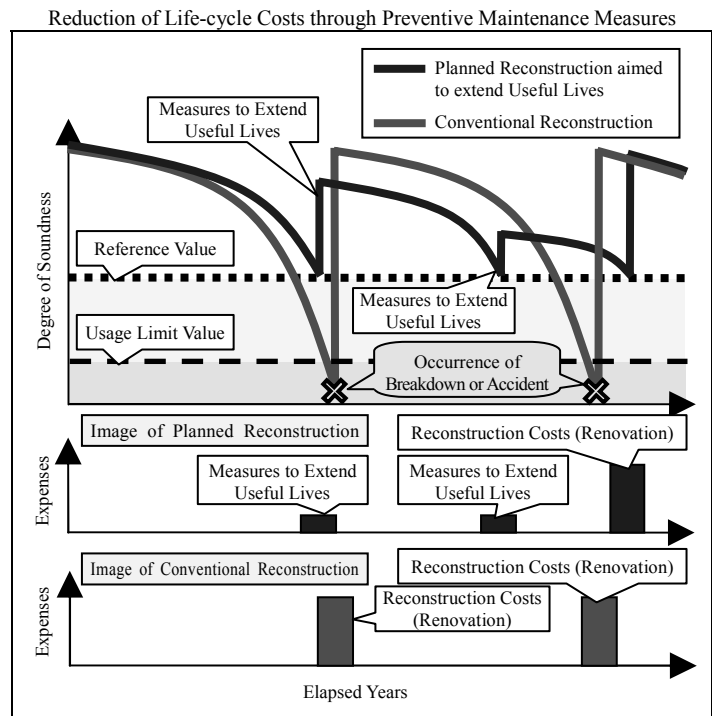
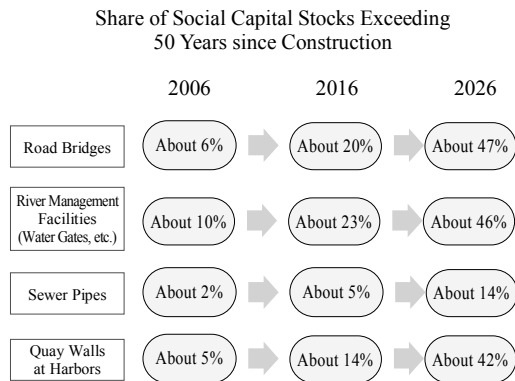
Further, as measures against bidding at dumping prices, a system of examining unreasonably low tender prices was introduced to construction consulting services while experimental application of “examination throughout the working processes” was put into practice. Requests to completely reject biddings at dumping prices have been made to local public agencies with weakness in their order management systems while assistance has also been provided via the introduction of the comprehensive assessment method.

In order to further improve the system of tender contracts, MLIT has been promoting an application of diversified ordering methods, including expanded general competitive bidding, further utilization of the comprehensive evaluation method, use of the bid bond scheme, application of package contracting of design and construction works as well as the CM method.

### ○ Strategic maintenance and renovation in the era of aging infrastructure

As an increasing percentage of infrastructure stocks are becoming old, maximum utilization of the accumulated stocks is indispensable to accurately cope with the political needs of addressing the decrease in population and revitalization of provincial areas.

To attain these goals, “preventive maintenance management” aimed at lowering the life cycle costs of stocks through prolonging their useful lives will be introduced, while an increased emphasis will be placed on “infrastructure-exploiting renovation” to enhance the functions of the existing stocks to obtain effects similar to those provided by newly developed facilities.



**○ Reform of independent administrative agencies**

As for the reform of independent administrative agencies, efforts will be made to integrate the four traffic-related research organizations.

With respect to the reform of public corporations, the Government Housing Loan Corporation was abolished and the Japan Housing Finance Agency was newly established in April 2007. The Japan Shipbuilding Industry Foundation was nominated to be a specified corporation in October 2007.

**○ Overhaul of special accounting and tax revenues exclusively reserved for road construction**

The revision of special accounts have been scheduled for the integration of the special accounts of loans for road development, river improvement, port improvement, airport improvement and urban development into the “Special Account for Social Capital Improvement Projects,” as well as the integration of the special accounts for motor vehicle liability insurance business and motor vehicle inspection and registration into the “Special Account for Motor Vehicle Safety” by the end of FY2008.

With reference to the special accounts for loans for road development, related bills based on the “Review of Special Accounts for Loans for Road Development” prepared by the government and the ruling parties were submitted to the 169th Ordinary Diet Session in December 2007.

**(3) Establishing new relationships among national government, regional governments and private sector**

**○New relationship between the national government and regional governments**

Taking the appropriate role sharing between the national and regional governments into consideration, the MLIT is promoting the establishment of flexible standards/criterion to make appropriate options available for the regions in accordance with their own circumstances (i.e. introduction of local rules.)

**○Utilization of the creativity and ingenuity of private sector**

With the PFI method proactively introduced to utilize private financial resources and capabilities to provide quality public services, the number of MLIT-related projects implemented as at the end of October 2007 amounts to 61.

Regulations by the MLIT are being reviewed on a timely basis to accurately cope with the changes of the times. The 14 preferential measures in the specified structural reform districts have been implemented nationwide, reflecting the accomplishments in the districts.

○ **Administrative operation open to the nation and promotion of interactive government**

The “MLIT Hotline Station” has been set up to obtain a broader knowledge of the nation’s opinions and demands. For the purpose of disclosing in plain terms negative information, including the history of punishments imposed on business operators, the “Internet Search Site for Negative Information” will be provided on the MLIT website.

Furthermore, for the purpose of ensuring the transparency and fairness of social capital development projects in their planning and subsequent stages, new guidelines were established in FY2007 that show the standard philosophy on how the technical and professional studies of the project schemes and the process of scheme examination should be carried out, in addition to the existing procedures to invite the nation’s participation.

**(4) Drawing up the prospects on national land and social capital**

○ **Promoting establishment of the National Spatial Strategies**

Following amendments to related laws in 2005, it was decided to newly establish the National Spatial Strategy so that it now consists of a two-tier structure of the National Plan and Regional Plan with the aim of transforming ongoing planning initiated by the national government to decentralized planning. The National Plan covers fundamental policies of national land construction while the Regional Plan deals with more independent regional and provincial planning and features their geographical characteristics.

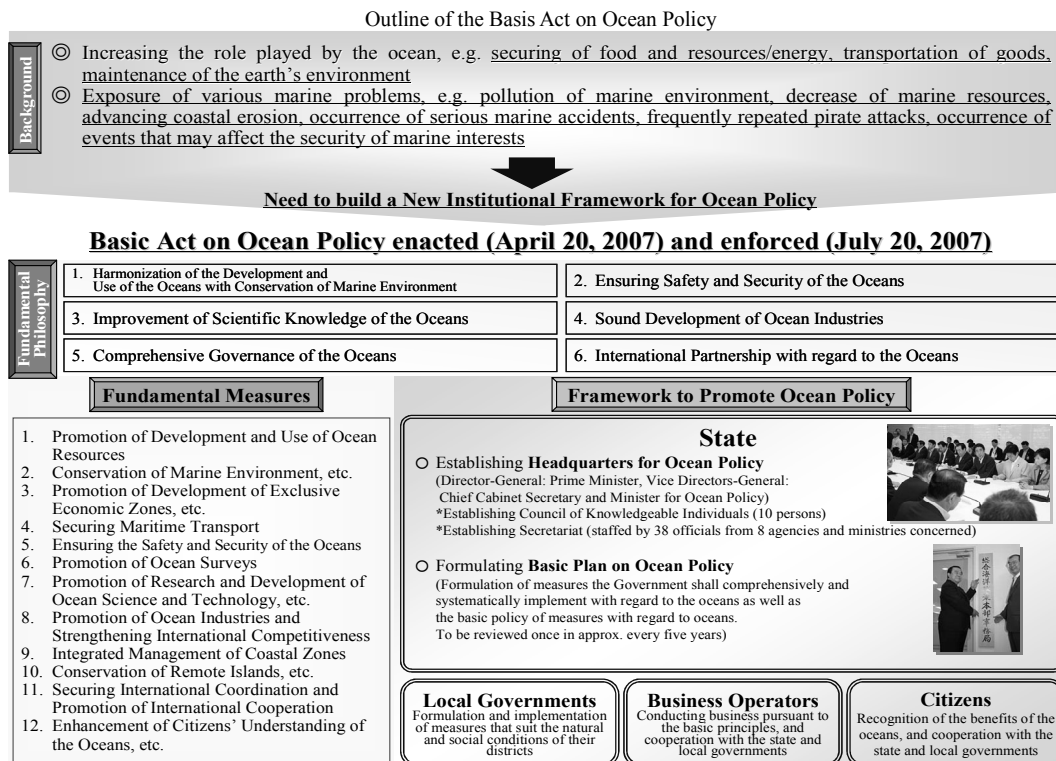
The Fourth National Land Use Plan (National Plan) declares a fundamental policy of “sustainable national land management” aiming at handing down the national land to the next generation in a better condition.

○ **Promoting establishment of the Key Plan of Social Capital Improvement for the next term**

The Key Plan of Social Capital Improvement aims at integrating the existing plans developed for nine different business areas into a single plan to implement the infrastructure development projects in an intensive, effective and efficient manner. As the current plan expires in 2007, the superseding Key Plan of Social Capital Improvement in the next term is scheduled to be drawn up (to be approved by the Cabinet) in FY2008. Based on the Key Plan of the next term, the respective regional blocks are to put together the “Key Policy of Social Capital Improvement for Regional Blocks” in the next term.

**(5) Promotion of the new marine/coastal region policy (establishing a marine-based country)**

Under the “Basic Act on Ocean Policy” enacted in April 2007, the Headquarters for Ocean Policy were established in the Cabinet and MLIT Minister Tetsuzo Fuyushiba was appointed as the first minister for ocean policy. Thus, a system to comprehensively and intensively promote ocean policy has been established. Being responsible for broad-ranging marine/coastal area policies, MLIT is actively participating in the government’s efforts.



## Chapter 2: Realizing a Tourism-based Country of Beauty

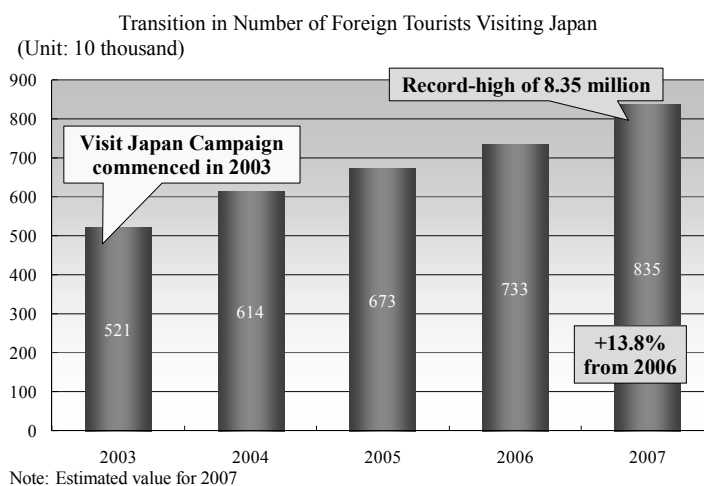
### (1) Tourism trends

#### ○Significance of establishing a tourism-based country

Tourism not only contributes to the revitalization of regional economy, the increase in employment opportunities and the development of all other areas of the nation's economy, it also has significance in promoting mutual understanding with other nations. As Japan will have an aging society of an unprecedented level combined with a falling birthrate, and as the development of full-scale international exchange is expected in Japan in the future, tourism takes on an important role, in promoting mutual understanding with other nations, and also in creating the demand, through an increase in the number of people participating in exchange, to activate the nation's economy.

#### ○International tourism today

Thanks to the efforts of the Visit Japan Campaign, the estimated number of foreign tourists who visited Japan in 2007 surpassed 8 million for the first time in history and amounted to about 8.35 million. The estimated number of Japanese tourists who visited locations abroad in the same year is 17.30 million; thereby the international tourist traffic is expected to hit an all time high of about 25.65 million.



#### ○Enactment of the Basic Act on the Promotion of a Tourism-based Country and the Formulation of a Master Plan for the Promotion of a Tourism-based Country

Pursuant to the “Basic Act on the Promotion of a Tourism-based Country” enacted in December 2006, the Master Plan for the Promotion of a Tourism-based Country, the basic scheme to realize a country based on tourism, was approved by the Cabinet in June 2007. Formulated in the Master Plan were five fundamental goals to be achieved and concrete measures to realize them.

#### ○Foundation of the National Tourism Agency

The decision was made to found the National Tourism Agency for the purposes of specifying an organization responsible for tourism administration and establishing a framework to enable systematic and effective execution of operations, and a bill to that effect was presented at the 169th session of the Diet.

#### [Five Fundamental Goals set in the Master Plan for the Promotion of a Tourism-based Country]

1. To increase the number of foreign tourists visiting Japan to 10 million per annum before the end of 2010 and to maintain the number of Japanese tourists going abroad at a similar level, at least, in the future.
2. To increase the number of international conferences held in Japan by more than 50% before the end of 2011, making Japan the largest site in Asia for international conferences.
3. To increase the average number of stays of the Japanese tourist during his/her domestic trips by one night before the end of 2010, making the total to four nights per tourist per annum.
4. To increase the number of Japanese tourists going abroad to 20 million per annum before the end of 2010 and enhance international exchanges with other nations.
5. To increase total domestic tourism consumption in Japan to ¥3 billion per annum before the end of 2010, through the additional tour demand newly created by environments that promote tours and diversified services provided through an improvement in productivity of the tourism industry.



## **(2) Efforts to realize a tourism-based country**

### **○Creation of attractive points of interest with international competitiveness**

For the purpose of promoting the creation of attractive points of interest with international competitiveness, assistance is being given, through the Tourism Renaissance Subsidizing Scheme and Practical Plan for Tourist Destination Development, to private organizations' projects to improve the environment to accept foreign tourists and to develop human resources, in combination with the aid projects conducted by the respective local municipalities.

### **○Improvement of international competitiveness of tourism industry and development of human resources to contribute to the promotion of tourism**

With the aim of revitalizing the accommodation industry, demonstration experiments were made to introduce a system where lodging and meals are provided separately to the guests. For the purpose of developing human resources that can contribute to the promotion of tourism, the MLIT has been sponsoring tourism charisma schools and promoting cooperation among the government, industry and academia to train tourism-related workers.

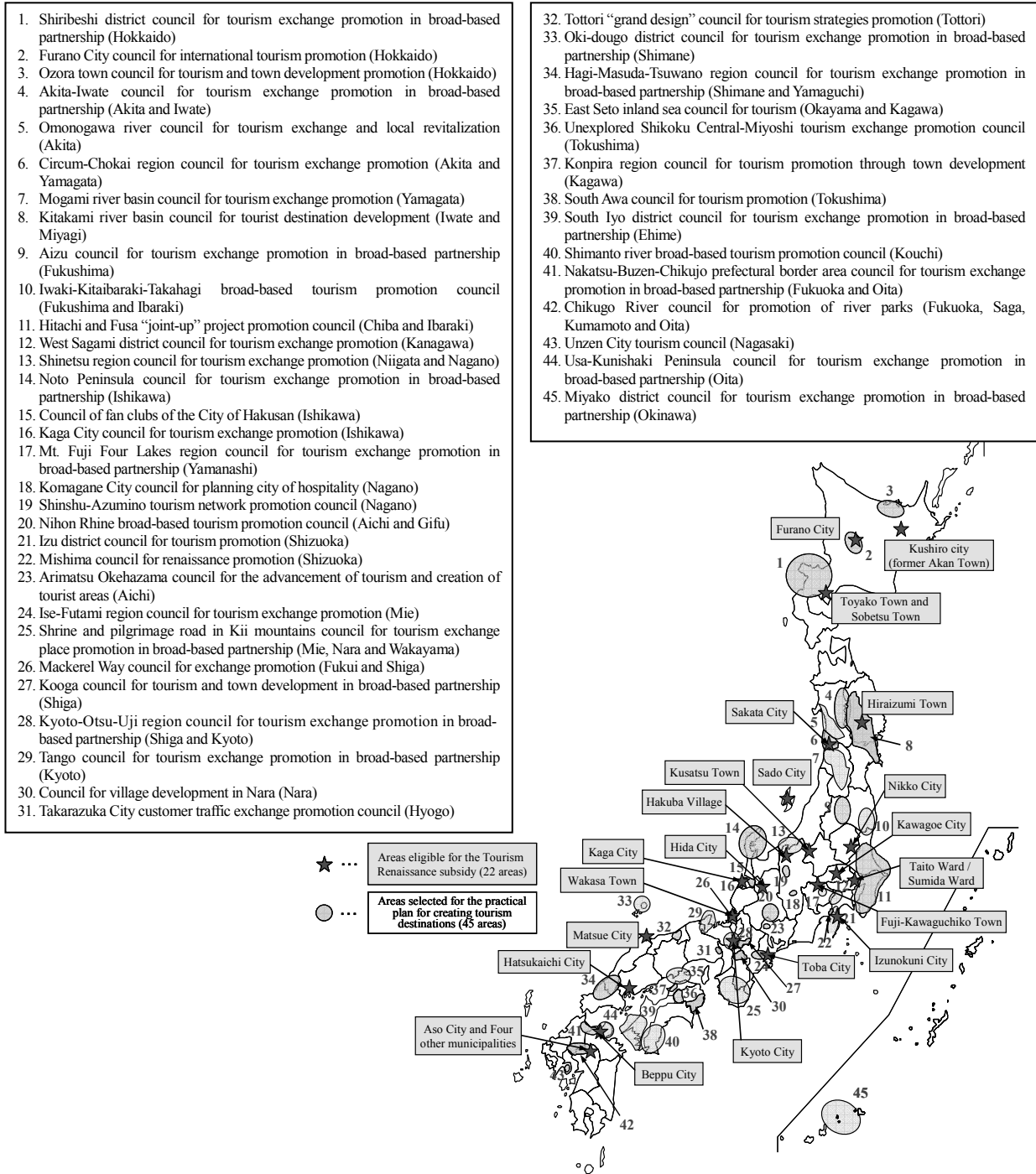
### **○Promotion of international tourism**

The Visit Japan Campaign is currently under operation through the joint efforts of the government and private sectors with a goal to promote the attractiveness of Japanese tourism and appealing tour products to foreign tourists abroad. From now on, the project will be transformed into the "Visit Japan Upgrade Project" with the goal of increasing the number of foreign tourists who visit Japan on a repeated basis. Efforts will be made to increase convenience for tourists by unifying IC cards or ensuring their common use among different business operators. Together with the promotion of international conferences to be held or invited to be held in Japan, efforts will be made to improve the facilities to accept foreign tourists to Japan.

### **○Improvement of the environment to promote tours**

Efforts are being made to formulate guidelines to promote universal design in tour products and tourist destinations, develop a system to provide information on tourist destinations, to protect consumers with respect to the diversified tourism products and to ensure the safety of tourists.

Areas Selected for the Tourism Renaissance Subsidizing Scheme and  
Practical Plan for Tourist Destination Development



### (3) Developing scenic landscapes and other aesthetic land planning

#### ○Developing pleasant landscapes

As the “Three Laws on Landscape and Greenery” went into implementation, the number of landscape administrative organizations under the Landscape Law increased to 301 as of October 2007, and 62 organizations have established landscape plans.

To promote infrastructure development that pays adequate attention to landscapes, the MLIT is piloting a landscape assessment system for some of the projects under the ministry’s direct jurisdiction or management.

#### ○Development of attractive landscapes the public can be proud of

The MLIT is moving forward with the cosmetic removal of power poles based on the 2004-2008 “Plan to Dispense with Power Poles” as well as the promotion of the “Scenic Byway Japan” project and development of waterside spaces.

Flexible allocation measures of budgets are made available throughout the fiscal year to facilitate effective implementation of the projects by various government offices aimed at developing pleasant landscapes.

## Chapter 3: Promoting Regional Revitalization

### (1) Initiatives toward regional revitalization

The Fukuda Cabinet recognized regional revitalization as one of the most important issues facing Japan. With the aim of proactively dealing with regional differences, the implementation structures of the four headquarters established in the Cabinet in connection with regional revitalization (Headquarters for Urban Renaissance, Headquarters for Promotion of Specified Zones for Structural Reform, Headquarters for Regional Revitalization and Headquarters for Revitalization of Central City Areas) have been integrated to promote the respective initiatives in a unified manner.

Within the MILT, regional revitalization is also recognized as one of the most important issues. Taking advantage of the framework of extended regional planning in the national spatial planning scheme, the MLIT will intensively promote effective measures, based on the philosophy of “selection and concentration,” including concentrated investment in the badly needed infrastructures and assistance for the creative regional initiatives toward the revitalization of central city areas and the promotion of tourism.

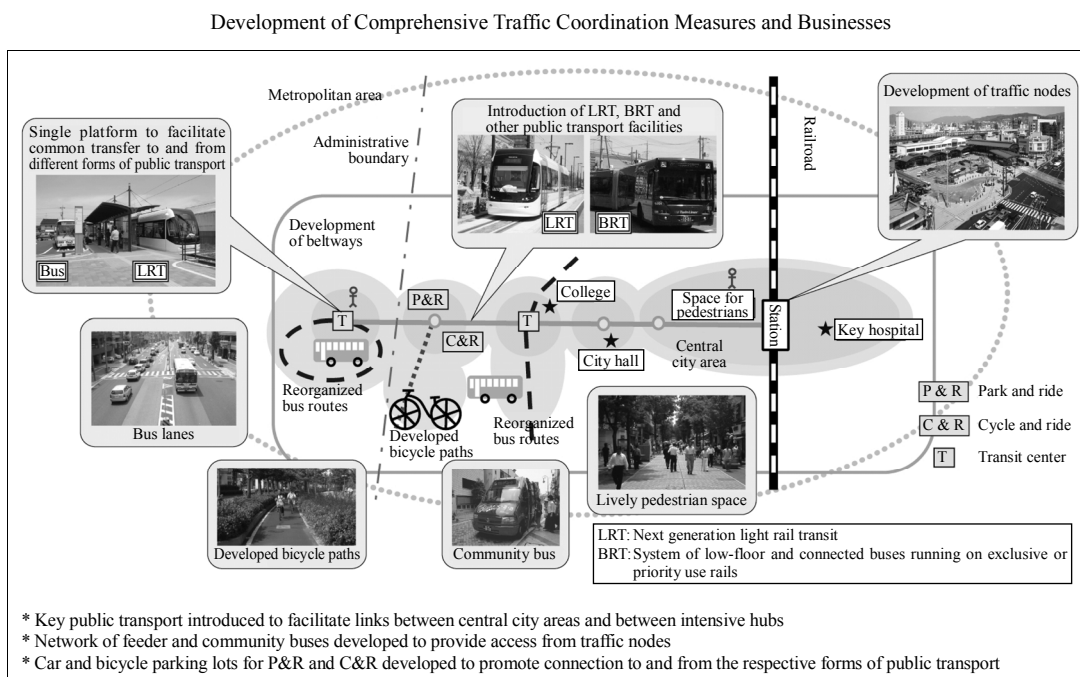
### (2) Promoting policies that support regional revitalization

#### ○Initiatives toward enhanced autonomy and discretion of regions and private sectors

The MLIT is working for the expansion and better operation of the “Regional Revitalization Infrastructure Reinforcement Grants,” “Regional Housing Grants,” “Community Renovation Grants” and other grants, and is also encouraging local governments to take advantage of the expertise and funds of the private sector.

#### ○Comprehensive initiatives to realize intensive-type urban structures

The MLIT is moving forward with the realization of intensive-type urban structures through comprehensive efforts to coordinate various policy measures that include amendments to the “Act on Revitalization of Central City Areas” and city planning law, the development and revitalization of public transport facilities based on the rural/regional comprehensive traffic strategy, and urban development measures aimed at developing stronghold city areas.



#### ○Hard and soft infrastructure development

The development of roads based on city planning, traffic nodes and high-standard banks, improvement of railroad crossings, utilization of sewers and ports, maintenance of cadastral data, the utilization of deep underground space, and the development of community-based town management are being promoted in urban districts.

**○Independence and revitalization of expanded regional blocks and regional/national building**

The Regional Independence and Revitalization Comprehensive Assistance Program was introduced in 2007 with the aim of promoting the independence and revitalization of expanded regional blocks.

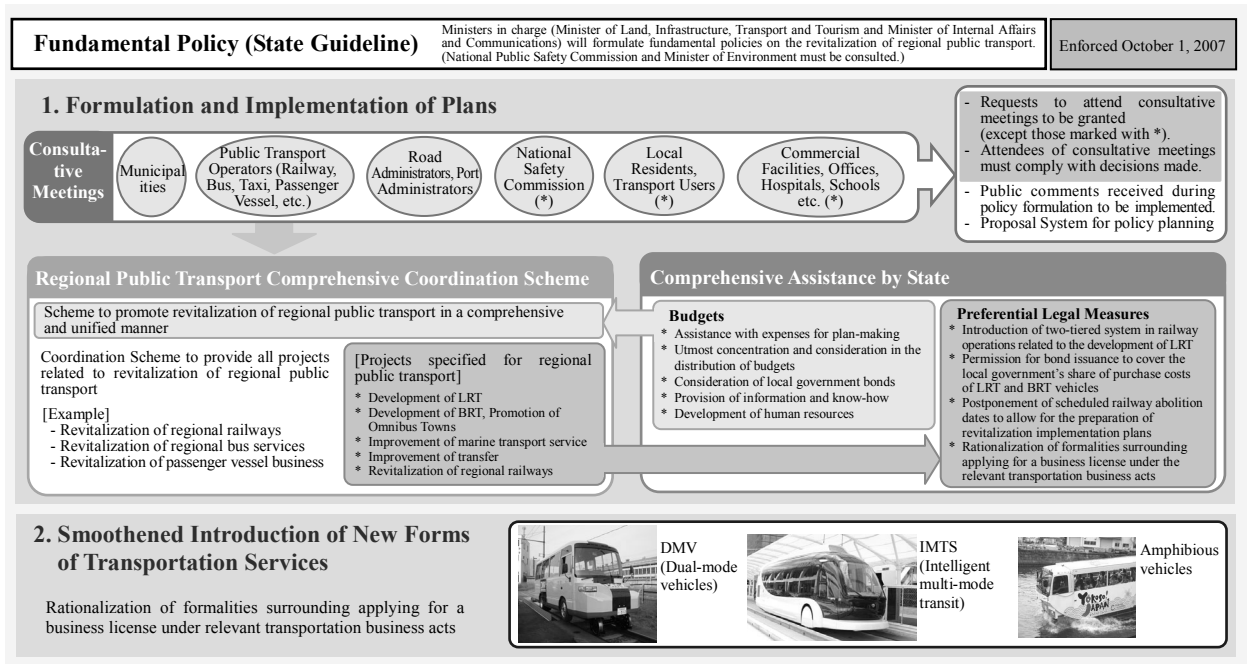
**○Promoting coordination and exchange among regions**

The MLIT is improving roads in order to promote identification among integrated municipalities and exchange among the regions, exchange between cities and farming, forestry and fishing villages as well as settlement in provincial areas.

**○Securing means of regional transportation**

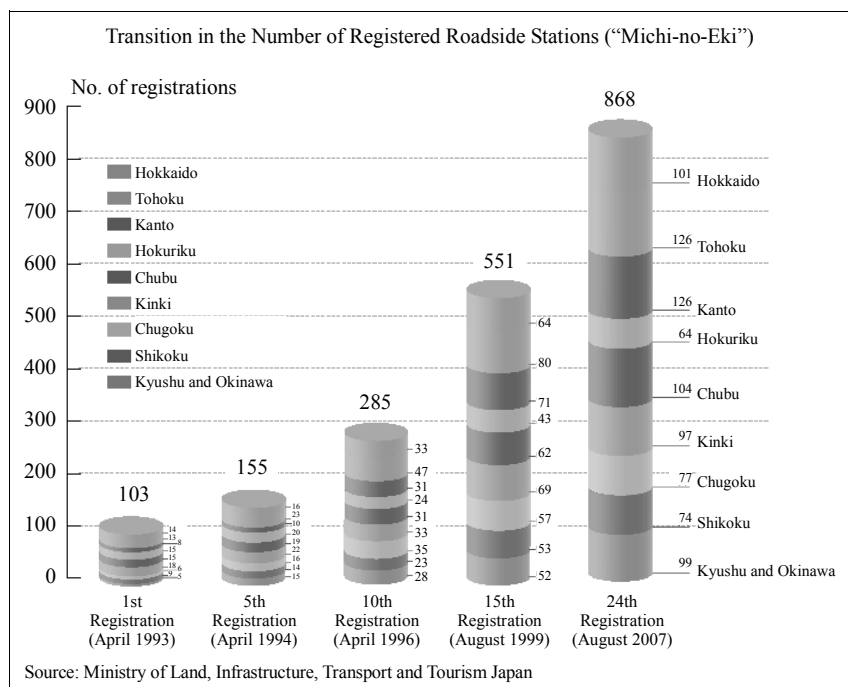
Pursuant to the Act concerning Revitalization of Local Public Transport, enforced in October 2007, the MLIT is making efforts to develop a system to facilitate consensus-building on the most appropriate means of regional public transport and ensure steady implementation of the agreement while rendering assistance to the revitalization of local railways and the maintenance and security of local bus routes and air and sea links to remote islands.

Framework of the Act concerning the Revitalization of Local Public Transport



**○Development of towns and exchange sites making use of regional characteristics**

The MLIT is promoting the development of regions making full use of their natural environment, history and culture, and the development of various businesses and systems closely related to regions, including Roadside Stations ("Michi-no-Eki"), Riverfront Town Development ("Kawamachi-zukuri"), Ports and Oases ("Minato-to-Oashisu") and Seaside Stations ("Umi-no-Eki").

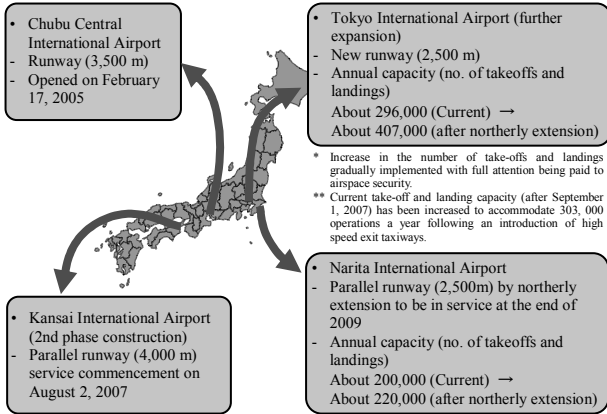


### (3) Promoting urban renaissance projects

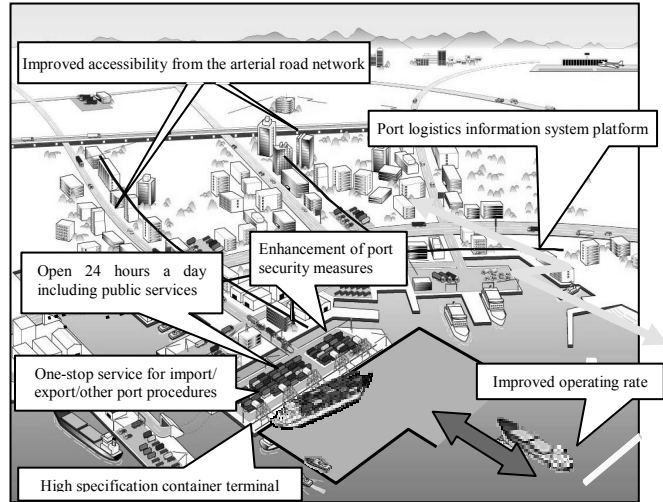
#### ○Achieving various forms of vigorous exchanges and economic activities

The MLIT is working to reinforce the capacity for international exchange and logistics and to develop ring road networks.

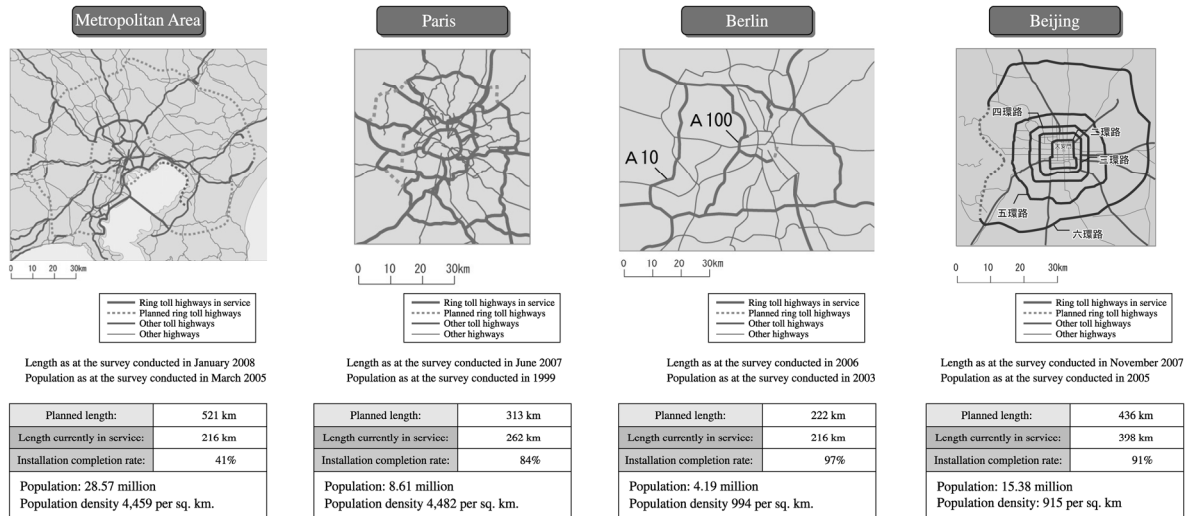
Major Airport Projects in Metropolitan Areas



Functional Reinforcement of International Ports



International Comparison of Metropolitan Ring Expressway Networks



Source : MLIT

Source :  
Road extension : Regional Road and Infrastructure Planning division, Ile-de-France

Source :  
Road extension : MAXIATLAS 2006/2007, Autobahn HP

Source :  
Road Extension : Road Administration Bureau, City of Beijing

Population and population density: Generally that of the area inside the ring road.

#### ○Making cities safer

The MLIT aims to further develop a core wide-area disaster prevention centers that serve as the centers for many local governments' disaster prevention activities. The ministry also focuses on rebuilding safe and secure cities through coordination between anticrime measures and community building initiatives.

#### ○Building a favorable urban environment

The MLIT is promoting city makeovers that result in zero-waste cities in the three major metropolitan areas, with a new medium- and long-term plan formulated for the Tokyo Metropolitan Area in January 2007. Efforts are also being made to preserve, restore and create natural environments in cities.

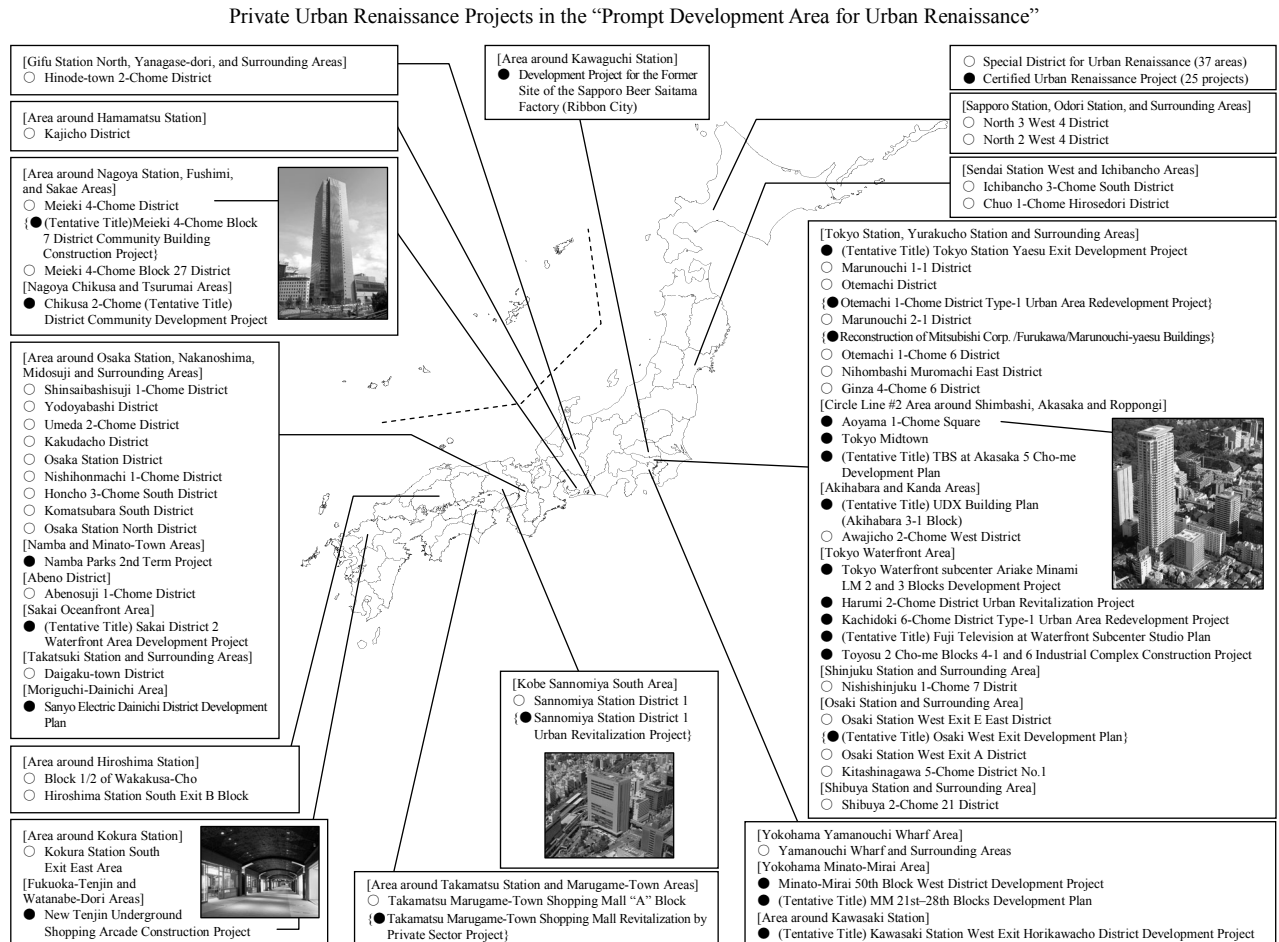
#### ○Promoting urban development initiatives by private sector

The number of the "Prompt Development Areas for Urban Renaissance," under the "Special Measures Act for Urban

Renaissance,” to be developed as centers of urban renaissance in the first round amounted to a total of 65 specified areas, including Tokyo, Osaka, and other Specified Cities and/or Prefectural Capital Cities. In these areas, various urban development initiatives by the private sector are under way (as at the end of March 2008).

### ○Flexible budget allocations promoting urban renaissance

Flexible budget allocation measures budget, including the Urban Renaissance Project Promotion Budget, are provided throughout the fiscal year to facilitate effective project implementation.



## **(4) Promotion of development measures for specified areas**

The MLIT is proactively promoting the development and promotion of heavy snowfall areas, remote islands, the Amami Islands, the Ogasawara Islands and various peninsulars.

## **(5) Promotion of comprehensive development of Hokkaido**

Pursuant to the plans of the Hokkaido Comprehensive Development Program for the 6th Term (Program term: 1998 to around 2007), the MLIT has been making efforts to enhance the role of the island as a national food production base, the development of regions using clean energy, the promotion of tourism exchange, the development of infrastructures utilizing local autonomy and discretion, the promotion of the areas adjacent to the Northern Territories and the promotion of Ainu culture. From 2008, the MLIT will formulate new plans and promote measures based on them.

## Chapter 4: Setting the Stage for Independent and Vibrant Life

### (1) Realization of a society embracing universal design

#### ○Realization of a barrier-free society based on the concept of universal design

Efforts are being made to realize a society that embraces universal design, by improving both structural and non-structural aspects, including barrier-free public transport, and residential, living and walking spaces, as the “Law for Promoting Barrier-free Transport and Facilities for the Elderly and the Disabled (New Barrier-free Law)” entered into force as of December 2006.

Percentage of Barrier-free Facilities in Public Transportation			
As at March 31, 2007			
○Transportation system facilities (with a daily average total of 5,000 or more users)			
	Total	Facilities in conformity with transport accessibility improvement standard <sup>(Note 1)</sup>	Proportion of total
Railway/tramway stations	2,801	1,758	62.8%
Bus terminals	42	32	76.2%
Passenger ship terminals	9	8	88.9%
Airport terminals	23	15	65.2% (100%) <sup>(Note 2)</sup>
Notes: 1) Total of those in conformity with the transport accessibility improvement standard (in relation to the width of passageways, slopes, escalators, elevators, etc.) as stipulated in Article 4 of the Transport Accessibility Improvement Law.			
2) All the airport terminals are equipped with elevators, escalators and slopes accessible to the disabled as at the end of March 2001.			
○Vehicles, etc.			
	Total of vehicles, etc.	Vehicles, etc. in conformity with transport accessibility improvement standard <sup>(Note 1)</sup>	Proportion of total
Railway/tramway rolling stocks	51,618	10,309	20.0%
Buses	58,735		
Low-deck buses		19,434	33.1%
Non-step buses		10,389	17.7%
Welfare taxis		9,651	-
Passenger vessels	939	108	11.5%
Airplanes	496	270	54.4%
Note: 1) Total of those in conformity with the transport accessibility improvement standard as stipulated in Article 4 of the Transport Accessibility Improvement Law.			

Number of Construction Plans of Specified Buildings accredited under the New Barrier-free Law

FY:	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
FY total	11	120	229	320	382	366	332	232	280	367	386	345	331
Cumulative total	11	131	360	680	1,062	1,428	1,760	1,992	2,272	2,639	3,025	3,378	3,709

Source: Ministry of Land, Infrastructure, Transport and Tourism Japan

#### ○Development of parenting environment in the society with declining birth rate

Regarding women who wish to join the workforce while they are mothers, the MLIT is making efforts to provide support for obtaining residences befitting newly married couples and parents with children, as well as support for the promotion of telework and child support transportation services. With the aim of developing an environment that poses no obstacles to children’s growth, the MLIT is promoting the development of safety measures concerning playground equipment in city parks.

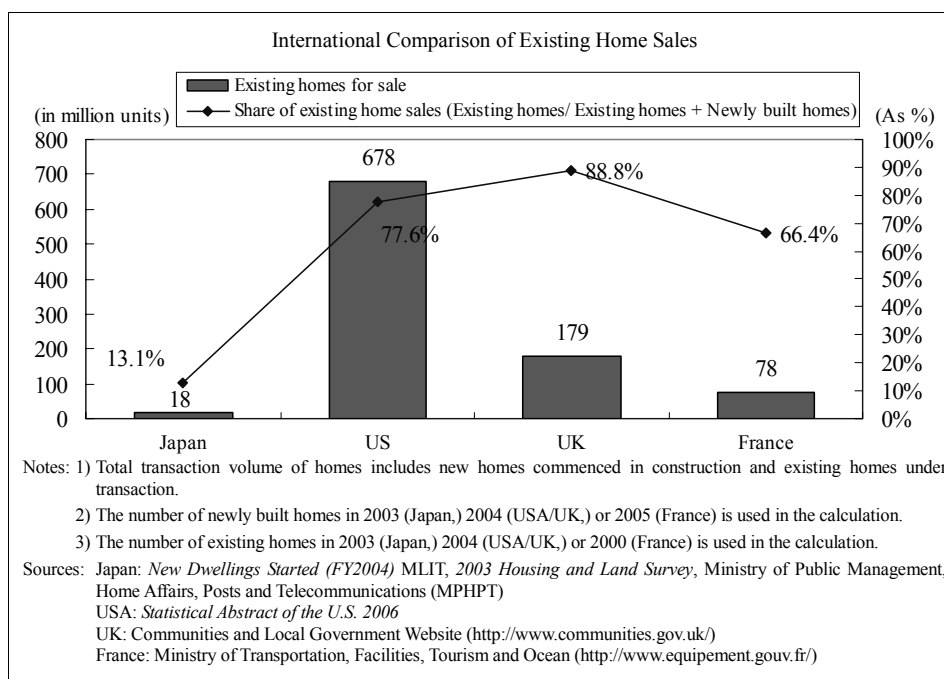
#### ○Responding to the aging society

In addition to the efforts to develop a safely habitable environment for senior citizens, the MLIT is striving to provide transportation services in combination with other welfare measures to address the aged society, as evidenced by the entry into force of the “Revised Road Transportation Law” in October 2006. The implementation of this law provided for the creation of a registration system enabling NPOs and other entities to provide revenue-generating welfare transportation and revenue-generating transportation in depopulating areas.

## (2) Providing quality housing

### ○Promotion of the Basic Program for Housing (National Plan)

Pursuant to the Basic Program for Housing (National Plan) (approved by the Cabinet in September 2006), the MLIT is currently promoting measures related to the promotion of securing and improving stability in housing, with the aim of attaining the following four goals: (1) the development of quality housing stocks and their being passed on to the future generation, (2) the development of a sound housing environment, (3) the development of an environment for a housing market where various habitation demands are realized, and (4) the securing of housing stability for those with significant requirements for such stability. In efforts to promote the “Housing with 200-Year Durability” scheme, aimed at extending the lifespan of residences, the “Bill on Promotion and Diffusion of Quality Housing with Long Life” was presented by the MLIT at the 169th session of the Diet.



### Purpose and Volume of Public Rental Housing

	Purpose	Volume provided
Housing Provided by Central and Local Governments	To provide quality, low-rent housing to people with lower incomes in need of housing	About 2.19 million units (2006)
Improved Housing	To improve the housing environment of inferior residential districts and provide public rental housing for former residents in need of housing	About 160 thousand units (2006)
Rental Housing Provided by the Urban Renaissance Agency	To provide in metropolitan areas, through the development of residential city districts, quality rental housing — mainly family-oriented units, located within shorter distances of work places — that is not supplied by private business operators at an adequate level. (A rental housing system to support private business operators in providing family-oriented rental units was introduced in 2002.)	About 770 thousand units (2006)
Rental Housing Provided by Housing Corporations	To supply quality rental housing in accordance with local demand	About 140 thousand units (2006)
Local Quality Rental Housing	To provide private land owners with financial support to enable them to develop quality rental housing for aged or child-raising families and offer it at reduced rents	Specified quality rental housing about 160 thousand units (2005) Quality rental housing for the aged about 26 thousand units (2006)
Rental Housing Financed by the Japan Housing Finance Agency	To provide rental housing to the aged and child-raising families with necessary funds available through long-term and fixed-interest loans from the Agency	
Rental Housing Provided by Farmland Owners	To help farmland owners build and provide quality rental housing in metropolitan areas by subsidizing the interest charged in financing construction	

- Notes: 1) The number of rental housing units provided by the Urban Renaissance Agency includes that of quality rental housing for the aged.  
 2) The number of rental housing units provided by the Housing Corporation does not include the number of specified quality rental housing and quality rental housing for the aged.  
 3) In 2007, the systems of specified quality rental housing and quality rental housing for the aged were integrated into a newly established regional quality rental housing system.

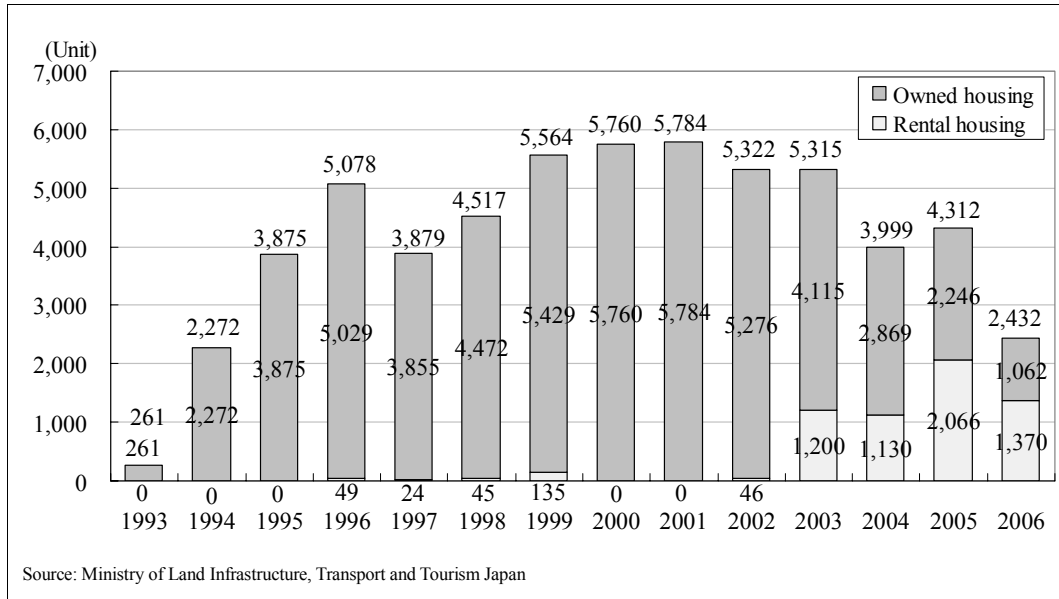
Source: Ministry of Land Infrastructure, Transport and Tourism Japan



○Promotion of favorable housing supply and its effective use

The MLIT is making efforts for the effective use of fixed-term land leases and the revitalization of “new towns” as well as for policy review to facilitate a stable supply of housing sites with sound environments in the areas necessary.

Transition in the Number of Housing Units with Fixed-Term Land Leases

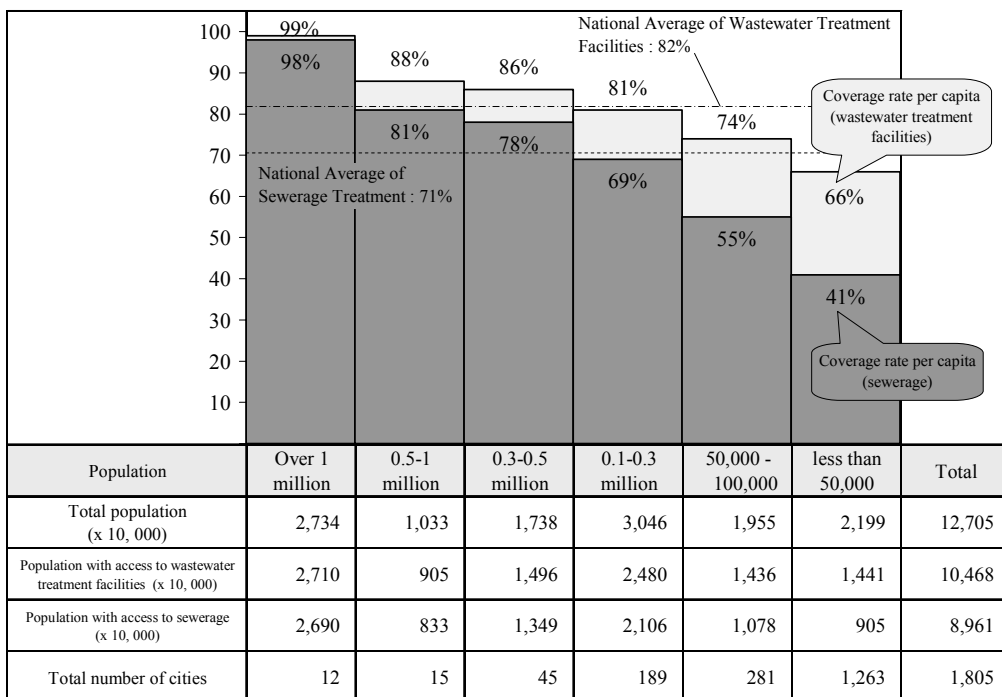


**(3) Realizing comfortable living**

○Sewerage development

The MLIT is working for the securing of a sustainable sewage service through appropriate stock management, an improved management base, the full utilization of private-sector initiatives and the securing of technology while promoting the dissemination of waste water disposal by sewerage.

Prevalence of Sewerage Systems in Municipalities of Different Population Scales (as at the end of FY2006)



### ○Development of city parks, etc.

The MLIT promotes the development of government-managed parks and the preservation of historic temples along with the improvement of the functions that contribute to comfortable lifestyles.

### ○Stable supply of water resources

The MLIT is making efforts in ensuring constant water availability, revitalizing water resource areas and recycling water after it has been treated in sewerage systems.

### ○Promotion of road planning prioritizing pedestrians/bicycles

The MLIT is promoting easy to follow street guides, while taking measures to build up safe, secure and high-quality pedestrian space and to develop an environment for bicycles. The amended Road Transportation Law has facilitated flexible road management that makes full use of the diverse functions of roads and satisfies the needs of the residents who live beside them.

## **(4) Realizing more convenient transportation**

The MLIT is making efforts to revitalize public transportation and to promote Traffic Demand Management (TDM) with the aim of easing congestion. The MLIT is promoting the improvement of urban railway networks and the development of urban railways, urban monorails and automated guideway transit and light rail transit (LRT) systems as well as the improvement of bus and taxi accessibility. Furthermore, efforts are being made to make highway functions more convenient for the sake of highway users, through an introduction of pilot programs to realize diverse and flexible toll policies.

Details of Pilot Programs conducted in FY2007

### **(1) Revitalization of Regions**

Program to introduce reduced tolls for highways running parallel to conventional national roads in provincial areas to encourage further use of the highways and solve or ease the problems existing in the national roads.

- Program to introduce reduced tolls by time zones to encourage further use of the highways in provincial areas. (Total 50 locations in Japan)

### **(2) Higher Efficiency in Distribution**

Program to introduce reduced tolls to facilitate improved efficiency in distribution

- Program to expand time zones when discounted night tolls are applicable.

Tomei Expressway (Susono IC – Tokyo IC), Meishin Expressway (Ritto IC – Nishinomiya IC, etc.), Higashi-Meihan Expressway (Mie-Kawagoe IC – Kameyama IC, etc.)

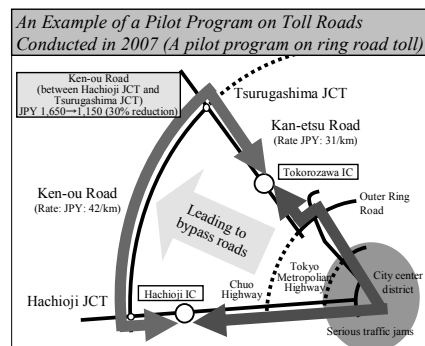
### **(3) Solution of Serious Congestion in City Areas**

Program to introduce reduced tolls to encourage the full utilization of highway networks in metropolitan areas

- Program to introduce distance-based tolls in Tokyo and Hanshin Metropolitan Highways

- Program to introduce reduced tolls for ring roads (Ken-ou Road, Aqua Line, Higashi-Kanto Road, etc.)

\* Pilot program conducted on the Honshu-Shikoku Highway to improve efficiency in distribution and promote revitalization of the district.



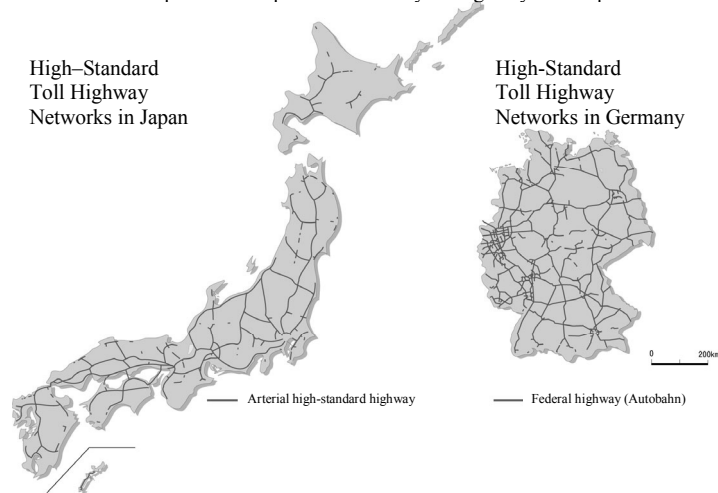
# Chapter 5: Forging an Open Economic Society with a Competitive Edge

## (1) Improvement in transportation networks

### ○Developing arteries

Highway networks, including high-standard highways and high-standard regional roads, constitute a very important infrastructure for our country that extends far into the north and south and has its connections between regions hindered by mountain ranges and the straits separating the major islands. It is vital to build highway networks and secure their functions for the development of safe and secure national land.

Comparison of Japan and Germany in Highway Development



		Japan		Germany	
Population	(10 thousand)	12,756	(2006)	8,241	(2006)
Area	(1000 km <sup>2</sup> )	378	(2006)	357	(2006)
GDP	(in trillion JPY)	505	(2005)	338	(2005)
The extension of service roads	(km)	9,047 *1	(as at the end of FY2006)	12,363	(as at the end of FY2005)
The average distance between cities *2	(km)	491		261	

Notes: 1) The extension of service roads and in general national road sections of bypasses will be included

2) With urban populations of more than 600,000 people

Source: Ministry of Land Infrastructure, Transport and Tourism Japan, *Statistics of the World 2007*

### ○Developing the trunk railway network

The MLIT has been committed to the construction of new Shinkansen lines, based on an agreement between the government and ruling parties, while promoting increasing the speed of conventional artery railways through an improvement of railroad bends and the partial introduction of double tracks as well as the technological development of superconducting magnetically levitated and variable gauged trains.

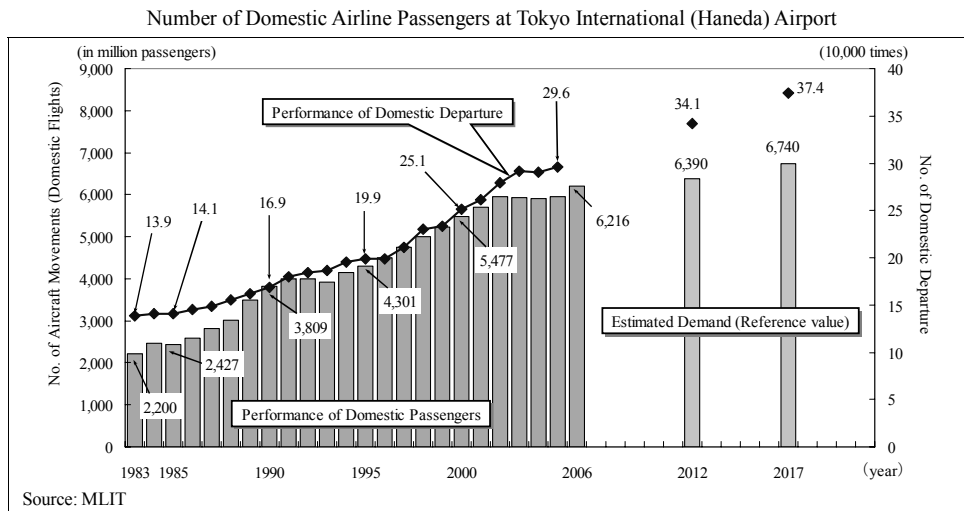
Reduction of Travel Time through Improvement of Seibi-Shinkansen

Improved sector	Approximate travel time	Improved sector	Approximate travel time
<b>Tohoku Shinkansen</b> Hachinohe ~ Shin-Aomori	Present: 3 hours 59 minutes After improvement: About 3 hours 12 minutes Reduced by about 47 minutes	<b>Kyushu Shinkansen</b> (Kagoshima Route) Hakata ~ Shin-Yatsushiro	Present: 2 hours 11 minutes After improvement: About 1 hour 20 minutes Reduced by about 51 minutes
<b>Hokkaido Shinkansen</b> Shin-Aomori ~ Shin-Hakodate	Present: 5 hours 58 minutes After improvement: About 4 hours 6 minutes Reduced by about 1 hour 52 minutes	<b>Kyushu Shinkansen</b> (Nagasaki Route) Takeo-Onsen ~ Isahaya	Present: 1 hour 47 minutes After improvement: About 1 hour 19 minutes Reduced by about 28 minutes
<b>Hokuriku Shinkansen</b> Nagano ~ Hakusan Grand Rail Yard	Present: 3 hours 10 minutes After improvement: About 2 hours 10 minutes Reduced by about 1 hour	* Present travelling times are based on October 2004 schedules. * Maximum speed in the improved sectors estimated to be 275km/h for Tohoku and Hokkaido Shinkansens, 260km/h for Hokuriku and Kyushu (Kagoshima Route) Shinkansens, and 200km/h for Kyushu Shinkansen (Nagasaki Route). * Plan of JR East Japan (announced in November 2007) estimates the travelling time from Tokyo to Aomori by Tohoku Shinkansen to be reduced to about 3 hours 10 minutes at the end of 2010.	
	Present: 3 hours 44 minutes After improvement: About 2 hours 28 minutes Reduced by about 1 hour 16 minutes		

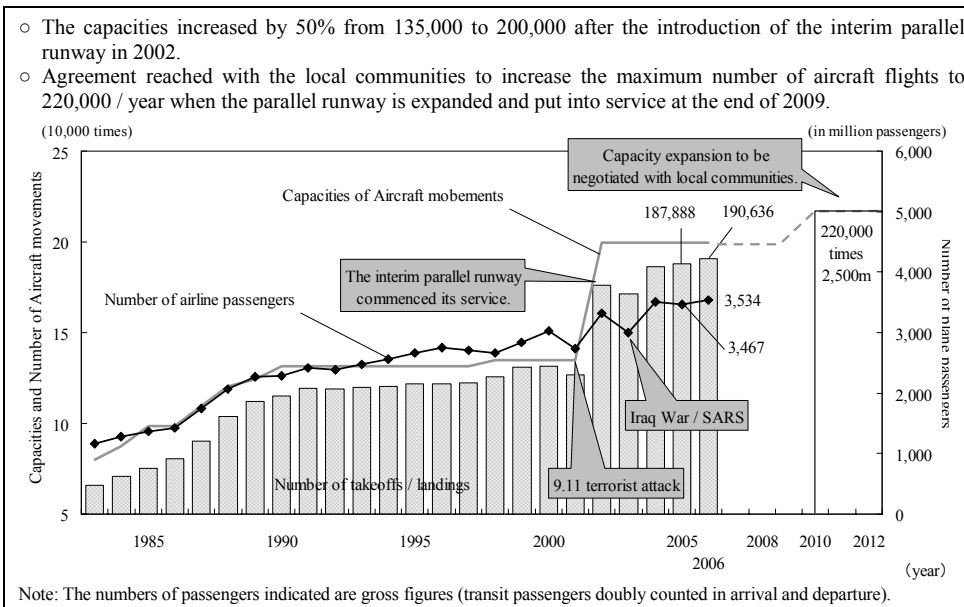
### ○Developing airline networks

The MLIT has been engaged in improving the international and domestic airline networks, by implementing measures for the development of the structural aspects of airport facilities and enhanced competition among the service providers through deregulation in nonstructural aspects, as well as entering into additional aviation contracts with other countries.

To be more specific, various projects, including the redevelopment of Tokyo International (Haneda) Airport, the extension of the parallel runway at Narita International Airport to 2,500m, and the 2nd phase construction of Kansai International Airport have been promoted. Furthermore, the MLIT is committed to urging for the construction of a strategic international aviation network through deregulation and further internationalization of Haneda Airport based on the Asian Gateway Initiative while implementing non-structural measures to formulate and improve the regional aviation network.



**Capacities, and Number of Aircraft Flights and Passengers at Narita International Airport**



## **(2) Improving coordination among different transportation modes**

### ○Developing multi-modal transport systems

The MLIT is working to improve the speed and facilitation of transit/transshipment by prioritizing the improvement of coordination among key transportation facilities and the functional enhancement of such facilities, which include airports, ports, train stations, high-standard highways, etc. as well as the roads and access railways that connect these key facilities.

### ○Improving access to airports

The MLIT aims to improve rail access to Narita International Airport to reduce the travel time from central Tokyo to less than forty minutes by supporting the construction of Narita Rapid Rail Access, and also to improve road access to the airport through the development of a highway network. In addition, MLIT is working to further improve railway access to Tokyo International Airport (Haneda Airport)

### **(3) Promoting comprehensive and integrated logistics policies**

In order to address the various issues related to logistics, including the quasi-domestication of logistics within the East-Asian region, the environmental measures required following the implementation of the Kyoto Protocol, and the increase in logistics security measures necessitated by the terrorist attacks in the USA, comprehensive and integrated promotion of logistics is being implemented based on the “Comprehensive Logistics Policy Outline (2005-2009)” adopted at a Cabinet meeting in November 2005. The MLIT also proceeds with policies to promote the “Asian Gateway Initiative,” formulated in May 2007.

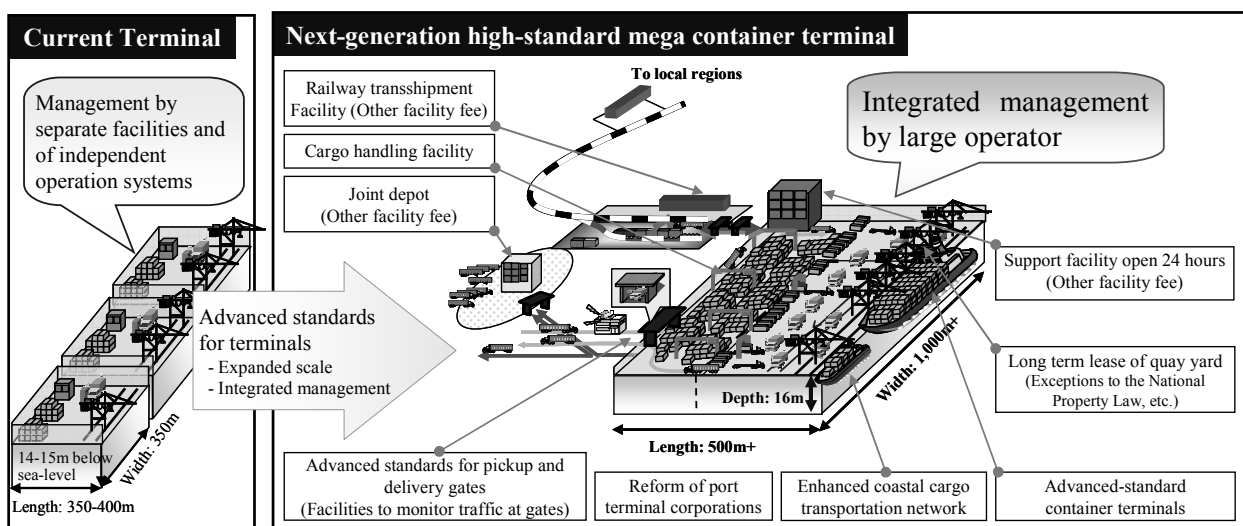
Among the issues taken up in the “International Logistics Competitive Edge Partnership Committee” established in 2006, the MLIT has been participating in a substantial running test using the “East-West Economic Corridor” in the Mekong region. Furthermore, the MLIT is going to sponsor the 2nd Meeting of the China-Japan-Korea Ministerial Conference on Maritime Transport and Logistics in Tokyo in May 2008 for the purpose of exchanging opinions to realize seamless logistics in Northeastern Asia.

#### **○Measures to strengthen international logistics functions**

Efforts are being made for the comprehensive and strategic promotion of international logistics measures based on the Comprehensive Logistics Policy Outline and decisions made by the MLIT Headquarters for Promotion of International Logistics Policies, while practical policies corresponding to front line needs are put into practice through the “International Logistics Strategy Team” organized in ten areas nationwide and joined by a wide variety of concerned parties.

The MLIT also enhances the foundation of the international maritime transport network by promoting the “Super-hub Port” project while at the same time upgrading airborne freight functions and promoting international inter-modal transportation.

Next Generation Container Terminal to be Developed in Super Hub-Port Project



#### **○Measures to develop an efficient logistics system**

The MLIT has been promoting the wider application of IT in logistics, including the development of more convenient electronic application systems for the administrative procedures required for import and export processes at ports, as well as the formulation of EDI standards based on international standards.

The MLIT is also addressing efficiency improvement in interregional logistics by boosting the transportation capacities of freight railways, developing ports, railway freight terminals and other distribution nodes as well as access roads connecting airports and ports with highways, and by supporting the improvement of logistics bases located in the areas along the highways. The “Total Plan for Urban Area Logistics” has been formulated with the aim of improving the efficiency of logistics in urban areas.

The MLIT is supporting the development and training of the human resources needed to promote a new logistics service called 3PL (3rd Party Logistics).

## **(4) Revitalizing industries**

### **○Trends and policies in railway-related industries**

The railway industry is making efforts to improve services against the backdrop of the severe business environment. IC tickets are being used or are planned to be used throughout the country and the MLIT is supporting their common or interchangeable use by taking preferential taxation measures. Also, supports are being given to Hokkaido Railway Company (JR Hokkaido), Shikoku Railway Company (JR Shikoku) Kyushu Railway Company (JR Kyushu) and Japan Freight Railway Company (JR Freight) to stabilize and strengthen their business bases to promote complete privatization of JR companies.

### **○Trend and policies of motor-vehicle transportation industries**

In the taxi industry, applications for fare revision were filed in various parts of the country aimed mainly at improving the working conditions of the drivers, and fares have been revised in 45 fare blocks out of 90 organized in Japan. The Special Measures Law on Appropriate Taxi Operation was amended in June 2007 to introduce new measures, including an expansion of the specified areas subject to the driver registration system for areas other than Tokyo and Osaka.

On the other hand, in view of the current devastating situation the trucking industry is facing, mainly due to the recent crude oil price soar, the MLIT is implementing support in creating an environment allowing the introduction of a tariff system corresponding to a hike in fuel prices as well as the subsidization upon purchase of low-emission vehicles or energy saving devices to enhance the energy saving capabilities of the industry.

### **○Trends and policies of maritime industries**

The “Bill to amend part of the Maritime Transportation Act and Seamen’s Act” was presented by the MLIT to the 169th session of the Diet, proposing an application of tonnage tariff to oceangoing vessel operators when they have been authorized by the MLIT Minister with respect to their plans on securing Japanese-flag vessels and training and securing their seafarers.

Under the “Action Plan for Substituted Construction of Coastal Vessels” formulated in March 2006, various policy measures have been implemented to ensure efficient and reliable transportation services to be provided in coastal shipping, while efforts are being made in and after 2007 toward group formation of coastal shipping companies.

Besides the efforts to enhance the international competitive edge of the shipbuilding industry, the MLIT is promoting the development and practical application of marine industry technology, including research and development to introduce vessels excellent in safety and environmental design, the practical application and dissemination of mega-float technology as well as the development of ocean platform technology that can be applied as the technology basis in the use of ocean space and natural energy in Japan’s exclusive economic zone.

### **○Trends and policies of aviation industries**

Competition is encouraged in aviation industries by policies such as expanding a framework that gives favorable treatment to newly launched airway companies by prioritizing the allocation of their arrival and departure slots at congested airports.

### **○Trends and policies of the freight forwarding industries**

Consideration is being given to revising the existing regulations to enhance more deregulated business operations based on the originality and ingenuity of the business operators while an increasing number of newcomers are joining the industry.

### **○Trends and policies of warehousing industries**

Recent trends show that new warehouse operators are joining the industry thanks to the ease of restraints on entry, but they also indicate that increased preference is being given to the comprehensive logistics service business, against the backdrop of deregulated entry into other logistics-related businesses.

### **○Trends and policies of real estate industries**

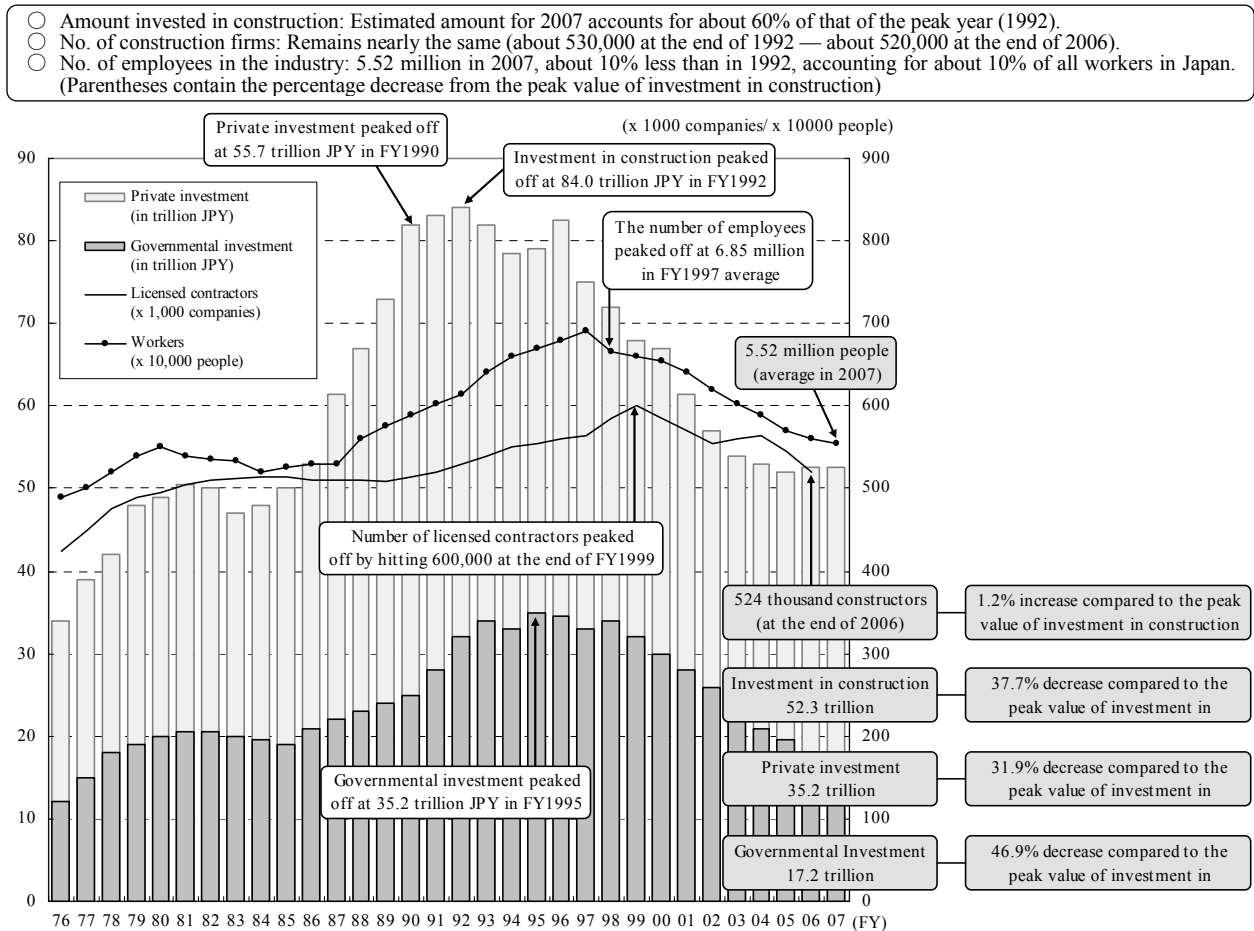
Efforts are being made to facilitate proper application of the Building Lots and Buildings Transaction Business Law and to secure proper management by condominium property management operators. In addition, the development of conditions to ensure transparency of the real estate market, the utilization of the tax system and term leasehold interest for business use, and the configuration of the real estate market adjusted to the new era are implemented in order to revitalize the market while the market size of the real estate securitization is expanding.

## ○Rejuvenating construction industry

While investments in construction are drastically decreasing, the MLIT has put together the “2007 Policy for Construction Industry—Structural Reform at Major Turning Point —(June 2007),” focusing on the “Conversion of Industry Structure,” “Reformation of Construction and Production Systems” and “Promotion of Human Resource Development to support Construction Industries,” and has also reviewed the examination of management items with the aim of promoting structural reform of the industry.

In the policy for construction industry, there are five measures recommended; building a basis for fair competition, promoting an activity to reorganization such as a merger and an advance to new fields, improving tendering and contracting systems so as to enhance the growth of business operators with excellent engineering and management capabilities, building the construction and production systems with fairness and transparency, and promoting the human resource development for construction industry.

Shifts in Total Construction Investment Amounts (Nominal), Number of Licensed Contractors and Workers



Notes: 1) The investment amounts are the actual values for FY2004 and earlier, interim values for FY2005 and FY2006, and estimated value for FY2007.

2) The number of licensed contractors represents the figure at the end of each fiscal year (the end of March of the following calendar year).

3) The number of workers represents the annual average.

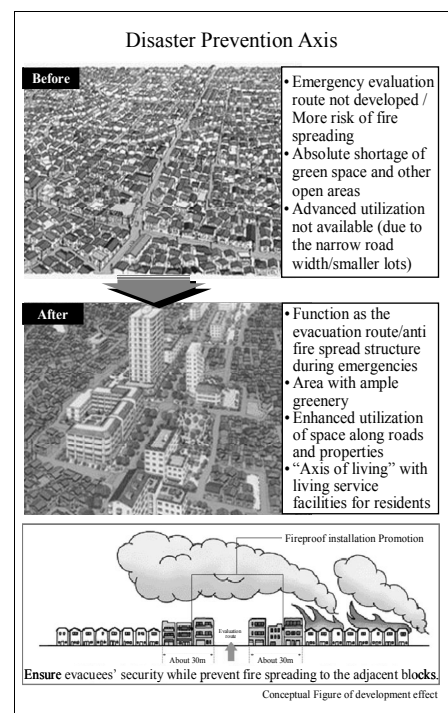
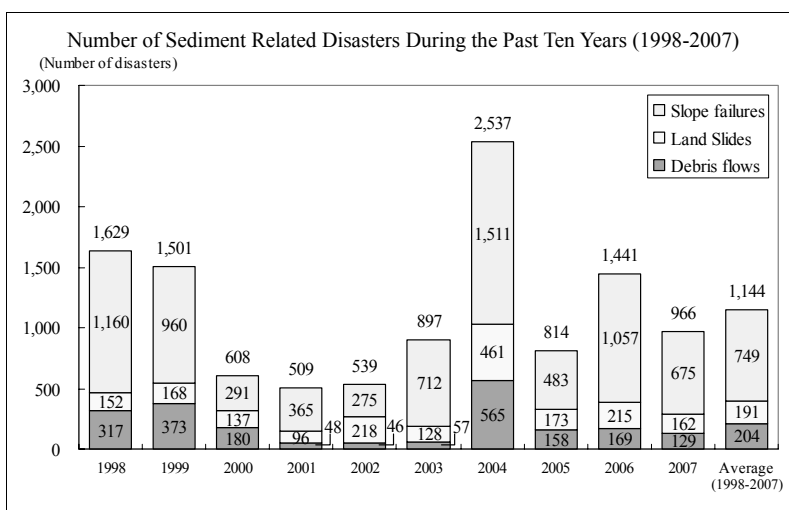
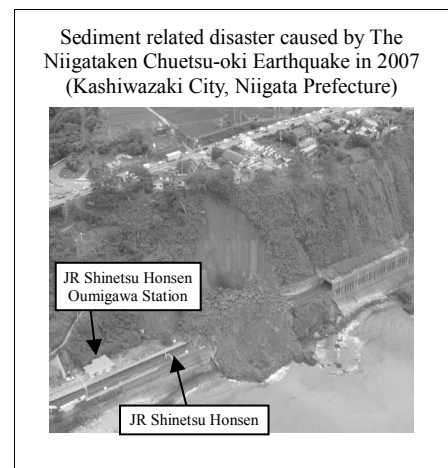
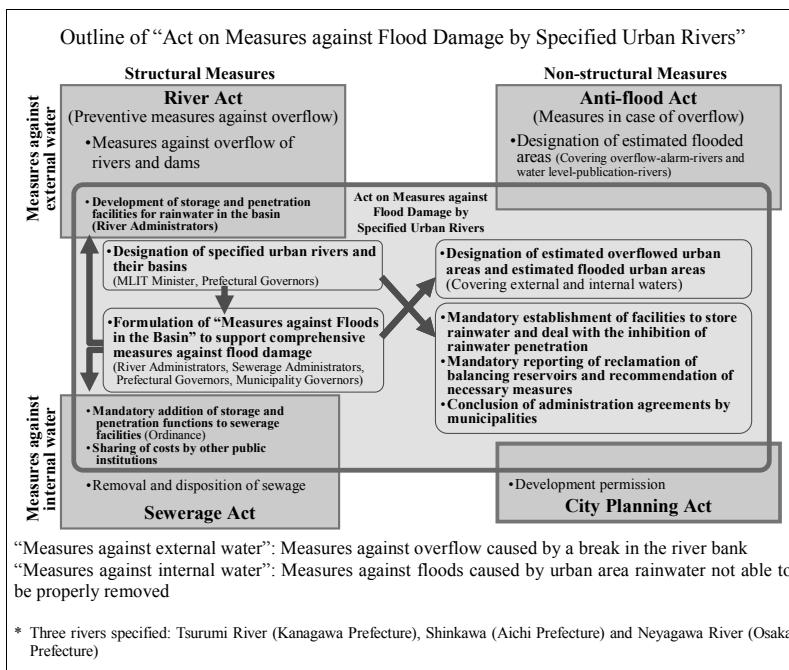
Sources: Estimate of Construction Investment and Survey of the Number of Licensed Contractors, MLIT, Labour Force Survey, MPHPT

# Chapter 6: Building a Safe and Peaceful Society

## (1) Measures against natural disasters

### ○Building a more disaster-resistant nation

The extremely severe natural conditions due to Japan's location render the protection of life and assets from natural disaster a fundamental challenge. Accordingly, the MLIT is committed to integrated structural improvements and non-structural measures, including: flood control measures, such as provisions to mitigate damage in case of floods, measures against flood disasters in urban areas involving entire communities as the basis; measures against sediment related disasters; measures against earthquakes, such as the improvement of earthquake resistance and the overall safety of homes and buildings, and urgent improvements in built-up areas (environmental axis for disaster prevention); measures against tsunamis, storm surges, and coastal erosion; measures for avalanche; and work for erosion and sediment control in volcanic areas.

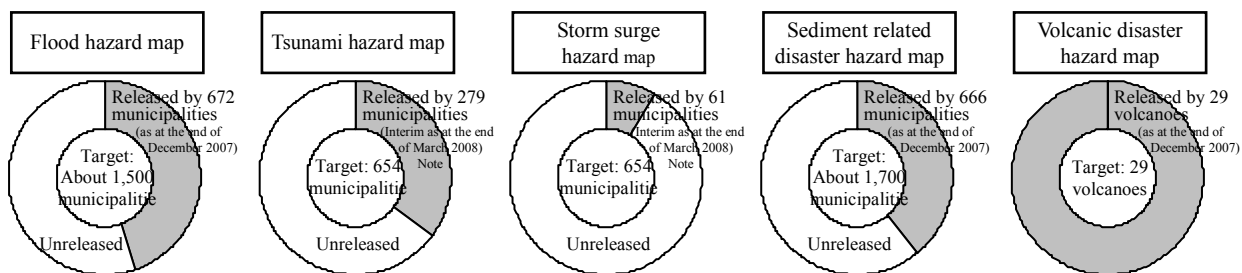




### ○Better disaster prevention arrangements

Aside from the promotion of non-structural measures, including the information and public relations activities concerning safety and security, promotion is implemented for more sophisticated information for disaster prevention. Such promotion includes the following measures: improved hazard maps; the transmission of Earthquake Early Warning; improvement in the disaster prevention capacities of regional communities, such as measures to care for the elderly, small children, and others with special needs during emergencies; arrangements to boost emergency responsiveness, such as the preparation of the MLIT business continuity plan (BCP); reinforcement for monitoring earthquakes and volcanic activities; and upgrading of existing stock by introducing ICTs.

Hazard Map Development Status



Note: The number of municipalities where the map, in whole or in part, is scheduled to become available by the end of March 2008 as at the survey conducted in October 2007

Source: Ministry of Land, Infrastructure, Transport and Tourism Japan

### ○Ensuring disaster-resistant transportation system

The development of a disaster-resistant transportation system with ensured multiple access and substitutability is promoted to secure passenger safety, traffic functions, the transportation and evacuation of citizens, the sick and wounded and emergency supplies in the case of large-scale disasters. Disaster prevention is also promoted for roads, railways, ports and air transportation.

## (2) Ensuring safety of building structures

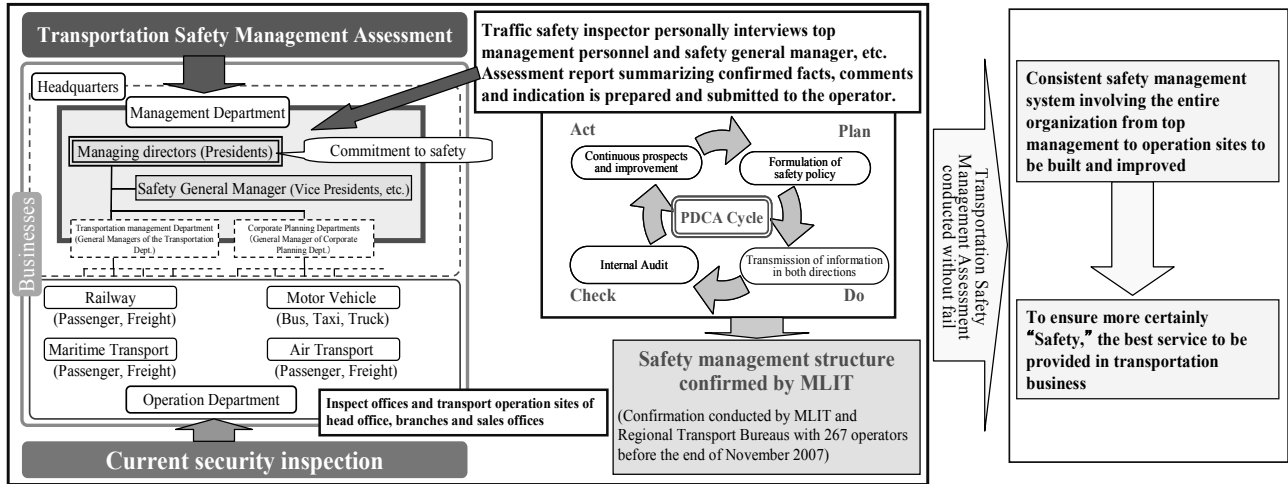
Efforts to ensure the reliability of the construction and supply systems of houses and buildings are taken following the enactment of the “Act to partly amend the Building Code and, others to ensure safety of building structures,” the “Act to partly amend the Act on Registered Architects and others” and the “Act on securing performance of warranty against defects of specified houses.” Efforts are made also to ensure proper response to accidents involving elevators and play facilities.

## (3) Reinforcing safety measures in the transportation sector

### ○Coordinating safety management system for public transportation

The “Act to partly amend the Railway Business Act and Others to Improve Safety of Transportation (Comprehensive Transportation Safety Act)” entered into force as of October 2006, in response to the repeated occurrence of accidents and problems presumably attributable to human error, including the derailment of the JR West Japan Railway Fukuchiyama Line. The Act requires transport business operators to prepare and submit a “Safety Management Manual,” and elect a “Safety General Manager” and notify the MLIT. The MLIT has started conducting “Transportation Safety Management Assessments” and suggests improvement measures to the operators.

Conceptual Diagram of New Transportation Safety Management System Implementation



**○Railway safety measures**

Based on the lessons learned from the JR West Fukuchiyama Line Derailment, the MLIT has obliged business operators to install ATS(automatic train stop) or other speed control devices over narrower curves, and in September 2007 instructed them to improve the ways to identify and utilize the cases of incidents (events that could lead to accidents). In consideration of the JR East Uetsu Main Line Derailment, deliberation concerning measures for railways against wind blasts is under way, which includes reinforced wind blast observation by the railroad operators. Efforts are further taken for the preventive measures against accidents at railroad crossings.

**○Maritime safety measures**

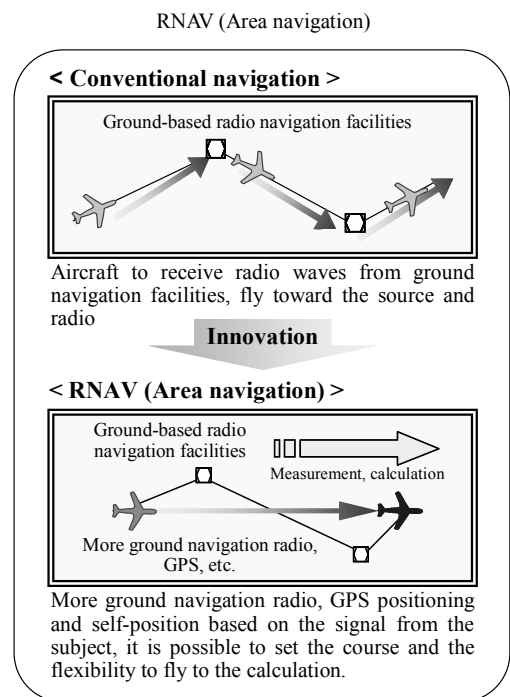
The MLIT is making efforts toward improvement in the safety of vessels, including a review of the domestic safety rules and regulations in line with entry into force of the amended SOLAS convention (The International Convention for the Safety of Life at Sea, 1914) between 2008 and 2010. The MLIT is engaged in securing the safety of navigation through measures including an amendment to the “Ordinance for Enforcement of Seamen’s Act” as well as the promotion of safety measures for crew and passengers on board, the enhancement of the rescue system, an investigation into maritime accidents and the prevention of recurrences.

**○Aviation safety measures**

In consideration of the repeated occurrence of aviation safety troubles in and after 2005, the MLIT is working on the enhancement of measures for aviation safety, including imposing an obligation on airlines to report safety related troubles as well as to establish safety management systems. An aviation safety system for safer and smoother aviation traffic is being constructed, through such efforts as introducing full-scale Area Navigation (RNAV) and improving the functions of the Air Traffic Management (ATM) system.

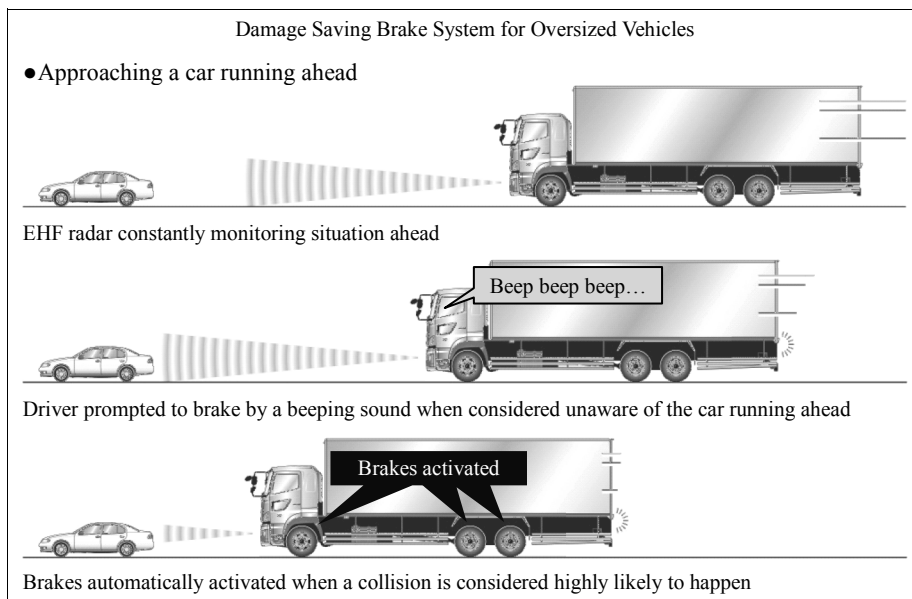
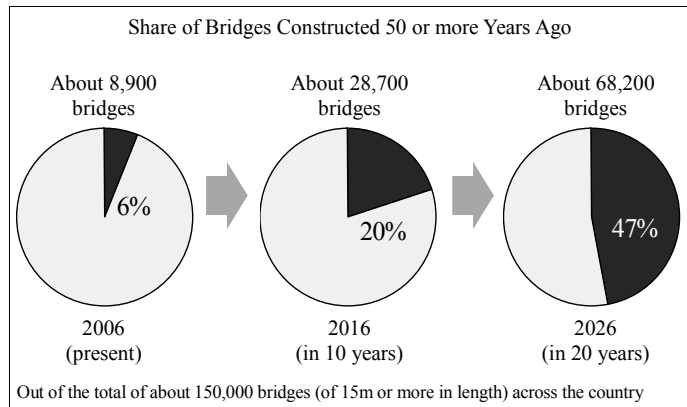
**○Establishing the Japan Transport Safety Board**

For the purpose of improving investigative functions with regard to the diverse and complicated accidents involving aircraft, railways and vessels and ensuring the prevention thereof, the MLIT decided to establish the “Japan Transport Safety Board” by integrating the investigative functions of the Aircraft and Railway Accidents Investigation Commission and the Japan Marine Accident Inquiry Agency, and presented a bill to that effect at the 169th session of the Diet.



## ○Road traffic safety measures

We are presently in a serious situation where the number of those killed or injured in traffic accidents in 2007 still exceeds one million; therefore, the MLIT is taking focused measures to reduce traffic accidents on arterial roads, including systematic maintenance of bridges to ensure secure and safe road services. The ministry's comprehensive automobile safety initiative involves expanding and strengthening safety standards, providing safety information through automotive assessments, developing and disseminating Advanced Safety Vehicles (ASV), and enhancing and improving the automobile recall system.



## (4) Crisis management and security

### ○Promoting measures against crime and terrorism

Besides working to materialize the agreements reached in the “Ministerial Conference on International Transport Security” held in Tokyo in January 2006, the MLIT is promoting measures against pirate attacks, attacks on port facilities and terrorism on the sea. Measures in line with PSI (Proliferation Security Initiative) are also promoted by the MLIT as well as anti-crime and terrorism measures in areas including railways, vessels, ports, aviation, motor vehicles and other important facilities. The MLIT is further working on coping with both security and efficiency in logistics and measures for information security.



#### **○Establishing responsiveness to incidents**

In preparation for incidents or disasters on vessels, aircraft or railways, the MLIT has established disaster headquarters to implement prompt and adequate measures. Effective from April 2007, ship owners are obliged to take preventive measures against hazardous liquids, etc, and the MLIT is striving to establish a system that is capable of prompt and effective response to noxious liquid substances.

#### **○Enhancement of maritime safety system**

The maritime safety system has been enhanced through the promotion and improvement of operation structure, and measures against terrorism, suspicious ships, spy boats and maritime crimes.

#### **○Protecting Japan's interests in the oceans**

Holding the view that maintaining order on the oceans is vital for the protection of Japan's interests therein, the MLIT is implementing strict security measures against vessels of other countries violating Japan's interests. Efforts to prepare appropriate nautical charts of the sea area in the vicinity of Japan will be continued, while prioritized and intensive oceanographic investigation will be conducted in the waters on which sufficient data has not been obtained yet. The MLIT is working with other government ministries and offices concerned to conduct surveys necessary to establish the outer limit of the continental shelves as well as to implement efforts to conserve Okinotorishima Island.

#### **○National security and protection of lives and property of Japanese citizens**

The "Plan on Protection of Citizens" has been formulated through the joint efforts of the MLIT, the Geographical Survey Institute, the Japan Meteorological Agency and the Japan Coast Guard with the aim of addressing possible armed attacks on the country. In response to the launching of ballistic missiles by North Korea in July 2006 and the statement on nuclear tests issued by the same country in October of the same year, measures have been taken to put all North Korean vessels under embargo and to verify information on the entry of any North Korean vessel into Japanese ports.

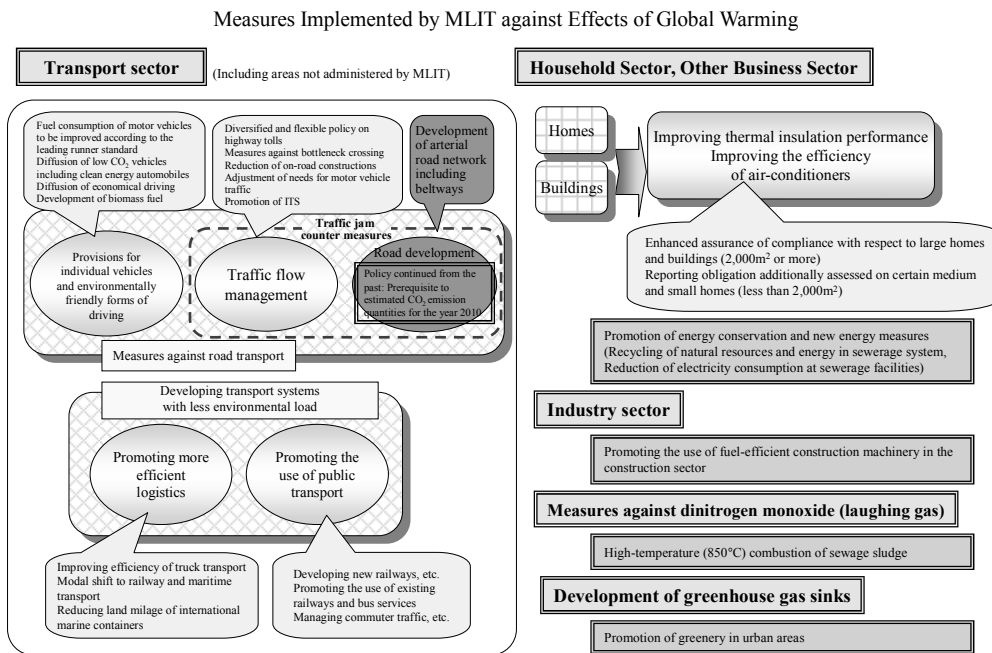
# Chapter 7: Creating and Conserving a Beautiful and Favorable Environment

## (1) Promoting measures against global warming

### ○ Implementation and revision of plan to achieve target set under Kyoto Protocol

To achieve its target reduction in CO<sub>2</sub> emissions set in the Kyoto Protocol Target Achievement Plan (approved by the Cabinet in 2005), the MLIT will implement measures against the effects of global warming in the transport sector as well as in the housing and building areas of the consumer sector, and the construction engineering area of the industrial sector, taking all possible steps to attain the goal without fail.

The Kyoto Protocol Target Achievement Plan was quantitatively evaluated and reviewed in the Environment Subcommittee of Council of Transport Policy and Environment Subcommittee of the Panel on Infrastructure Development in terms of its future measures as well as its progress since autumn 2006. The New Kyoto Protocol Target Achievement Action Plan was finally approved by the Cabinet on March 28, 2008.



### ○ Measures in the transport sector

Measures aimed at individual motor vehicles, including improving fuel consumption, developing systems to promote reduced gas emissions and higher fuel performance, a green tax plan for motor vehicles and developing the next generation of low-emission vehicles, are being implemented while efforts are being made to increase the awareness of driving methods through the promotion and dissemination of economical driving.

The MLIT is also proceeding with promoting environmental measures in the transport sector by achieving smooth road traffic flows based on the “Action Program for Reduced CO<sub>2</sub> Emissions” and enhanced coordination between logistics business operators and corporate shippers through the holding of “Green Logistics Partnership Conferences” and similar initiatives.

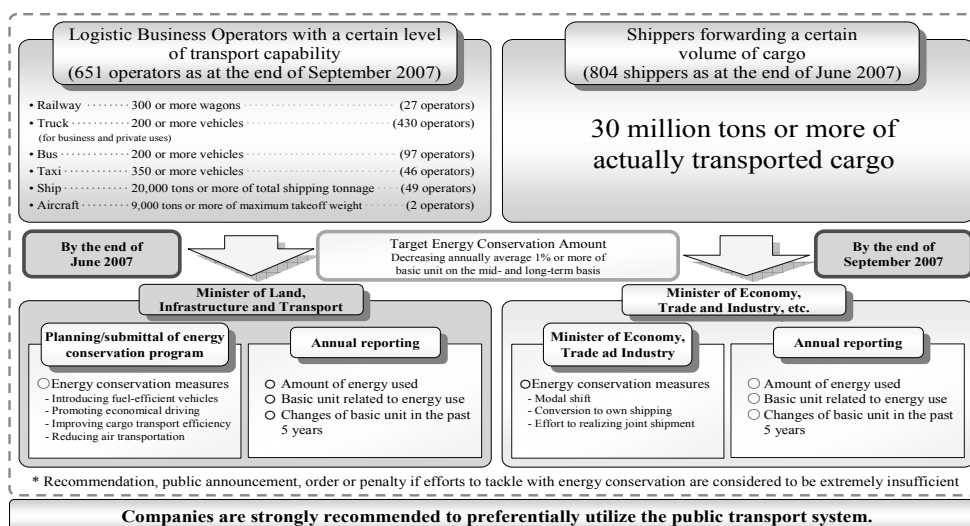
### Conceptual Diagram of the Promotion Efforts through Green Logistics Partnership Conferences



The ministry is promoting the use of public transport by making it more convenient through enhancing information technology, including IC cards, and improving transport connections.

Further, efforts by citizens and private business operators will be promoted through the commencement of a presentation of regular reports by specified logistics business operators and specified shippers pursuant to the “Act on the Rational Use of Energy (Energy Conservation Act),” amended in April 2006.

Measures to be taken in the Logistic Business Sector According to the “Energy Conservation Act”



### ○ Measures concerning houses, buildings, sewerage, and urban greening

The revised “Act on the Rational Use of Energy (Energy Conservation Act),” as amended in April 2006, revised the energy saving standards and further enhanced the measures by stipulating mandatory reports concerning energy saving measures for the new construction, renovation, and major improvement of houses, and the major improvement of other buildings. The “Bill partly Amending the Act on the Rational Use of Energy” was presented at the 169<sup>th</sup> session of the Diet to further intensify the energy conservation measures.

The ministry is also promoting the reduction of government facilities’ environmental loads, advancing the popularization of symbiosis housing, and taking steps to implement measures against the effects of global warming caused by sewerage systems, including measures concerning dinitrogen monoxide emitted by sewage sludge incineration facilities. The MLIT is also promoting urban greening (planting) and other provisions for carbon sinks, as well as the cohesive use of energy and other environmental measures in urban development.

## (2) Promoting a sound material-cycle society

### ○ Promoting the recycling of construction materials

The MLIT is committed to promoting, reducing, recycling and restraining the generation of construction waste and sewage sludge (each of which accounts for about 20 percent of waste discharged from all industries). The ministry is also promoting solid waste management in the housing and construction fields.

Recycling Rates of Construction Waste by Item

	FY2005	FY2005 Target Value		FY 2010 Target Value	
	Performance value	Achieved	98% or more	Achieved	98% or more
Recycle rate of asphalt/concrete blocks	98.6%	Achieved	98% or more	Achieved	98% or more
Rate of concrete blocks	98.1%	Achieved	96% or more	Achieved	96% or more
Rate, etc. for construction-derived wood chips	90.7%	Achieved	90%	Not achieved	95%
Rate for construction-derived wood chips	68.2%	Achieved	60%	Achieved	65%
Rate for construction derived sludge	74.5%	Achieved	60%	Not achieved	75%
Reduction in mixed construction waste emissions compared to FY2000 (%)	39.6% reduction	Achieved	25% reduction	Not achieved	50% reduction
Recycling rate of total construction waste	92.2%	Achieved	88%	Achieved	91%
Proportion of recycled soil in construction gravel	62.9%	Not achieved	75%	Not achieved	90%

### ○Developing logistics systems for recyclable resources

The MLIT recently designated 21 Recycle Ports nationwide, and is deliberating upon the development of an appropriate and efficient international logistics network for recyclable resources.

In June 2007, the Port and Harbor Law and the Law Concerning Port Construction for the Development of Hokkaido were partly amended so that the national budget would bear an increased proportion of the cost of promoting the sea surface waste disposal facilities used to facilitate the formation of recycling communities and to continue appropriate final disposal of waste.

### ○Recycling of vehicles and FRP boats

The promotion of proper disposal and the prevention of illegal dumping is being addressed by the implementation of deletion registrations under the Road Transport Vehicle Law and the vehicle tonnage tax reimbursement scheme. The recycling of FRP (Fiber Reinforced Plastic) boats has been put into practice across the country with the support of the MLIT.

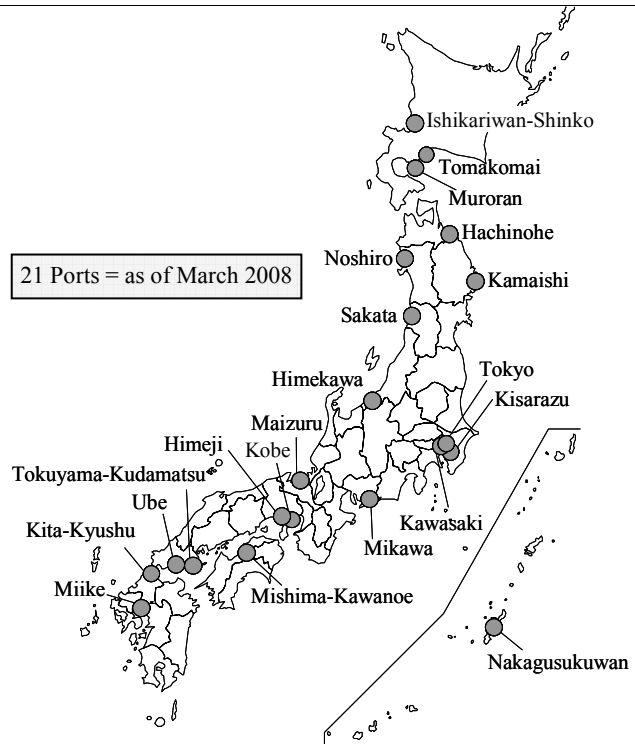
### ○Promoting procurement of materials contributing to the reduction of environmental load

The MLIT is promoting green procurement efforts and the wider use of wood materials in public works projects as well as the dissemination of wooden houses.

### Designated Recycling Ports

Effects of Venous Logistic Bases at Ports and the Formation of Their Network

- (1) Development of a recycling community through enhanced recycling of resources throughout the country
- (2) Reduction of environmental load through the use of maritime transport
- (3) Networking of recycling facility locations in expanded regions and reduction of recycling costs through the use of maritime transport
- (4) Revitalization and activation of industries in coastal areas through acceptance of recycling facilities



## **(3) Conserving and regenerating a beautiful and abundant natural environment**

### ○Development of a beautiful and abundant fluvial environment

The MLIT is promoting the development and conservation of a sound riparian environment and the restoration of river water as well as the comprehensive maintenance of earth and sand covering the areas from mountains to beaches. The ministry is also promoting education concerning fluvial environments.

### ○Maintenance and conservation of beach and coastal area environments

It is necessary to protect beach areas from high waters, tsunamis and ocean waves while at the same time securing areas for the inhabitation and growth of life forms, maintaining scenic beauty and ensuring the proper use of beaches. The MLIT is promoting the maintenance and preservation of beaches by sustaining balance among “protection,” the “environment” and the “use” thereof.

### ○Greening of port administration

The MLIT’s fundamental policy on port administration is to aim for the development and utilization of ports as well as the preservation, restoration and creation of their environments. The ministry will also promote the review and enhancement of environmental policy measures that will include the maintenance of an ocean environment database where administrative agencies, research laboratories and citizens will share and coordinate the oceanic environmental data they collect and manage respectively.

### ○Promotion of the greening of roads and measures for natural environments

The greening of roads will be promoted to reduce environmental load and create beautiful scenic views. The MLIT will aim at

preserving and restoring environments based on the fundamental policy to avoid or minimize impacts on irreplaceable natural environments and to employ alternative measures whenever possible.

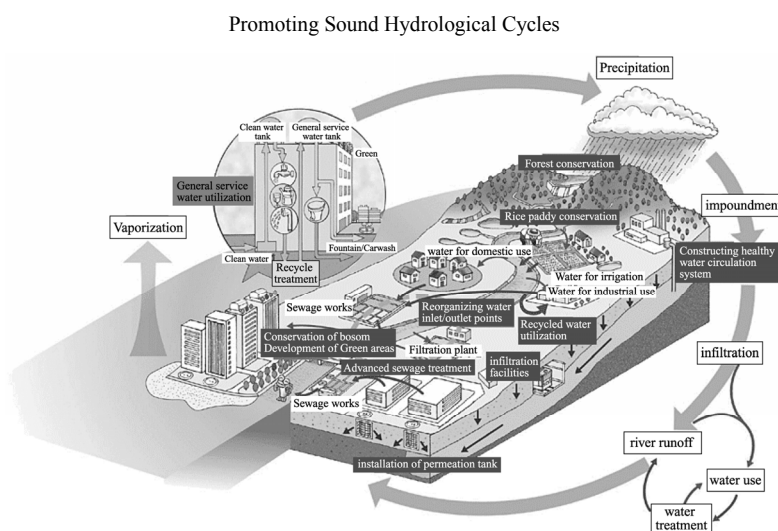
#### **(4) Promoting sound hydrological cycles**

##### **○Efforts to develop sound hydrological cycles through coordination among the government offices concerned**

The MLIT is working to promote sound hydrological cycles in association with other ministries and agencies concerned.

##### **○Efforts to improve water environments**

The ministry is also formulating and implementing the “Phase II Emergency Action Plan for Improvement of Water Environment (Clear Water Renaissance II)” with respect to the 34 rivers across the country whose water environment is considerably deteriorating. Efforts are also being made to improve the water environment in the enclosed coastal seas as well as to promote sewerage maintenance and the restoration of canals in response to the needs of regional areas.



##### **○Creation of water resources and good use of water**

The MLIT is promoting the improvement of water in reservoir areas, measures against the infiltration of storm water, measures for groundwater and the use of general service water.

#### **(5) Conservation of marine environment**

The MLIT is promoting measures to prevent large scale oil pollution by participating in an international activity to eliminate sub-standard vessels, and by enhancing port state control (PSC), where vessels calling at the ports in Japan are inspected to verify their conformity to the required standards. Other MLIT promotions include measures against gas emissions from vessels and a study to establish a certification system for the facilities to be installed to control harmful aquatic organisms in ballast water.

#### **(6) Improving the living environment through measures against air and noise pollution**

##### **○Addressing environmental degradation associated with road transport**

Along with strict auto emission standards imposed on individual motor vehicles and the development and dissemination of low-emission vehicles, the MLIT is promoting measures against air and sound pollution by facilitating smooth traffic flows through efforts including traffic demand management (TDM).

##### **○Environmental measures for airports and their vicinities**

The MLIT is taking measures directed at the sources of aircraft noise and improving airports’ structures, as well as making efforts to preserve and create more favorable environments in airports and surrounding areas.

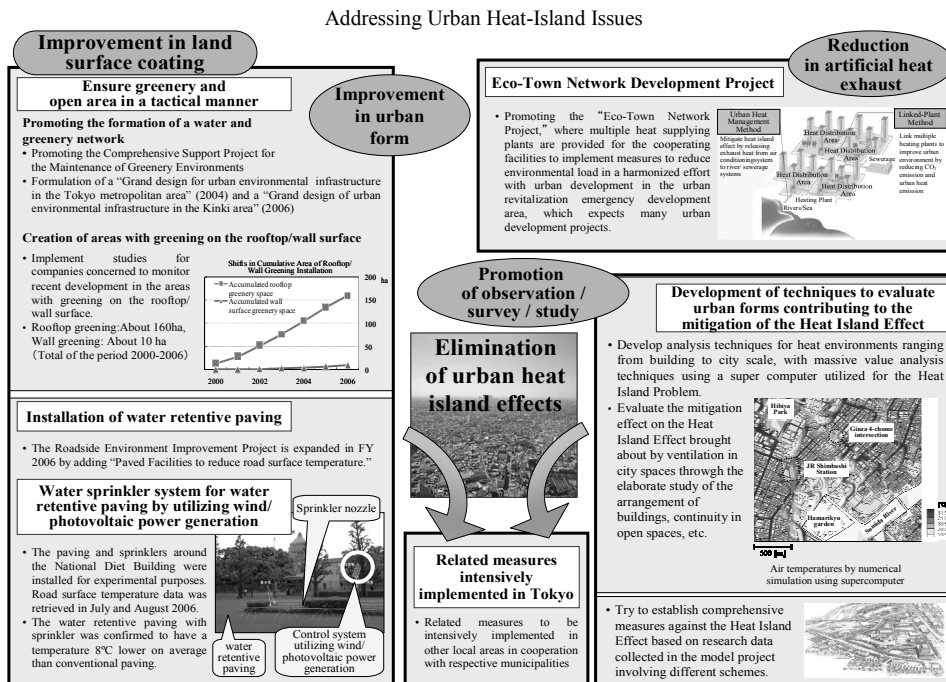
##### **○Measures against railroad noise**

Regarding the Shinkansen, measures directed at noise sources are being implemented, and further soundproof improvements will be made for the benefit of houses subjected to such noise in case said measures are not sufficiently effective. Noise from other lines is addressed by giving instructions to the operators based on the “Policy for Noise Measures upon Newly Installed or Drastically Improved Conventional Lines.”



## ○Addressing urban heat-island issues

Pursuant to the “Outline of Measures against Urban Heat Island Effect (March 2004)” established at the Related Offices and Ministries Liaison Conference with the aims of reducing artificial exhaust heat, improving surface coatings and upgrading urban forms, the MLIT is intensively focusing on measures to secure greenery and open areas in a strategic manner.



## ○Responding to the sick building syndrome and soil contamination issues

The MLIT is addressing the sick building syndrome, soil contamination and dioxin issues while taking necessary measures against the asbestos issue, which include use control pursuant to the amended “Building Standards Law,” removal from existing buildings and prohibition of air-borne asbestos in the demolition thereof.

## ○Measures for environment construction

Regulation on the use of non-road special motor vehicles has been implemented pursuant to the “Act on Regulation, etc. of Emissions from Non-road Special Motor Vehicles.”

## (7) Observing/monitoring/predicting the global environment

### ○Observation and monitoring of global environment

As part of its monitoring of climate change, the MLIT is conducting observation of CO<sub>2</sub> using its research vessels. The MLIT participates in the Argo Project and deploys profiling floats to observe water temperature and salinity in the oceans across the globe equipment that automatically observes and monitors the interior of the oceans. The ministry is also observing and monitoring the ozone layer and ultraviolet rays at four points in Japan and making the data public. Regular observation in Antarctica is also being promoted by the MLIT.

### ○Projection of global climate change

With respect to global warming, the Japan Meteorological Agency and Meteorological Research Institute has developed a models to predict global climate change as well as climate change of the areas around Japan, and the research results have been quoted in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). The Tokyo Climate Center, established within the Japan Meteorological Agency, provides meteorological organizations in other countries with technical assistance, including information related to the observation of extreme weather, long-range weather forecasting and global warming predictions.

### ○Provision of Global Map and global geodetic observation

The MLIT is playing a leading role in the Global Mapping Project (joined by 178 nations and regions), which has developed the Global Map Version1 needed in grasping and analyzing the global environment. The MLIT is also conducting global geodetic observation such as crustal movement and associated research.

## ***Chapter 8: International Partnership and Contribution for the Nation's Sustainable Development***

### **(1) Developing international partnership and coordination mechanism under the initiative of Japan**

The MLIT is working to bolster partnership in the ASEAN and other East Asian areas as a whole in such sectors as transport, construction, and marine environment management. At the same time, the ministry is developing a policy network involving major countries' transport ministers and a network in the Asia-Pacific region to share technology and know-how on infrastructure development and mutual cooperation. Moreover, the MLIT is taking steps to ensure free and fair construction markets overseas.

On the other hand, issues concerning water are becoming increasingly serious in various regions of the world, which greatly impacts Japan because the country imports agricultural and industrial products from such regions. Following the practical measures proposed in the Asia-Pacific Water Summit attended by summit-level leaders of the countries concerned (December 2007, Beppu city, Oita Prefecture), the MLIT is committed to supporting the Network of Asian River Basin Organizations in solving water resource problems in the Asian region.

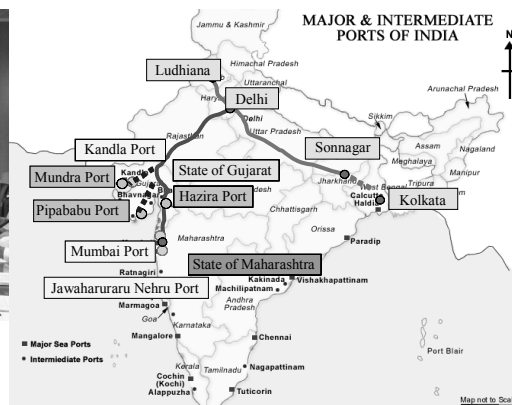
### **(2) Efforts concerning international standards**

The MLIT is addressing a number of issues concerning international standards, including the harmonization of vehicle regulations and mutual recognition of certification; the international standardization of railway specifications; the promotion of formulating international standards concerning vessels and seafarers; the international harmonization of civil engineering and construction standards and the certification system therefor; and the international standardization of ITS and geographical information. In addition, the ministry is implementing all possible measures to address the issue regarding the internationally recognized name of the Sea of Japan in cooperation with other government offices.

### **(3) International cooperation that takes advantage of Japan's experience, technology and expertise**

The MLIT is pursuing strategic international cooperation in transport and infrastructure development. The ministry is focusing on such matters as the development of broad-based socioeconomic infrastructure, including the Asia Highway Project and the development of the Mekong Delta area, as well as disaster preparedness, the environment and security.

Japan-India Working Group on Improved Connection between Ports and Railways



### **(4) Multilateral and bilateral talks**

The MLIT has been participating in multilateral talks and forums, including those held by the World Trade Organization (WTO), the Asia-Pacific Economic Cooperation (APEC) and the International Civil Aviation Organization (ICAO), in order to make proactively negotiate and make proposals. The ministry is also involved in multilateral efforts in such sectors as roads, ports, maritime safety, and geographical surveying and mapping, and is actively promoting partnership and cooperation at meetings among the countries involved.

The MLIT is involved also in bilateral negotiations regarding Economic Partnership Agreements (EPAs) and Free Trade Agreements (FTAs) as well as in scheduled negotiations in the various areas for which the ministry is responsible, in order to exchange opinions and promote technical cooperation.

## Chapter 9: Use of ICT Technology and Promotion of Technical R&D

### (1) Promoting innovation in MLIT administration through use of ICT

#### ○Systematic development of location information using ubiquitous technology

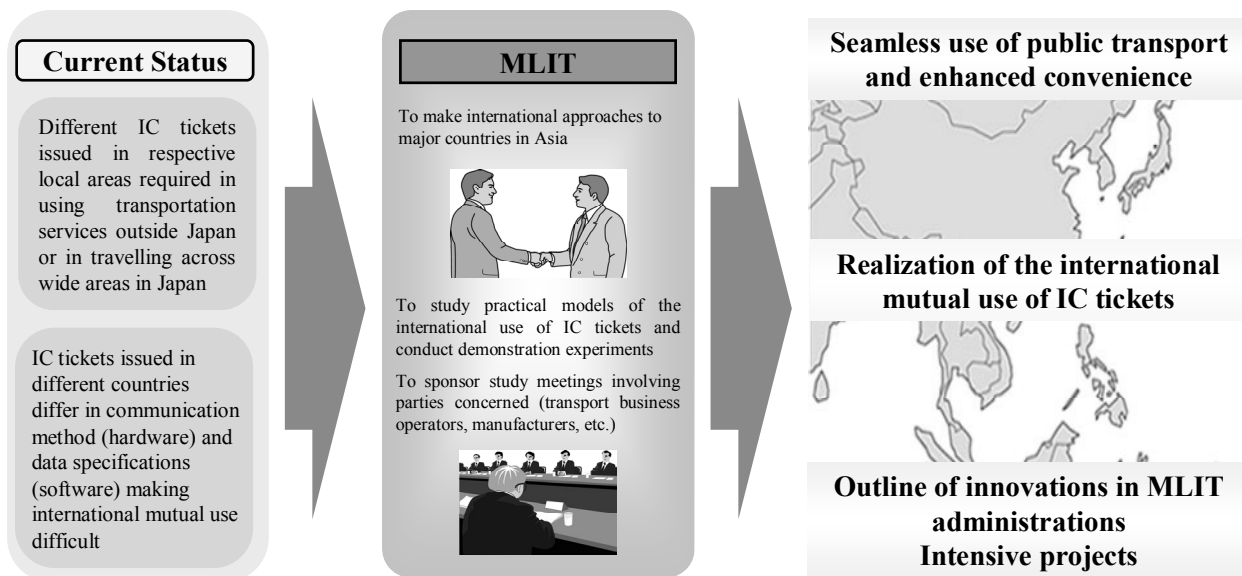
The MLIT is promoting the “Free Mobility Project” using Japan’s advanced ubiquitous network technology. Demonstration experiments were conducted at eight locations in Japan in 2007 with the aim of commencing regular services in the near future.

#### ○Application of ICT in transport sector

The MLIT is engaged in an application of ICT in the public transport field that includes the mutual use of IC train tickets among countries in the Asian region and the development of an information system for public transport. The ministry is aiming at promoting the Intelligent Transport System (ITS), and is making efforts to popularize and disseminate Electronic Toll Collection (ETC), improve road traffic information, and promote technology development and demonstration experiments as well.

#### International Use of IC Train Tickets in the Asian Region

- To improve convenience of tourists from other Asian countries visiting Japan and Japanese tourists visiting other countries in Asia through international mutual use of IC train tickets in the Asian region.
- To make joint efforts by the government and private sectors to approach other governments and transport business operators in major Asian countries to promote international mutual use of IC train tickets.
- To promote technology on advanced IC train tickets on a medium to long term basis.



#### ○Realization of an advanced geospatial information utilization society

The “Basic Act on the Advancement of Utilizing Geospatial Information” was enforced in August 2007 with the aim of realizing an economic society of advanced utilizing geospatial information. The MLIT is promoting the development of “Denshi Kokudo,” virtual national land to be developed by computer, while establishing a framework related to geospatial information including fundamental geospatial data.

#### ○Realization of electronic government

The application of ICT is being promoted in order to realize one-stop-service in motor vehicle ownership procedures as well as to tender and contract formalities for public works.

**○Development of fiber-optic network for maintenance of public facilities and its accommodation pipeline open to public use**

A network covering a distance of approximately 36,000km has been developed, and a section used for rivers and roads managed by the central government has been opened to the public to the extent that facility management is not disturbed.

**(2) Promotion of Technical R&D**

While improving the framework for the partnership among industry, government and academia at all levels of the ministry, including bureaus at the headquarters, affiliated research institutions and regional development bureaus, the MLIT is promoting cross-sectoral and integrated R&D of technologies and the results are actively reflected in construction and transport industries, as well as in related public works projects. The MLIT is promoting technology R&D to realize the society the ministry as a whole should try to establish according to its “MLIT Fundamental Plan on Technology” (Term of Plan: 2008 ~ 2012).

**(3) Improving construction management techniques**

The MLIT is making efforts to improve its cost estimation techniques in public works projects, including an attempt to shift from the traditional “Capital Cost Estimate method” to the “Unit Price-Type Estimation method.” The ministry is promoting the application of ISO management systems to public works projects.

**(4) R&D on construction machinery/equipment**

The MLIT is working to develop and improve construction machinery for more efficient, effective and safer construction projects, to rationalize the maintenance of machinery and equipment and to improve their reliability. The MLIT is also making efforts to utilize the developed techniques in construction works.