

# Chapter 6 Building Competitive Economy and Society

## Section 1 Constructing Traffic Networks

### 1 Developing Trunk Road Networks

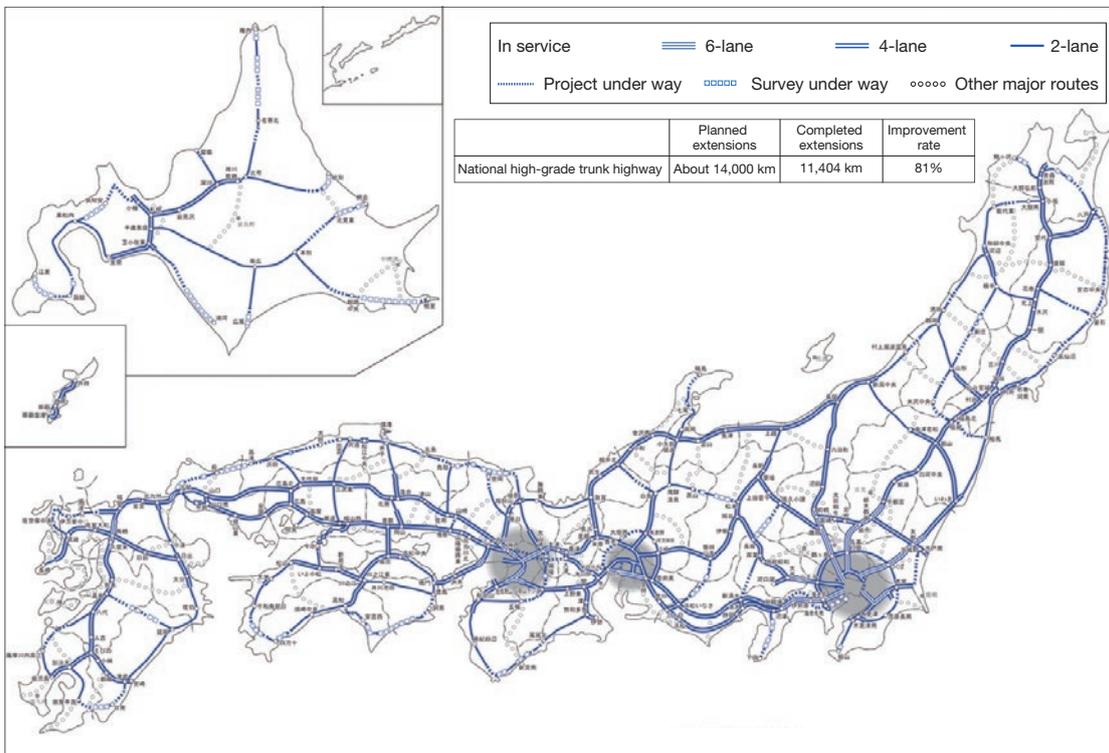
#### (1) Developing Trunk Road Networks

Since the First Five-Year Road Construction Plan formulated in 1954, Japanese highways have been continually constructed. For example, the construction of national highway networks, including expressways, has provided a major impetus in the rejuvenation of regional economies by encouraging plant locations near expressway interchanges. Additionally, it has helped enhance the quality and safety of national life by making broad-area medical services accessible to rural areas and allowing broad rerouting to avoid highway disruption by natural disasters.

An example includes the Sakai-Koga IC to Tsukuba Chuo IC segment of the Metropolitan Intercity Expressway (Ken-O Expressway) opened on February 26, 2017, which resulted in roughly 90% connection of the 300 km of total roadway on the Expressway. This development is expected to attract more businesses and promote sightseeing activities.

On the other hand, there are still missing links of expressways and arterial road networks in other parts of the country, which we plan to develop in a systematical manner.

Figure II-6-1-1 State of Current National High-Grade Trunk Highway Improvement



As of March 31, 2017

Note 1: Names for interchanges and junctions under development include pending names

Note 2: "Other major routes" shown on this map show major roads in the region (including those under development and in-service routes) and not the necessity of or order of priority for individual routes.

Source) MLIT

## (2) Promoting Smart Use of the Roads

In the interest of improving productivity and thereby achieving economic growth and improving traffic safety, efforts are under way to make intelligent use of all road network functions by developing necessary networks, as well as improving operations and small-scale enhancements. Electronic toll collection (ETC) 2.0 is one of these efforts, which started full service in August 2015.

### (i) ETC 2.0 that supports smart use

With data communication in both ways between about 1,700 roadside units across Japan and vehicles on road, ETC 2.0 compared to the previous version of ETC is capable of:

- Sending and receiving a large volume of data
- Capturing route information, in addition to IC entry/exit data

With these much more advanced functionalities, ETC 2.0 greatly contributes to the promotion of ITS.

### (ii) Smart toll system

Regarding expressway tolls in the Tokyo Metropolitan Area, new tolls were introduced in April 2016 aiming at relieving traffic congestion in the urban center. We will continually verify effects of attracting traffic through central Tokyo to the outer ring roads. New expressway tolls for the Kinki region will go into effect in June 2017 based on, among other policies, the Policy Concerning New Expressway Tolls for the Kinki Region (Draft), which was announced on December 16, 2016.

In Japan, there are 77 sections of expressways that have no gas stations at intervals of 100 km or more.

Given that many drivers run out of gas on sections of road due to lack of gas stations (particularly on stretches greater than 150 km), active efforts are under way to completely eliminate such sections by fiscal 2017.

Another effort includes a testing, which allows vehicles equipped with ETC 2.0 devices to temporarily exit to rest facilities outside of expressways on a trial basis. The intention is to eliminate sections of road with no rest facilities or gas stations nearby to improve the driving environment.

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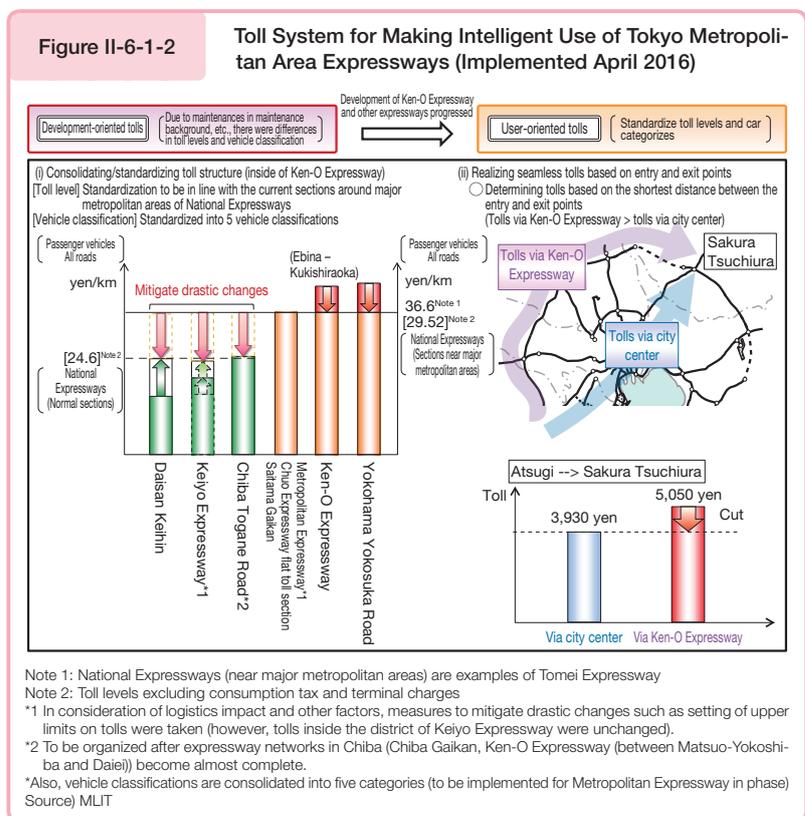
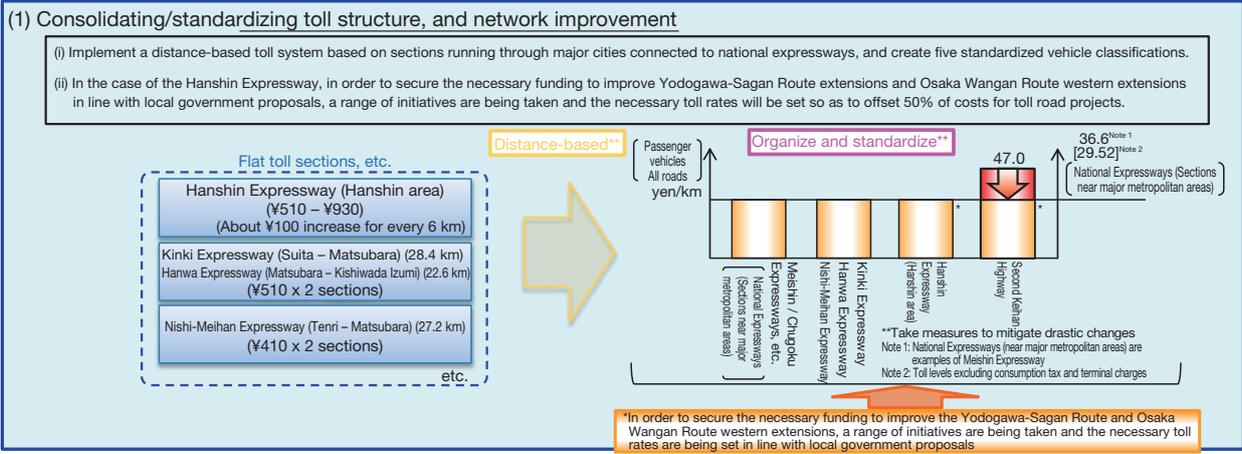


Figure II-6-1-3 Toll System for Making Intelligent Use of the Kinki Region Expressways (Implemented in June 2017)



Source) MLIT

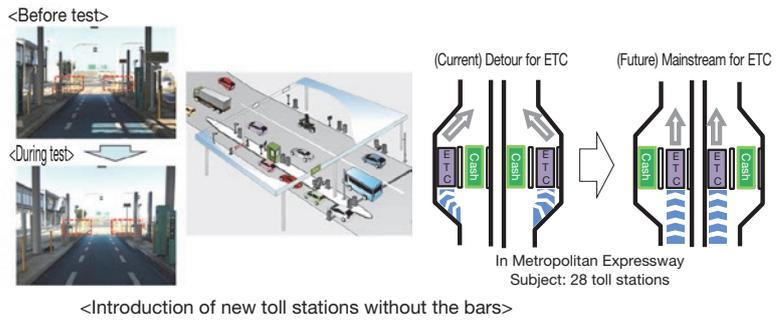
**(iii) Smart toll stations**

Towards introduction of stress-free smart toll stations based on ETC, we are experimenting with the operation of keeping ETC bars open at Ken-O Expressway toll stations and mainstreaming the use of ETC lanes at Metropolitan Expressway toll stations.

**(iv) Smart investments**

As part of efforts to achieve maximum effect with the existing networks at minimum cost, we are implementing congestion measures focusing on specific locations to identify places where deceleration or traffic congestion occurs from structural factors, such as uphill sections and tunnels, by using detailed deceleration, acceleration, and other big data collected through ETC 2.0 and other means for effective measures. Until now, additional lanes have been provided within the existing road width at three locations, including Ebina Junction on the Tomei Expressway. Our congestion relief measure is currently focusing on 14 locations, including in the vicinity of the Yamato Tunnel on the Tomei Expressway.

Figure II-6-1-4 ETC 2.0-Based Stress-Free Smart Toll Stations



Source) MLIT

## (v) Enhancement of smart functions

Provisional two-lane expressways create various problems including safety of two-way traffic, driving performance, and large-scale disaster preparedness. In order to enhance the safety, comfort of drivers and driving performance, a Cabinet Order to Partially Amend the Enforcement Order for the National Expressway Act came in effect on November 18, 2015. In addition, pilot programs are conducted to verify the creation of additional lanes to deal with slowing traffic on four routes across Japan. Also, verification tests for wire rope's safety effect to prevent head-on collisions are conducted for a total of approximately 100 km of expressways across Japan.

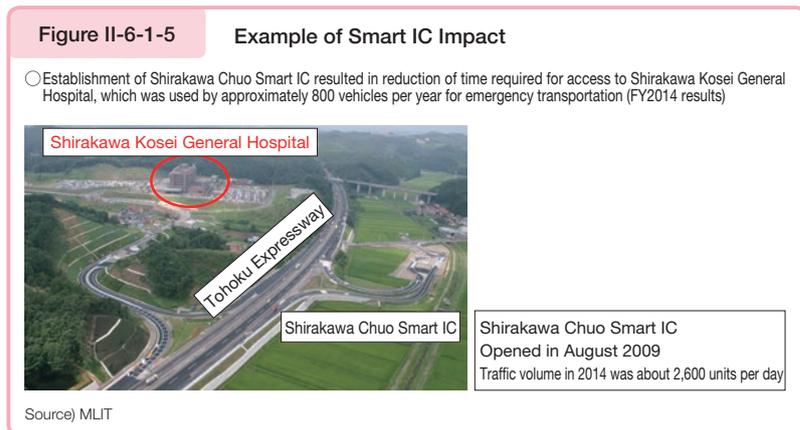
## (vi) Other initiatives

In order to promote cooperation among local areas, the MLIT is improving accessibility, including direct connections between expressways and facilities. By being flexible in building additional Smart ICs, we are increasing accessibility to the distribution centers and tourism hubs from expressways through the consolidation and sophistication of measures based on the concept of "compact" and "networked" roads and reducing traffic congestion around the existing ICs. In view of promoting the use of expressways and improving usability, the MLIT is organizing new rules, such as directly connecting expressways and large-scale distribution centers, industrial complexes, and commercial facilities near the expressways by using Smart ICs and other means with appropriate assumption of burden. Based on preparation phase surveys, the national government is implementing the preparation and examination of Smart ICs in systematic and efficient manner in places where necessity is found.

The Council for Traffic Congestion Relief Measures was established in order to institute effective measures for congested areas around the country. Comprising road administrators, police departments, and other organizations at the prefectural level, the council deliberates on and carries out all necessary measures. In the future, it will more closely coordinate with groups who use trucks, buses, and other modes of transportation to identify and promote necessary measures from the standpoint of those users.

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Advanced traffic assessments targeting developers of commercial facilities and other structures, as well as new initiatives for requesting additional measures after siting, are being planned with the goal of reducing congestion as more people begin to use the land along roads.



## 2 Constructing Arterial Railway Networks

### (1) Development of Shinkansen Railways

A rapid transit system of vital value to Japan, Shinkansen [bullet train] Lines significantly cut the time spent moving from region to region and help greatly boost regional activities and rejuvenate local economies. Shinkansen Lines feature safety (no record of passenger death accidents since opening of the Tokaido Shinkansen Line in 1964) and eco-friendliness (the railway CO<sub>2</sub> emissions per unit of energy (g-CO<sub>2</sub>/passenger-kilometer) being one fifth of aircraft and one sixth of automobiles). As New Shinkansen<sup>Note</sup>, Tohoku Shinkansen (between Hachinohe and Shin-Aomori) opened in December 2010 and the Kagoshima Route (between Hakata and Shin-Yatsushiro) of Kyushu Shinkansen opened in March 2011, and Hokuriku Shinkansen (between Nagano and Kanazawa) in March 2015 and Hokkaido Shinkansen (between Shin-Aomori and Shin-Hakodate Hokuto) in March 2016.

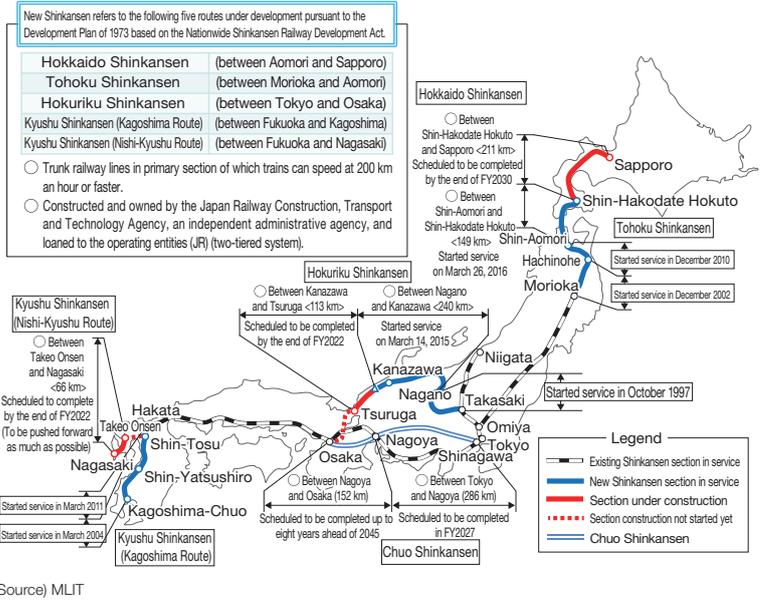
Steady improvements are being made in preparation to complete and open the Hokkaido Shinkansen line (between

**Note** Five routes that are stipulated in the Development Plan approved in 1973 pursuant to the Nationwide Shinkansen Railway Development Act.

Shin-Hakodate Hokuto and Sapporo), the Hokuriku Shinkansen line (between Kanazawa and Tsuruga) and the Kyushu Shinkansen line (between Takeo Onsen and Nagasaki), in accordance with the Handling of New Shinkansen Lines (agreed upon between the government and the ruling party on January 14, 2015). With respect to the Hokuriku Shinkansen Tsuruga – Osaka section, a section scheduled for construction, a survey was conducted by the MLIT that looked at matters requiring consideration concerning route selection, including the estimated project cost. Discussions were then held by the ruling coalition’s project team to promote Shinkansen development based on the results, and the decision was made to create a route connecting Tsuruga Station – the Obama (Higashi-Obama) area – Kyoto Station – the Kyotanabe (Matsuyamate) area – Shin-Osaka Station.

The Transport Policy Council, which had debated Chuo Shinkansen since March 2010, came up with recommendations in May 2011 to affirm the appropriateness of Central Japan Railway Company as an entity of its operation and construction, the superconducting maglev method of train operation and the Southern Alps of Japan route. The MLIT responded to name Central Japan Railway Company as an entity of operation and construction for Chuo Shinkansen in accordance with the Nationwide Shinkansen Railway Development Act, and decided on the Development Plan and directed Central Japan Railway Company to embark on construction. Central Japan Railway Company publicized and made available for public inspection an environmental assessment report edited and finalized under the Environmental Impact Assessment Act in August 2014 and, at the same time, filed an application for Plan for Constructing the Chuo Shinkansen Line Section between Shinagawa and Nagoya Stations (No. 1) to the MLIT, which was approved by the Minister of Land, Infrastructure, Transport and Tourism in October of the same year. Plans call for putting the Shinagawa – Nagoya route into service in 2027, and currently, construction of the Shinagawa Station and of the tunnels of the Southern Alps is ongoing. All routes to Osaka will be put into service up to eight years ahead of the original schedule (2045), using the Fiscal Investment and Loan Program for construction of routes between Shinagawa and Nagoya. Pursuant to revisions made to the Act on the Japan Railway Construction, Transport and Technology Agency, an Independent Administrative Agency at an extraordinary Diet session in 2016, fiscal loan funds are being provided to JR Central, the entity of construction from November 2016.

Figure II-6-1-6 Present Status of Nationwide Shinkansen Railway Network



(2) Driving Technical Development

(i) Superconducting maglev trains

Efforts to develop SCMaglev technology were assessed as follows at a February 2017 meeting of the Superconducting Magnetic Levitation Technological Practicality Evaluation Committee: “Technologies needed for routes open for traffic have been developed. Efforts going forward will focus on developing technologies aimed at achieving further maintenance efficiency and improving comfort.” Based on this assessment, changes to basic plans for the technological development of the superconducting magnetically-levitated transport system (drafted by the Railway Technical Research Institute and Central Japan Railway Company) were thereafter approved by the MLIT in March 2017.

(ii) Free gauge trains

Based on results of deliberations held by the Free Gauge Technology Evaluation Committee in November 2016, discussions concerning cutting costs and developing technologies to improve durability will be held to deploy free gauge technology on the Kyushu Shinkansen Nishi-Kyushu Route. At the same time, to deploy free gauge technology on the Hokuriku Shinkansen, we will drive forward technological development activity meant to address snow hazards (snow and cold resistance) for the sake of greater safety.

**3 Constructing Aviation Networks**

The Basic Policy Committee, Aviation Group, Transport Policy Council had explored the future directions of Japan's aviation in recurring sessions of discussions since October 2012 and finally came up with a report in June 2014. The report sets forth mid- and long-term directions in the three areas of aviation: laying a firm ground for building an aviation network, building an enhanced aviation network and developing aviation demand, and providing quality aviation and airport services. Based on this direction, we are working on developing specific measures.

Figure II-6-1-7 Overview of Tokyo International Airport



Source) MLIT

(1) Expanding Aviation Networks

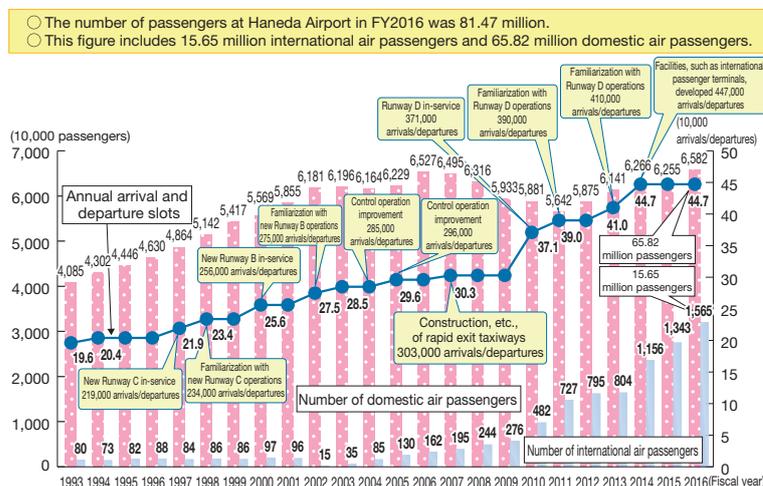
(i) Enhancing metropolitan airports functionalities

To beef up Japan's competitiveness in the global arenas of business and tourism, enhancements to the functions of the metropolitan airports were made, thereby achieving the annual total number of arrival and departure slots at Tokyo International Airport and Narita International Airport of 750,000 in March 2015.

Additions to the international passenger terminal building at Haneda Airport elevated the number of boarding/alighting slots on the international lines by 30,000 to 450,000 a year from March 2014. Narita international Airport realized 300 thousand arrival and departure slots a year in March 2015 thanks to the development, etc. of an LCC terminal.

Having achieved the number 750,000, the focus will be on smoothly holding 2020 Tokyo Olympic and Paralympic Games and looking further ahead. This will involve increasing the international competitiveness of the Tokyo Metropolitan Area, achieving the numbers of foreign travelers visiting Japan set forth in the New Tourism Strategy to Invigorate the Japanese Economy, which are, for example, 40 million by 2020 and 60 million by 2030, and regional

Figure II-6-1-8 Trend in Number of Passengers and Number of Arrivals and Departures at Tokyo International Airport



Source) Prepared by the Civil Aviation Bureau, MLIT

revitalization. Achieving these aims will require strengthening the functions of both airports, and work is underway to increase the total number of annual departures and arrivals to and from Haneda and Narita Airports by approximately 80,000 by 2020 by, among other means, reviewing flight paths to and from Haneda Airport.

Approval was received in July 2016 from all local governments involved concerning the government taking budgetary measures for project costs and environmental costs related to developing the facilities needed to enhance Haneda Airport functions. Along with making steady progress on environmental measures and developing the facilities needed to review Haneda Airport flight paths, information will continue to be disseminated effectively by means that include holding regular information sessions.

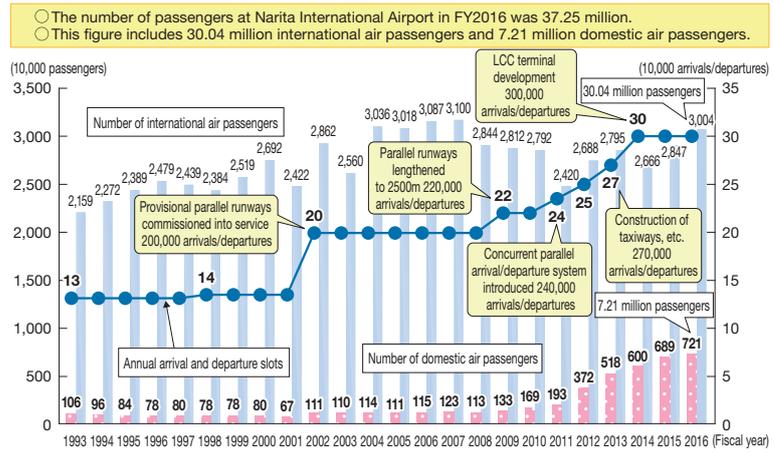
Regarding 2020 and after, approval was granted to explain measures to further enhance functions, including the development of a third runway at Narita Airport, to community members at a September 2016 meeting between local governments and the Council, so briefing to community began.

Figure II-6-1-9 Overview of Narita International Airport



(Source) MLIT

Figure II-6-1-10 Trend in Number of Passengers and Number of Arrivals and Departures at Narita International Airport



(Source) Prepared by the Civil Aviation Bureau, MLIT

(ii) Enhancing functions at Kansai International Airport and Chubu Centrair International Airport

At Kansai International Airport, Kansai Airports started doing business after obtaining concession rights in April 2016. Passenger numbers continued to increase even after the company started its business, with a new record set in 2016 that broke the record set in 2015.

In addition to expanding the immigration check area and adding more checking booths at Terminal 1, a new terminal exclusively for low-cost carriers, Terminal 2 International, was put into service in January 2017 by Kansai Airports. These measures aim to improve the system to accommodate the growing number of foreign travelers visiting Japan.

At Chubu Centrair International Airport, an apron that was being renovated to accommodate new LCC and other flights was put into service in March 2017. The development of an LCC terminal (scheduled to be put into service in fiscal 2019) has begun as a means to make the airport a hub for LCC service.

(iii) Enhancing functions at regional airports

For further revitalization of Okinawa at Naha Airport, which plays critical roles as a travel and logistics base connecting Okinawa and mainland Japan/overseas, the project to increase runways was carried out. At Fukuoka Airport, the project to increase runways continued with the aim of fundamentally resolving the issue of chronic airport congestion at peak times. Measures taken at New Chitose Airport include greatly expanding access to foreign aircraft beginning at the end

of October 2016, and increasing the number of departures and arrivals per hour from 32 to 42 at the end of March 2017. Additionally, in order to relieve facility congestion caused by a sudden increase in international flight passengers, among other factors, and to accommodate greater demand for international flights, development projects are underway to expand the apron for international flights, construct a new taxiway, and improve the functions of the terminal building servicing those flights (CIQ facility). At regional airports, as well, apron expansions and CIQ facility renovations are among the efforts being made to bring in more aircraft and accommodate new flights.

Also, the MLIT has been implementing countermeasures against aging airport facilities based on strategic maintenance to ensure safe flights of airplanes, while pushing forward with quake-resistant technologies and structures at airports so that airports can maintain their operations in the event of an earthquake.

#### (iv) Driving the Open Skies strategically

The Ministry has strategically pursued the Open Skies <sup>Note 1</sup>, including a metropolitan airport (Narita Airport), to respond to changes in the competitive climate resulting from global trends towards air services liberalization while accommodating vigorous economic leaps in Asian and other overseas nations. Open Skies with a total of 31 nations and regions <sup>Note 2</sup> were realized by March 2017. Also, discussions with ASEAN are ongoing with a view to concluding a regional air service agreement between Japan and ASEAN.

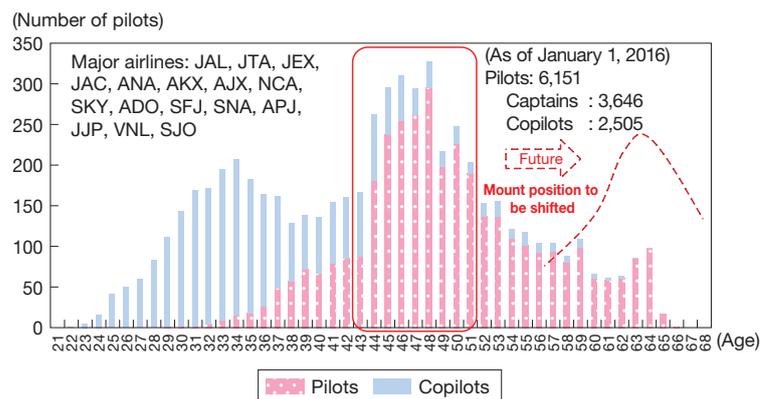
#### (v) Fostering and securing aircraft pilots, etc.

In the Japanese aviation industry, while drastic leaps in the demand for aviation focusing on international lines and massive retirement of pilots in their 40s, who form a primary workforce at present, are predicted in the future, it would be difficult to fully fill the future demand for pilots with the present yearly supply of new pilots. Hence, a solution to middle- and long-term shortages of pilots is sought.

To this end, the Joint Subcommittee for Studying Crew Policies was formed under the Basic Policy Taskforce and Technology and Safety Taskforce, Aviation Group, Transport Policy Council in December

2013 to explore directions in the specific measures to address shortages of pilots, and a report was put together in July 2014. Subsequently, the following initiatives have been taken in accordance with the report. The Aircraft Pilot Training Liaison Conference consisting of relevant stakeholders including airlines and training organizations was launched in August 2014, and various challenges in training and securing pilots are being examined utilizing such a conference.

Figure II-6-1-11 Age Compositions of Japan's Major Airline Pilots



**Note 1** An agreement on mutually removing bilateral constraints on the number of operators, that of routes and that of flights in international air transportation to enhance the quality of services, such as cutting airfares by encouraging the entry of new airlines, increasing the number of flights and stimulating competition between airlines. In recent years, many countries in the world pursue its implementation.

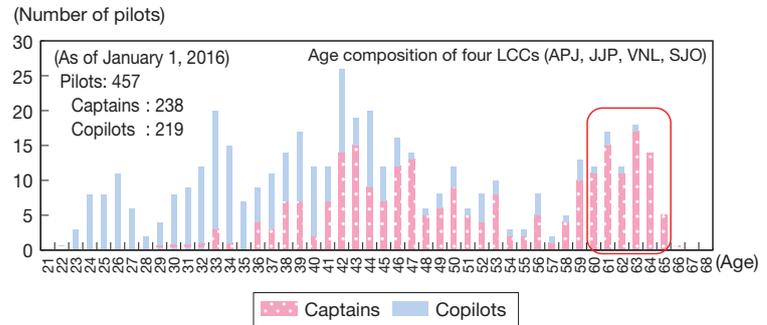
**Note 2** The number of passengers flying to and from the 31 nations and regions accounts for about 95% of the total number of passengers departing from and arriving at Japan.

In order to secure pilots ready for work, we are promoting such efforts as using Self-Defense Force pilots or foreign pilots by relaxing residency status requirements or hiring active pilots under enhanced health management by raising the age limit for airline pilots.

Also, a unified website Skyworks (<http://www.skyworks.info>) that shows the appeal of aviation related jobs was launched in December 2015 while we promote efforts in such areas as efficient pilot training by airlines, expanding the supply capacity of private sector training institutions including private universities, and further utilization of Civil Aviation College.

The target numbers of foreign travelers visiting Japan set forth in the New Tourism Strategy to Invigorate the Japanese Economy are set at the double of the previous number, i.e. 40 million by 2020 and 60 million by 2030. In this respect, fostering and securing aircraft pilots are becoming much more important, and we are planning to expand the training capacity of the Civil Aviation College from FY2018 (from 72 to 108 trainees).

Figure II-6-1-12 Age Compositions of Japan's LCC Pilots



Source) MLIT

(2) Enhancement and Optimization of Airport Operations

(i) Driving airport management reforms

Using the Act on Operation of National Airports Utilizing Skills of the Private Sector (Private Utilizing Airport Operation Act), the MLIT is committed to driving airport management reforms at national airports and the like to suit specific local conditions through utilization of private-sector capabilities, integrated management of airline and nonairline businesses and so on in order to expand the amount of population who are engaging in domestic and international interactions, etc. on the support of the airports and thus to encourage regional revitalization.

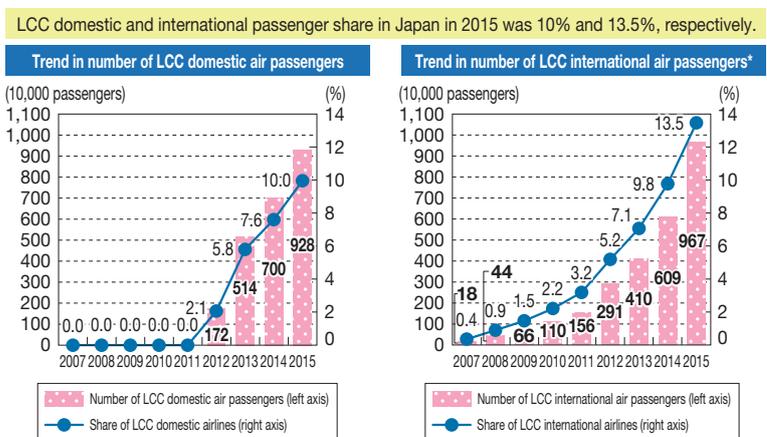
Amid these initiatives, in July 2016, Sendai Airport became the first of Japan's national airports to begin undergoing privatization. Steps are now being taken to privatize a number of other airports, including Takamatsu Airport, Fukuoka Airport, and airports in Hokkaido.

(ii) Efforts to achieve sustainable growth for LCCs

An LCC originating from Japan went into service in March 2012. As of March 2017, Peach Aviation operated 14 domestic routes and 13 international routes; JetStar Japan, 16 domestic routes and eight international routes; Vanilla Air, seven domestic routes and seven international routes; and Spring Airlines, four domestic routes and four international routes.

Japan's domestic and international air travel network is being pressed to make upgrades in order to accommodate an increasing number of passengers traveling to Japan and to achieve regional revitalization. In response, more robust LCC service is now seen as an important aspect of aviation administration, and a range of policies

Figure II-6-1-13 Trend in Number of LCC Passengers in Japan



\* Aggregation based on data as of July 2016  
 Source) Prepared by the Civil Aviation Bureau, MLIT; statistics for each (calendar) year

are being introduced with the goal of bringing the percentage of LCC passengers on domestic flights to 14% and on international flights to 17% by 2020.

Plans are being developed and carried out based on these three policies: (1) reducing landing fees and other airport fees, (2) reforming airport management, and (3) upgrading facilities. Measures to reduce airport fees include stimulating the local economy by maintaining local roads around national airports and joint-use airports and supporting low-cost carriers. To this end, landing fees for the equipment most often used (equipment weighing 100 tons or less) were reduced starting in fiscal 2013, with further reductions planned for fiscal 2016. Furthermore, continuing efforts that began in 2015, airport fees—including landing fees at Narita International Airport and Kansai International Airport—are also being reduced and reviewed. Regarding airport management reform, efforts that include having private enterprises operate runways and other facilities, along with airport buildings, will revitalize airports through strategic fee systems and business activities made possible by utilizing private sector knowledge and funding. The first airport management privatization in Japan began with Kansai International Airport in April 2016, which was followed by a similar move at Sendai Airport that July. Regarding upgrading facilities, LCC-dedicated terminals are being constructed. FY2012 witnessed the launch of an interim LCC receiving facility at Narita International Airport, Japan's first LCC-dedicated terminal (Terminal 2 Domestic) at Kansai International Airport and an interim LCC terminal leveraging existing facilities at Naha Airport. Terminal 3 (an LCC terminal) went into service at Narita International Airport in April 2015. In addition, a new LCC-dedicated terminal (Terminal 2 International) went into service at Kansai International Airport in January 2017. The development of an LCC terminal has also begun at Chubu Centrair International Airport.

LCC domestic and international passenger share in Japan in 2015 was 10% and 13.5%, respectively.

#### (iii) Accelerating the reception of business jets

A business jet is a small aircraft with the capacity to hold a few to more than a dozen passengers at the most. Business jets are typically used by businesspersons valuing time because they are able to adjust times according to their schedules or utilize the plane as a secure space to carry on business meetings and such on board.

Business jets have become a means of global corporate activity in the U.S. and Europe. As Japan's economy goes on global, further capitalizing on economic growth in Asia through mainly Tokyo International Airport and Narita International Airport has been an important aim, recent years have seen greater importance placed on winning more affluent passengers and otherwise capturing inbound tourism demand.

These conditions are prompting powerful efforts to collaborate with related ministries and agencies and take measures that include structural development and the relaxing of regulations in order to get better prepared for hosting business jets. Particularly at Tokyo International Airport, where many aircraft wanted to use the airport but could not do so, there was a major expansion of departure and arrival slots for these jets in April 2016 (from a maximum of 8 departures/day to 16 departures/day, while the 4 arrivals /day limit was eliminated), priority was raised for departures and arrivals of these aircraft, and the number of business jet parking positions was increased.

These efforts have made it easier to use these airports, and similar efforts will be taken to achieve further improvements.

#### (iv) Promotion of international flight services at regional airports

Although the number of foreigners visiting Japan is steadily increasing, most of them are entering the country through the country's major airports, including Narita, Haneda, and Kansai. The New Tourism Strategy to Invigorate the Japanese Economy lays out goals concerning the numbers of foreign travelers visiting Japan, including 40 million visitors by 2020 and 60 million visitors by 2030. Essential to achieving this goal will be promoting flights into regional airports serviced by LCCs and other carriers, and encouraging travel to rural areas as well as metropolitan areas.

For national airports and joint-use airports, landing fees of international flights have already been reduced by 30% for regular flights and by half for charter flights. New measures were taken in fiscal 2016 to reduce international flight landing fees a further 50% in cooperation with efforts being taken by regional airports looking to be added to flight routes. These fee reductions will occur when new routes are created or additional flights are added for international passengers at regional and national airports and joint-use airports. From in fiscal 2017, in order to aggressively expand the number of international flights serviced by LCCs and other carriers to regional airports in Japan, regional airports that undertake sophisticated measures to attract more passengers and aircraft will be designated as airports that help encourage travel

to Japan. Whether a national airport or regional/second class airport, they will receive subsidies along with landing fee, ground handling fee, and other fee reductions with the aim to promote new or additional services. In addition, such airports will be able to receive support for efforts such as improving CIQ facilities and building boarding bridges in order to improve convenience and relieve bottlenecks in accommodating the growing number of air travelers.

### (3) Building a New Air Traffic System

In FY2010, air traffic experts from the industrial, academic and governmental sectors formulated a long-term vision for future air traffic systems as CARATS (Collaborative Actions for Renovation of Air Traffic Systems) with a view to realizing a globally interoperable air traffic system and addressing increases in long-term demand for air traffic capacity and diversified needs. Studies are underway to make this vision a reality in conjunction with ICAO's Global Air Navigation Plan (GANP).

In FY2016, we began using the advanced observational capabilities of the Himawari 8 and 9 weather satellites to visually represent phenomena that are difficult to identify and provide a greater range of information regarding cumulonimbus clouds. Also, with the aim of realizing the use of precision landing, which is currently limited to straight lines, we are examining the introduction of the Ground Based Augmentation System (GBAS) to allow for curved lines to improve safety and convenience.

### (4) Strategic Promotion of Overseas Aviation Infrastructures

The Asia and Pacific region is expected to grow into the world's largest aviation market before too long. Under these circumstances, important issues for the growth strategy of Japan are not only to contribute to strengthening of the aviation networks in this region, but also to actively capture the impetus of the emerging countries in which numerous aviation projects are in progress.

An important aspect of winning projects will be strengthening the aviation industry's structure and expertise, with a central focus on airport operators, while engaging in public-private partnerships aimed at discovering new projects and enhancing the consulting structure. The Council for International Deployment of Aviation Infrastructure, which comprises numerous enterprises engaged in these endeavors, is leading the way in gathering information and strengthening bilateral relations between countries.

Sales activities and invitations to key government officials (February 2017) were among the efforts made in fiscal 2016 to encourage Japanese enterprise involvement in improving and operating the domestic terminal at Khabarovsk Novy Airport in Russia, the Long Thanh International Airport in Vietnam, the Hanthawaddy International Airport in Myanmar, the New Ulaanbaatar International Airport in Mongolia, and the New Manila Airport in the Philippines.

## 4 Facilitating Traffic Access to Airports

With respect to the rail networks for accessing these airports, efforts have been made to further improve railway access to international hub airports in accordance with the Approaches to Future Urban Railways in the Tokyo Area Report from the Council of Transport Policy, which was put together in April 2016. This includes promoting barrier-free construction at stations providing access to airports, as well as promoting specific discussions between stakeholders regarding project implementing entity, project schemes, and other matters, with the goal of improving access routes to major airports in the Tokyo Metropolitan Area and Kansai International Airport, among others.

In addition, to improve bus access to airports within National Strategic Special Zones, all necessary measures are being taken to ensure greater procedural flexibility, including shortening the time given to submit fare and service schedule plans.

## Section 2 Implementing Comprehensive and Integrated Logistics Policies

In accordance with the Comprehensive Logistic Policy Guidelines (2013-2017), logistics policies are implemented in a comprehensive and integrated manner in coordination between the public and private sectors. A logistics productivity revolution is also being advanced in order to improve logistics business efficiency and provide added value.

### 1 Implementing Logistic Policies to Correspond with Deepening Global Supply Chains

To keep up with deepening global supply chains, efforts directed at reinforcing Japan's international logistic facilities are underway, including driving overseas deployment of the nation's logistic systems.

#### (1) Promoting Overseas Deployment of Japan's Logistics Systems

As supply chains continue to get globalized at a deeper level than ever, grabbing the evolving Asian markets would be essential to sustaining and enhancing the international competitiveness of Japan's industries. The formation of a sophisticated international logistics system should be of prerequisite importance to meet this urge. Capturing the Asian markets has become an urgent task for Japanese logistics companies that support the business expansion of the nation's industries in Asia.

However, the existence of institutional and customary constraints in the partner countries is posing challenges to Japan in expanding its high-quality logistics systems into Asian nations. Therefore, the MLIT is developing an environment to encourage overseas expansion of Japan's logistics systems in collaboration with the private sector through logistics pilot projects, bilateral logistics policy dialogues, projects for development of human resource, international standardization of logistics systems, and other means.

#### (2) Strengthening the Functioning of the International Marine Transportation Network

As the globalization of economy progresses, the volume of international marine transportation continues to grow year to year. From the perspective of optimizing marine transportation through large bundle shipments, container carriers and bulkers continue to grow in size. In the meantime, key Asian ports have successfully increased their volumes of freight handling, resulting in concentrated ports of call, international trunk routes making fewer calls at Japan. Furthermore, slow responses to larger vessels to carry bulk cargo<sup>Note</sup> raise concerns over diminishing competitiveness in domestic industries forced into a mutually disadvantageous business environment.

In light of such conditions, Japan carries on its effort to streamline the flow of logistics that supports economic activity in Japan and life of citizens, improving the shipping entities at their location at home, which would in turn augment Japan's industrial competitiveness and realize economic reconstruction by maintaining and expanding the calls of international trunk routes at Japanese ports and simplifying and stabilizing imports of lifeblood materials, such as resources and energies.

In parallel with these approaches, efforts to shape an efficient network of marine transportation in which international and domestic transport services are integrated will be carried on, and relevant measures will be enhanced and developed at a deeper level of refinement.

##### (i) Enhancing the facilities of International Container Hubs

To strengthen Japanese economy's international competitiveness and to maintain and create citizens' employment, the international shipping trunk routes that directly connect Japan to North America, Europe, and other places need to be consistently maintained and even expanded.

For this purpose, the government of Japan chose Hanshin Port and Keihin Port as International Container Hubs in August 2010 to implement a full package of structural and non-structural measures. However, tumultuous change has been the defining feature of conditions surrounding Japanese ports: the size of container vessels are becoming larger and alliance between shipping companies is progressing. Based on these, the government of Japan promotes the policy of International Container Hubs that consists of three measures: (1) "Cargo collection" at International Container Hubs from

**Note** A generic term covering cargoes that ship in bulk, such as grains, iron ores, coal, oils and timber.

wide area, (2) “Cargo creation” through industry accumulation behind International Container Hubs, and (3) “Reinforcing the competitiveness” of International Container Hubs by, among other efforts, strengthening the functions of deep-water container terminals, collaborating with port authority and port operating company.

At Hanshin Port, the government of Japan gives “Kobe-Osaka International Port Corporation” – port operating company which is partially invested by the government – subsidy for projects to collect cargo. As a result, the number of domestic feeder services connecting between Hanshin port and ports in western Japan increased about 50%, from 68 to 99 per every week. The container throughput at the port of Kobe in 2016 recorded high in two consecutive years since the Great Hanshin-Awaji Earthquake in 1995.

At Keihin Port, the government of Japan gives “Yokohama-Kawasaki International Port Corporation” – port operating company which is partially invested by the government – subsidy for projects to collect cargo, and it contributes to opening new direct shipping routes between Japan and North America at the port of Yokohama since April 2017.

Meanwhile, maritime situations grow harsher, which saw the collapse of Hanjin Shipping Co. Ltd. in August 2016, and the formation of new integrated container shipping business among Japan’s three largest shipping companies. Based on these conditions, the government of Japan continues to promote measures strongly to maintain and expand international trunk routes including cargo collection from Asian ports to International Container Hubs.

#### (ii) Development of an LNG Bunkering Hub

In response to developments such as a tightening of regulations on SOx in general sea areas after 2020 by the International Maritime Organization (IMO) in October 2016, it is predicted that the number of vessels fueled by LNG (liquid natural gas) will increase, which produces cleaner emissions. The international competitiveness of ports may be largely determined by whether or not it has an LNG bunkering (fuel supply) hub. Japan is the world’s second largest LNG importing country and MLIT launches a feasibility study for LNG bunkering in the port of Yokohama where ‘several’ LNG tanks already located in June 2016 and established a steering committee in December 2016. Based on these results, collaborating with the port of Singapore, MLIT promotes measures to build LNG bunkering hubs at Japanese ports to reinforce the competitiveness of Japanese ports.

#### (iii) Forming a marine transportation network for moving resources, energy sources and so on with stability and efficiency

Supply-demand balances for resources, energy, and so on, assuring Japan of stable, low-cost imports of these substances to build up industrial competitiveness of the nation’s industries and to maintain and even create employment and revenues should be one of the tasks of foremost importance as the nation depends on imports for virtually 100% of its requirements.

Ten “strategic international bulk ports” were therefore chosen in May 2011 to serve as bases for resources and energy. In order to enhance the functions of these ports to allow them to serve as marine transport network hubs for bulk freight, the development of quays that can accommodate large vessels and the promotion of cooperative transportation using large vessels through corporate partnerships are being targeted, and both structural and non-structural measures are being taken with the help of subsidies and preferential tax measures.

At Onahama Port, construction of an 18 meter-deep international logistics terminal started in FY2013 as a base for handling coal imports, and it was designated as Specified Cargo Import Hub Port in December 2013. Development of another international logistics terminal with a water depth of 18 m was begun in fiscal 2014 at Tokuyama-Kudamatsu Port.

At Kushiro Port, construction of a 14-meter-deep international logistics terminal started in FY2014 as a base for handling grain imports, and it was designated as a Specified Cargo Import Hub Port in February 2016.

The goal is to realize a stable, low-cost supply of imports and thus build up Japan’s industrial competitiveness, create more employment and prevent outflow of earnings abroad.

**(iv) Building functionally core ports on the Japan Sea**

Among the ports located on the coastal line of the Japan Sea geographically close to the fast economically growing nations across the sea, core ports were selected in November 2011 in an effort to capture the economic booms in these nations into Japan's growth through selection of functions and concentration of measures and through port-to-port linkage and to build a disaster-resistant logistics network following the Great East Japan Earthquake. We will continue to follow up on the progress and other aspects of the plans formulated by port management bodies.

**(v) Building an integrated logistics information platform**

An integrated logistics information platform that reflects Nippon Automated Cargo Consolidated System (NACCS), with Container Logistics Information Service (Colins) is being built in order to improve the efficiency of system administration and user convenience.

**(vi) Enhancing functionalities of international ports**

The MLIT not only develops international physical distribution terminals, etc. in the international maritime transport network or at regional hub ports for consolidated competitiveness, etc. of local key industries but also pushes efforts directed at enhancing the functionalities of these ports, as by pushing their migration to ICT. To address increasingly sophisticated and diversified needs for East Asian logistics, which is not much different from domestic logistics in both terms of time and distance and build a low-cost logistics system, the Ministry pushes ahead with functional enhancements to unit loading terminals<sup>Note</sup> and with the construction of facilities designed to smooth the flow of cargo transshipment.

**(vii) Developing a marine transportation environment**

Among all international backbone routes, those that could interfere with bay navigation because of shallow waters, etc. have been improved and Aids to Navigation have been established to develop a marine transportation environment that combines the safety of navigation with the efficiency of marine transportation.

**Column****Toward the Development of an LNG Bunkering Hub**

In recent years, the number of vessels fueled by liquefied natural gas (LNG) is expected to increase in response to the strengthening of international regulations on gas emissions from ships, as LNG emits clean gases. Under these circumstances, whether a port has an LNG bunkering (fuel supply) hub now has a major influence on international port competitiveness.

Japan is the world's largest importer of LNG, and LNG bases, which are very expensive to develop, have already been constructed at many ports. Additionally, in September 2015, a private shipping company began operation of an LNG-fueled tug boat and a bunkering service that supplies LNG from an LNG tank truck to a tug boat at the port of Yokohama, and other such initiatives are being implemented to accumulate expertise on LNG bunkering. Japan is thus in a position to lead the world in the development of an LNG bunkering hub. Against this backdrop, the MLIT established a steering committee in June 2016 with the Ports and Harbours Bureau as the secretariat, with an eye toward the possibility of developing an LNG bunkering hub at the port of Yokohama as a model case, and compiled a report by that December. Furthermore, in August of the same year, initiatives for the development of ports in cooperation with Singapore as an LNG bunkering hub were included in "Economic Measures for Realizing Investment for the Future" (approved by the Cabinet on August 2, 2016).

Cooperation is also being strengthened with the Maritime and Port Authority of Singapore (MPA), which

**Note** A unit loading terminal is a terminal ready for the scheme of transportation in which freights are loaded and unloaded, unitized, in chasses, containers or the like, to make their physical distribution faster and more efficient.

is also the operator of the world’s largest heavy oil bunkering port. In July 2016, Mr. Keiichi Ishii, Minister of MLIT, attended and gave a speech at “Port of Yokohama LNG Bunkering Mini Seminar in Singapore” (sponsored by the MLIT and the Japanese Embassy in Singapore), and shared an understanding with the MPA Chief Executive of MPA of the need to cooperate in developing an LNG bunkering hub.

Furthermore, during the Singapore-Japan Summit Meeting held in September 2016 (Japan side: Prime Minister Shinzo Abe; Singapore side: Prime Minister Lee Hsien Loong), Mr. Abe expressed his wish to strengthen cooperation with Singapore in the development of an LNG bunkering hub, and Mr. Loong said he also wished to seek cooperation in the development of an LNG bunkering hub.

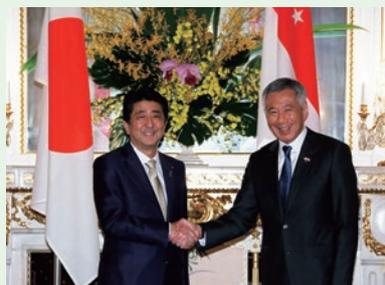
The following October, eight parties from seven countries, including the MLIT Ports and Harbours Bureau and MPA, signed a Memorandum of Understanding (MOU) in relation to the cooperation on the development of LNG as a marine fuel to promote the introduction of LNG-fueled ships, and opened the way to constructing a worldwide network of LNG bunkering ready ports.

In April 2017, MLIT and METI: Ministry of Economy, Trade and Industry sponsored the “LNG bunkering International Symposium in Yokohama,” bringing together stakeholders from around the world who are involved in promoting LNG bunkering, including shipping companies, energy businesses, and port and harbor authorities (approx. 550 participants from Japan and overseas), to share awareness of the general course of action that must be taken toward the development of an LNG bunkering hub and a worldwide LNG bunkering network.

The government of Japan will continue to play a leading role in developing an LNG bunkering hub in Asia, while strengthening cooperation with Singapore, with the aim of maintaining and expanding container and other services to Japan’s ports and enhancing the international competitiveness of the Japanese economy.



Mr. Ishii, Minister of MLIT, giving an opening speech at the “Port of Yokohama LNG Bunkering Mini Seminar in Singapore” (Friday, July 22, 2016)



The prime ministers of Japan and Singapore shaking hands at the Japan-Singapore Summit Meeting (Wednesday, Sept. 28, 2016) (Photo provided by: Cabinet Public Relations Office)



MOU signing ceremony (Wednesday, Oct. 5, 2016)



Fuel supply during cargo loading/unloading (image)



Commemorative photo of the sponsors, co-sponsors, and speakers of the international symposium (Monday, April 3, 2017)

Source) MLIT

### (3) Developing Advanced Aviation Logistics Facilities to Pursue Increased International Competitiveness

The MLIT pushes efforts to consolidate the functionalities of the metropolitan airports, drive an airfreight hub implementation of Japan's hub airports, such as Kansai International Airport and Chubu International Airport, and simplify the transportation process flow in its bid to positively capture airfreight originating from and arriving in Asia as it promises further leaps.

### (4) Improving Logistics for Promoting Exports of Agricultural and Marine Products and Food Products

The exports of agricultural and marine products and food products reached 750.3 billion yen in FY2016, updating the record high for the past. With a view to achieving the government's target of ¥1 trillion in exports of food and other agricultural products, forestry, and fishery products by 2019, efforts are being made to spread and promote technologies and devices for preventing those products from perishing during transportation and keep them fresh and expanding transportation of large-volume shipments by combining different items of cargos. These efforts, along with efforts to create international standards for refrigerated delivery services, are some of the attempts being made to maintain the quality of food and other agricultural products, forestry, and fishery products and strengthen cost competitiveness.

### (5) Strategic Development and Utilization of a Logistically Important Road Network

Building an efficient logistics network is of crucial importance to motor-truck transportation, which accounts for about 90% of domestic transportation. For this reason, the construction of ring roads in the three major metropolitan areas, access roads to airports and ports is underway. In fiscal 2016, a new individual subsidy program was launched to support the development of roads for accessing interchanges on regional high-standard highways, and the "international strategic and hub port" designation was granted to the last-one-mile of "road network for vehicles exceeding the weight and size limits," which take large vehicles onto routes suited to their size. In addition, we are steadily pushing forward with initiatives using ETC 2.0, such as the simplification of the overweight/oversize vehicle passage permit for vehicles with ETC 2.0 and a demonstration experiment of the operation management support services for ETC 2.0 vehicles. In addition, a strategy to save labor in truck transport and improve productivity saw the November 2016 launch of a demonstration project for double-trailer trucks (trucks pulling two trailers) in the field, primarily on the Shin-Tomei Expressway. Efforts are also underway to utilize and upgrade existing road networks, including the construction of smart ICs.

### (6) Measures That Help Strengthening of International Logistics Facilities

To meet the needs for the improved international logistics network where all modes of land, sea and air are efficiently combined, we are driving forward the realization of the mutual access of chasses (trailers that have no power drive) to and from Korea and China.

The MLIT will push the development and redevelopment of physical distribution sites and facilities around international ports, etc., which are nodal areas for international physical distribution in metropolitan zones. They will also undertake this at the ports that are the strongpoints of physical distribution and industry. This will be done to build up international competitiveness and form an efficient network of physical distribution as an integral part of urban environment improvement activity, while also seeking better disaster preparedness to deal with massive disasters as they occur.

## 2 Measures Aimed at Building an Efficient and Sustainable Logistics System in Japan

Additional approaches are underway to build an efficient and sustainable logistics system at home to toughen Japan's industrial competitiveness and increase logistics productivity while easing environmental loads.

### (1) Flow of Interregional Logistics

The MLIT proceeds to develop nodal points of logistics, such as ports and freight stations, to drive combined multi-modal transportation. Cargo transportation by rail can be used more efficiently by utilizing the facilities that have been developed to increase capacities of cargo transportation by rail. The construction of combined multimodal transport terminals is also being proceeded at Toyo Port and elsewhere to consolidate coordination between marine transportation and other modes of transport. Also, we have supported the development of low floor type railroad cars that meet the height

restrictions of existing structures such as tunnels with the aim of promoting modal shift of 40 feet container to railway transportation in domestic transportation of import/export container cargos.

Key road networks will also be constructed to streamline the flow of truck transportation.

## (2) Optimizing Local Logistics in Cities, Depopulated and Other Areas

Urban distribution centers<sup>Note</sup> have been developed in 20 cities and 29 locations (27 of which were already in service by the end of March 2016), in accordance with the Act on the Improvement of Urban Distribution Centers, to enhance the urban functions of logistics and streamline road traffic through the intensive location of distribution facilities.

To prevent roadside parking for cargo handling purposes, the Ministry has encouraged local governments to include the mandatory installation of parking spaces for cargo handling in their municipal parking ordinances. As of the end of March 2016, municipal ordinances that stipulate mandatory installation of parking spaces for cargo handling at commercial facilities of above certain size were established in 89 cities.

A handbook for designing and operating buildings that takes logistics into account has been drafted and provides hints as to the kinds of initiatives that will take place in the future. Thanks to this handbook, steps will be taken to more smoothly unload cargo at buildings and transport cargo within buildings, while it is expected that the burden placed on traffic and the environment will be limited and harmony with urban development efforts such as creating pleasant scenery will be achieved.

Measures taken to optimize traffic flow include making focused attempts at eliminating congestion bottleneck points, constructing graded intersections, and resolving railway crossings that are closed at nearly all times. In parallel, nonstructural measures, such as those aimed at encouraging joint transportation and delivery pursuant to the Low Carbon City Promotion Act to boost loading efficiency, have been promoted.

Furthermore, while the number of people having difficulty in daily shopping is increasing in depopulated and other areas, the logistics efficiency is on the decline. Therefore, a model project on achieving sustainable logistics was conducted in fiscal 2015 that has led to the accumulation and spreading of practical expertise with respect to problems and solutions that have been brought to light.

A report was issued in September 2015 by the Panel for Reducing Redeliveries through the Promotion of Greater Parcel Receiving Method Diversity, which comprises delivery businesses, mail order businesses, and other industry players. Its findings have prompted efforts to reduce redeliveries as recommended in the report through means that include making delivery lockers available at the offices of the MLIT for one month starting in July 2016 as a measure to promote more widespread usage of such lockers. In addition, October 2016 saw the installation of lockers for missed deliveries at Michino-eki, a place of central significance in the region, and the start of a public-private partnership for studying the potential for these lockers to reduce redeliveries in other regions.

Unmanned aircraft (i.e. drones, etc.) have the potential to be used for transporting cargo to remote islands and depopulated rural and urban areas, as well as for transport when natural disasters occur. However, when used for transporting goods, they must be capable of performing complex processes with accuracy and safety while flying outside of visual range. This includes flying to their destinations as well as taking off and landing in order to load and unload cargo. The development of a logistics drone port system was therefore launched in fiscal 2016, which enables unmanned aircraft to make safe and autonomous takeoffs and landings even outside of the operator's visual range. The system was used in a cargo delivery trial wherein unmanned aircraft transported goods to special housing for the elderly at Michi-no-eki in Ina, Nagano, in March 2017. This initiative exemplifies current efforts to make cargo delivery via unmanned aircraft a reality.

## (3) Further Efforts to Implement Logistic Services That Are More Sophisticated, Comprehensive, and Efficient

In response to a declining labor force and a rising volume of frequent, small-lot deliveries in the logistics sector, efforts are under way to economize on labor in and reduce the environmental impact of logistics business. The Act to Amend the Act on Advancement of Integration and Streamlining of Distribution Business, which seeks to support a wide range of logistics integration and streamlining efforts taken through collaboration by industry players, went into effect in October 2016. The act has certified and provided the necessary support to a total of 19 (as of March 31, 2017) integration and

**Note** A large-scale urban distribution center intensively equipped with distribution facilities, such as truck terminals and warehouses, which is conveniently located for ready access to an expressway interchange, for example.

streamlining plans that detail initiatives pertaining to, among other things, cooperative delivery, modal shifts, and consolidating transport networks using warehouses equipped with truck scheduling systems and other software. As of the end of September 2016, 301 certifications had been made under the unamended system<sup>Note</sup>.

#### (4) Measures for Labor Shortage in Logistics Sector

Under the influence of falling birthrates with aging populations, concerns over shrinking workforces are looming mainly in the trucking and domestic shipping sectors. Amid these circumstances, in order to secure the human resources needed in logistics and enhance logistics efficiency/labor saving, we have worked to facilitate modal shifts and joint transportation and to reduce redeliveries of home delivery services, while striving to promote social significance of logistics business effectively, in accordance with the Action Plans for Measures for Labor Shortage in Logistics Sector (March 2015 by the MLIT). Also promoted were efforts to use AI and other technologies to streamline logistics operations and economize on labor.

In addition, based on a report compiled in December 2015 at a joint meeting with the Logistics Task Force of the Transport System Subcommittee of the Council of Transport Policy and the Basic Policy Taskforce under Road Subcommittee of Infrastructure Development Council, we are working to increase productivity of logistics business, while promoting development of working environments where everyone can work and take active roles regardless of gender and age as well as creation of attractive workplaces where people can keep motivated to work with pride, such as by reducing long work hours and increasing wages.

## Section 3 Reactivating Industries

### 1 Trends in Railway Industries and Measures

#### (1) Railway Business

##### (i) Trends and measures in the railway business

The number of railway passengers carried in FY2015 increased from its year earlier level. At Japan Railway, transportation on the Shinkansen increased and as did transportation on conventional railway lines, with transportation on private railways on the increase, too.

In FY2015, the annual volume (tons) and distance (kilometers) of railway freight increased from the previous fiscal year for container freight, while carload freight slightly decreased.

The railway operators are working on such initiatives as presenting guidance information in multiple languages, showing route and station names along with their alphanumeric notation and offering free public wireless services in order to enhance railway competitiveness, increase convenience in coordination with livelihood services and be better prepared in receiving inbound foreign tourists.

Additionally, traffic IC cards continue to gain growing popularity across the nation since their pioneer “Suica” was launched by JR East in 2001. Since March 2013, 10 kinds of traffic IC cards used by JR and major private railways and the like have been made interoperable. As IC cards penetrate more railway operators and areas, they could help improve passenger convenience and reactivate regional economies.

**Note** This system supports efforts to use logistics facilities located near social capitals, such as expressway interchanges or ports, as cores to integrate transportation networks and streamline logistics.

**(ii) Initiatives towards the complete privatization of Japan Railways**

Japan's national railways were once operated as a centrally-managed organization run under a state-owned corporation. Improper business management and a failure to account for actual conditions in the areas of service led to high levels of long-term debt and eventual bankruptcy. This led to the division and privatization of Japanese National Railways in April 1987 and a rebirth of the rail business in Japan. April 2017 marked 30 years since the formation of the JR companies.

The breakup and privatization of Japanese National Railways resulted in the formation of a system characterized by efficient and responsible management. This led to dramatically improved comfort, convenience, and trust in rail services as a whole. The East Japan Railway Company, West Japan Railway Company, and Central Japan Railway Company became fully private entities by 2006, and JR Kyushu Railway Company was listed on the Tokyo Stock Exchange in October 2016. The intended purpose of national railway reform is on the road to being achieved.

The government is also helping Hokkaido Railway Company, Shikoku Railway Company, and Japan Freight Railway Company—all of which have yet to announce plans to be listed on a stock exchange—to achieve business independence in a number of ways, including assistance with capital investment and the provision of interest-free loans.

Hokkaido Railway Company is facing particular difficulties in maintaining profitability as more train lines find it difficult to capitalize on their unique characteristics. Factors include rapidly declining numbers of train passengers as more people move out of rural areas and begin driving cars or using other forms of transportation. For its part, the national government is working with the Hokkaido Government Office, taking part in discussions between stakeholders and planning solutions that involve building sustainable traffic systems in rural areas.

**(2) Railway Vehicle Industry**

The volume of newly built railway vehicles by value moved flatwise for domestic shipment and varied depending on the status of orders for overseas shipment. Production by value in FY2015 stood at 181.6 billion yen (1,737 vehicles.) Production by value was broken down into 80.6% (146.3 billion yen) for domestic-bound and 19.4% (35.3 billion yen) for export-bound, the former declining by 6.7% over FY2014 and the latter rising by 205.2% over FY2014.

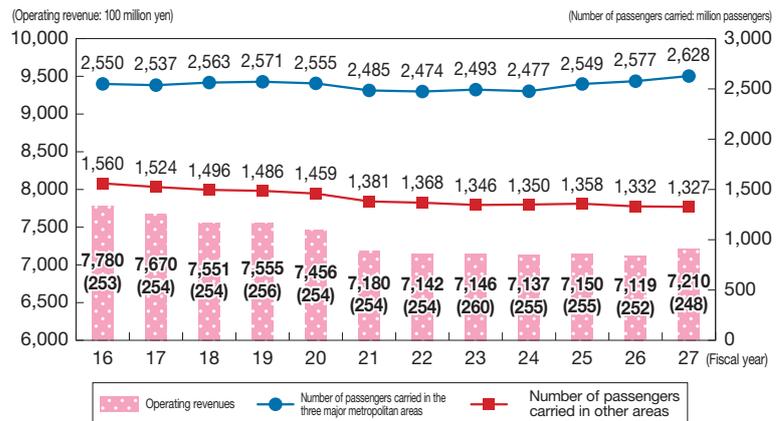
Production of railway vehicle parts (such as power generators and bogies) was 323.6 billion yen by value and that of signal protection devices (such as automatic train control devices and electrical interlocking devices) was 114.5 billion yen.

Rolling stock builders and others are working to develop rolling stocks that fill diverse social needs, such as speed, safety, passenger comfort, low noise and being barrier-free, by partnering with railway operators and also to set up and even expand local production and service sites in the U.S., U.K. and elsewhere with the recent order taking for overseas projects as an impetus.

**2 Trends in Motor Truck Transport Business and Measures****(1) Passenger Vehicle Transport Business****(i) Motor bus business**

While motor buses in major cities in which populations have increased have seen slight increases in passenger volume and revenues, factors that include increasing ownership of private vehicles in rural areas continue to push down the demand for public transport. The climate surrounding the motor bus business remains extremely harsh.

**Figure II-6-3-1** Changes in the Number of Passengers Carried by Motor Buses and Operating Revenues



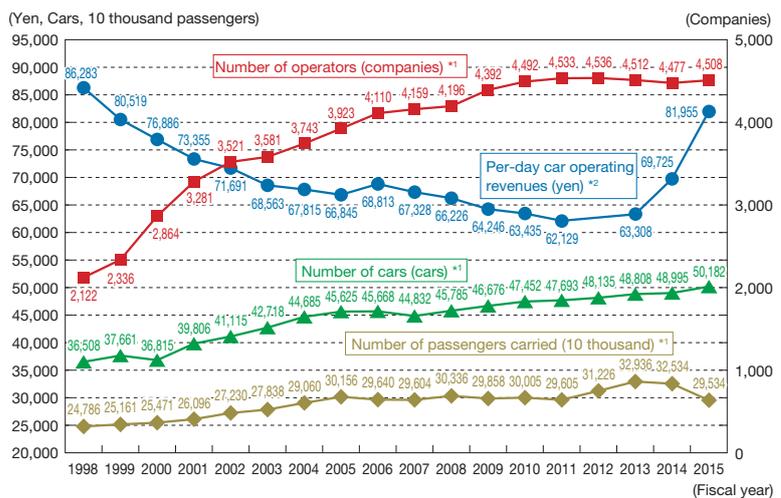
(Notes) 1 Numeric data above has been collected from the bus operators who own a fleet at least 30 motor buses. The parenthesized value for each fiscal year denotes the total number of bus operators who own a fleet at least 30 buses for that fiscal year.  
 2 The number of passengers carried in the three major metropolitan areas is an aggregate total for Saitama, Chiba, Tokyo, Kanagawa, Aichi, Mie, Gifu, Osaka, Kyoto and Hyogo.  
 Source) MLIT

(ii) Chartered bus business

Since deregulations in February 2000, the chartered bus business has sponsored low-cost, diversified bus tours in its effort to deliver better user services, but competition is stiffening with increase in the population of operators in play. Meanwhile, chartered bus industry conditions are improving: Despite a previous downward trend for transport revenues due to developments such as smaller group sizes for group tours and lower prices for travel packages, revenue growth is now being seen as a result of factors that include new fares and costs systems being implemented that properly factor in safety costs and the increasing number of foreign travelers visiting Japan.

The Committee of Experts to Investigate Measures in Response to the Ski Bus Accident in Karuizawa put together comprehensive measures in response to the Karuizawa ski bus accident that occurred in January 2016. Based on these measures, efforts are being made to ensure safe and secure chartered bus services that include strengthening rules for charter bus operators.

**Figure II-6-3-2** Chartered Bus Business Overview



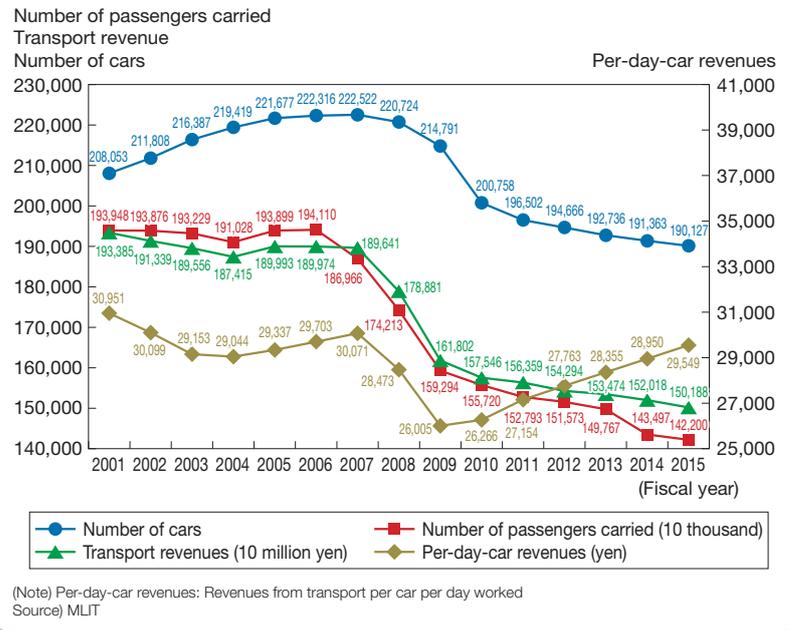
(Note) 1 Surveyed by MLIT  
 2 Surveyed by Nihon Bus Association (No data listed for FY2012 because subject operators are different)  
 Source) MLIT

(iii) Taxi business

In the taxi business, the Act on Special Measures Concerning the Optimization and Revitalization of the General Passenger Car Transportation Business in Specified and Semi-Specified Areas was put into effect in January 2014 in order to, among other things, improve working conditions for drivers while providing better taxi services.

Pursuant to provisions of the law, the MLIT has designated 27 specified areas and 116 semi-specified areas, working to improve taxi business productivity by making efforts to rectify the current over-supply and stimulate demand.

Figure II-6-3-3 Developments in Per Day-Vehicle Reviews of Hires and Taxes



(2) Replacement Driver Service

The replacement driver service is used as an alternate means of transport for drunken drivers. As of the end of December 2016, 8,916 replacement driver service providers are in operation. Keen to add to further soundness of the replacement driver service, the MLIT has formulated “Measures for Making the Replacement Driver Service More Sound for Added Safety and Security” in collaboration with the National Police Agency in March 2012 as part of its continuing effort to drive various relevant measures. Furthermore, the MLIT developed “measures to address issues concerning user protection toward appropriate operation of replacement driver services” in March 2016 in order to further ensure protection of users in replacement driver service, and these measures were implemented from April 2016.

(3) Truck Transport Business

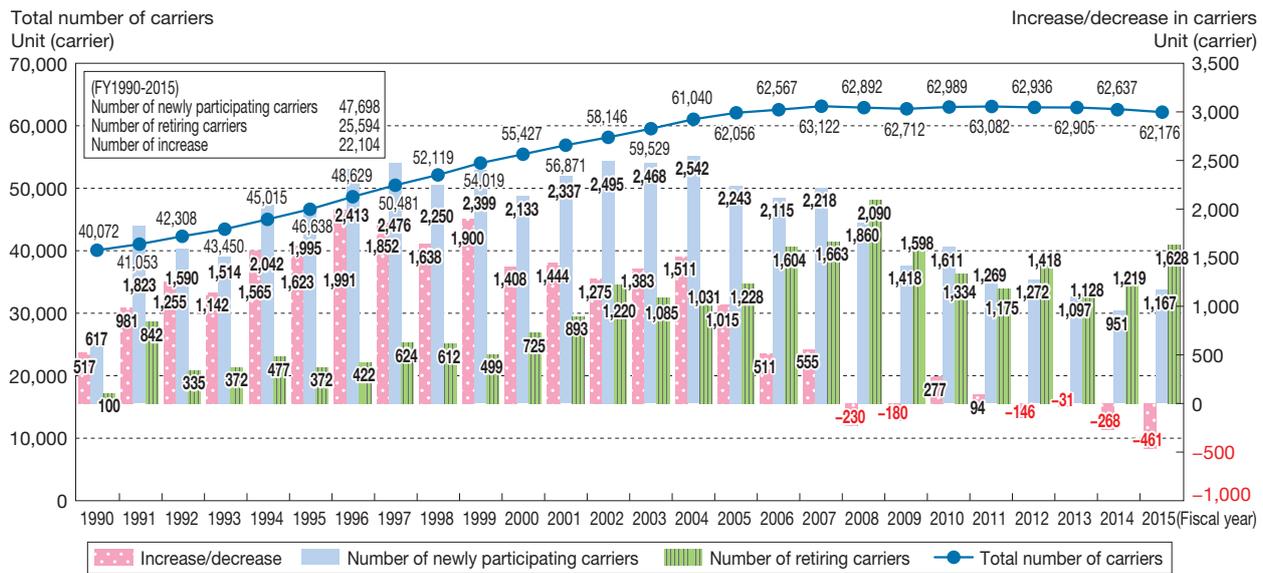
The number of motor truck carriers had been on the rise for long, but the number of carriers has been moving crabwise at about 63,000 since 2008.

Since about 99.9% of truck transport business operators are small and medium sized businesses, they are in a weak position in relation to shippers and other business partners and thus subject to such issues as not being able to receive appropriate fares and being forced to accept waiting time for convenience of shippers. Therefore, as part of a framework devised by a council that has been meeting since FY2015, a pilot program was conducted in FY2016 to shorten the currently long working hours through efforts that include decreasing standby time through collaboration between shippers and truck transport business operators. At the same time, the Investigative Commission for Proper Trucking Industry Fares and Fees has begun holding discussions aimed at ensuring that the proper fares and fees are received.

Efforts have also been made toward improving business terms for truck transport business operators and conducting projects that seek to improve productivity.

As changing working arrangements is important to make working in the truck transport industry more attractive, efforts will continue to carry out these policies on a comprehensive scale.

Figure II-6-3-4 Trends in the Number of Motor Truck Carriers



(Note) The number of retiring carriers includes that of carriers that have terminated as a result of a merger or transfer.  
Trucking Business Act was enforced on December 1, 1990.  
Source) MLIT

#### (4) Securing and Fostering Bearers of Motor Carrier Businesses, etc.

Motor carrier businesses that undertake the movement of people and goods (trucking, bus and taxi businesses, and automotive maintenance business that contributes to safety assurance in these businesses) are a social infrastructural industry of vital importance to sustaining Japan's economy and means of regional transportation.

A look into the employment structure of the motor carrier businesses, however, suggests that the workforce more or less depends on middle-aged and elderly workers, with female workers accounting only for about 2%. If this condition lasts, a serious shortage of bearers of these businesses is feared to occur in the future.

In the light of these circumstances, the MLIT has defined the year 2015 as the "first year of human resources securing fostering" and worked out its future approaches to analyzing current status across these businesses, identifying problems, encouraging the work of younger and female workers and so on.

With regard to trucks, along with addressing issues concerning and carrying out policies aimed at driving a wider adoption of and achieving the practical application of relay transport, we are working on measures to secure bearers by, for example, disseminating information about the license for quasi-medium-size trucks program, enhancing information dissemination and awareness of business managers, leveraging "Female Truck Driver Promotion Project Site."

The bus industry is advertising the job of bus driver as a choice for employment, and is creating flyers and leaflets targeting young female jobseekers. Bus companies are also working to recruit and train more

Figure II-6-3-5 Employment Structure of the Motor Carrier Businesses, etc.

	Bus	Taxi	Truck	Automotive maintenance	Total industry average
Number of drivers and maintenance technicians	130,000 (FY2015)	320,000 (FY2015)	830,000 (FY2015)	400,000 (2016)	—
Female ratio	1.5% (FY2014)	2.5% (FY2014)	2.4% (2016)	1.3% (2015)	43.5% (2016)
Average age	49.9 (2016)	58.7 (2016)	47.5 (2016)	44.3 (2016)	42.2 (2016)
Working hours	210 hours (2016)	193 hours (2016)	217 hours (2016)	189 hours (2016)	177 hours (2016)
Annual income	JPY 4.49 million (2016)	JPY 3.32 million (2016)	JPY 4.47 million (2016)	JPY 4.17 million (2016)	JPY 4.90 million (2016)

(Notes) 1 The ratio of female in automotive maintenance is that for second level automotive mechanics.  
2 Prepared by the MLIT's Road Transport Bureau for Average Age for Total Industry Average from the FY2016 Basic Survey on Wage Structure and for Working hours and Annual income from figures of investigated industry total in the FY2016 Basic Survey on Wage Structure  
3 Figures for working hours were estimated by the MLIT's Road Transport Bureau from scheduled hours worked + non-scheduled hours worked in the Basic Survey on Wage Structure.  
Scheduled working hours indicate the number of hours actually worked during the hours from start time and finish time on scheduled work days in June each year as stipulated in employment rules or other such documents of the business office. Nonscheduled working hours indicate the number of hours actually worked outside the scheduled working hours and the number of hours actually worked on prescribed days off.  
4 Annual income is the figures estimated by the MLIT's Road Transport Bureau from regular salary paid in cash x 12 + annual bonuses and other special salary in the Basic Survey on Wage Structure.  
Regular salary paid in cash means six-months' worth of salary paid in cash (before deducting income tax, social insurance premiums, etc.) and includes base salary, rank allowance, attendance allowance, commuting allowance, family allowance, overtime allowance and the like.  
Annual bonuses and other special salary means the amount of bonuses and special salary such as fiscal year-end special allowance paid during the January-December period of the year preceding the survey year.  
Source) Prepared by the MLIT's Road Transport Bureau from Labor Force Survey by the Ministry of Internal Affairs and Communications, Basic Survey on Wage Structure by the Health, Labour and Welfare Ministry, Japan's Bus Service by the Nihon Bus Association and Hire-Taxi Year Book by the Japan Federation of Hire-Taxi Associations, and Automotive Maintenance White Paper by the Japan Automobile Service Promotion Association.

bus drivers by creating recruiting and training handbooks.

In the taxi industry, June 2016 saw the launch of the Female Driver Support Enterprise certification program, which seeks to get and keep more women in the taxi workforce by supporting and advertising efforts aimed at improving female driver employment and by businesses trying to make it easier for women with children to continue working.

The automotive maintenance industry is targeting women and younger people, working to advertise and improve the perception of being a mechanic by working with public and private entities through efforts that include visiting high schools and putting up posters. Based on the results of a survey conducted by a panel of experts that looked at work environments as well as compensation and benefits, further measures are being planned according to business type, size, etc., in collaboration with the industry players involved.

### 3 Trends in Maritime Industries and Measures

#### (1) Achieving Stable Marine Transportation

##### (i) Achieving Japanese-flagged vessels and Japanese seafarers

As Japan is a nation with limited resources surrounded by the sea in all its sides, international shipping, which depends on 99.6% of the Japan's trade, plays a significant role in ensuring the country's economic security. As such, even in times of emergency, it is critical to maintain a sufficient number of Japanese vessels and Japanese mariners to eliminate jurisdictional competition with the country of vessel registry, and these numbers have been in decline as a result of weakened cost competitiveness brought about by a yen that has appreciated since the Plaza Accord.

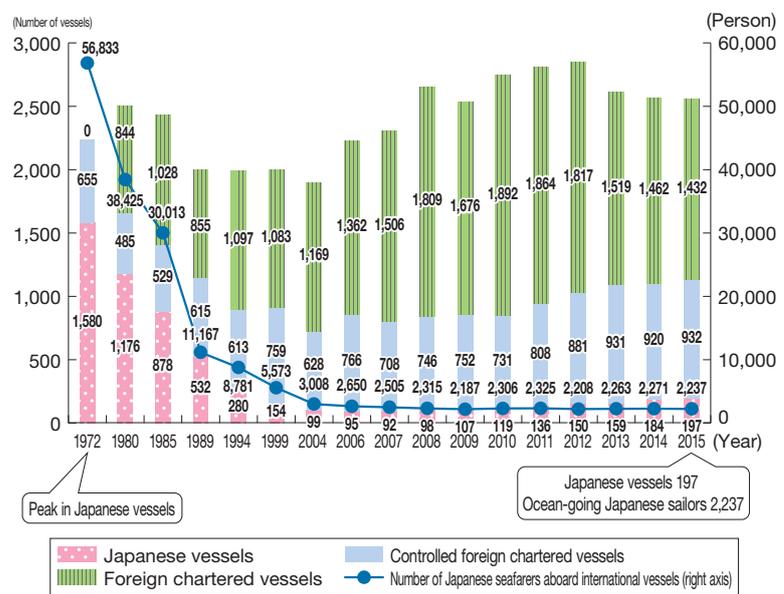
To address this situation, a tonnage tax system<sup>Note</sup> went into effect in FY2009 for Japanese vessels owned by Japanese overseas ship operators who have been certified under the Japanese-flagged Vessels and Japanese Seafarers Securing Plan in accordance with the Marine Transportation Law.

In FY2013, the system sought to supplement the number of Japanese vessels by expanding the scope of the system to vessels that are owned by subsidiaries of Japanese overseas vessel operators and that have taken measures to be flagged as Japanese-flagged vessels when navigation orders are given (referred to as semi-Japanese-flagged vessels). These efforts are helping to increase the number of Japanese vessels and mariners.

Furthermore, as a move to more quickly achieve stable marine transport in the face of a rapidly changing landscape concerning waters around Japan in recent years, a bill to enact the Marine Transportation Law and Mariners Act was submitted to the Diet in February 2017. This law would, among other things, add foreign vessels that are owned by the subsidiaries of Japanese vessel owners to the list of deemed-Japanese-flagged vessels, if the vessels satisfy certain conditions.

Figure II-6-3-6

Trend in Number of Japanese Seafarers Aboard International Vessels, Japanese Merchant Fleet



Source) MLIT

**Note** A tax system that calculates the amount of corporate tax on the basis of a predetermined deemed profit according to vessel tonnage, rather than yearly profits. Similar tax systems are already introduced in the world's major nautical nations.

These initiatives aim to stabilize the marine transport business in Japan as quickly as possible.

### (ii) Acquiring and fostering seafarers (Seamen)

Acquiring and fostering Japanese ship's seafarers, human resources of marine transportation, is of essential importance to boosting Japan's economy and maintaining and upgrading national life. Coastal shipping sailors are aging with about 50% of them being 50 years of age or older, and it is necessary to secure and foster a sufficient number of young seafarers so that

bearers' shortages will not occur when old seafarers retire in a large number. In response, efforts are under way to expand employment opportunities for new seafarers. One such effort involves strengthening the system for supplying seafarers by making it easier for seafarers to find employment through such means as providing support for conducting short-term training courses and offering direct invitations to participate in employment seminars at culinary schools for people who have not graduated from a mariner training institute. Another effort involves supporting business operators that employ new seafarers in a systematical and holding job interviews for new graduates by working with the organizations involved to encourage participation by graduates whose schedules have so far prevented them from attending.

On the other hand, a certain number of ocean-going Japanese sailors need to be secured and fostered from economic security and other perspectives. Therefore, we are making efforts to secure Japanese seafarers, including steady implementation of the plan to secure Japanese vessels and seafarers.

As Asian seafarers account for a greater proportion of the total seafarers aboard Japanese merchant fleet, training aimed at improving the skills of mariner's instructors in the developing nations has been conducted to help secure and foster more capable Asian seafarers.

The I.A.I. Japan agency of Maritime Education and Training for Seafarers (JMETS) is the seafarers training institutions over which the MLIT holds jurisdiction. JMETS, which was established through an April 2016 merger between the I.A.I. National Institute for Sea Training and the I.A.I. Marine Technical Education Agency, is the largest seafarer training institute in Japan. It provides new seafarers training, practical training according to sea freight company needs, and sailing training for students of mercantile marine universities and colleges of technology.

Going forward, JMETS is steadily pushing forward the securing and fostering young seafarers by advancing training contents and making the best use of its resources.

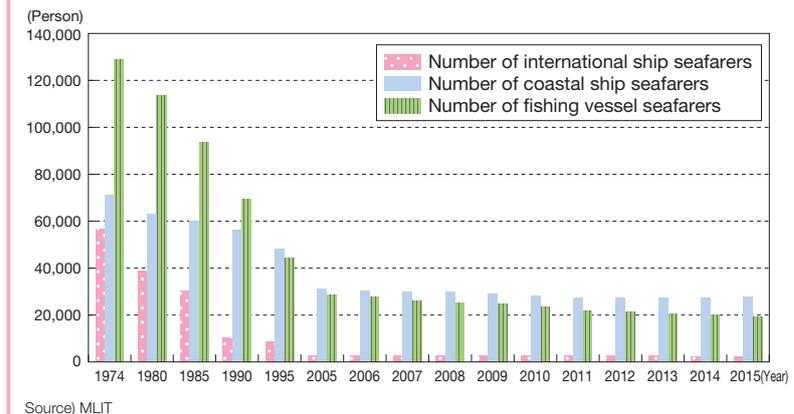
In addition to these efforts to secure and foster seafarers, continued efforts will be directed at promoting On-board Occupational Health and Safety Management System and Work Improvement on Board (WIB), a continual approach to reducing seafarers accidents to add to the vocational charms of the job of being a seafarer.

### (iii) Promotion of the understanding of ocean by the public

While achieving stable marine transportation is crucial in supporting the Japanese economy and national life, the understanding of sea by the public is not necessarily sufficient. To this end, the MLIT is working with local governments, businesses, related groups, schools, boards of education, and other organizations to promote the understanding by the public—young people in particular—on maritime affairs, through initiatives that include Ocean Month, the Sea-Festa (held in five cities, two towns, and one village, including Toyohashi City, in 2016), and commending those who have been instrumental in helping Japan to grow into a maritime nation (Prime Minister's Commendation).

In addition, in an address delivered on Marine Day in 2016, Prime Minister Abe announced the launch of the "Nippon Platform for Marine Education" an organization promote marine education. In response, the MLIT has furthered its plans for efforts such as marine education programs for elementary and secondary school education. Following this, in August

Figure II-6-3-7 Changes in the Number of Japanese Seafarers



2016, regional transport bureaus and related organizations have collaborated with boards of education to provide secondary school students with career education that teaches the benefits and importance of maritime work, while opening up related jobs as career choices, with the goal of increasing the maritime industry workforce in the future.

## Column Historical Maritime Depression and Integration of Regular Container Services of International Shipping Companies in Japan

International shipping could be said to be an industry in which a gap tends to emerge between demand and supply. This is because ocean-going ships require several years from placing an order with a shipyard to completion, and also because they have a long service life until they are scrapped.

The large number of ships that were ordered during the maritime boom before the Lehman Crisis have been launched on the market in recent years, but ocean-going ships have fallen into a state of considerable oversupply, due to the declining volume of seaborne trade throughout the world accompanying the slow-down of China's economy.

Such aggravation of the demand-supply environment was reflected in the Baltic Dry Index (BDI; first published on January 4, 1985, at a level of 1,000 points), an index that measures the transport cost of bulk carriers that transport dry cargo such as iron ore, coal, and grains, which recorded a lowest-ever value of 290 in February 2016. The China Containerized Freight Index (CCFI; first published on January 1, 1998, at a level of 1,000 points), an index of container freight cost, also marked a record low in the same year on North American and European routes, and illustrated the severity of the business environment surrounding international shipping.

Under this situation, on October 31, 2016, the three shipping companies of Nippon Yusen, Mitsui O.S.K. Lines, and Kawasaki Kisen announced that they will be establishing a joint venture that integrates their regular container services as a measure to ensure efficient business operations and to pursue economy of scale.

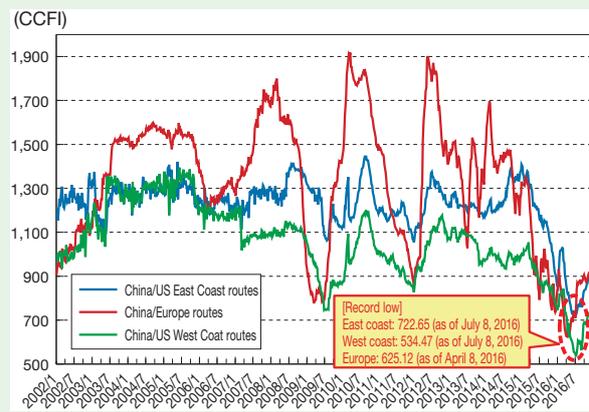
The MLIT expects that the integration of the three companies' regular container services will strengthen the competitiveness of Japanese international shipping companies and lead to the provision of stable services to users, and is thus prepared to respond to consultations from the three companies so that the integrated business can produce the expected effects.

Long-term trend of the bulk carrier freight market



Source) Prepared by the MLIT from Nippon Yusen Kabushiki Kaisha, *Factbook*

Long-term trend of the container freight market



Source) Developed by the MLIT from Nippon Yusen Kabushiki Kaisha, *Factbook*

## (2) Marine Transportation Industry

### (i) International shipping

The volume of cargo movement on ocean in the world for 2015 stood at 10.718 billion tons (up 2.0% year-on-year) with Japan's volume of seaborne trade for the same year at 0.94671 billion tons (down 1.2% year-on-year).

Despite a mild recovery of the economy and a decline in fuel oil prices in the U.S., overall international shipping business conditions were severe in FY2015 due to a slowing of economic growth and an oversupply of seagoing vessels in emerging nations.

### (ii) Domestic passenger shipping business

Domestic passenger shipping business demand was 88 million passengers in FY2015, a 2% increase over the previous year. The trend is, however, downward on a long-term basis attributable to changes in Japan's demographic structure, among other factors. Fuel prices are now in a downturn after attaining peak level in 2014, a development that continues to make for a difficult business environment. The domestic passenger shipping business plays an important role as a means to transport people and daily commodities from region to region, and holds promise as a way to increase tourism among those interested in maritime scenery and other opportunities. The ferry business has modal shift potential and serves a key role in providing transport after natural disasters occur.

This has prompted the MLIT to provide support for the construction of highly energy-efficient vessels through preferential tax measures and a joint shipbuilding program administrated by the Japan Railway Construction, Transport and Technology Agency. At the same time, the MLIT is supporting the development of new tourism-related services under the Model Zone for Sea Travel Revitalization Program, which was launched in April 2016 (13 zones as of the end of March 2017). Support is also being provided for seagoing vessel construction to facilitate a modal shift under the joint shipbuilding program, with the goal of achieving the modal shift targets (coastal shipping volume: 36.7 billion ton-km by FY2020; FY2015 volume was 34.0 billion ton-km) set forth in the Basic Plan on Transport Policy, which was ratified by the Cabinet in February 2015. This is taking place alongside efforts to implement a system for certifying total efficiency plans in accordance with the Act on Advancement of Integration and Streamlining of Distribution Business, which was revised in October 2016.

Figure II-6-3-8 Trends in the Number of Domestic Passenger Ship Operators and Number of Passengers Carried

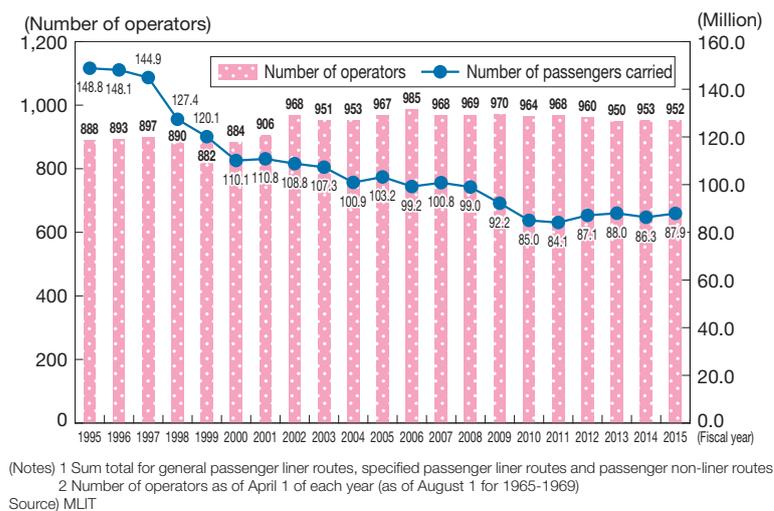


Figure II-6-3-9 Delivery of Request Letter from the Minister of MLIT



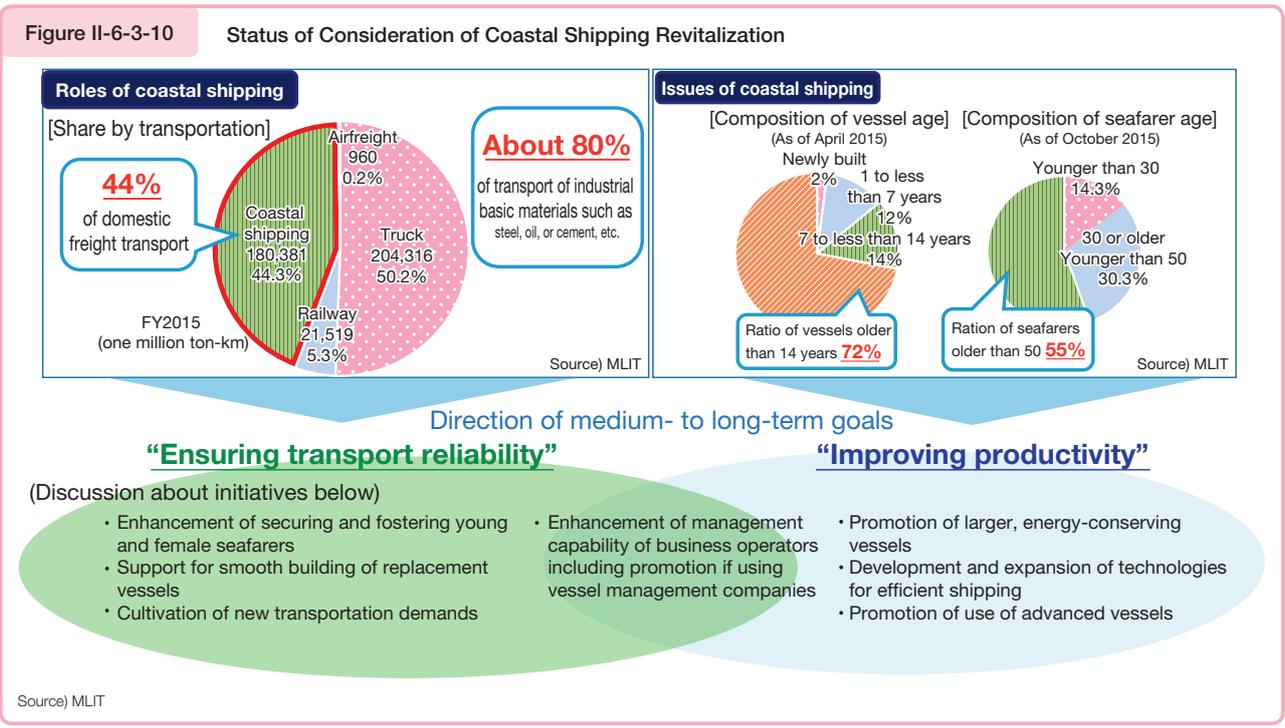
Source) MLIT

In addition to the above, the MLIT is working with concerned ministries, agencies, and private ferry operators to formulate measures aimed at quickly dispatching regional support teams via private ferry when the Nankai Trough Mega Earthquake occur. In connection with this, the Minister of Land, Infrastructure, Transport and Tourism sent a request concerning preferential transport for regional support teams to passenger shipping business operators in order to ensure seamless transport in the event of a natural disaster.

(iii) Coastal shipping

The coastal shipping volume in FY2015 was 180.3 billion ton-km, a 1.5% decrease over the previous year. Although recent years have not seen any significant decline, the long-term view trends downward for transport demand for industrial base materials, in particular, due to factors that include a stagnant domestic economy, intensifying international competition, and business mergers among shippers. Coastal shipping accounts for 44% of domestic logistics and roughly 80% of industrial basic materials transport, and constitutes a core transport infrastructure supporting Japan’s economy and the lifestyles of its people. Along with ferry transport, it is a key element for achieving modal shift. However, overage vessels comprise 70% of all domestic vessels at sea and more than 50% of seafarers are 50 or older. This “dual aging” of vessels and seafarers presents a systemic problem.

In response, meetings of the Panel to Consider Future Measures for Coastal Shipping Revitalization have been held since April 2016. Participants have begun discussing the ideal path forward for achieving coastal shipping industry growth that ensures the sustainable provision of safe, high-quality transport services. In July 2016, the panel released a midterm report detailing initiatives to be undertaken immediately. The panel is now discussing specific efforts aimed at ensuring transport reliability and improving productivity as medium- to long-term goals, and plans to present its conclusions in June 2017. Also, the smooth and steady implementation of provisional measures for coastal shipping<sup>Note</sup> is also supported.



**Note** A system that grants a certain subsidy to those who have dismantled and removed their ships and that demands the shipbuilders pay fees (grant of subsidy ended by the end of FY2015).

## (iv) Port and harbor transportation business

The port and harbor transportation business plays a significant role as an interconnecting node between marine sea and land transportation in support of Japan's economy and national life. As of the end of March 2016, there were 868 transporters (0.7% down from the previous year) in the general port and harbor transportation business at the 93 ports nationwide that are governed by the Port and Harbor Transportation Business Act. Vessel loading and unloading volumes for FY2015 were approximately 1,399 million tons nationwide (down 2.7% from the previous year).

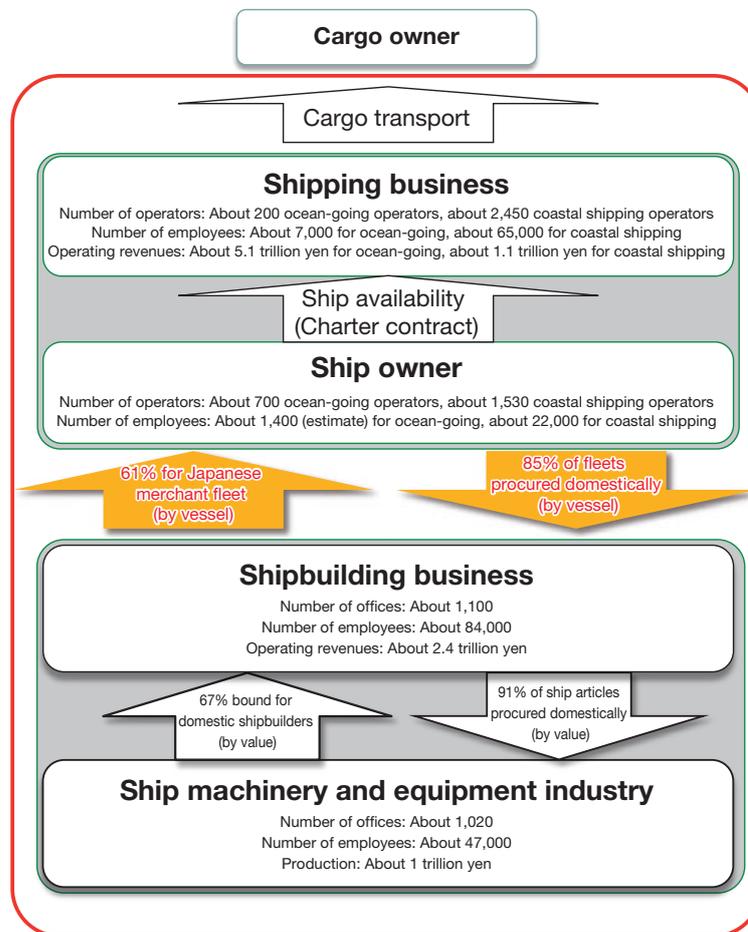
## (3) Shipbuilding Industry

## (i) Present status of the shipbuilding industry

Japan's shipbuilding industry is an extremely important industry that contributes to regional economy and employment by providing a stable supply of quality vessels tailored to ship owner's varied needs. Japan possesses a clustered integration of maritime industries in which the marine transport business, shipbuilding business and ship machinery business are closely linked to one another.

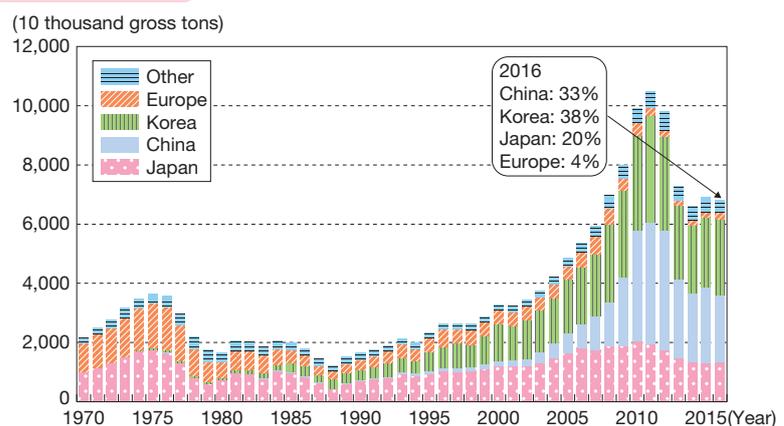
In the shipbuilding industry, while order volume has remained sluggish since the 2008 financial meltdown due to stagnant growth of the global economy and over-tonnage, a weaker yen has provided a tailwind that has led to a recovery of the market for high-performance, high-quality Japanese vessels. As a result, since hitting bottom in 2012, order volume in Japan has increased for the past three years in a row. Orders worldwide dropped precipitously in 2016 due to, among other factors, a downturn in economic growth in emerging nations. However, as a result of orders received up until 2015, a trade balance has been carried over and business operations are maintaining positive performances. The 2016 domestic construction volume was 13.31 million gross tons (versus 68.16 million gross tons globally), giving Japan 19.5% of the global market (a 0.6% year-over-year increase). The production of ship machinery products for 2015 was valued at 1,221 billion yen (up about 5.1% from its year earlier level), with an export amount of 352.5 billion yen (down about 6.7% from its year earlier level). This was the second consecutive production increase owing to rising orders for new ships in recent years.

Figure II-6-3-11 Japan's Maritime Industry Cluster



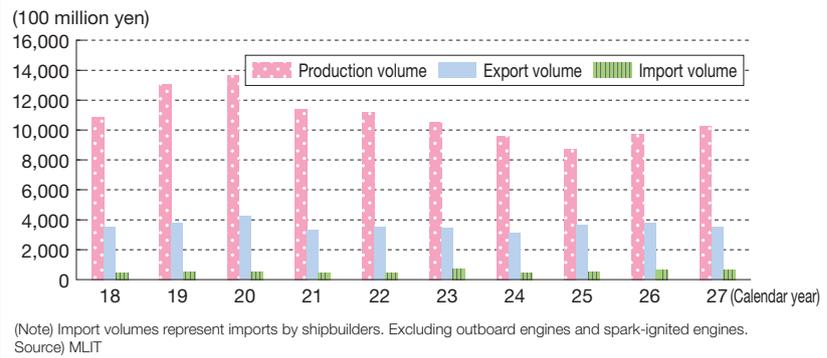
Source) MLIT

Figure II-6-3-12 Developments in the Volume of Newly Built Ships in the World



Source) Prepared by MLIT from IHS (former Lloyd's Register of Shipping)

Figure II-6-3-13 Developments in Japan's Production, Export and Import of Marine Industrial Products



### (ii) Approaches to consolidating the international competitiveness of the shipbuilding industry

With the goal of consistently overcoming fierce competition in the domestic shipbuilding industry, efforts will focus on further enhancing technologies for improving production efficiency and saving energy, which are a strength of the industry. A focus will therefore need to be placed on radically improving productivity through the use of information and other technologies that are seeing rapid development in recent years.

To this end, since 2016, the MLIT has been using IoT, big data, and other technologies through all phases of seagoing vessel preparation, including development, construction, and sending into service. The result is an initiative known as i-Shipping, which seeks to improve production site productivity, cut down on the wasteful use of fuel, and completely eliminate losses of time due to malfunctions.

Specifically, efforts are under way to improve new vessel development, improve production site productivity, and realize high value-added ships. Through efforts such as subsidizing technology development and offering tax breaks for capital investment, efforts have begun to support businesses looking to proactively improve productivity. The MLIT is also promoting the deployment of high-tech vessels that use advanced technologies, and submitted a bill for the Act for the Partial Revision of the Marine Transportation Act and Mariners Act to the Diet in February 2017, with the goal of stimulating Japan's maritime industry and strengthening the country's international competitiveness.

Coordinated efforts by government, industry, and academia are under way with the goal of acquiring and training more personnel for the shipbuilding industry, one of the core principles of i-Shipping. These efforts include promotion of internships for high school teachers and students to deepen their understanding on appeals of shipbuilding, and improving the quality of shipbuilding education provided at technical high schools. Having established that expending the maximum possible effort to acquire domestic personnel through the aforementioned efforts will be a basic goal, the MLIT is recruiting overseas workers with the potential to hit the ground running as an urgent and time-limited measure (to be achieved by FY2020).

Through these measures, efforts are focused on bolstering international competitiveness in order to increase the global market share of Japan's shipbuilding industry from the current 20% to 30% by 2025.

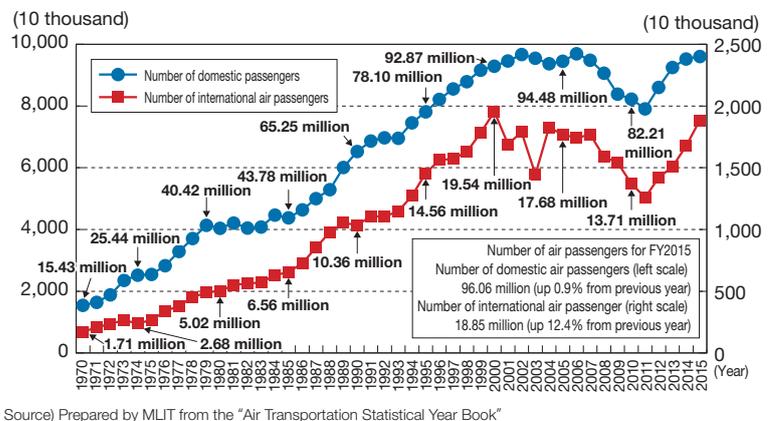
### (4) Offshore Industries

Offshore development, represented by offshore oil and natural gas production, is an area in which medium- to long-term growth is expected. In addition, there are many types of vessels used in this field and the revenue per construction is considerable. As such, offshore development is an important field for Japan's maritime industries (e.g. marine transportation and shipbuilding). However, as there is no domestic field for offshore resource development, the offshore industries in Japan are still immature. j-Ocean, one element of the MLIT's Productivity Revolutionization Project, is therefore aiming to improve such areas as the technical capabilities of Japan's maritime industries in a wide range of fields, from the design to the construction to the operation of facilities used in the area of offshore development, and gain business in offshore development market. A central focus will be on continuing to develop educational bases for training offshore development engineers—a pressing need—and making steady progress in supporting technological development.

## 4 Trends in Air Transport Business and Measures

In regards to circumstances surrounding the aviation industry, demand was robust overall due to a rise in the number of inbound foreign visitors during a moderate recovery in domestic and overseas economies. According to Japan's air transport results, the number of domestic air passengers, which had moved downward after peaking in FY2006, turned for an increase from FY2012 on, with impetus from demand for restoration from the Great East Japan Earthquake, increased demand encouraged by the entry of LCCs and so on, reaching 96.06 million in FY2015 (up 0.9% from a year earlier level). The number of international passengers also turned for the increase from FY2012, reaching 18.85 million (up 12.4% from a year earlier level), same as the domestic passengers.

Figure II-6-3-14 Developments in the Number of Air Passengers (Japan-based Airlines)



## 5 Trends in the Consigned Freight Forwarding Business and Measures

The consigned freight forwarding business<sup>Note</sup> is combined with multiple means of transport to provide services specific to varied user needs. Recent years have witnessed growing entry into the aircraft- and ship-based segments of international shipment to reflect the cargo owners' needs for globalization.

Further, while international trade becomes increasingly important and its speediness is globally required, safety assurance during transportation is also essential. The MLIT works to ensure the availability of safe and secure logistics services, as by conducting audits, etc. to consolidate thorough operator code compliance.

## 6 Trends in the Warehousing Business and Measures

Commercial warehouses play a significant role as nodal points of physical distribution. There are 6,031 warehouse operators (4,884 ordinary warehouse operators, 1,147 refrigerated warehouse operators) as of the end of FY2014.

In recent years, the construction of large, intelligent physical distribution facilities by foreign or domestic real estate entities or funds has been activated, giving birth to warehouse operators who rent such facilities to develop their businesses.

## 7 Trends in the Truck Terminal Business and Measures

The truck terminal business plays a significant role in streamlining the flow of transport, mitigating congestion and so on as a nodal point of trucking between a trunk line and a terminal. In recent years, the construction of facilities that provide the functionality of a distribution center (sorting, processing for distribution and so on), as well as loading and unloading, is in progress to meet the sophisticated and diversified needs for logistics.

**Note** A business that transports cargoes by the means of transport (motor trucks, railways, aircrafts, ships) owned by real carriers (who undertake transportation by themselves) in a fully integrated, complex flow of door-to-door transportation, from picking up cargoes to delivering them.

## 8 Trends in the Real Estate Business and Measures

### (1) Real Estate Business Trends

The real estate business is one of the key industries that command 2.8% of the total sales of all industries and 11.4% of the total number of corporations (FY2015).

According to 2017 official land prices (as of January 1, 2017), the national average for residential land prices halted its decline and leveled out, while commercial land prices increased for the second year in a row. The average for the three major metropolitan areas continued the rising trend for both residential properties and commercial properties. On the other hand, land prices in rural areas continued the downward trend for both residential and commercial land, though the rate of decline was smaller. The number of housing starts was 980,000 in FY2013. This dropped to 880,000 in FY2014 due to a reactionary drop prompted by a last-minute surge in demand in response to a consumption tax hike. The number then increased to 920,000 in FY2015.

In the existing housing distribution market, the number of successful deals was 179,000 in FY2016 (up 3.4% from the previous fiscal year) according to the Real Estate Information Network System (REINS) <sup>Note 1</sup>.

### (2) Status of the Real Estate Industry

The Ministry endeavors to ensure precise administration of the Real Estate Brokerage Act to protect consumer interest involved in housing land and building deals and to expedite distribution. The number of real estate dealers was 123,307 at the end of FY2015.

The MLIT, along with prefectural and municipal governments, endeavor to prevent complaints and disputes by working in conjunction with the bodies concerned while imposing severe supervisory dispositions on those entities that have breached the law. In FY2015, 227 supervisory dispositions were imposed (including 137 revocations of licenses, 63 suspensions of business and 27 orders).

To ensure the proper management of condominiums, the MLIT is taking measures aimed at registering condominium managers and ensuring proper business operations in accordance with the Act on Advancement of Proper Condominium Management. As of the end of FY2015, the number of condominium management service entities was 2,185.

Moreover, on-site inspections are being conducted and the necessary guidance and oversight is being provided to condominium management service entities in the interest of, among other things, preventing wrongdoing.

Since December 2011, a “system of rental housing management entity registration” that places a certain set of rules on the fulfillment of rental housing management services has been put into effect to foster and develop a good-quality rental housing business. As of the end of FY2015, the number of registered rental housing management entities was 3,815. Before five years passed after its establishment, the system was reviewed in August 2016 based on discussions at a third-party council. The purpose was to respond to current issues including conducting more proper management and taking measures against increasing sub-leasing.

### (3) Conditioning the Environment for Market Reactivation

#### (i) Status quo of the real estate market

Japan’s real estate had a total asset value of about 2,519 trillion yen as of the end of FY2015 <sup>Note 2</sup>.

The book value of the real estate or the trust beneficiary interest in real estate that were acquired by J-REITs (real estate investment corporation), real estate specified joint enterprises, special-purpose companies and so on as objects of securitization during FY2016 stood at about 4.8 trillion yen.

**Note 1** Real estate brokers have property information loaded on REINS for them to exchange. As property deals are concluded successfully, the relevant information, including the transaction prices, is stacked on REINS.

**Note 2** A sum total of the values of the buildings, structures and land calculated on the basis of National Accounts.

J-REITs play a central role in the real-estate investment market. As many as five brands were newly listed in just one year in FY2016. As of the end of March 2017, 58 brands were listed on the Tokyo Stock Exchange. Total book value of assets under management of J-REITs amounts to 17.2 trillion yen and the market value of the real-estate investment securities adds up to about 11.9 trillion yen.

The Tokyo Stock Exchange REIT Index, which indicates price movements across the entire J-REIT market, put the market in a good position in 1H 2016 as a result of factors including the negative interest rate policy implemented by the Bank of Japan. The index rose from around 1,700 points in early January to between 1,850 and 1,900 between February and July. Although numbers sagged from August on due to long-term interest rates and other factors, the index had returned to around 1,850 points by the end of December. This rebound owed to, among other things, heightened optimism for U.S. economic growth following the results of the American presidential election and an interest rate hike by the Federal Reserve Board, as well as a weaker yen resulting from stabilization of long-term interest rates in Japan.

The amount of yearly property acquisition in J-REITs stood at about 1.7 trillion yen for 2016.

#### (ii) Conditioning the environment for real-estate information

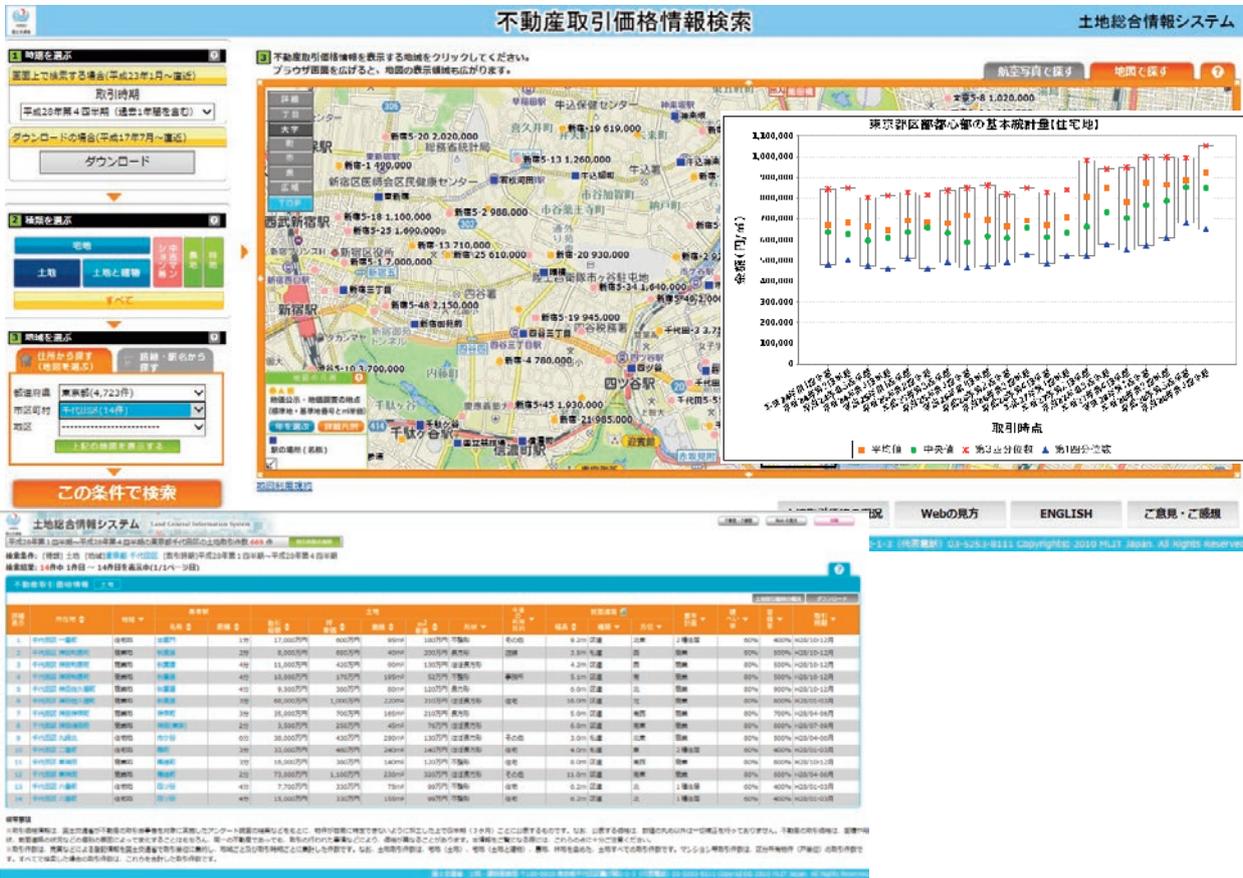
The MLIT surveys real estate transaction prices, etc. nationwide in a bid to make the real estate market more transparent, streamline, and reactivate deals. Information thus collected from such surveys, including locations, areas and prices of real properties traded, is uploaded at a Website on the Internet (Land General Information System<sup>Note</sup>) with due care taken to prevent identification of the individual properties (as of March 2017, the number of transactions published was 2,971,491 and the number of visits to the website was about 710 million).

In the interest of tracking real estate price trends in a more accurate and timely fashion based on lessons learned from financial crises and other events in recent years, the MLIT has announced that it will publish a property price index (residential) on a monthly basis in accordance with guidelines prepared by the IMF and other international organizations, and has published a property price index (commercial) every quarter since a pilot project for the index was launched in March 2016.

**Note** <http://www.land.mlit.go.jp/webland/>

Figure II-6-3-15 Land General Information System

- Since April 2006, transaction price information based on questionnaires conducted among parties to real-estate deals has been posted every quarter on an MLIT website, with care to protect the properties in question from being identified easily.
- As of March 2017, information on 2,971,491 properties was posted, attracting a total of about 710 million Web accesses.



Source) MLIT

(iii) Conditioning the existing home circulation market

The MLIT is working to condition the existing home trading environment to promote the circulation of existing homes, which have a low share of the total volume of housing in circulation when compared with the U.S. and Europe. Revisions were made to the Real Estate Brokerage Act in FY2016 with the goal of promoting, among other things, usage of the building conditions survey (inspections) based on discussions concerning issues such as program design related to collaborative operations between housing land and building dealers and service providers in the business of inspections and renovations. Information required for real estate transactions, including transaction histories, transactions made in nearby areas, natural disaster risk, and legal restrictions, has been gathered efficiently, and a pilot project for a comprehensive real estate database that allows housing land and building dealers to provide critical information to consumers in a suitable and timely fashion has been carried out in Yokohama, Shizuoka, Osaka, and Fukuoka. In addition, efforts were made to put into more widespread practical use the Price Appraisal Manual, which is used in the underwriting process by housing land and building dealers and which was revised in FY2015 to reflect the intent of the Guidelines for Improving Building Assessments Relevant to Existing Homes formulated in FY2013.

(iv) Effective use of the tax system

A number of changes were made as a result of the 2017 tax system reforms. These include an extension of the deadline for application of special provisions on business asset replacement concerning land, etc., held for the long term; an exten-

sion of the deadline for the application of special measures for registration of transfer of land ownership pertaining to the registration of transfer of land ownership; an extension of the deadline for application of, and an expansion (the addition of healthcare facilities to real estate subject to real estate acquisition tax exemption) of special measures pertaining to real estate acquired by J-REITs and other trusts; an extension and loosening of requirements for the application of special measures pertaining to real estate acquired by special-purpose companies; and the creation of special measures in connection with the establishment of new business categories under the Act on Specified Joint Real Estate Ventures.

#### (4) Building a Real-estate Market Tailored to New Ages

Based on the new direction for land policy laid out in the 2016 New Plan for Land Policy (at an August 2016 meeting of the Planning Task Force of the National Land Development Council's Land Policy Subcommittee), a meeting of the Real Estate Appraisal System Conference was held in order to hold wide-ranging discussions on issues pertaining to the Real Estate Appraisal System Conference going forward.

On-site inspections by real-estate appraisers and appraisal monitoring surveys concerned mainly with facts about securitized real-estate appraisals have been conducted to further enhance real-estate appraisal reliability.

Previously, properties acquired by REITs were mainly offices and residences. In recent years, however, types of properties acquired are expanding to hotels, logistics facilities, healthcare facilities and the like. As a step toward making it easier for REITs to acquire healthcare facilities, a seminar was held in collaboration with concerned ministries, agencies, and other organizations that targeted healthcare business operators based on REIT-related guidelines for healthcare facilities drafted in 2014 and 2015.

A number of efforts have been made to bring real estate securitization techniques into wider use in local regions. These include holding seminars and mobilizing experts to participate in real estate securitization projects in small cities. To promote the reuse of vacant homes and shops through the use of crowdfunding and other means, a bill for the Act for Partial Revision of the Act on Specified Joint Real Estate Ventures, which provides for the creation of a registration system for small specified joint real estate businesses and the development of crowdfunding rules, was ratified by the Cabinet and submitted to the Diet in March 2017.

Under the project to promote formation of earthquake-resistant/green buildings, the decision was made to invest in a public-private fund for the financing of two environmental development and environmental improvement projects in fiscal 2016.

In addition, with the aim of promoting the usage of public real estate (PRE) owned by local public entities and further expanding the real estate investment market, handbooks on utilizing securitization and other techniques were distributed to employees at local public entities. A related model project was also conducted. Along with these efforts, the MLIT launched the Public Real Estate (PRE) Portal Site<sup>Note</sup>, which serves as a central repository for information provided by private organizations and information on sales of and loans for underutilized real estate published by local public entities and other organizations actively engaged in working with private enterprises.

## 9 Building a Sustainable Construction Industry

### (1) Conditions Surrounding the Construction Business

An essential player in developing social infrastructure, the construction industry plays a major role in helping to achieve a bright future for Japan through efforts that include urban revitalization and rural area development. It is also a very important defender of Japan's communities, helping with recovery from earthquakes, taking measures to prevent and mitigate disasters, carrying out strategies to address aging facilities, and performing maintenance.

However, the rising proportion of elderly citizens in Japan is leading to systemic problems that include a declining number of young workers in the construction industry and a greater proportion of older workers. Addressing these problems, and building a sustainable construction industry, will be critical.

Amid these circumstances, the MLIT drafted rules for ensuring proper procedures for foundation pillar construction in March 2016. These rules, which seek to address a problem concerning foundation pillar construction that was brought to light in 2015, were created in response to interim guidelines released by a task force in December 2015. With respect

**Note** <http://tochi.mlit.go.jp/pre-portal-site/preportalsite>

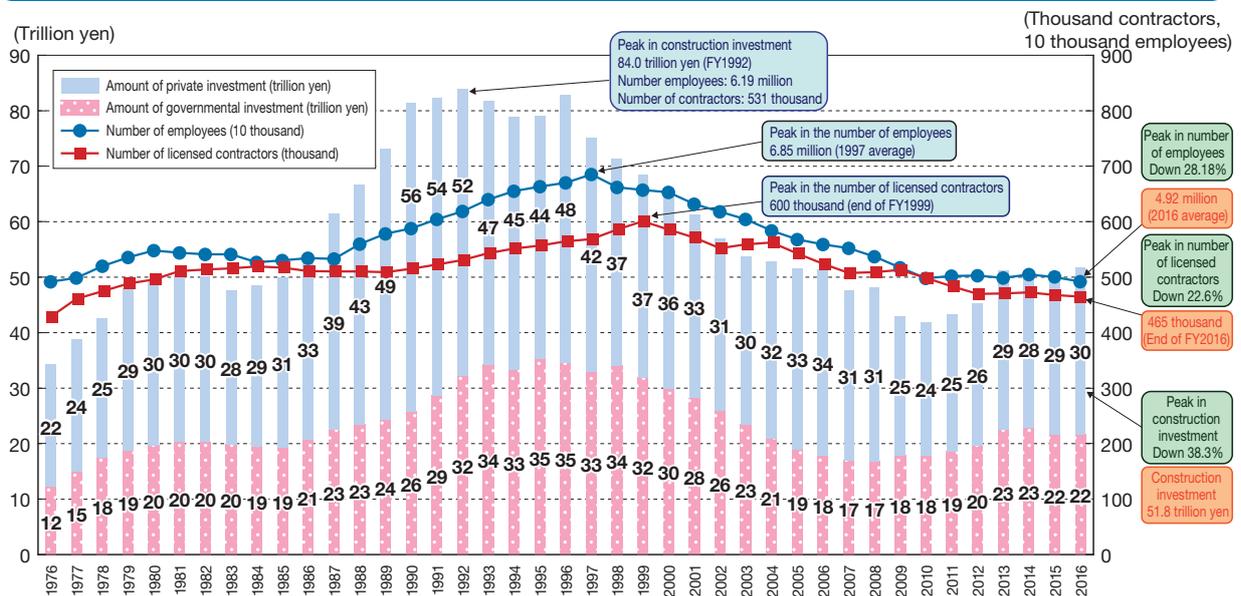
to systemic problems facing the construction industry, in July 2016, the MLIT created a guideline to ensuring the quality of private construction work following the release of interim guidelines by the Fundamental Issues Subcommittee of the Central Council on Construction Contracting Business in June. The MLIT also took measures in October to set forth decision-making criteria concerning the prohibition of blanket contracting.

Furthermore, at a Construction Industry Policies Research Group meeting conducted in October, discussions were held concerning a basic framework for construction industry-related programs aimed at improving construction industry productivity while also maintaining workplace capabilities 10 years from now.

Figure II-6-3-16 shows the trends in construction investment and the number of licensed contractors and employees.

Figure II-6-3-16 Trend in Construction Investment, Number of Licensed Contractors and Number of Employees

- The amount of construction investment, after peaking at about 84 trillion yen in FY1992, dipped to about 41 trillion yen in FY2010, but is now forecast to get back to about 52 trillion yen in FY2016 (about 38% down from its peak).
- The number of contractors was about 470,000 as of the end of FY2016, down about 23% from its peak (at the end of FY1999).
- The number of construction employees (2016 average) was 4.92 million, down about 28% from its peak (1997 average).



(Notes) 1 The amount of investment is the actual results up to FY2013, estimates for FY2014 and FY2015 and a forecast for FY2016.

2 Number of licensed contractors at the end of each fiscal year (end of March of the next year)

3 The number of employees is a yearly average. Supplementary estimates for the three quake-stricken prefectures (Iwate, Miyagi, Fukushima) in 2011 have been calculated by retrospectively correcting the estimated population based on the findings of the 2010 National Census.

Source) "Construction Investment Forecasts" and "Licensed Constructor Count Survey" by the MLIT and "Labor Force Survey" by the Ministry of Internal Affairs and Communications

## (2) Securing and Fostering Human Resources to Work for the Construction Industry

The construction industry builds on a large number of human resources. While the number of employees in the construction industry shows signs of pickup in recent years, it would be important for the MLIT to direct its continued efforts at securing and fostering industry leaders, including young workers, as well as challenging reforms of work methods, in order to enable the construction industry to continue playing its role as a community supporter in the background of falling birthrates with aging populations.

To this end, the MLIT is working to refurbish the environment that makes construction builder confident about their future prospects, including a continued, stable supply of public works funding, in addition to improving the labor conditions drastically, such as maintaining appropriate wage levels and encouraging their subscription to social insurance and other security programs. The MLIT revised the system for technical certification to facilitate early use of young workers, and is keen to enhance education and training in the industry to facilitate the smooth transfer of skills from generation to generation. Moreover, the MLIT is making efforts to further increase women's engagement in the construction industry, based on an action plan formulated through a joint effort between the private and public sectors.

Moreover, the MLIT will be working to help boost productivity in the construction industry, such as by introducing

i-Construction at construction sites and improving the heavily tiered subcontracting structure, in light of declines in working population in the future.

United public-private approaches will be driven to encourage more people to join in the construction industry and let them concentrate on their jobs with pride.

In addition, the project of receiving foreign construction workers is in place since April 1, 2015 as a time limited measure to handle increased construction demand due to one-off factors such as hosting of the 2020 Tokyo Olympic and Paralympic Games. Under this framework, 1,480 foreign construction workers entered Japan (as of March 31, 2017).

### (3) Establishing a Framework of Fair Competition

The construction industry must establish a framework of fair competition among contractors, including thorough legal compliance, to enable those of them who are superior in their technical strength, construction capability and management power to keep up with their growth. Accordingly, MLIT has conducted subcontracting transaction status surveys, on-the-spot surveys, etc., opening a desk for consultation services on troubles and other problems encountered in concluding construction work contracts as “Construction Business Transaction Normalization Center” and the Construction Business Normalization Promotion Month. The Ministry has been working to normalize the practice of deals between prime contractors and subcontractors in the construction business through means that include making revisions to the Guideline to Legal Compliance in the Construction Industry in March 2017.

### (4) Measures Aimed at Supporting Construction Companies

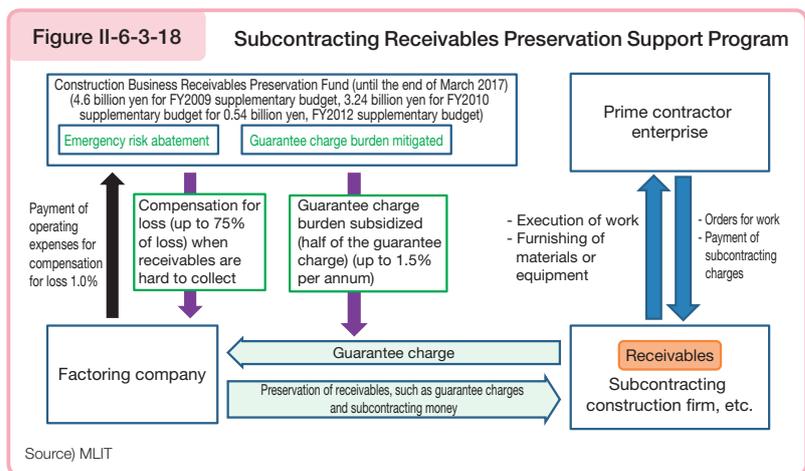
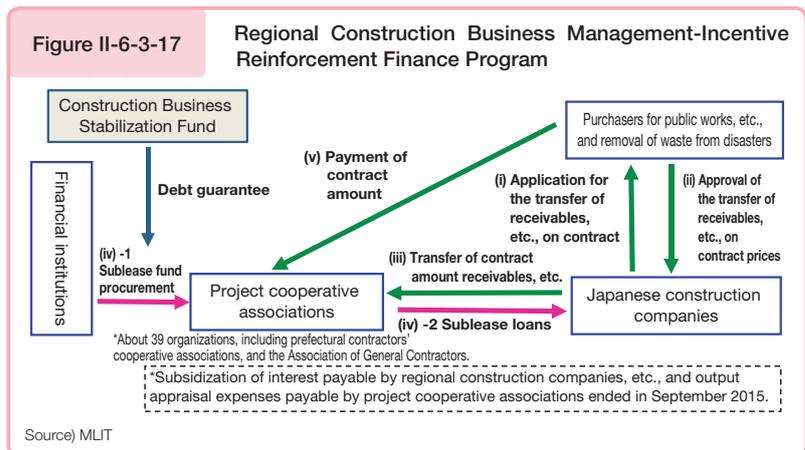
#### (i) Regional construction business management-incentive finance program

The regional construction business management-incentive finance program allows prime contractors to acquire loans from money lending business operators (e.g., cooperative association) on security of the public works contract price credit obligations, according to the completed amount of works. Its purpose is to smooth their cash flow. This program aims to secure loan funding and reduce the borrowing rate and other costs by providing debt guarantee to sublease loans, which the money-lending operator borrows from financial institutions when extending loans.

Effective since November 2008, this program will be carried forward through FY2017 and onwards.

#### (ii) Subcontracting receivables preservation support program

The subcontracting receivables preservation project aims to prevent chain-reaction bankruptcies of subcontractors in association with failure of their primary contractor by reducing the burden of guarantee charge when the payment of such receivables is guaranteed by a factoring company<sup>Note</sup> and



**Note** A financial enterprise that collects receivables owned by others by guaranteeing or purchasing them. At present, 10 factoring companies, including bank subsidiaries, prepayment guarantee companies and leasing companies, run this service.

by indemnifying the factoring company for part of losses, it may suffer upon fulfillment of the guaranteed obligations. This program has been implemented since March 2010 and will be carried on through FY2017.

### (iii) Regional construction industry revitalization support project

In the regional construction industry revitalization support project, regional revitalization support advisers, including human resources development experts and small and medium enterprise management consultants, provide wide-ranging advice that help resolve management tasks or technical tasks, such as execution management tasks, to smaller or middle-ranking construction companies and construction-related businesses (such as surveying, construction consulting and geological surveying) as they work to develop, and maintain and manage social infrastructures and to get prepared for, and reduce the impact of, disasters in support of communities. In addition, for exemplary initiatives where multiple companies or other organizations collaborate and contribute to securing and fostering of industry bearers and higher productivity, we provided continued support by a team of experts until set goals such as plan development are achieved (consulting support) and subsidizing part of expenses in the phase of implementing the plan (step up support) as priority support projects. In FY2016, we provided consulting support in 20 cases and step up support in 15 cases.

This program has been implemented since 2015.

## (5) Promoting Construction-related Businesses

Information about the total number of operators registered in the construction-related businesses (such as surveying, construction consulting and geological surveying) is published each month and analyses of the financial conditions by sector based on that information are released at the end of the next fiscal year. In addition, the MLIT works to encourage sound growth of the construction-related industries and make effective use of the registration system, as by holding explanatory sessions for students before attending school in collaboration with the associated bodies.

## (6) Present Status of Construction Machinery and Growth of Construction Production Technologies

The number of units of major construction machinery owned by organizations and people in Japan totaled approximately 870,000 in FY2013. Market share by industry for units of construction machinery purchased was about 54% for the builder's equipment leasing industry and around 25% for construction businesses.

Pursuant to the second phase "Computer-Aided Construction Promotion Strategies" (formulated in March 2013), to encourage and diffuse the practice of computer-aided construction, the MLIT seeks to promote proactive use of machine control/machine guidance technologies realizing high-precision and efficient construction under automated control. As current deployment of computer-aided construction equipment is inadequate to encourage and diffuse the practice of computer-aided construction, it will be essential to develop the construction industry, as well as to support a healthy builder's equipment leasing industry, since this industry accounts for a major share of construction machinery purchases.

## (7) Settling Disputes Arising from the Execution of Construction Works

To promptly resolve disputes arising from the execution of construction work contracts, the Construction Works Dispute Review Panel implements dispute settlement procedures. In FY2015, the Panel received 39 applications (three of arbitration, 34 for conciliation and two for mediation) at the central level and 94 applications (24 for arbitration, 55 for conciliation and 15 for mediation) at the prefectural level.