



Project Name: GEF Large-City Congestion and Carbon Reduction Project

“Concept Paper for 13th Five-Year Plan of Transport Development”

Implementation Report of the 12th Five-Year Plan of Transportation Development

Research Report
(Simplified Version)

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1 Overview

1.1 Project background

Transportation development five-year plan is a guiding document for the implementation of transportation long-term development planning objectives, which plays a vital role in the smooth implementation of the transportation development task during the planning. “Transportation ‘12th Five-Year’ development planning” is the China's transportation industry development blueprint and action platform in the “12th Five-Year” period, which is also an important basic for the government to fulfill transportation construction, market supervision, social management and public service responsibility. Since the “12th Five-Year”, under the guidance of “Transportation “12th Five-Year’ development planning”, the transportation industry insists the scientific development as the theme, regards the development mode transition and modern transportation development as the main line. The main work includes the following three aspects:

- (1) Focus on adjusting the transportation structure, expand the service functions;
- (2) Improve the quality of development;
- (3) Realize the sustained and healthy development.

However, during the “12th Five-Year” period, the development of transportation is faced with major changes in international and domestic political, economic and social situations, for example, the "One Belt and One Road" development strategy, the new-type urbanization national strategy, the "Four Transport" development goals, the restructuring of central government offices, the reform of the investment and financing circulation system and foreign transportation trend. At the same time, according to the requirements about the transformation of the economic development mode proposed in the Eighteenth National Congress of the Communist Party of China, after a large-scale and rapid development, the transportation also need to change the

way of development, and further optimize the structure of transportation, improve transport efficiency and serve the resource saving and environment friendly society construction better. Therefore, at the end of the “12th Five-Year” and the beginning of the “13th Five-Year”, it is of vital significance to complete the following tasks:

- (1) Conduct the evaluation of the "planning" implementation;
- (2) Propose countermeasures and suggestions according to the developing environment change to further improve the planning implementation;
- (3) Promote the completion of goal and task proposed in the "compendium";
- (4) Facilitate the coordinated and sustainable development of traffic transport industry.

The above mentioned is also the inevitable requirement of completing the construction of well-off society comprehensively and transportation system.

In order to carry out (1) the evaluation of implementation of the “plan”; (2) make a comprehensive and systematic understanding of the development target, main tasks, policies and measures of the “plan”, summarize implement achievements; (3) find out the existing problems, analyze the possible reasons, and promote the further implementation of "planning". The GEF-funded Large City Congestion and Carbon Reduction Project select “The Framework Research for 13th Five-Year Plan of Transport Development” as one of the research topics. Based on the implementation of “12th Five-Year” transportation development plan (including railway transport development plan), this project can obtain the following objectives:

- (1) Provide basis and suggestions to formulate the “13th Five-Year Plan” transportation development plan outline scientifically and reasonably;
- (2) Promote the establishment of a comprehensive transportation system, deepens the system reform of transportation domain;
- (3) Make contributions for the construction of convenient, safe, economic and efficient comprehensive transport system and “resource-saving,

environment-friendly” society.

1.2 Research tasks

The main research tasks of the implementation evaluation of the “plan” are as follows:

(1) Analyze the infrastructure construction of high speed railway, road and airport impact on economic and social development during the "12th Five-Year Plan" period. Discuss the promotion of transportation poverty alleviation work to the development of rural economy.

(2) Based on the “12th Five-Year’ development plan of transportation”, investigate implementation condition of the infrastructure construction, transport equipment construction, transport service construction, investment and financing construction, comprehensive transportation management system construction, safety emergency and security construction, transportation technology and information construction, green transportation construction and other related construction index, guidance index and service index involved in the “12th Five-Year” plan, and then judge its completion trend and explore the inherent reasons.

(3) Analyze the major problem and obstacle in the transportation development at present, dissect the causes of the contradictions, and provide guidance for carding the main work direction and emphasis of the “13th Five-Year Plan”.

(4) Put forward the strategies for ensuring the plan completed on schedule.

1.3 Important conclusions

During the “12th Five-Year” period, the transportation industry of has rapidly developed, has played a vital role in the social and economic development. Independent industry chain of high speed railway has brought new growth points for the economic and social development. The construction and development of expressway and national / provincial road stimulating economic growth. Compared with high speed railway and highway, the construction of civil aviation airport was slower, it has week effect in promoting the economic development during “12th

Five-Year”. As a key content during "12th five-year" period, transportation poverty alleviation work carried out smoothly. Rural transportation infrastructure gradually improves, the communication with social passenger and freight is smoother. Therefore, the rural economy vigorously develops. With the continuous improvement of China’s transportation infrastructure, the comprehensive transportation network is optimized gradually. The mode of transportation which is fast and comfortable develop rapidly, such as high speed railway and civil aviation. The choice for people going out is spontaneously layout, the traditional mode of transportation and the emerging mode of transportation are competition with each other and interdependent, and gradually formed a relatively reasonable competition scope of transportation.

Aim at the main mission performance of transportation industry according to the PLAN, since "12th five-year", China’s transportation development adheres to seek improvement in stability. According to the basic requirements that steady growth, promoting reform, structural adjustment, improve people's livelihood, anti-risk requirements, we should push the main mission in order and gradually implement policies and measures to continuously perfect the comprehensive transportation system. According to the evaluation results, the implementation of the industry planning missions during the “12th Five-Year” is better. By the end of 2014, the completion progresses corresponding to the main indexes proposed in the “plan” are shown in annexed table. According to the current trend at present, if we can continue to maintain the current investment and promote the relatively work during the latter half of the “12th Five-Year”, the goal of PLAN will basically achieve on schedule.

According to the present development situation, during the “12th Five-Year” period, the transportation industry of has rapidly developed, and the main tasks and construction projects is basically carried out in accordance with the PLAN. But there are still some problems about transport development, mainly manifested in the following aspects:

(1) The transport ability needs to be further improved, and structural contradiction between supply and demand is prominent.

(2) The construction of comprehensive transportation system develops slowly, and the integration process should be speeded up.

(3) The pattern of the transportation development still needs to be adjusted, and the process of transportation marketing is a little slowly.

(4) Reform of the management system and mechanism needs to be deepened, and the responsibilities should be clearer.

(5) The mode of traffic investment and financing is too simplification, the conflict between supply and demand in terms of funds is extremely prominent

(6) Some indicators in the “plan” were set unreasonable, and the “plan” plays a weak role in guiding the transportation development.

(7) Transportation approval process is relatively cumbersome, and the execution efficiency needs to be improved.

(8) Traffic law and regulation system needs to be established, and the facility maintenance is suffering the bottleneck.

(9) The innovation ability of traffic science and technology still needs to be strengthened, and the process of personnel training in scientific research is slow.

(10) The rigid constraint of land use and environment is starting to appear; security issues are still striking.

In order to ensure that the objectives and main tasks of the PLAN are completed on schedule, combine the present transportation development situation with the main problems and barriers of PLAN implementation and industry development during the "12th Five-Year", the following are recommended:

Based on the principle of "appropriate advance", adjust unreasonable planning target timely, comprehensive coordination, and focus on breakthrough, comprehensively promote the PLAN implementation, to ensure planning target regular achieved on time. From central to local place, further overall coordination is promoted under the precondition of keeping good quality. The following suggestion

are proposed to ensure the completion of the PLAN.

Approval process and related procedures for specific situation should be reasonably simplified, approval period should be shortened, and approval efficiency should be improved;

The time spending in dealing with relevant supporting documents should be compressed;

Financing mechanism reform should be accelerated, investment and financing mode should be innovated, investment efforts should be increased, and financing channels of traffic should be actively broadened,

Give the decisive role of markets in allocating resources full play, and cooperation with financial institutions should be deepened, and the market environment where there is diversification of investment, fair competition and equal market access should be promoted.

Traffic management reform still needs to be strengthened, big sector management system should be implemented, coordination between industry sectors should be strengthened, administrative divisions barriers are broken, interregional project cooperation across the province should be strengthened, and regional balanced development should be promoted. The construction of comprehensive transportation system should be advanced fast, various traffic transport way of effective convergence and service integration should be accelerated. Planning's leading role should be strengthened, planning implementation regulatory should be guaranteed, planning review amendment should be carried out. Sound technology innovation system should be established, technology support should be strengthened, and the ability of independent development should be enhanced. Legal regulations system construction should be perfected, policy support is strengthened, industry environment is improved, and transport should be safeguarded to the given direction to achieve strategic goals.

2 Analysis of the transportation construction impact on economic and social development during the "12th Five-Year Plan" period

2.1 Independent industry chain of high speed railway has brought new growth points for the economic and social development.

With the construction of the Beijing-Shanghai line, the Harbin-Dalian line, high speed railway is no longer the single concept at the beginning, but gradually formed a transportation network. Especially in the Yangtze River Delta area, high speed railway transportation network is almost completely connecting the major cities, forming the urban rapid transit network. In 2012, China's high speed railway renewed about 3500 kilometers, high-speed railway total operation length will exceed one million kilometers. Beijing-Shanghai, Beijing-Guangzhou, Beijing-Harbin, coastal high speed railway formed "four-vertical" branches throughout the country; it's the year that the maximum amount of new lines has been constructed in history. The high speed railway network brings not only convenient traffic, but also brought huge amount of passengers, goods, funds and messages. Moreover, it benefits the talent mobility, industrial transferring, urban quality, and regional cooperation; also play an important role in promoting industrialization, urbanization, and regional integration along the high speed railway lines. By March 2015, high speed railway operating mileage reaches 16,000 kilometers, accounting for more than 60% of the world. Due to the alternative effect, high speed railway attracts shorter distance travelers than civil aviation. The proportion of airway passenger reduced and changes the proportion of passenger airline demand for long routes and short routes, which leads to changes in market structure. The cost level, convenience, passenger preference, income levels and other factors cause this change for these two transportation modes.

The development of high speed railway, form a new industry of track and locomotive vehicle construction, increase employment, and become a new economic growth point, which is the country's unique advantages. Revised high speed railway chapter in "12th Five-Year Plan" limited the total scale of planned new lines is less

than 30,000 km, and arrangements for infrastructure construction investment of 2.8 trillion Yuan. By 2015, the scale of the rapid railway is up to 4,5000 km, such a huge investment fosters a huge high speed railway industry chain, covering infrastructure, laying track, vehicle purchase, operation and subsequent vehicle maintenance stages. Infrastructure is the first direct benefit industry in construction period of high-speed railway, mechanical engineering, cement and other material enterprises have made some progress in development. Moreover, the locomotive and relative parts as well as other information and signal railway equipment manufacturing also stepped to a new high growth period in 2010. From a longer period of time, with the further maturation development of High-speed Rail technology in China, the output of the locomotive system will bring unlimited opportunity for locomotive manufacturers and parts manufacturers with independent property rights.

2.2 The construction and development of expressway and national / provincial road stimulating economic growth.

In the period of the 12th Five-Year Plan, the construction of expressway and national /provincial road grows continuously and steadily. This is a great significance to the economic construction of China, especially for its regional economic development. It primarily reflected in the following aspects.

(1) Build an economic corridors or economic belt with axis of routes

With the construction and development of the routes, both sides of the cities extend and develop itself along the routes, it forms a series of economic development zones near the passageway, and promotes the development of new high level technology industry along the routes. At the same time, the construction of expressway has brought us convenient transportation conditions, accelerated the regional exploitation of the potential resources along the routes, stimulated real estate development, and lead up to land increment along the routes.

(2) Accelerate the circulation of commodities, and optimizing the regional economic

development structure

With the increasing improvement of highway network, the circulation of commodities is greatly improved. When road is put into use after completion, it can reduce the transportation costs and time, shorten the space time distance between the producing and sale area, accelerate speed of logistics, and improve the circulation of commodities. At the same time, expressway network construction is a tie and bridge which can connect the economic, politics, cultural center area and its surrounding cities. The formation of the expressway network has changed the development of regional economic structure.

(3) Stimulate the development of urban and rural economies, and promoting the optimization of industrial structure

In the period of the 12th Five-Year Plan, the construction investment environment of the expressway and national /provincial road has been improved. It provides a good investment condition for domestic and foreign enterprises, promotes the market prosper, and drives the development of tourism, commercial, catering, entertainment and sports or the tertiary industry. Then, it can promote the labor from rural to urban in those area, transfer from primary industry to the second and tertiary industry, promote the high-technology and high value-added products increase substantially, and bring some changes in expressway industrial structure.

2.3 The construction of civil aviation airport has week effect in promoting the economic development.

The civil aviation industry has developed rapidly in recent years, and an aviation hub in the city will bring economic development benefits beyond the scale. The long-term effects of airport construction on country and local areas are mainly through three ways: 1) the employment and increasing income created by the airport and related industries; 2) the increase of local employment and income because of traveler living and dining; 3) and the multiplier effect of direct and indirect economic

activities to other industries. These effects have played an important role in the employment, family income, government and tax in the local economy. However, during the "12th Five-Year Plan" period, the civil aviation airport construction is still relatively slow, failed to promote the economic growth. The main reason is that the approval process of the construction of the airport is complex, and usually, it takes at least two years from setting up the project to starting construction. In addition, the airport gets much administrative intervention in the construction process. Airport construction is often not considered from the perspective of market demand, but more often from the perspective of political, leadership performance. Because of the different understanding of the airport expansion for local leaders, the construction of the airport has been greatly affected.

2.4 Transportation poverty alleviation work has a great influence on the development of rural economy.

The "12th Five-Year Plan" period is the key period for the work of poverty alleviation in our country, focusing on breakthrough and implement. From start of "the eight seven poverty alleviation project", our country started well planned and well-focused transportation related poverty alleviation. The central and local government treat transportation poverty alleviation as a political task and livelihood projects from strategic height. Compiled by the Ministry of Transport, "The Medium and Long Term of the Integrated Transportation Planning" emphasize increasing efforts on poverty alleviation, and formulated special planning of "concentrate poor areas transportation construction poverty alleviation plan outline (2011-2020)", and signed transportation poverty alleviation co-construction agreement with 19 province (autonomous regions and municipalities), and formulated "Rope-sliding bridge reconstruction plan (2013-2015)" with the State Council Poverty Alleviation Office, create solution for the special problem that in some western mountainous area of using rope-sliding as travel tool. The "12th Five-Year Plan" period, the relevant departments focus on contiguous poor areas for poverty alleviation as main battlefield,

development-oriented poverty alleviation, in order to solve the restricted bottleneck problem of transportation and transportation development in poor areas. It pushes the equalization of basic public transportation services as the main direction, carries out their duties and work together to tackle and jointly promote the transportation and transportation development in poor areas and has achieved initial results. With the steady progress of the transportation-oriented poverty alleviation, not only the transportation conditions in poor areas are improved, the development of farmers, agriculture and rural areas has also brought significant changes, especially in the promotion of economic development in poor areas, helping poor people out of poverty, and the construction of small towns and new rural areas, and raise the level of basic public services in poor areas.

Rural highway construction is an important guarantee for the construction of new socialist countryside, and it is the concrete embodiment of the construction of harmonious society. From the point of view of economic development, the rural highway construction can optimize the allocation of various resources in space. Gradually improved rural road network will be closely linked to the city, to achieve the rapid flow of personnel, materials, information and other resources, which will let the economic development of rural areas more actively and promote the upgrade of the modernization of rural areas, urbanization and rural industrial structure. The farmers can really get benefits and comfortable living condition. After the improvement of the rural transportation conditions, we can promote the continuous increase of the poverty population, broaden the channels for poor people to get rich, promote the upgrade of traditional industries, enhanced economic development of endogenous power, change the mode of production and the life of residents, improve the quality of life and the level of basic public services, and promote the progress of social civilization in poor areas.

During the "12th Five-Year Plan" period, the rural highway construction in our country strengthens the communication and cooperation among various regions, and makes the development of rural modernization more actively. Counties, townships

and towns seize the open of rural highway as an opportunity to combine the construction of new socialist countryside, and to guide the farmers to develop the related industries by considering the local conditions. For a large number of leading enterprises of agricultural industrialization, due to the convenient road network support, the costs of labor, logistics and other business were reduced, and the speed of enterprise development was getting quicker with the ability to increase agricultural income significantly. The development of rural road network greatly reduces the cost of production and construction, and improves the quality of farmers' travel and life. Because of the improvement of the traffic, farmers receive a large amount of information, a more open vision. New type of farmers with knowledge, technology and marketing skills are constantly emerging. The pursuit of farmers has become to getting rich via scientific technology.

3 Completion status analysis of major objectives of the “plan”

3.1 Overall status of the objective completion

In accordance with the principle of appropriate advance, the PLAN proposes coordinating the development of various transport modes, initially forming the comprehensive transportation system with supporting and connecting network facilities, advanced technical equipment, safe and efficient transport services. Looking at the results from the evaluation, the implementation of PLAN and the effects are slightly good. It basically completed development and improvement in stable. And every work has achieved relatively good results. According to the current trend at present, if we can continue to maintain the current investment and promote the relatively work during the latter half of the “12th Five-Year”, the goal of PLAN will basically achieve on schedule.

In general, transportation industry is well-developed during “12th Five-Year” Plan of Transportation Development. From the performance of planning objectives, transportation infrastructure construction is well completed, most of the PLAN target can complete. The part of the construction target of highway and water transportation infrastructure has been finished, which reflect in freeway network and high grade fairway construction, the target which did not complete at this stage can meet the requirement of PLAN according to the current construction progress; but aviation infrastructure performed poor, which reflect in insufficient civil aviation airport amount, more difficult to complete the goals. Transportation services, technology and informatization performed poor, the former reflect in deficiency of railway freight turnover, low rate of rural highway bus and decline of civil aviation flight on-time, and the latter reflect in low coverage rate of key road section and waterway detection and transportation equipment monitor. Green transportation, safety and emergency is well performed, the former reflect in significant reduction of pollutant emission and carbon emission radio, the latter reflect in decline of major accident rate and increase of salvation rate.

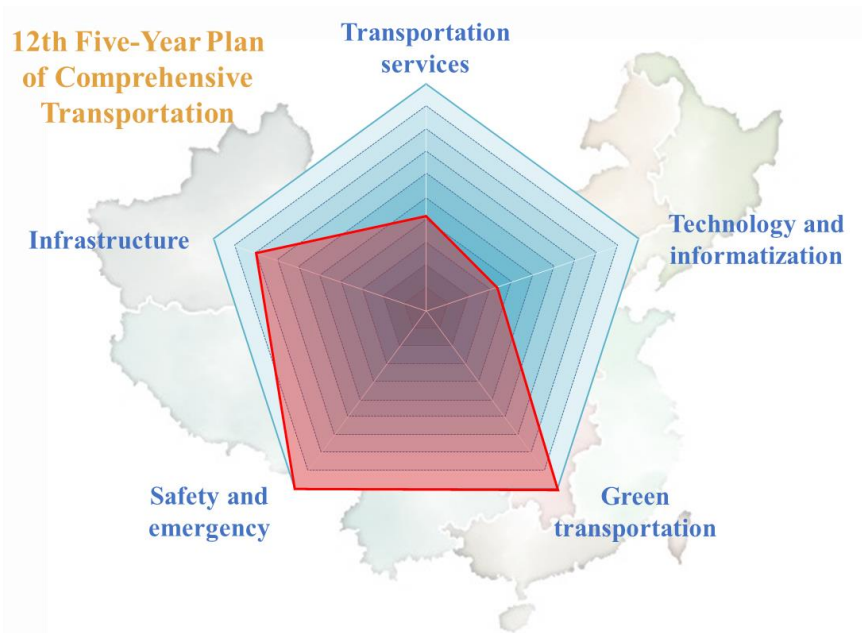


Figure 1 Performance of 12th Five-Year Plan of Transportation Development

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3.2 Completion status analyses of specific objectives

3.2.1 Infrastructure construction

(1) Comprehensive transportation

By the end of 2014, the total mileage of national comprehensive transportation network has reached 4.81 million kilometers, increasing 0.49 million kilometers compared with 2010. "Five vertical and five horizontal" as comprehensive transportation network skeleton is basically established (Figure.2), A number of trunk railway, highway and airport projects has been completed and put into production. The intercity rail traffic mileage increased steadily, the traffic network layout of the key areas in the "plan" has been formed basically, among which, China has built 20 intercity railway lines with the operation mileage of 3287.12 kilometers and the construction mileage of 3075.96 kilometers. Among them, the lines under construction are mainly concentrated in Chengdu Chongqing area and the Pearl River Delta region. Six highway area circle roads are under planning, three of which have been built, and the other three circle roads have been completed more than sixty percent. The number of regional feeder route and route has increased year by year,

and the coverage of air traffic network has been expanded. The integration construction of urban and rural has been developed. The construction process of rural traffic infrastructure is fast and the rural residents travel condition was improved obviously. The bus pass rates in towns and villages have reached 98.6% and 92.8% respectively. The rate of launching passenger bus in villages has reached the goal ahead of the schedule of "12th Five-Year Plan of Transport Development", which drives the improvement of people livelihood in rural areas.

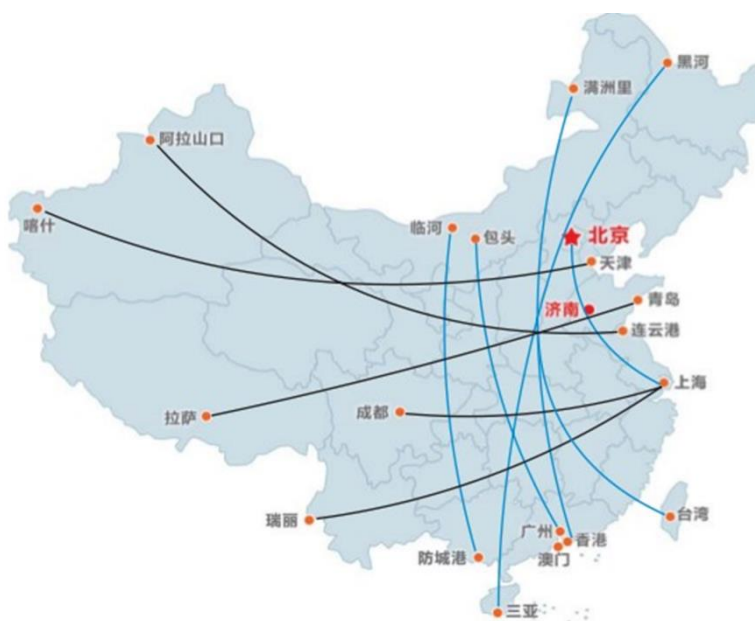


Figure.2 Schematic Plot of "Five Longitudinal and Five Horizontal" Integrated Transport Corridor

According to preliminary statistics, in the period of "12th Five-Year", (Figure 3) a total of 113 transportation hub project was planned and constructed for the 42 national comprehensive transportation hub city. Among them, the number of comprehensive hub was 23, railway hub was 28, highway hub was 49, aviation hub was 8 and water transport hub was 5. Comprehensive transportation hub in the 12th Five-Year Plan has a relatively low proportion and it has a slow development. At present, 44.5% on investing is expected to complete based on hub construction projects in the 12th Five-Year Plan, however, the speed of construction is very slow and it's difficult to achieve goal of the 12th Five-Year Plan. In addition, the implement of "zero transfer, seamless connection" also have greater difficulty, the establishment of integrated hub to meet the requirements of the whole country is required to provide all kinds of

safeguard measures in the late.



Figure.3 The 42 Integrated Transport Hub City

(2) Railway transportation

By the end of 2014, the national railway operating mileage has reached 112000 kilometers, which is also 27.8% should to be done to achieve the 120,000 km target of 2015. Total mileage of High speed railway reached 16000 kilometers, increased by 220% than 2010. Double track mileage and electric mileage are increasing year by year from 2011 to 2014. However, affected by the "7.23" incident in 2013, the growth rate of double track mileage and electric mileage both have a different degree of growth. The annual growth rates by 2013 have a certain gap to complete the goals of the "12th Five-Year Plan". But in 2014, the growth rate increased seriously, therefore the target of developing railway infrastructure construction is hopeful to be completed.

As the skeleton network of express railway in the "12th Five-Year", "four vertical and four horizontal" high-speed railway is constructed steadily. Among them, "four vertical" has been completed, half of the "four horizontal" has done, which is expected to complete at the end of the "12th Five-Year Plan". The process of inter

region new trunk line construction and the existing line expanding and rebuilding is fast. The transport channel for heavy load such as coal has been enhanced. The South and North Channel except Datong to Zhanjiang, Guiyang to Fangcheng is open, and the East and West channel except land-bridge channel is open. The multi channels pattern for the communication of China and surrounding areas forms gradually, and multiple regional cooperation channels construction has been speeded up. 35 new construction hub projects have been started, which intensifies the system of hub, passenger and freight facilities, strengthens the cohesion with other transport modes, and enhances the comprehensive transportation system combination efficiency and overall superiority.

(3) Highway transportation

By the end of 2014, the national highway has a total mileage of 4463900 km. The expressway is 111900 kilometers. The goal of “12th Five-Year” highway construction can be completed basically (4500000km and 1080000km). The national highway network skeleton has been formed basically. Among the 36 mainline (“7 shooting, 11 vertical and 18 horizontal”) in the national highway network, the overall completion percentage of main lines is nearly 90%. As of 2013, in the east, middle, western area, national freeway has built 27000 km 27000 km and 29000 km respectively, and the completion proportions are 75.1%, 74.4% and 45.7%. The construction of national expressway is still arduous task in the western area. The proportion of general national highway with level 2 or above is 64%, 5% higher than the beginning of “12th Five-Year”, which is expected to be able to complete the original planning target successfully. The total mileage of national rural road is 3.773 million km, 267,000 km longer than that in 2010, and increasing about 90,000 km annually. With the smooth progress, it is expected to achieve the overall development goal. It is difficult for Yunnan, Shaanxi and Gansu provinces to achieve the goal, and the construction task in the next two years will be heavy according to the established targets. At the end of 2013, the countries with harden roads has accounted for 97.85%, and the villages with harden roads has accounted for 88.99%. The construction of

rural roads has gone smoothly since 12th Five-Year Plan of Transport. In 2013, the national highway maintenance mileage is 4,251,400 km, accounting for 97.6% of the total mileage, and increasing 375,500 km than 2012 with a ratio of 9.7%. The highway service level has been improved. The road traffic disaster prevention and emergency response capabilities as well as the capacity for highway sustainable development are improved. So, the main objective of “12th Five-Year road maintenance management career development program” can be achieved basically. In addition, the “Dead End Highway” phenomenon in China’s highway construction is more obvious, there are 23 "broken road" in "7918" National Highway., a total of 3,221 kilometers, there also increased 23"broken road “of the new national highway, a total of 733 kilometers.

(4) Waterway transportation

By the end of 2013, the major port construction projects proposed in the plan have been started or completed mostly under a generally smooth process. The number of deep-water berths in coastal ports has increased 289 within 3 years, completing by 66% percent. It is expected to complete the planning objectives by the end of “12th Five-Year” according to the present course. The “12th Five-Year Plan of Transport” requires that the number of deep-water berths in coastal ports should reach 2214, that is to say, the number of deep-water berths in coastal ports should increase by 440. The coastal port layout has been further improved. The service function is expended and the structure of the ports is optimized. The new added mileage of high-level inland waterway is 1800 km, completing by 67% of the plan. It is expected to complete 13,000 km of the planned high-level channel mileage by the end of “12th Five-Year” and the inland waterway navigation conditions will be improved significantly. The port area will realize scale development. The upstream shipping center of Chongqing Yangtze River and the midstream shipping center of Wuhan Yangtze River have a high development speed.

(5) Air transportation

By the end of 2014, China has a total of 202 certification airports with 27 new airports the new airport construction target only completed 49%. With such a slow speed, it will be difficult to finish the goal by the end of “12th Five-Year”. In 2012, the “12th Five-Year comprehensive transportation system planning” is issued, which confirmed 82 new airports and aimed to adjust the aviation planning synchronously. After adjustment, the total number of airports should reach 257 by the end of “12th Five-Year”, so the goal is difficult to be realized. During the “12th Five-Year”, the general aviation airport is constructed steadily with the national support. By the end of September 2014, there are 286 general aviation airports. By the end of 2014, the total number of regular flights routes is 3142, increased 1262 compared with the end of the “11th Five-Year”, average annual growth rate of 13.7%.

(6) Parcel post transportation

By of the end of 2014, the 138000 national postal service branches have completed. Among them, the number of the courier service office reached 132000, There are 67 domestic express special cargo planes. The courier service industry has become a new way to improve the universal postal service, which plays a crucial role in the entire development of the post industry. The number of national postal empties box is 142000, and the total number of postal kiosks is 28000. The number of postal mailbox and newsstand remains stable. The percentage of administrative villages which has postal services reached 99.2%.

(7) Urban transportation

By the end of 2014, China's total operation mileage of urban rail transit has reached 3155 km (including subway, tram, etc.) New operating mileage increases every year with an average annual increment of 389 km. Based on the projection, the total operations mileage will reach over 3,500 km by the end of 2015, and there're a total of 101 operating lines. So we have been completed ahead of the scheduled objectives of the "12th Five-Year plan". The cities will continue to increase investment in urban road construction, improve the road network and related infrastructure

construction, build new roads and bridges, widen and reconstruct the original roads, in order to ease traffic congestion and improve road capacity. By the end of 2013, the road area per capita has increased to 14.9 square meters, which is expected to exceed 15 square meters / person by the end of “12th Five-Year”, and the urban road traffic congestion will be eased in China. Major cities have promoted the public transport priority development strategy actively, developed urban public transport system, and made a great progress in urban rail transit construction, ground public transport system investment, network density and station coverage rate. By June 2013, the coverage rate of bus station within 500 meters of the city center was about 83% in the 40 sampled cities and it will reach 90% by the end of “12th Five-Year”. By the end of 2013, there were 41,738 operation lines of public buses and trams in cities and counties, and the total length of operational lines was 748,900 km, among which the bus lane is 5890.6 km with an increase of 2164.8 kilometers compared with 2010. Although the increase is obvious, there is still a long distance compared with the target.

3.2.2 Transport equipment

During the “12th Five-Year”, the number of transport equipment increases substantially and the structure of equipment is further optimized. The equipment technology continues to progress, and the independent innovation capability continues to improve. By the end of 2014, the national railway locomotive ownership is 21,100, increased 1,661 than 2010, among which, the electric locomotives accounts for 55% of, and exceeded the proportion of diesel locomotives (45%) for the first time. The national railway passenger train ownership is 60,600, with an increase of 8,500 compared with 2010. The "Harmony" CRH train ownership is 1,411 groups, increasing 931 groups compared with 2010. The national railway freight wagon ownership is 710,100, with an increase of 87,900 compared with 2010. The road commercial car ownership is 15,379,300, increased 5.67% annually compared with the end of the “11th Five-Year”, among which, the passenger service vehicles ownership is 852,600 and the commercial truck ownership is 14,533,600, with an

annual increase of 0.63% and 7.26% respectively compared with the end of “11th Five-Year”. The proportion of large / medium-sized operating trucks, vans and specialized trucks as well as senior coach increased year by year. In the waterway transportation, as the standardization work of transport ship is carried out, part of the ship and ship types have been eliminated, which is not in conformity with the provisions. By the end of 2014, the water transport ship ownership is 172,000, with a decrease of 6000 compared with the end of the “11th Five-Year” and the droop rate is 3.3%. The DWT of ship has greatly increased. It was 257,850 thousand tons, 77440 thousand tons more than the end of the "11th Five-Year", which is 180,410 thousand tons, increased by 42.9%. 2370 civil aviation industry transport aircraft have been recorded, China has 1798 general aircraft, with an average annual growth rate of 10.3% and 15.5% during the “12th Five-Year”, respectively. Based on the current growth rate, it is expected to complete the general aviation aircraft target, but it will be difficult for the transport aircraft fleet size to achieve its planning target. The postal industry owns 67 dedicated cargo aircraft for domestic express delivery, 230,000 various types of vehicles, and 178,000 express delivery cars. The express delivery industry owns 357,000 computers and 571,000 handheld terminals. The total number of operating public transport vehicles in China is 546,100, with increase of 27.36% compared to the end of 2010. Among that, the number of buses/trolley buses is 528800, However it is still far from the planning goal of 600000 by the end of 2015. It is not supposed to be completed according to the planning. The number of track traffic is 17300, the urban public transportation equipment has gradually developed to the direction of large transport capacity and low pollution. The number of taxi is 1370100, 144400 more than that of the end of 2010.

While the number of transport equipment increases continuously, the equipment modernization is also propelled steadily. The independently developed CRH380B alpine CHR train put into operation in Harbin-Dalian high-speed railway was first high-speed rail in the alpine region of the world. The transportation industry propels the technology research of quick, heavy-duty new trucks, completes the 80-ton utility

truck's design, trial-produce and process evaluation, carry out the research project of heavy duty trucks with 30 tons' axle weight, develops the high-speed train track approach warning system, the CHR train off-line avoidance technical equipment and gradually promotes the use of locomotive safeguard systems (6A). The waterborne transportation industry actively enhances the level of coastal marine technology, encourages the development of gas carriers and other specialized merchandise RORO ships, promotes the standardization of inland river ship type, guides the transformation and renovation of old inland river transport ship, adjusts and continues the policy about the scrap and update of old ships and transport single-hull oil tankers, develops the river-sea transportation. The civil aircraft of China develops from small/medium aircraft to large aircraft gradually. C919 large aircraft and other products develop steadily. China's first new developed short-range jet ARJ21 based on international standards is on the schedule of certification and delivery. Several technical fields such as aerodynamic, structural strength, power plant, airborne systems and manufacturing processes have made important breakthrough. The supercritical wing and other achievements in aerospace product development has also been fully applied. Forging presses, 3D printing and other advanced manufacturing technology and equipment in aviation equipment manufacturing applications are gradually popularized. Thus, the research and manufacture strength of aviation equipment industry is enhanced continually. At present, China's rail transport technology and equipment have changed from original importing mode towards automation, localization development, and even export the whole vehicle to the world market. In addition, China's localized urban rail vehicle traction system has occupied 50% of the market, so does the signal equipment manufacturing.

3.2.3 Transportation service

During “12th Five-Year”, with the steady implementation of domestic demand expansion strategy, industrial restructuring and urbanization promoting, the passenger and freight transport demand continues to increase. Meanwhile, with the construction of infrastructure and the growth of transport service capacity, the completed transport

amount increased further. In 2014, the passenger transport volume of the whole society is 22.094 billion, and the passenger turnover is 3009.739 billion passenger-kilometers. The freight transport volume is 43.13 billion tons and the freight turnover is 18150.919 billion ton-km. The following chart shows the information of the "12th Five-Year" period of China's transportation services:

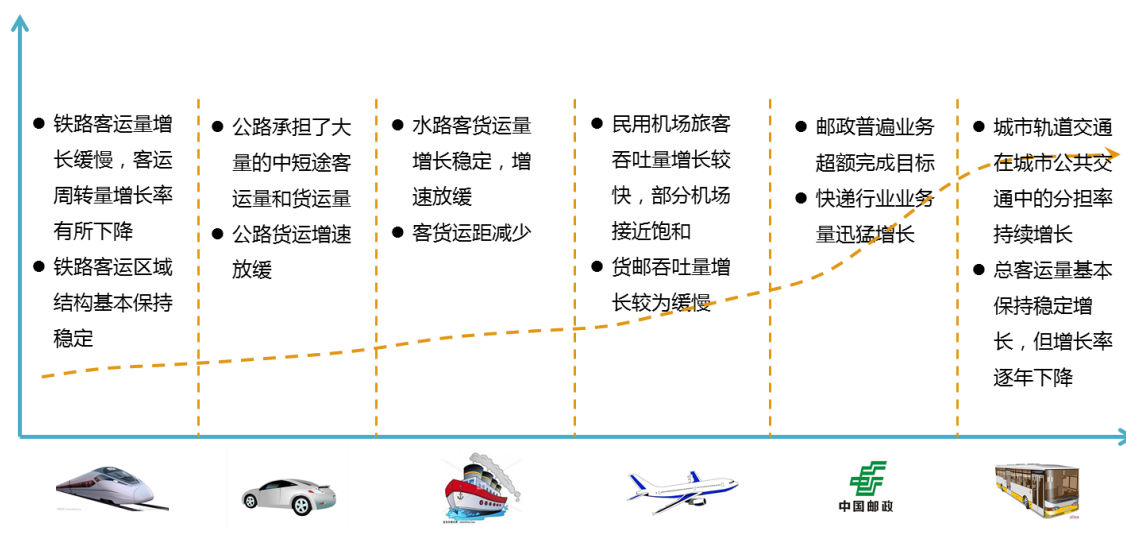


Figure 4 The transportation situation during "12th five-year" period

(1) Railway transportation

In 2014, the railway sending passenger volume has reached 2.357 billion yearly, the passenger turnover volume has achieved 11604.75 One hundred million people * kilometer, but still need around 1.6 billion passenger volume to achieve the goal of 4 billion in 2015.

The railway freight transport volume is 3.81 billion tons, increasing 4.7% compared with 2010, and only completed 9.6% of the target. The freight turnover is 2753 billion ton-km, decreasing 4.1% compared with 2010. As for the regional structure of railway passenger transport, it maintains the basic stability in our country. For example, in 2012, the construction and development of railway in eastern area have become more mature, passenger transport volume is still dominant, and whose proportion is 41.57% in total passenger transport. In other area railway is also in the steady development. The central region accounts for the proportion of 23.77% and the central region 19.43%, the northeast area with the smallest proportion, 15.23%.

(2) Highway Transportation

In 2014, the highway passenger volume is 19.082 billion and the passenger turnover volume is 1.198174 trillion passenger kilometers. The highway freight volume is 33.43482 million tons and the freight turnover volume is 1.198174 trillion passenger ton-kilometer. The highway passenger volume and passenger turnover volume account for 87.3% and 40.8% of the total passenger volume and passenger turnover volume respectively. The highway freight volume accounted for about 80% of the total freight volume, while the highway freight turnover volume accounted for only about 30% of the total turnover volume. It seems that the highway undertakes a large amount of medium and short distance freight volume.

(3) Water Transportation

By the end of 2014, the waterway passenger volume was 264 million people and passenger turnover volume was 7441 million people * kilometers, increased by 17.9% and 3.0% respectively compared with the end of the 11th Five-Year Plan. The average transportation distance is 28.19 kilometers, decreased by 12.6% compared with the end of the 11th Five-Year Plan. Besides, the waterway freight volume was 5.956 billion tons and freight turnover volume was 9188.112 billion tons*kilometers, increased by 57.2% and 34.3% respectively compared with the end of the 11th Five-Year Plan, and the average transportation distance is 1542.64 kilometers, decreased by 14.6% compared with the end of the 11th Five-Year Plan. the national throughput of coal and related products above the scale ports reached 2.173 billion tons; crude oil reached 406 million tons; metal ores reached 1.67 billion tons, which increased 32.0%,4.6%,32.2 % respectively than those in end of “the 11th Five-Year”. The throughput of national ports reached 190 million TEU, which increased 30.1% than the end of “the 11th Five-Year”. In addition, during the “12th Five-Year”, no matter shocked by macroeconomic and impacted by negatively growth of port investment, the throughput of several main categories increased approximately 30%, except crude oil.

(4) Air transportation

In 2014, the passenger throughput of national civil airport was 0.832 billion, and the cargo throughput was 13.5608 million tons with a slow growth. During the “12th Five-Year”, the general aviation operations capability increases rapidly with a favorable development trend. The total working time of general aviation was 67.5 hours, increasing 535200 hours than 2010 with an increase rate of 383%. Over the past three years, the total turnovers grew 7.6% a year on average, which was far below the planning target. The increase of freight market rebounded in 2013 and 2014. So the total turnovers will be expected to reach or get close to 99 billion tons’ kilometers in 2015.

(5) Post transportation

The annual post transport completed 369.61 billion yuan and the annual post income completed 320.33 billion yuan in 2014, which did not include the direct revenue of the savings bank. So we had overfull completed the production quota far ahead. In 2014, express service enterprises have achieved 13.96 billion deliveries on the national scale, up 51.9% year over year; express business revenue has reached to 204.54 billion yuan, up 41.9% year over year. Express industry surpassed the target of 12th Five-Year Plan of Transport Development in advance.

(6) Urban Transportation

In the promotion of “public transportation priority”, the pace of development of Chinese city public traffic has significantly speed up, service capacity and quality has in the promotion of “public transportation priority”, the pace of development of Chinese city public traffic has significantly speed up, service capacity and quality has been also increased, and urban public transportation enterprise in China has entered a period of rapid development. City public transportation passenger volume growth in the first four years of 12th Five-Year Plan is as Table 1 and Figure 5, which showed that the total amount of city public traffic remained stable growth, but the growth rate decreased year by year. Among them, the development of public transportation tram

and taxi has been slowed down, as the rise of the first four years was about 45.67 billion, 34.01 billion, 21.37 billion, 10.71 billion people and 30.43 billion、13.32 billion、11.91 billion、4.12 billion people. But the city track traffic showed good development trend, as the rise of the first four years was about 15.66 billion, 15.95 billion, 21.89 billion, 17.47 billion people. The passenger ferry passenger volume was decline year by year.

Table.1 Urban Public Transportation Passenger Volumes since during 12th Five-Year

Project	2010	2011	2012	2013	2014
Public steam tram passenger volume (100,000,000)	670.12	715.79	749.80	771.17	781.88
Rail transit passenger volume (100,000,000)	55.68	71.34	87.29	109.19	126.66
Taxi passenger volume (100,000,000)	346.28	376.71	390.03	401.94	406.06
passenger ferry passenger volume (100,000,000)	1.90	1.72	1.31	1.06	1.07

3.2.4 Investment and financing construction

During the “12th Five-Year”, the marketization of transport industry is promoted continually. In accordance with the basic ideas of the overall planning, diversified investment, market operation and policies supporting, the transportation construction project investment and financing system reform is impelled. Social funds enter into the transport infrastructure field and the investment keeps a high level. In 2014, the railway industry investment in fixed assets reached 808.800 billion Yuan, reducing 4% compared with “11th Five-Year”. Among them, the investment of the railway construction accounts for 81.9 percent of total investment, and the investment of the purchase of locomotive vehicle accounts for 18.1 percent of total investment. The highway construction investment was 1.36922 trillion RMB in 2013, among which, 729.776 billion RMB for highway construction, 389.961 billion RMB for common national/provincial construction and 249.483 billion RMB for rural highway construction. Generally, the investment can basically achieve the goal, but for Yunnan, Shaanxi and Gansu provinces, it will be difficult to achieve the planning goal. In the first four years of 12th Five-Year Plan, the water transportation construction

investment is 140.488 billion Yuan, 149.382 billion Yuan, and 152.846 billion Yuan, 145.998 billion Yuan respectively. In general, annual total investment is higher than the last year of 11th Five-Year Plan, but the growth rate in every year was declined gradually. The growth of inland investment in 2013 had a sharp decline during the period of 12th Five-Year Plan of Transport Development, but the inland investment maintained a high growth rate on the whole. But the coastal ports investment grew unstably. The investment growth was negative since 2012. In the first three years of the 12th Five-Year Plan of Transport Development, civil aviation transportation had accomplished the basic construction and technology retrofit investment of 211.65 billion, including the 70% of airport construction investment. In 2013, the civil aviation fixed asset aggregate investment was 145.22 billion. And the airport system completed the investment of 50.75 billion, an increase of 14.9% compared with the end of “11th Five-Year Plan”. By the end of 2012, the total town fixed asset investment in urban public transport industry was 206 .45 billion RMB, increased 13.9% compared to the “11th Five-year”. Since the 12th Five-Year Plan of Transport Development, it completed the investment of 570.7 billion Yuan (1628 billion in 2011, 1914 billion in 2012 and 2165 billion in 2013) in the first three years, and it reached 831.3 billion with the plan completed quantity in 2014. According to this, the completed investment will be a trillion Yuan in 12th Five-Year Plan of Transport Development.

Compared to the “11th Five-year”, the sources of transport industry construction fund have a breakthrough during the “12th Five-Year”. Instead of relying on the central funds only, they explore diversified investment and financing mode actively, differentiate investment mode for different transport mode, promote optimize the investment and financing mode further. During the “12th Five-Year”, the Ministry of Railways funding sources rely mainly on domestic loans and bond financing. The proportion of bond financing keeps a steady increase while the domestic loans financing maintains steady. At the same time, the railway is actively exploring diversified investment mode and encourage non-public capital to join into the railway.

The self-financing and other fund has a rapid growth, and so does the foreign investment. The highway construction fund comes from central subsidies, local financing, bank loans, etc. The highway maintenance and management fund mainly consists of refined oil consumption tax, vehicle tolls, vehicle purchase rebates, Ministry of Transportation special project construction cost, and the central and local financial investment and bank loans. The port construction fund mainly comes from national in-budget investment, the special fund of Ministry of Transportation, domestic loans, enterprises self-financing, local self-financing, and foreign investment and so on. The inland water transport investment and financing modes mainly include central special fund, local fiscal expenditure and financing platforms. The airport construction fund comes from local finance, civil aviation development funds and credit loan, corporate investment, and generally, one-third from civil aviation authority, one-third from local government, one-third from the airport. Since the “12th Five-year”, the Chinese private investment in civil aviation has increased rapidly and entered all areas except the air traffic control. The aviation aircraft financing mainly relies on external financing, especially debt financing. At present, there is no airline can purchase the aircraft all by itself, and most of them use loan, shares and bonds issuing, leasing, or the combination of above ways. China's urban transportation investment and financing mode has been adhering to the "national investment, local fundraising, social financing and foreign capital utilization " concept all the time, developed the function of market further, treated all types of investors equally, attracted social capital to the public transport infrastructure construction and operation, strengthened the cooperation between banks and enterprises, innovated in financial services to provide high-quality and low-cost financing for urban public transport development.

3.2.5 Security and emergency

During the 12th Five-year, the traffic emergency response ability and security has been optimized. The number of traffic accidents reduces and each of the objective indicator of the “12th Five Year Plan” has been realized. In 2013, no extraordinarily

serious accident occurred in national railway transportation, 1 major accident occurred in local railway; the index of one billion ton-km national railway accident was 1.253, 5.2% lower than 2012; Annual railway traffic deaths are 1336 people, 5.7% fewer than those in 2012; 1 billion tons' km mortality rate was 0.336, 7.7% lower compared with 2012. dangerous bridge reconstruction project has reconstructed 9404 bridges, 801,000 linear meters, security engineering department has engineered 154,600 km dangerous road, disaster prevention project has engineered disaster-prone sections of 16,000 km. In 2014, the number of water traffic accidents is 255, with 139 wrecks and 236 fatalities, which dropped 23% and 28.3% than the end of "11th five-year", respectively. The number of wrecked vessels is decreasing year by year. In 2014, the number of wrecked vessels is 139, 28.7% fewer than the previous year. The direct economic loss is 0.248 billion yuan, dropping 23.5% than the end of "11th five-year". In addition, China's water emergency support system gradually improved. The ability of search and rescue has been strengthened. During "12th five-year", the water search and rescue success rate is above 96% at all levels, requirements for the safety index in the "12th five-year Plan" has achieved. The central government has invested a total of 11.8 billion yuan to strengthen security and capacity-building major time periods and major waters, to enhance water safety supervision and rescue equipment levels, to effectively enhance the industry accident investigation and emergency response abilities. The major accident rate of China's civil aviation transportation per one million hours (five-year cumulative) has to be less than 0.2. The major accident rate is almost zero, which is in line with the "Twelfth Five-Year Plan" requirements. And no major aviation accidents occurred for three consecutive years since 2011.

However, during the "Twelfth Five-Year Plan" period, the "7.23" Yongwen line special major railway transportation accident occurred in 2011, the "6.1" Orient Star passenger ship capsized in an accident and "8.12" Tianjin Binhai New Area Explosion accident occurred in 2015. These accidents caused serious casualties and great economic damage to property, and a very bad influence stable and healthy

development of the society. Therefore, in "Thirteen Five-Year Plan" period, should put an end to the occurrence of such major transportation accidents firmly, and ensure the safety of transportation development, laying a solid foundation of environment for the economic and social stability and development.

3.2.6 Traffic technology and informatization

During the "12th Five-Year Plan" period, the investments on technology have been increased, and technological progress contribution rate has been increased. In 2013 the contribution rate of science and technology industry reached 53%. At the end of "12th five-year", it is expected to achieve the goal of the science and technology progress contribution rate 55%. The embodiment of the specific as follows: (1) **Research foundation conditions has been improved.** During the first three years of the "12th Five-Year Plan" the highway transportation and water transportation construction investment continued to increase, the investment of the first three years has accumulated a total of over 4.8 billion yuan, the average annual investment is more than 1.6 billion yuan, compared with the "11th Five-Year Plan " , the annual average investment has increased by about 6.67% . (2) **R & D investment increases.** In the first two years of the "12th Five-Year Plan", both the number of research projects and investment achieved increment. By the end of 2012, the waterway and highway transport industry have newly signed projects 3073, the scale of investment was 4.77 billion yuan. (3) **Scientific and technological achievements are remarkable.** In 2013, the railway department issued five batches in total of 73 items railway industry standards, 151 documents of railway special technical product standards. (4) **The number of high-quality talents has been increased.** In the period of "12th Five-Year Plan", relying on major scientific and technological projects, key research base and special training programs and training exercise brought together a group of transportation technology professionals, established a rational structure, a sufficient number, excellent quality of transportation scientific and technical personnel.

In the previous three years of the "12th Five-Year Plan", with the construction of transport sector management service applications, public travel information service system, credit information service platform of the market, safety unimpeded and emergency systems, transportation and economic operation monitoring and early warning systems and decision analysis, information infrastructure and other projects to work and support capabilities, the intelligent transportation developed rapidly, the degree of traffic informatization was deepened significantly, the level of modernization of transport was raised significantly. The average coverage rate of ECT reached 51.7% in 2013, exceeding the requirement of "12th Five-Year Plan" by 34%.

3.2.7 Green transportation

In the period of "12th Five-Year", to ease the transportation pressure on the environment and energy, a series of measure for energy saving and emission reduction has been taken in the relevant areas. Major pollutants emission intensity decreased further, and the effect of transportation energy conservation and emissions reduction is significant. Compared with 2010, at the end of the 12th Five-Year-Plan, the comprehensive energy consumption of unit of railway transportation workload decreases by 5%, the national railway CO₂ and SO₂ emissions has been effectively controlled, to achieve energy conservation and environment protection goals of increasing production without increasing pollution; commercial vehicle and operating ship energy consumption and CO₂ emissions of unit transportation turnover volume decrease by 6.2%, 6.6% and 9%, 9.2%, respectively, port production energy consumption and CO₂ emissions of unit cargo throughput decreases by 3.5% and 5.0%, respectively; civil aviation transportation energy consumption and CO₂ emissions per ton kilometer of five years on average decrease by 5.6% compare with the 11st Five-Year-Plan. The industry regulatory capacity of environmental protection has been significantly improved, and started the construction of the transportation industry environment data centers and 20 provincial industries environmental monitoring central station. The level of intensive utilization of resources has been further improved, in the construction of highway, railway and port advocated the

design concept of saving land, eco-friendly and new technologies, the through capacity of unit length of quay of coastal port increased by 5%.

During the “12th Five-Year”, the traffic industry developed a series of key projects and two special action to save energy and reduce emission, such as the admittance and exit project of commercial vehicle on the basis of fuel consumption, demonstration and extension engineering of energy saving and new energy vehicle, expansion engineering of dumping trailers transportation, green driving and repair engineering, the ITS energy saving and emission reduction project, energy saving and emission reduction technology expansion engineering in highway construction and operation , green port construction project, energy efficiency management system of the ship and database construction engineering, extension engineering of contract energy management, supervision capacity construction engineering about emission reduction and so on. Through the implementation and promotion of the projects, the supervision ability of environmental protection will be improved significantly. In addition, the transportation industry will start to construct the environmental data center and environmental monitoring center station of 20 provinces. Meanwhile, by adopting structural measures, the advantage of various transportation modes can be fully used. The allocation of transport resources can be optimized and there will be more and more energy-saving and new energy automobiles. Thus, the advantage of comprehensive transportation will be fully used to reduce the energy consumption intensity. The transport infrastructure network system will be improved. Commercial vehicles, ships and port handling equipment structures will be optimized. Transportation energy consumption structure will be more reasonable. Structural energy-saving achieves significant progress. Energy-saving technological innovation capability will be further enhanced. Energy-saving technologies service system will be further improved. The level of traffic information will be further enhanced. Energy conservation technique will achieve significant progress. Transportation production efficiency will be further improved. Basically construct more perfect transport energy strategic planning system, regulatory standards system, statistical monitoring

evaluation system, policy support system and supervision and management system. Enhance energy conservation supervision capacity and supporting security level, and significantly improve the transportation energy use efficiency.

4 Current situation and Problems of transportation development during the 12th Five-Year Plan period of Transport Development

4.1 Effects of the 12th Five-Year Plan of Transport Development

4.1.1 Comprehensive transportation

(1) Comprehensive transportation network has been initially constructed, but the effective connection between various modes of transportation remains to be strengthened.

During the period of "12th Five-Year Plan", the transportation infrastructure scale had a rapid development, the total mileage of comprehensive transportation network, mileage of the fast railway, mileage of the freeway, mileage of highway, the ten thousand tons and above deep-water berths of coastal port, high-grade waterways of inland, the number of civil airports, the operating mileage of urban rail transit lines operating range increased two fold. Relying on the existing hub, station and other facilities, combined with the construction of transportation hub project, through overall planning, optimization and integration, and the new expansion, etc. to build a comprehensive transportation transit, constantly optimize transport structure, basically formed a main and branch linked up comprehensive transportation network which focused on the main railway corridors, highway framework, water carriage channel and harbor hub. Passenger traffic and passenger turnover is growing steadily. Among them, the growth of civil aviation passenger transport volume is the highest and highway takes second place, but the growth rate of rail passenger transport volume is relatively slow.

The construction of the regulations for the comprehensive transport system is not

sound due to the different administrations for different modes of transport and the lack of mutual co-ordination when making policies. The unbalanced legislation between different modes of transport as well as the split between the legislative contents extents hindered the integration development for the various transportation modes, so that the overall effectiveness of the comprehensive transportation system cannot be exerted. During the “12th Five-Year Plan” period, the Ministry of Transport issued a notice ---Transportation Standardization Program and develop a transportation standards table to suggest the reform of the urgent need for transportation, but the detailed criteria and indicators for the comprehensive transport system have not been established yet so far, which resulting to a lack of co-ordination between various modes of transport when making the policies. And there was also a lack of cooperation between transportation policy and the policy which focus on the land, investment and tax, thus the smooth implementation of transport policies has been restricted. The construction of transportation hub fragmented and it is not consistent with regional transportation. So, it is difficult to achieve seamless transfer distance for passengers and freight. In addition, local governments have stepped up efforts in planning and building the comprehensive transport hubs. However, the construction task of comprehensive transport hub has been affected because of the lack of cooperation among each industries and departments. So the overall construction of comprehensive transport hub is lagging behind. The effective connection between various modes of transportation remains to be weak. And it is difficult to achieve the goal “Passenger transfer to zero distance, freight seamless connection”

(2)The process of regional transportation integration has been accelerated, but the integration of the regional traffic network structure is still unreasonable.

During the 12th Five-Year Plan period, local governments have stepped up efforts in building and planning comprehensive transportation hubs, which is focusing on joining the urban transportation systems and the intercity transport systems. Also, the

construction for the highway "broken road" has been accelerated to improve the road network combination between each region. The overall function of the hub airport group has achieved convergence among hubs, trunk and feeder by phased construction of added airports and the expansion of existing airports. In this way, the aviation resource in each area has been integrated effectively. At present, "Jingjinji" traffic has been gradually showing the integration blueprint of "2 rings, 8 ways, 4 joint, 8 ports, and 8 hubs". The construction of the intercity rail transit is speeded up in the Pearl River Delta, initially forming the comprehensive transportation system which is composed of railway, highway, waterway, civil aviation and other modes of transport with Guangzhou city as the center, and connects Guangdong province with all over the nation. The construction and maintenance of high grade waterway are vigorously promoted in the Yangtze River Delta, and the various modes of transport and rational distribution of organic convergence are concerned, and the development of integrated transportation is vigorously promoted. The construction of transportation network and the corresponding of planning and strategy are published in other regions, and the regional transportation integration is gradually promoted.

But the integration of the regional traffic network structure is still unreasonable, and docking is imperfect, because of lack of policies and incentives to support. The co-ordination has to be improved and the convergence between transportation hubs has to be strengthened. The phenomena with unreasonable proportion of each transportation mode is still exists, such as the proportion of intercity railway among Beijing, Tianjin and Hebei is very low, which made it difficult to meet the transportation demands for intercity passengers. There are duplicated constructed roads existing among cities as well as division of work of highways and urban roads is not reasonable. The construction of transportation hub fragmented and it is not consistent with regional transportation. So, it is difficult to achieve seamless transfer distance for passengers and freight.

4.1.2 Railway transportation

(1) The railway transportation capacity has been improved continually, and

development in western region still needs to be strengthened.

"12th Five-Year Plan" is a critical period of China's railway development, especially high-speed railway construction and development. The scale of construction of the railway network has kept a continuous growth, and with a large number of key projects completed and put into production. The rate of double-track railway and electrification rate further increased. The railway network constantly completed will promote the release of the railway transport capacity and further improve the railway passenger transport volume. Meanwhile, High-speed railway construction in China is about to enter full harvest period.

During "12th Five-Year Plan", interregional channels realize the capacity expansion revamping, it realizes the separation of passenger and freight traffic of busy trunk lines and. The process of inter region new trunk line construction and the existing line expanding and rebuilding is fast. By using the new constructed express railway and the existing ones, the planning and construction of intercity railway can make full use of network resources in regional intercity passenger transport. In order to alleviate tense situation of coal transport channel capability in the "12th Five-Year Plan", the construction of passenger dedicated line and release of existing transportation capacity has been speeded up and the construction of coal transport channel had been promoting actively. At present, there have been some projects including Jining to Zhangjiakou, Jining to Baotou, Fuyang to Liuan, Hami to Luobupo, and Kuche to the Russian mining have been completed and put into operation. A total of 1868 km new line was put into operation. The projects that are under-building still mainly rely on "3 wests" energy transportation system. Energy transport system of Meng Dong, Xinjiang are also in the rapid advance. In regional development projects, the regional projects are gradually advanced, and the business mileage of western region is 44000 kilometers, indicating an increase of 4020 kilometers and increase of 10.2%. Compared to other areas, the construction rate of the western region is still relatively slow, as well as the road network coverage, which would fail to meet the needs of the west, so the railway construction point of the next

step is still in western region.

(2) The transportation equipment technology has a breakthrough innovation, and the level of transportation services has been further improved.

With the acceleration of the railway, overheated construction of high-speed railway, the improvement of requirements in railway vehicle equipment level and transportation service continue, the post construction engineering is particularly important, and it plays a vital role on the safety and effective operation, management and service of the whole system. During the period of "12th Five-Year Plan", railway departments have insisted on independent innovation, deepened key technologies, key areas of innovation, improved railway technical standards, and comprehensively promoted the modernization of technical equipment. The development work of Chinese standard EMU has been vigorously promoted, the key technologies of rolling stock and the major technologies of high-speed railway have made considerable progress, which laid the foundations for the development of China's railway construction and transportation, especially the development of high-speed railway.

During the 12th Five-Year Plan, compared with road and air transport, rail freight is still not able to convert the ideas of development that implement the modern logistics development in transition, fail to actively improve transport services, improve the efficiency of rail freight, optimize the structure of freight and strengthen the freight service convenience. Compared with the logistics of road and air transport which basically achieve the transport of "door to door" and the service of "next day delivery" and "delivery in 48 hours", in the aspects of integrated services and transport limitation and so on, the rail freight is obviously inferior. And it leads to a lack of market competitiveness of rail freight and is unable to fully meet the diverse needs of customers.

(3) Railway system reform has been further promoted, diversification of investment and financing mode needs to be perfect.

According to the requirements of the large ministry reform, railway excluding

the government function from enterprises management, revoking the Ministry of Railways, and the administrative duties for planning and policy of railway development of the Ministry of Railways was assigned to the Ministry of Transport; establishing China General Railway Company, take the Ministry's corporate responsibilities. This reform changed the pattern of fragmented transportation planning in China, creating good conditions for the construction of a comprehensive transportation system in the future. For railways, through reform, it can promote the railway reform in terms of investment and financing, tariffs, laws and regulations, and it will have a profound impact on the expansion of passenger and freight transportation market and the enhance of service levels. But according to the current development situation, responsibilities and relationship still needs further straighten out, and there is still a long way to go for railway reform. Railway system reform still presents a fixed situation that the management and enforcement are out of sync which needs continued to solve, there are many problems need to be solved if the national railway administration wants to give full play to the regulatory functions.

In recent years, the large scale of high speed railway had been constructed, the railway ministry which gets little profit had gotten considerable investment as high as 600billion~700billion, the funds mainly come from debt and borrowing. From 2005 to 2011, In the financing structure of the ministry of railways, the domestic loans and bonds soared to 372.028 billion yuan from 20.768 billion yuan, increased by 17 times, and since 2007 accounted for more than 50%, which are the main sources of Railway Ministry funds. However, the excessive dependence on domestic loans and bond issues leads the Railway Ministry to bear the huge debt service pressure. In order to improve the railway financial situation, accelerate the pace of railway construction and promote railway diversified financing, the Ministry of Railways promotes the reform of the railway enterprise system in "12th Five-Year Plan" period. "The opinions on the reform of the railway investment and financing system and accelerating railway construction" promulgated by the state council show that the railway has really become market-oriented, which breaks the barrier of the industries, encourages

the social capital investment in railway construction. Meanwhile, "notice of the liberalization of prices on the part of the railway transportation products" indicates that part of rail transport prices had been liberalization released with a low level. The new railway by social capital investment holding is rare, which is accounted for less than 10%, and most are local lines. Because the railway investment belongs to the industry with long construction period, high debt ratio and low rate of return, and the joint venture railway company corporation is very hard to speech, leading to what is not attractive. And because of the market regulation, the public welfare and policy transport, subsidies is still in the study and formulation, in the case of a subsidy mechanism does not reach the designated position, and social capital is difficult to enter. Therefore, the railway industry should continue to improve the institutional mechanism of diversified financing and attract external capital sufficiently at this stage.

4.1.3 Highway transportation

(1) The highway network structure has been gradually optimized, the mileage of rural highway has been greatly increased.

According to the construction of highway infrastructure during the first three years of the period "12th Five-Year Plan", the investment of general national highway construction grew steadily, the western region's investment increased significantly, by the end of 2013, China has formed a pattern with 111950 km highways, 179200 km national highways and 3.8816 million km of rural roads, which basically meets the basic transportation needs of social production and people's lives. The process of the national highway construction is relatively fast in some parts of our country. However, due to the more historical debt and limit of landform in the western region, the task of national road upgraded and construction perfecting is particularly arduous. The promotion of freeway construction was smoothly. But the restriction of the engineering construction conditions and funding, the western region lags behind the national highway construction process in the eastern and central regions.

Viewing from the completion of investment plan during the first three years of the 12th Five-Year Plan of Transport, the realization extent of the goal and the documentation of annual plan in 2014, the construction of rural highway has gone smoothly, but the western region development is not ideal. The proportion of paved roads in village is improved significantly. The villages with harden roads has accounted for 66.5% in the west, except Tibet. There were still 808 towns and 66000 villages have not built hardened road. Rural highway construction of the western region is still a difficult task in the future.

(2) The results of the poverty alleviation work are obvious, and the travel conditions in the countryside are obviously improved.

In the "12th Five-Year Plan" period, according to the general requirements of "central co-ordination, provinces take overall responsibility, counties carry it out", a division of responsibilities and tasks at all levels of government transportation poverty alleviation are basically defined. The responsibility and organization are putted in place. In general, through promotion of its strength, transportation conditions of highway and waterway in poor areas will be improved significantly. The service coverage of passenger and cargo transportation continuously expand, the depth of accessibility unceasingly extend and the service level significantly improve. Bottlenecks of transportation development in poor areas will be further solved. Gap of main indicators of basic public transportation services among all country will be narrowed significantly. A solid foundation will be made to complete the goal of transportation poverty alleviation in well-off society successfully in the next phase. In addition, since work of transportation poverty alleviation started, the Ministry of transportation has increased the support of the central funds and investment subsidy standards with the poor areas of weak local financial capacity and insufficient of construction funds. Rural road in poor area float the 30-70% than other regions. The western regions of the township and the village formed through asphalt (cement) road subsidies are about 2 times and 2.5 times higher than those in the "11th Five Year" period.

Although rural road construction has made remarkable achievements during 12th five-year period, it severely restricts their transport services due to the factors of low level of maintenance management, low technical level, more dangerous bridge, lower passenger taxi stands allocation ratio and so on. The task that western region villages constructing sclerosis road is still arduous especially densely contiguous destitute areas. The proportion of sclerosis road construction of western region villages is only 65%. There are also 808 towns, 66 000 administrative villages which don't have sclerosis road, respectively accounts for 99.1% and 94.2% of national nowhere sclerosis road towns and administrative villages. For rural passenger transport, our country still has 488 towns and 44,000 administrative villages have no bus in the end of 2013, and the basic travel needs of farmers cannot fully meet. The proportion of the towns which have a highway bus terminal and administrative villages which have a flag stop respectively accounts for 69.1% and 46.7% and rural transportation travel waiting condition is still poor. In rural areas where bus has been opened, the number of common trips is small, vehicle old phenomenon is obvious, people travel convenience and comforts are poor and the rural passenger transport operating costs is high and loss phenomenon is obvious due to the limitation of factors of scattered rural tourists and low passenger flow.

(3) Maintenance of infrastructure begins to take effect, and the constraint of conservation finance is significant.

At present, highway maintenance in our country learns from the advanced experience of developed countries and regions and technologies, and has formed a maintenance company which is integrated of the funds by the state subsidies, maintenance personnel, maintenance equipment and maintenance material. But, as the costs of construction rise and financing difficulties is increased, especially received new road pressure, part of the national highway and highway maintenance funds has certain gap. With regard to national road, there are some prominent problems including low index of roads and poor safety in some interprovincial roads, especially on sections going by mountainous regions, which has been the bottleneck on the

transportation network. In highway, restrict to technical and funds conditions, some early built highways were mainly built with four lanes and some of them with a lower line index. In additions, the traffic capacity of highway has also been restricted by some incompletely built sections.

It's notable, a lack of funds of rural road maintenance. In recent years, with the increase of rural highway maintenance manpower and material costs, the standard of rural highway maintenance subsidies has been reduced significantly. Although the country has defined the main responsibility of the county government management and maintenance clearly, the majority of provinces in the county township finance is generally tight. Local financial input of rural highway maintenance funds is generally inadequate and routine maintenance of rural roads level is low. In 2013, the proportion of rural highway maintenance mileage is only 72.1%. It is still about 980,000 kilometers that is included in the long-term seasonal conservation statistics staying, temporary and sudden maintenance state in the rural highway. Moreover, because of the general lack of professional maintenance management team, technical personnel in rural highway, the process of most rural road maintenance is rough, equipment and technical level is relatively lagged behind. It is difficult to meet the technical specifications, especially maintenance for bridge, tunnel and other objects with high technology requirements. Maintenance cannot be effective with weak technical strength.

(4) The conflict between supply and demand preliminary eased, and structural contradiction between supply and demand is prominent.

With the increasing construction of highway infrastructure year by year, By the end of 2013, the service ability of highway transportation can basically meet the transportation demand of social production and residents' life, which eases the contradiction between supply and demand of transportation preliminarily. However, with the diversity development of highway passenger transportation market, highway transportation demand has gradually shifted from the traditional "pervasive security type" to "high and fast improvement type", which puts forward higher requirements

on travel efficiency and service level of highway transportation. Especially in the eastern and western areas, the difference in demand is extremely vivid, which put forward new requirements on the strategic transformation. As for rural roads, the level of transportation service has been limited by poor level of management and technology, dangerous bridges and low allocation of passenger stations. For rural passenger transportation, there are still 488 towns and 44000 villages do not have buses by the end of 2013, and it causes the travel demand of farmers can't be fully satisfied. The proportion of towns with highway bus station is 69.1% and villages with flag stops account for 46.7%, which indicates the travel conditions of rural residents remain to be poor. The frequency of buses in rural regions is low and many buses are old, which result in the bad convenience and comfort for residents' travel. Besides, limited to the passenger decentralization and numbers, operation cost of rural passenger transportation is higher and losses are always very common.

(5) The effect on reform of the management system and mechanism is shown, and the laws and regulations still need to be improved.

During the “12th Five-Year” Plan period, as a series of highway management laws (such as the highway law) and regulations policy coming on stage, highway management department and transportation enterprises further cleared the rights and duties of the road, the construction, maintenance, usage, management and operation of highway get implemented. Separation on the construction responsibility caused a certain influence on the building of the ordinary state highway: firstly, the local government emphasis on different highway section construction. More attention has been put on the construction of function road on both cities exit and scenic road, while the construction of the relatively remote roads which plays an important role in the national or provincial road networks have been ignored. Secondly, the coordination on construction standard seems to be hard as various cities and counties are in disagreement on the construction standard. Finally, it is the construction schedule problem i.e., the construction time of adjacent roads in different cities and counties does not match which leads to the efficiency problems of trunk highway channel is

difficult to solve.

In the aspect of highway transport, along with fast development of economic society and highway construction in China, as well as the transformation of logistics industry, part of the laws and regulations already can't apply to the current actual situation, or some of them have adversely affected the healthy development of highway transportation, which become the bottleneck of the highway development. During the 12th Five-Year, the toll period of the first batch of freeway built in China has begun to gradually mature, although some of them have been extended the toll period via reconstruction and so on. But once the toll period of the rest is due, they will face regulations and public opinion pressure of cancelling charge. If the toll is cancel, its maintenance and operation management will be severely affected. Although as early as in 2008, the ministry of transport had issued "Interim Measures for Rural Road Maintenance management", which makes regulations in the aspect of financing and management of rural highway maintenance, maintenance engineering management, road administration, however, the main body of highway maintenance responsibility and the obligation of road users are not clear, which leads to appear fuzzy boundary the in the process of the law enforcement. What's more, the laws about rural road maintenance are too lagging to handle in destruction behavior to road infrastructure in time.

4.1.4 Waterway Transportation

(1) The rate of the inland river investment gradually expand, the investment and financing mechanism of harbor has not been formed.

During 12th Five-Year Plan, national inland water transportation investment reached 50.812 billion in 2014, more than 33.453 billion yuan at the end of the '12th five-year', which has increased dramatically. The proportion of that the inland water transportation investment in the water transportation construction investment gradually expand, inland water transportation construction has significantly improved than at the end of the period of "11th five-year". The government gradually

strengthened the construction of the high-grade waterway. The mileage of rating channels has been 65400 kilometers which accounted for 51.8% of the total mileage, and it has increased 1.6% than that at the end of 12th Five-Year Plan. The mileage of third-class and above channels accounted for 8.6% of the total mileage, the growth rate is 17.0% at the end of 12th Five-Year Plan. The mileage of fifth-class and above the channels accounted for 22.5% of the total mileage, the growth rate is 12.8% at the end of 12th Five-Year Plan. By the end of 2013, Network system of inland waterway Basically formed, the mileage of Yangtze River has been 64374 kilometers, that of Pearl River was 16444 km, the mileage of Yellow River has been 3488 kilometers, the mileage of Heilongjiang River has been 8211 kilometers, the length of navigable part of Beijing-Hangzhou canal has been 1438 kilometers, the mileage of the Minjiang River 1973 kilometers, and the mileage of Huaihe river has been 17338 kilometers. It basically formed a main and branch linked up channel network which focused on the trunk line of the Yangtze River, Xijiang shipping lines, the Grand Canal, the Yangtze River Delta and the Pearl River Delta channel network.

The division of responsibilities between government and enterprises is unclear, and the Investors are relatively simple and channels of financing are narrow.

During the 12th Five-year Plan period, China's Port Law also stipulated the responsibilities of the government on investment and financing activities in the port management, established the scope and the main body of the port's investment in public infrastructure. But in fact it is difficult for local governments to assume the investment responsibility in the construction of port's infrastructure. On the one hand it is limited by local financial resources and it has its objective reasons as well, the port has certain character of being regional while it is unmatched that the responsibility of constructing the public infrastructure is undertaking by the local governments. It is exactly the unclear division of responsibilities between governments and enterprises and the impact of invests big and long payback period that make the unwillingness of civil capital to invest the port projects. After the decentralization of local port management system, local governments set up the

authorities concerned on the management for ports. The former port authority substantially restructured to the company enterprises, which the government and enterprises has been isolated to a certain extent. However, the fact is the port enterprises are still holding a large number of public affairs. The non-operating expenses and investments in port enterprises will be increased if the responsibilities of various departments cannot be rationalized during the Thirteenth Five-year Plan period, and it will lead to the reduction of financing capacity in port enterprises to some extent.

(2) The comprehensive abilities of port groups are stand out, but some port exists the phenomenon of excess production capacity.

Five major port groups have been formed in China's coastal areas, which respectively is the Bohai port group, the Yangtze River Delta port group, the southeast coastal area port group, the Pearl River Delta port group, the southwest coastal area harbor group. The formation of port group and the integration of port resources have realized the rational division of labor, complementary advantages, mutual cooperation and orderly competition, which enhanced the ability of serving hinterland economy. Some major ports have already developed into a regional international shipping logistics center, which occupies the main position and plays an important role in the port group. The Yangtze river, pearl river, heilongjiang, huaihe river and the Beijing-hangzhou grand canal have formed continuous coast ports, built the waterway passenger transportation port loading and unloading system, which focused on five cargoes of container, coal, ore, oil, food and passenger. By the end of 2014, There are 2110 10000-ton and above berths which has increased by 449 than that in 11th Five-Year Plan of Transport. And the number of 10000-ton and above berths in coastal ports are 1704, the number of 10000-ton and above berths in inland ports is 406. The number of 10000-ton and above berths in our country increases faster than that of berths used for production. With the construction of waterway infrastructure, the improvements of transportation equipment and transportation service, berths in inland and coastal ports are developing in the direction of large-scale and

specialization.

However, during “12th five-year Plan”, under double pressures of the weak foreign trade and sickly domestic demand, China's coastal construction investment growth was negative, and the cargo throughput gains a new low in recent years. The growth of port demand has slowed, but construction still did not stop, which lead to the rate and capacity utilization is low. Although the principle of port construction is a moderate advance, but the port still occurs the current situation of excess capacity in the process of upgrading, large port group of demand is insufficient, the number of berth in some ports is more than the number of ships, a number of small and medium-sized port terminal equipment is idle, the ratio of port capacity and throughput is imbalance, Port enterprise profitability decline. The competition problems of homogeneity between adjacent ports is obvious, it focusses on competition rather than cooperation between ports. The functions of ports in the same port group coincide, port infrastructure construction is redundant, which increased port internal consumption and competition, weakened the whole external competitiveness. The development pattern of port expansion is still extensive, which takes up shoreline. Regional port construction is overheating, shoreline utilization is lack of overall consideration, so that port space layout is homogenized, the coastline and the effective use of environmental resources was affected.

(3) The technical standard of channel has been constantly introduced, but the standardization degree of shipping equipment is still low.

During “12th five-year”, the government revised the "inland river navigation standard", “the technical specification for inland waterway maintenance” and other standards, which constantly improve the waterway technical standards and maintenance quota system, promotes the development of channel management and maintenance, cooperate with inland port infrastructure construction, so that inland river navigation condition improved significantly. In addition, the act of waterway was announced, which promote the legislative process of channel laws and regulations, and make full use of local legislative resources, speed up the local

channel rules and government regulations, and form relatively perfect channel management and conservation laws and regulations system. The work of ship equipment standardization had been carried out gradually during the “12th Five-Year Plan”, but the degree of inland ship equipment standardization is still low. So, an update and alteration for the non-standard, unsafe and non-environmental friendly old ship is still urgent

4.1.5 Air Transportation

(1) The develop priority of civil aviation has turned into structural adjustment, but the development of general aviation still falls behind.

During “12th five-year”, air transport airport network layout has been basically formed in China, the key point of the development of the aviation transportation has been changed from the increase of the amount into the adjustment of the structure, the civil aviation to enter into medium growth period by the high-speed growth. Civil aviation enters the medium growth period from high-speed growth. In 2014, the annual growth of the international shipping line total turnover is 14%, which is 3.8% higher than that of domestic routes. The growth of passenger throughput in Midwest airport is 13.07%, which is 4.37% higher than the eastern airport. The throughput growth of feeder airport with annual passenger throughput less than one million is 19.6%, which is higher 9.8% than the key trunk airport with annual passenger throughput of more than one million. In general, the civil aviation industry structure presents positive momentum, which means that the international market is faster than the domestic market, the Midwest is faster than the East, and branch market is faster than the main market.

At present, general aviation, low-cost airlines and airport economy become a new growth point of air transport. However, general aviation in China started late and it is at the early stage of development which still haven't formed a complete system. Under the guidance of "12th Five-Year Plan", the government has issued a series of related regulatory measures in the aspect of general aviation infrastructure construction, low-altitude airspace reform, industry access conditions, and business subsidies. Local governments also stepped up efforts to support general aviation.

The sluggish development of general aviation in China has many reasons. Firstly, the amount of China's general aviation airport is less, density is low, function is single, layout is unreasonable, and development is slow, which is difficult to meet the needs of general aviation development. General aviation in China started late. At present, it is at the early stage of development, and still doesn't form a complete system. At the end of 2014, the total number of general aviation companies registered aircraft airworthiness reached 1798. In 2014, the industry complete general aviation production flight 675000 hours, there are 239 general aviation enterprises to obtain general aviation business license. In 2012, the number of General Aviation Airport in America is 2563, and the number of navigation aircraft is more than 200000. Secondly, pilot shortage becomes the main obstacle of the development of general aviation in China. At present, the domestic flight school through the civil aviation administration examination and approval can train pilots about 3000 people a year, and the 3000 pilots is mainly training for transport aviation. In addition, the pilot training uses a single "bonded directional training" mode, general aviation pilots are not in the training plan at all. In recent years, with the development of general aviation, part of the general aviation enterprises has been approved to carry out the pilot training. But the training by private enterprise is far less than professional institutions in terms of professionalism, systematic. But in the face of the rapid expansion of general aviation, general aviation pilot training system needs to be established urgently.

(2) The capacity of airline hubs is saturation, but it is hard for feeder airports to make profits.

In 2014, the passenger throughput of nation civil airports realized 832 million person-times. Among them, 76.8% of the total throughput is delivered by 24 large-scale airline hubs that account for 11.9% of the total airline hubs. National transportation airport completed cargo throughput of 13.5608 million tons. Among them 95.8% of the total throughputs were delivered by 50 airports, which account for 25% of the total airports. Three big cities of Beijing, Shanghai and Guangzhou airport

passenger throughput accounted for 28.3% of all airports passenger throughput, the cargo throughput accounted for 51.3% of all airports cargo throughput. Business layout between hub airport and regional airport is imbalance, which led to the problem of saturation at hub airport and feeder airport business is pale, profit difficultly.

During “12th five-year Plan”, the problem of saturation at hub airports remained to be obvious. In order to alleviate the problem of saturation at the main hubs in China, airport expansion projects have been carried out. But because the airport construction cycle is long, passenger and cargo traffic volume is growing rapidly, the problem of saturation remains unresolved. The following picture shows the capacities and throughput of the top 20 airports in the rank of passenger throughput. It is easy to find that the actual passenger turnover of 5 airports, such as Beijing Capital airport, exceed the design capacity. The passenger throughput of many airports, including Guangzhou Baiyun Airport, Shanghai Pudong International Airport, which close to saturation.

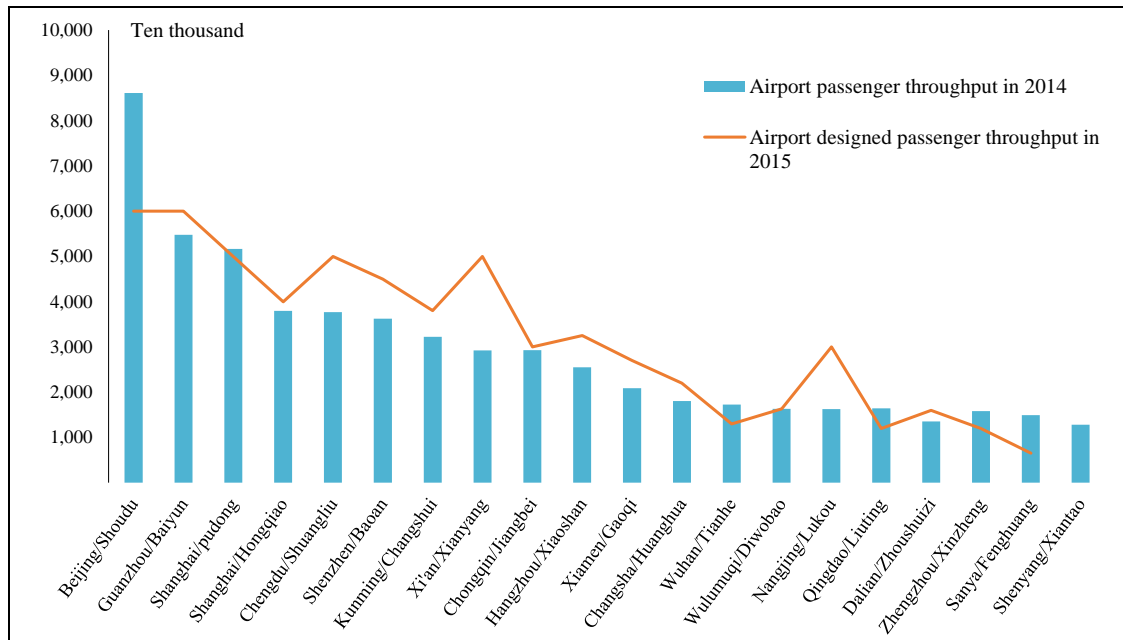


Figure.5 The Comparison in Capacities and Throughputs of the Main National Airline Hubs

Contrary to saturation at the hub airports, passenger volume of many feeder airports is limited, as a result of few flights and slow growth of passenger volume and goods business in air transportation. Therefore, most feeder airports is hard to

maintain high operation costs just depends on business incomes. According to the statistics, 130 feeder airports of all 180 airports are at losses in 2011. The improper connection between the trunk and branch network causes the excessive concentration of passenger flow, which is not only a waste of the resources, but also an unhealthy development for the air transportation industry.

4.1.6 Parcel post transportation

The overall development level of the postal service sharply improves and the postal service is in urgent need of related management and specification policies.

During the "12th Five-Year Plan" period, the general service terminal capacity of the postal industry has further enhanced, the construction of rural postal facilities has been strengthened. The management and supervision system has been further improved, and the courier industry standards and industry regulatory system has been formed. However, the postal industry also faces the challenge of transformation and upgrading, accelerates the need to adapt to the rapid growth of the express industry and promotes it as a new growth point.

Faced with opportunities and challenges of external environment and internal development, the post industry needs to be the inevitable choice of the postal industry. Postal enterprises will achieve the transformation from universal postal service to the public service, postal services to the delivery of goods, traditional postal service to a culture-spreading service, and the traditional financial mode to modern finance mode. The express industry will take the establishment of "rookie" as the breakthrough point in order to fulfill the transformation of the development of scale, standardization and automation. Sustained and healthy development of the postal industry will be achieved through restructuring and development.

Although e-commerce is arising and the express industry has developed rapidly, it is still in the early development stages of the industry regulations system to improve. At the same time, due to the lack of effective management of the industry, scale of express enterprises is small, industrial concentration is low and the business model is single. The standard is not unified and small courier business management system is

not standardized, which has affected the promotion of courier service level. The price competition among enterprises is fierce, and the growth of express business volume and the growth of business income are seriously unbalanced. Therefore, the courier industry in the "13th Five-Year Plan" period will be developed towards business scale, industry standard integration, automation of business.

4.1.7 Urban transportation

(1) The construction of urban rail system has been speeded up, the problems of initial stage of development are highlighted.

During "12th Five-year", the urban rail transit construction is widely spread all over the county. With the increase of the urban rail transit mileage under operation, the market demand of railway traffic equipment is growing significantly, which highlighted the key role of city rail transit in city traffic system gradually. With the rapid development in the past two decades, the cities of China which have urban rail traffic have increased from 3 in 2000 (Beijing, Shanghai, Guangzhou) to 22 in 2014. By the end of 2015, the total operation mileages of urban rail transit of China will reach about 3500 km. Meanwhile, it promotes the development of China's rail traffic equipment manufacturing industry. Since the rail transit equipment localization policy was launched, great achievements have been made in Chinese urban rail vehicle localization. Domestic urban rail vehicles are constantly emerging, and the capacity for independent innovation significantly enhance.

However, because of China's urban rail transit development later, although main skeleton of urban rail transportation in Beijing, Shanghai, Guangzhou, Chongqing, Shenzhen, Nanjing, Chengdu and other cities has formed basically, the public transportation network with urban railway and BRT as the backbone, buses based and a variety of ways to coordinated has not formed yet in mega cities such as Wuhan, Foshan, Dongguan, Xi'an, Shenyang, Hangzhou and Harbin. In most of the cities with population more than 3,000,000, urban rail transportation system has just started, and some cities even remain in the planning stage. In small and medium-sized cities, public transportation lines are insufficient and the frequency is low.

After several years of development, Chinese rail transit equipment manufacturing technology has achieved great successes, but on the whole, compared with foreign countries there is still a large distance. At present, there are gaps in the international domestic signal control system, and there is no company mastering core technology of breakthrough signal system alone. Meanwhile, compared with the world level, the domestic operations management technology still exists a big gap, and the level of automation and informatization is lower. Meanwhile, by the influence of management method and habits, a lot of problems exist in trams and urban fast-speed transit, such as disperse planning, complex approval, loss of statistics and management not in place. Additionally, the unified centralized management for urban rail transit industry has not started.

Financing mode of urban rail transportation is single, and financing source needs to be widened. The construction of urban rail transit, not only requires a lot of money and long time to prepare, but also is accompanied by the uncertainty and persistence of demand. The funds of rail transit construction in China at present depend on subsidies to a large extent, and the complete reasonable mechanism of construction funds-raising, management and use of urban rail transit.

(2) The public transport priority development strategy is preliminarily implemented; the bus system is still in need of improvement.

Since “12th Five-Year”, major cities have promoted the public transport priority development strategy actively, developed urban public transport system, and made a great progress in urban rail transit construction, ground public transport system investment, network density and station coverage rate. Service capability has large improvement. Some cities have gradually opened the ground bus rapid transit system such as Beijing, Guangzhou, Hangzhou, Dalian, Changzhou, Zhengzhou, Jinan, Hefei, Chongqing, Urumqi, Xiamen, and so on. The construction of priority lanes and priority signal system of urban public transportation is promoted actively to form the urban public transport priority network gradually.

The public transportation line network and the facilities and equipment are in

continuous improvement stage, but there are still a lot of problems. Many cities remain on support of governmental capital and policy to construct infrastructure like bus stops, hubs, lanes and update of vehicle equipment. In some cities, the original public facilities such as the public exchange station and maintenance field have been recalled by government to develop other projects because of its added land value. As a result, public land is eroded, which causes more universal problems including low speed of city public traffic, long waiting time, poor punctuality, inconvenient transfer and bad comfort conditions. All these problems directly affect the competitiveness of public transportation and its attraction to the public travel.

(3) The taxi market reform carried out preliminarily, the marketization process is in urgent need of speeding up.

At the request of the "Plan", the work to regulate the taxi industry successively carries out in various regions to establish and improve the taxi policy and law system around. In 2013, Beijing first planned to propose the taxi comprehensive reform measures, to orientate the taxi services scientifically, to adjust the taxi price, to control the total amount of taxis, and to establish the enterprise operation mechanism and exit mechanism for the driver. In addition, various provinces and cities successively formulated the methods on taxi service quality credit evaluation, gradually forming the market mechanism of the fittest survive; regulations on taxi qualifications management were formulated, establishing the access and exit mechanisms for the taxi driver; corporatization and intensification operation and staff management were promoted, further building smooth and orderly industry demand expression and rights guarantee mechanism.

However, the slow marketization process in taxi industry has been existing for a long time. Although the reform for taxi has been added to the overall transportation planning for a long period, the process seems slow. For example, there is no radical actions on both breaking the monopoly and developing the admittance of taxi, which leads to the failure of meeting the travel demands of urban residents. Therefore, with the advent of the mobile internet era and more and more problems raised in the taxi

market, the designated car as a result of the current era of market demand and technological innovation emerges, which has strong impact on the current taxi market. By using big data and mobile internet technology, the designated car ventilates the market and idle resources, integrates resources to meet diverse needs of users, and achieve the win-win situation for the interests of each part. Faced with the growing threat of the designated car market, a reform for taxi industry is still urgent. According to the "Guidance on Comprehensively Deepening Reforms of Transportation Issued by Ministry of Transport", taxi service should perfect capacity assignment and appropriate taxi amount. Shares can be negotiated to achieve dynamic adjustment, rental business for free use, share money or reduce the total amount of taxi to exercise control and implementation of dynamic adjustment, as well as the automotive platform. Vehicles and drivers are set certain requirements and non-operating vehicles shall not have access to the taxi platform. On the one hand, reform would be taken place in the standardized management of the designated car. At the same time, the parade (traditional taxi) contract rentals (network booking vehicles) are also required to provide differentiated services and realize the imposition management. And distinctions should be made in terms of service mode, price mechanism, vehicles and service standards between them.

(4) The concept of green transportation is gradually deepening; the non-motorized transportation system needs to be constructed.

Green transportation is one of the major themes in the 12th Five-Year Plan of Transport Development. To ease the traffic congestion and advocate green travel, the planning and construction of environmentally and slow traffic such as pedestrian and bicycle become the concern of the society. Therefore, cities have begun to adopt corresponding measures. Besides, some cities are actively discussing and promulgating the 12th Five-Year Plan of Transport Development of urban slow traffic, and proposed infrastructure of slow traffic system including bicycle lanes and pedestrian lanes to create favorable conditions for citizens to have a green travel. However, the process of non-motorized transportation construction is slow, there are

many difficulties. At present, the current planning in big cities of slow traffic is still not perfect, as the focus of modern city traffic planning are often placed in the car, the planning on the green environmental pedestrian, bicycle slow traffic system is still lacking, which makes the slow traffic system at a disadvantage. And most of the city public bicycle service system construction is not optimistic. Most cities have planned the parking pattern as parking lots based, parking outside the road for assistance and side parking for supplementary. Under this situation, some non-motor vehicle lanes are applied as side parking area. This occupation of slow traffic system not only reduces traffic efficiency but also causes security problems as riders have to drive on motor vehicle lanes or sidewalks.

4.2 Main problems and barriers of transportation development during the “12th Five-Year” period

According to the present development situation, during the “12th Five-Year” period, the transportation industry of has rapidly developed, and the main tasks and construction projects is basically carried out in accordance with the PLAN. But there are still some problems about transport development, mainly manifested in the following aspects:

The transport ability needs to be further improved, and structural contradiction between supply and demand is prominent. Since the “12th Five-Year”, the scale of China's transportation infrastructure is increased, and transport services is promoted substantially, so the conflict between supply and demand preliminary eased. However, the relative simplifying transport services gradually can't meet the passenger and freight transport market demand, the diversification of which needs to be continuously strengthened, and structural contradiction of supply and demand is still significant Main existing problems in the construction of railway infrastructure is that the railway network is incomplete. The construction speed of trunk lines still needs to be accelerated, and the construction scale of branch line should be expended. Highway transportation has been gradually

removed from the traditional "universal protection type" demand towards "high fast-improved" demand, and the shift put forward higher requirements of highway transportation efficiency and service level of travel, especially the eastern region and western region has formed a more distinct differentiation characteristics of demand, so new requirements on the strategic transformation needs to be put forward which is from meeting basic contradiction between supply and demand adjustment to solving structural contradictions. Problem of transportation service ability mainly shows that inland waterway passenger service level is not high, and contradiction between supply and demand of different regional is outstanding, Coastal ports are overworked, and the capacity of some ports is remainder. For air transportation, the large airports saturation problem is a difficult problem in the development of aviation industry in recent years. The cohesion between the trunk and branch network is inappropriate, which causes the excessive concentration of passenger flow. The result is not only the waste of resources, but also disadvantageous to the healthy development of the air transport industry. The capacity of urban transportation system is insufficient, and infrastructure construction is lagging, and service quality needs to be improved, so as to meet the diversified and multi-level travel demand.

The construction of comprehensive transportation system develops slowly, and the integration process should be speeded up. The process of constructing of comprehensive transportation system of China is slow, and transport hub with comprehensive functions is not constructed in large areas, and the effective cohesion among the various modes of transport need to be strengthened. During the "12th Five-Year" period, there are some problems about comprehensive transportation system, such as the lack of structure planning, positioning is fuzzy, hierarchy is not clear, and development goals are not clear, location and reasonable structure proportion among the various modes of transport lack deep research in different regional comprehensive transportation system. The various modes of transport has basically formed a relatively independent legal system of the leading method, because the legal system is not perfect, and different authorities of different modes of transport,

the policy formulation lack of planning and coordination, so the construction of regulations of comprehensive transportation system is not perfect, between the legislation of different modes of transport development is not balanced, separated from each other and legislation contents etc. to some extent hindered the integration of a variety of modes of transport development, and the overall efficiency of the comprehensive transportation system can't play well. There is no lack of supporting policies and incentive measures on the construction of regional integrated transportation and overall coordination, and the network structure is still irrational, so hub connection is required to be strengthened further.

The pattern of the transportation development still needs to be adjusted, and the process of transportation marketing is a little slowly. During the “12th Five-Year” period, the reform of the government is speeded up to improve the process of transportation marketization. However, the degree of the differentiation between the government and enterprise is still not suitable so that enterprises cannot be devoted to the fairly-competing market independently and cannot become an active part in the market economy. As a result, the process of marketing goes slowly, the market competition mechanism is not perfect, the situation of monopoly still exists, the mechanism of price forming and management is not suitable for the demand of market economy and the administrative and political obstacles that hinder the marketing process are not cleared. The China General Railway Company is still a monopolistic company lacking competition and the market mechanism is not formed in the railway field. The air transportation market is dominated by state-owned airlines for long and the market share of low-cost private airlines is less than 5%. During the “12th Five-year” period, there are some disadvantages in routes approval, policy environment, airspace resource, financial service for private airlines, so that the development is limited. Private airlines are faced with the difficulties, such as lacking airplanes and routes, and even less popular routes. The government is also faced with great pressure in the construction and management of public service ports because there are some difficulties in the transformation of developing way and the process of

transportation marketing is slow. It's still slow for the process although the 'improving the reform of taxi transportation' has been included in the traffic planning for many years. There are public voices on the suggestions like breaking the monopoly, improving the access system, etc., but there are no actions so that lead to many society events.

Reform of the management system and mechanism needs to be deepened, and the responsibilities should be clearer. During the "12th Five-Year" period, China further deepens the reform of traffic management systems and mechanisms, the implementation of "Super Ministry" system make an important step to the establishment of a comprehensive transport management system. However, due to the various modes of transport in terms of operation and management under the profound influence of the past, and development modes which coordinate traffic integration of the variety of transport is not yet complete. The coordination of Department of National Council and local road transport bureau need to be strengthened, and there is a lack of interactivity for the various modes of transport in the terms of operation and management, and the consistency of different transportation modes' laws and regulations are very bad. To realize goals for "one-invoice" of freight transport, "one vote" of passenger transport, information services of "one-stop" is still need long-term reform as the motive force. Under the "Super Ministry" reform, the railway system broke the long-standing situation of railway non separation; railway transportation supervision will usher in a new breakthrough. But on the current development situation, related responsibilities and relationships needs to be further rationalized; railway reform has a long way to go. Railway reform is still showing a situation that "the upper but not the lower moved on", it has to be further deepened, and if the State Railway Administration wants to give full play to supervisory function, and there are many problems need to be solved.

The mode of traffic investment and financing is too simplification, the conflict between supply and demand in terms of funds is extremely prominent. Until now, there is no infrastructure investment and financing system which adapt to

the transportation characteristics of the industry and market development needs. In the construction of transportation infrastructure investment, ports, toll road projects can achieve social capital investment to give priority, but construction of other projects require the government to give priority to invest. Government basically adopts the method of bank loans and the issuance of bonds to debt financing, except traffic special funds and the budget funds for transportation projects of the principal, and the mode of transport investment and financing is too simplex. As the annual large-scale projects start, the scale of the government transportation debt continues to expand, asset-liability ratio quickly rises, and high debt and high debt ratio cause a large government debt and certain debt risks. However, transportation infrastructure construction in China is still in the stage of the network upgrading and improving, in order to make transport infrastructure support and guide the socio-economic development and urbanization, there must be greater efforts on transport infrastructure construction for a certain period. As the proportion of non-profit projects in transport infrastructure projects is increasingly increased, projects are less profitable, and it is difficult to attract funding, so investment in financial capital needs to be increased, while under the influence of the policies on financial capital and local financing platforms cleaning up, there is some lack of funding and financing is more difficult, and contradiction between supply and demand of funds is more significant.

Some indicators in the “plan” were set unreasonable, and the “plan” plays a weak role in guiding the transportation development. At the early stage of formulating the PLAN, due to the lack of accurate demand forecasting process, as a result, the cognition of infrastructure demand is not clear, and the settings of part of the building goal’s value is unreasonable. Meanwhile, influenced by the economic environment at home and abroad during the “12th Five-Year” period, the construction of some projects goes slowly, and the goal cannot be obtained. For water transport, because green and safety indicators have been a weak link for long period, appropriate technical guidelines are missing in the past, and there is a lot of space to advance, so during the “12th Five-Year” period, both of their indicators exceeded expectations for

this period. For air transportation, 55 new airports are planned to be built, and the goal of airport construction is far from completion. By the end of 2013, only 18 new airports are constructed with a completion rate of 33%. The difference between construction speed and the target number is very large.

Transportation approval process is relatively cumbersome, and the execution efficiency needs to be improved. For a long time, the transportation industry approval process is very complicated, administrative examination and approval matters are messy, implementation strength needs to be strengthened, forward hearing more pre-approval conditions and repeatability, Such as mechanism of coordination with government departments is weak, synchronous accept, lead coordination, information sharing, information recognition methods has not been popular, formalities for examination and examination time is long, efficiency and service level for examination and approval needs to be strengthened. Marine and maritime administrative examination approval matters and the approval process is too cumbersome, mainly includes the name of item, the way of accepts, the conduction period, the department of accept, the license authority, the approval process, submit materials directory and so on, figure up 40 items. The project of Air airport has the disadvantage of long construction period, combined with the cumbersome project examination and approval process, and examination and approval cycle is so long, all above lead to the slow construction of air transport projects. From the project planned to the project completed and put into production, usually need seven to eight years or even longer. During the “12th Five-Year” period, although some of the measures, imposed on the lower part of the examination and approval authority, simplify the approval process, but the scope is limited and the efficiency is no significant.

Traffic law and regulation system needs to be established, and the facility maintenance is suffering the bottleneck. With the transform of the economy and the construction of comprehensive transportation, the existing laws and regulations in transportation industry cannot meet the demand of modern transportation. Conflicts may happen sometimes between the existing laws and the current development. The

development of transportation has been seriously hindered by the low level of regulations and the lack of coordination among various laws. As for highway, with the fast development of economic society in our country, as well as the development of highway construction and the transformation of logistics industry, part of laws and regulations clause does not apply to the actual situation of the current or part of them affect the healthy development of highway transportation even become the bottleneck of the highway development. The phenomenon still exists of inland waterway "heavy construction, light pipe support", so the tasks of maintenance channel are increasingly heavy. Airspace resource tension is an important reason for limiting the development of general aviation and the obstacles is also difficult to solve in the short term. The rules of the current "Civil Aviation Law" and "the basic rules of flight" put forward airspace resource use principle, but for how designated airspace and how to use it between civil and military airspace not expressly provide.

The innovation ability of traffic science and technology still needs to be strengthened, and the process of personnel training in scientific research is slow. After several years of development, Chinese rail transit equipment manufacturing technology has achieved great successes, but on the whole, compared with foreign countries there is still a large distance. At present, there are gaps in the international domestic signal control system, and there is no company mastering core technology of breakthrough signal system alone. Meanwhile, compared with the world level, the domestic operations management technology still exists a big gap, and the level of automation and informatization is lower. Operating rail lines in China are basically in a Sino-foreign cooperative mode, and the core technology is still in the hands of foreign, so it is difficult to achieve true localization, which also is one of the reasons for causing the construction of Chinese railway industry and high operating costs. Urban rail transit is developing rapidly, but the contradiction of the shortages of talents is obvious. Both the operators of operating positions and the top management personnel, technical personnel, are all grossly inadequate. About 3000 people primarily for the air transportation are trained to be pilots each year in the domestic

flight schools by the approval of CAA, and. Additional pilot training using a single "tie pattern oriented training" mode, but there are no training programs for the pilots of general aviation. In recent years, with the development of General Aviation, part of the general aviation company is approved to conduct pilot training. But private companies are far weaker in professional, systematic than professional training institutions. But in the face of rapidly expanding General Aviation, general aviation pilots training system needs to be established.

The rigid constraint of land use and environment is starting to appear; security issues are still striking. The "12th Five-Year" period is a critical period of the transformation of Chinese economic and social development and transportation development. The contradiction of the ecological environment carrying capacity pressure, resource requirements, global warming etc. is further highlighted with the development of construction. Up to now, the Green low carbon recycling development of transportation system has not yet been established, and there is lack of viable mechanism system for monitoring and evaluation. Green low carbon recycling transportation system development framework has not yet been fully raised, forward-looking policy research of letting "green transportation" leading the modernization of transportation is not enough. Construction of statistical analysis of data and database platform for commercial vehicle energy consumption and emissions data has not been completed, and comprehensive evaluation index system for green low carbon recycling transportation system is not perfect. Energy saving and environmental protection is more relying on the Central Government to promote, and enterprises don't have enough enthusiasm to play. In response to new issues such as the atmospheric haze, water and soil pollution and ecological protection, there are lack of technical support and initiatives. Large-scale infrastructure construction and maintenance demands for land, construction materials and energy is huge. With the expanding scale of highway construction, east region faces severe resource constraints; the Midwest region faces the pressure of ecological environmental protection about fragile area and National ecological barrier area.

Sustained attention needs to be drawn even if the status of traffic safety in China has improved during the “12th Five-Year” period. In recent years, significant traffic fatalities still exist, and the number of people killed in the traffic accident stays at a high level, and economic losses caused by traffic accidents is up to several billions of dollars. Transportation safety regulations and emergency plans is lagging, and part of legislation enacted at an earlier time, and the contents of work safety and emergency is less, response and preparedness system is not perfect, and there are lack of certain areas of special contingency plans. In addition, the process of informatization in transportation safety needs to be accelerated. Intersectional, inter-regional information-sharing and coordination of work safety is not high. Most important is that the lack of total transport infrastructure and equipment, and security infrastructure project has historical debt, part of ships is in a poor security situation, and safety monitoring and emergency rescue equipment and facilities is generally insufficient.

5 Strategies for ensuring the plan completed on schedule

5.1 Adjust the unreasonable planning objectives, simplify the approval process, and promote the comprehensive completion of the “plan”.

Due to the unreasonable phenomenon within parts of the indexes in the "12th Five-Year Plan of Transport Development", the accomplishment ratio of the planning goal is low so far. Therefore, it is suggested that the planning objective should be adjusted based on practical construction situation, as well as taking effective measures to accelerate the implementation of the planning goals at the same time.

In the late period of "12th Five-Year", the country should strengthen overall coordination, in order to guarantee the achievement of the planning goals. Moreover, the departments should continue to earnestly implement the overall deployment and relevant requirements of the CPC central committee and state council on accelerating transport construction, strengthen the structure adjustment of transportation and

promote the construction of comprehensive transport system, to ensure the smooth achievement of the planning goals. Meanwhile, both central and local governments must further strengthen overall coordination on the premise of high quality, simplify the approval process and relevant procedures, and shorten the processing time of corresponding supporting documents as much as possible. Thus, the period of examination and approval will be shortening, and the efficiency will be increased. Furthermore, we should pay attention to the connection of the process of examination and approval, strengthen the coordination of inter-industry, national and local, inter-department which is involved in transportation construction project. With the strong support of the departments concerned and the local governments, speeding up the construction of transportation, especially the construction of key project, should be a priority of all.

5.2 Promote the reform of investment and financing mechanism, increase the intensity of investment, and extend the financing channels of transportation.

During the "12th Five-Year", the development of transportation industry is faced with the problems, including the difficulty of financing and the tremendous pressure on the security system. In order to guarantee the achievement of the planning goals, it is urgent needed to innovate the investment and financing modes, actively expand the financing channels of transportation, make full use of the decisive role of the market in the allocation of resources, and deepen the cooperation with financial institution. It is also important to promote diversification of investment, build the environment of construction and operation with fair competition and equal market access, and explore the new mode of investment and financing of construction of transportation facility. In addition, it is encouraged to further increase the intensity of opening and cooperation in the field of traffic construction by way of the comprehensive development of traffic construction and land, to form the multi-level and diversified investment pattern and meet the fund demand of sustainable transport.

In the construction of comprehensive transportation, it is needed to pay attention to optimize the property structure and increasing the investment in infrastructure constantly at the same time. And the subsidy of the Infrastructure for public welfare, including western railway, inland water transportation, feeder airport, the national and provincial trunk roads, rural roads and rural postal facilities, should be increased with government funds, to promote the further perfection of comprehensive transportation.

In the railway transportation, the country is exploring the diversified investment modes and encouraging the non-public capital into the railway sector. The proportion of foreign investment is growing during the "12th Five-Year". In order to accelerate the construction and development of railway transportation, it is needed to continue deepening the reform of investment and financing and enhance the vitality of the railway development. First of all, it is necessary to arouse the enthusiasm of various aspects and widely attract social capital into railway construction to improve the situation of single railway investment channels. In order to ensure the interests of investors, it is needed to further decontrol the price of railway transportation, make full use of the comprehensive development policy of railway land and use the profit gained from development to support the development of railway transportation. Meanwhile, we also need to improve relevant system, give appropriate discourse to private enterprise, build the system to protect the interests of investors, and provide the fair market order for the ordered access of non-government capital. And then, it is needed to optimize the property investment structure while increasing the intensity of investment, ensure the key project fully funded, and increase subsidy of fiscal fund to the Midwest railway for its rapid construction. At the same time, the vehicles and equipment, which are energy-saving and environmentally friendly, should be actively invested to expend the use of new energy, new product and new material and reduce energy consumption of the railway.

In the highway transportation, the shortage of capital has been one of the main determinants to restrict the construction and maintenance of highway at this stage. And it is also a bottleneck which needs to be solved urgently to acquire the

development target in the "12th Five-Year" period. The country should distinguish the emphasis of investment in view of the difference of economic attributes among the national highway, highway and rural roads. Besides, the local government should further display its functional role, get the relevant experience from developed country and expand financial channels.

In the water transportation, the country should vigorously encourage social capital to increase fund to input social undertakings and innovate financing methods to expand the financing channels and increase investment continuously at the same time. Meanwhile, it is needed to establish the security system of construction fund for the Yangtze River golden waterway, and strengthen the infrastructure construction including channel, support system and inland port in mid-west area. Furthermore, the country should allocate a portion of money to guide the standardization of ships and obsolescence old transport ships in advance. The competent department of local traffic should coordinate relevant departments actively, endeavor to put the development funds of inland water transportation into the public finance system, bring the maintenance fund of Channel management and emergency capability under fiscal budget, and introduce policy to support investment, land and revenue. The local government is encouraged to increase financial investment, set the petroleum pricing and the reform of tax and fee overall. As well, the central government should transfer payment to local and issue bond funds of local government in order to set up a stable special fund for the construction of inland water transportation, and scale up step by step. The department of local traffic is heartened to set up the investment and financing platform for inland water transportation based on the assets and earnings of navigation and electricity junction, lock, port and pier. The local government can adopt various measures to strengthen financing ability of the investment and financing platform. And by adopting the diversified market mode of investment and financing, it can attract the social capital into the development of inland water transportation.

5.3 Deepen the reform of the traffic management system, guarantee the coordination of different departments, and promote regional balanced development.

In the “12th Five-Year Plan”, in order to implement the super-ministry management system adapted to comprehensive transport system, speed up to progress the construction of comprehensive transport system and promote the effective connection of various transportation modes, China’s transportation management system carried on the reform of “Super-Ministry System”. In order to ensure the strict implement of this measure, it is needed to further deepen the reform of railway system, straighten out all relationships of railway system after the separation of enterprise from administration, speed up the transformation of development approach, boost the innovation of system and mechanism, strengthen the governance according to law and the scientific management, establish scientific high-efficient enterprise's operating mechanism and ensure the sustainable coordinated development of railway. At the same time, coordinating the relevant state ministries and China Railway Corporation, aimed at the new management pattern formed within the railway after the reform, the relevant state ministries and China Railway Corporation definitude their two-stage enterprise’s management function orientations. China Railway Corporation needs to vigorously promote the progress of marketization of enterprises, promote the reform of marketization of railway and push on the construction of railway. The National Railway Administration needs to be further actively play its regulatory functions to supervise railway’s safe production, transportation service quality and railway engineering quality, then perfects the supervision and management system and technical standard system.

While strengthening the construction of interregional comprehensive transport corridor, the state emphatically solves the traffic integration problem of inter-city rapid transport within the urban agglomeration, central city and the surrounding area. In order to ensure the implementation of all the policies that promote transportation

construction, it is needed to continue to strengthen the coordination between industry sectors, coordinate all the provinces (autonomous regions and municipalities) government, break the barrier of the administrative division, strengthen interregional cross-provincial project cooperation, ensure the coordination of the cross-regional planning and promote the co-operation of various transportation modes plan's implementation. For the construction of regional channels, the "Dead End Highway" phenomenon in China's highway construction is more obvious, due to the lack of communication and coordination between local governments and the differences of the regional economic development. In order to remove the "Dead End Highway" phenomenon, governments and highway competent departments at all levels should break the fetter of the system, overcome the difficulties, help each other, share the information and strive to quickly solve the "Dead End Highway" phenomenon. The state shall link up the traffic bottleneck segments of the national highway and provincial channels, optimize the network structure, improve the transportation capability and transportation accessibility, support and drive the development of regional economic and social integration with the traffic integrative development. In addition, the ecological civilization construction is now placed in an important position, so it is urgent need to solve the problem for the current transportation construction development that how to make the approach of sustainable development and realize the request of "Green Traffic". The transportation construction projects should do a good job in the feasibility analysis, learn the foreign advanced experience, apply the advanced technology and materials, avoid destroying the ecological environment as far as possible, pay attention to the communication and coordination with the competent department related to the environmental protection and land sources management, and vigorously promote the usage of electric power maintenance equipment and environmental conservation materials.

Traffic competent departments should pay attention to the malconformation of regional development in our country, and pertinently adjust the policy support, financial subsidies and project construction to ensure the proportionality of Chinese

traffic construction. At present, from the performance of construction of all aspects of the national highway, high net and rural highway, the difference between the construction and maintenance of Eastern and Western highway is obvious. In the East and Central region, the constructing assignment of “12th Five-Year Plan” has been completed basically or can be guaranteed to be completed by 2013, while in the West region, the constructing assignment of “12th Five-Year Plan” is difficult to be completed due to the relatively lagging economic development and the poor national conditions.

5.4 Strengthen the leading role of the plan, guarantee the implement of supervision and management, and focus on the review and revise of the “plan”.

The transportation development plan is based on the current run and aimed at the long run, gives consideration to the economy and society, the development of resources and environment, and the forward-looking and guiding advanced design. The appropriate formulation and strict implementation of the Plan can ensure the unity and coordination of transportation system, avoid the redundant construction of various transportation modes’ infrastructure, and improve the efficiency of the overall transportation system. In order to ensure the smooth realization of the goal of “12th Five-Year Plan of Transportation Development”, the state should further strengthen the Plan’s leading role, continue to strengthen the transportation structure adjustment and promote the construction of comprehensive transport system in accordance with the spirit of the Plan. The state should take the Plan as the top strategy, establish the thought mode that considering various transportation problems from the perspective of comprehensive transportation, get rid of the bondage of the traditional method of single mode and local development from the perspective of integrality, overall, long-term. Relied on the Plan, the state achieves the regional development goal, laying a good foundation for establishing a real integrated transportation system. All local governments should strengthen the development of local relevant policy,

actively link up with the national plan, implement the key traffic task of “12th Five-Year Plan” to the special project, and strengthen the Plan’s leading role, around the content requirement of the “12th Five-Year Plan” and combined with the local actual situation.

In the implementation of the Plan, according to the progress of the key project in the “12th Five-Year Plan”, the state should complete the implementing evaluation, adjust the policy timely, and strengthen the safeguard measures, to ensure the achievement of the “12th Five-Year Plan” goal. The Plan’s goal, has yet to be not completed by the end of 2014, should be classified as the key task, and the state practically strengthens the coordination of all relevant departments, strengthens the supervision of the Plan implementation, strengthens the supervision of the planning formulation and planning execution, strictly controls and integrated optimizes the transport resources. In addition, in order to realize the continuous transportation security and stability, while speeding up the construction of transportation, the state strengthens the traffic project safety supervision, adheres to the policy of "safety first, prevention first", properly handles the relationship between security and development, speed, efficiency, quality, fully strengthens the safety infrastructure construction, perfects and improves the safety management system, strengthens the safety supervision management, increases the investment in safety facilities, enhances security research capability, promotes the team building for safety, and continuously improves the emergency support capability.

During the last year of “12th Five-Year Plan”, it is necessary to timely adjust and revise the related content of the plan according to the target completion situation. At the same time, In order to guarantee the sustainable development of transportation, the corresponding industry planning should be reviewed and amended combined with the new environment and new requirements in the development of transportation. At this stage, there has not been a clear system on the formulation and revision of long-range planning. Therefore, government departments need to clear the relationship of long-range planning and the five-year plan, and to develop long-term planning (20

years and above) as the fundamental basis of middle (5-10) construction projects examination and approval system. The implementation of the recent construction is guided by the relatively stable long-range planning, to avoid the frequent changes in the planning content and to enhance the authority of the planning results.

5.5 Establish and improve the system of technology innovation, strengthen scientific and technological support, and enhance the capacity for independent development.

In order to ensure the planning smoothly, it is necessary further enhance the level of technology and equipment. The transport sector should learn from the Chinese Private Sector about ways of the project operation, the management mode, etc. At the same time, by strengthening the development and application of new technology and new equipment in transportation, the marketization and industrialization of technology and equipment with our own intellectual property rights should be accelerated and advanced to promote the upgrade and expand of related industries. Equipment energy consumption and emission limit standards should be established, research of policy related to equipment and technology should be strengthened, and the modernization level of technology and equipment should be promoted. In addition, the construction and management of National Key Laboratory of science and technology platforms and industries are supposed to be strengthened, to promote the formation of industry university research cooperative innovation alliance.

Relying on key railway projects, it is needed to give full organization play to the role of the railway construction unit and enterprises and technological advantages of research institutes, focusing on key technology, strengthening scientific research, to make major progress in the theoretical calculation, construction method, process and equipment for major development, and to enhance the level of technology in railway construction. By special funds of the projects of national science and technology support platform and the west traffic construction, the support of golden waterway related research projects should be promoted. It is needed to speed up the formulation

(revise) for standards of energy saving and emission reduction of Inland Waterway Port construction as well as energy saving and environmental protection, to accelerate the standardization of ship type development. The provinces (cities) are supposed to increase the inland waterway research support, to promote the research and development of major science and technology, to strengthen original innovation, to strengthen the introduction and popularization of advanced technology, and to constantly improve the technology content of the Yangtze River waterway. It is necessary to strengthen the construction of inland water transport of scientific and technological innovation, focusing on strengthening the management of inland waterways and sedimentation reduction, ecological waterway construction and maintenance, river channelization, port construction and renovation, construction technology and equipment, port logistics, transport of dangerous goods safety, energy saving and environmental protection, and organizing major projects technical research such as the ability to enhance the Yangtze golden waterway, waterway system control technology, ship type standardization, Three Gorges Project Construction and operation of major projects. It is also needed to accelerate the pilot demonstration projects such as the promotion of safety emergency, market credit, decision analysis and information technology major projects and national container rail sea intermodal transportation networking application, to carry out the construction of transportation logistics public information platform to improve the implementation of the pilot project, and to accelerate the ability training, flight technical expertise into the professional.

5.6 Improve the construction of legal systems, strengthen policy supports, and accelerate the industrial environment development.

Laws and regulations are the most powerful protection of traffic and transportation to achieve strategic objectives towards the direction of development. And legal system is an instrument for implementation. So we can build a reward

system in innovation, technology and implementation. In the transportation development process, legislation is need to guarantee the achievement of the strategic goal. Comprehensive transportation system contains various modes of transport and all sectors of the national economy, including a number of links. As a result, transport policy and regulations and standard system should be established according to the different modes of transport and transport links to adapt to the new situation and in accordance with the law of development, and to provide legal support for the scientific management and effective convergence of various transport modes. Therefore, we should strengthen efforts to improve policies and regulations, to establish and improve the system of laws and regulations. In terms of highway, construction of laws and regulations system should be further cleared and perfected, and functions and responsibilities of supervisors at all levels of government and departments should be explicated, so that construction and maintenance of highway can be processed according to the law. In terms of water transport, laws and regulations needed should be formulated as soon as possible, and supporting regulations including port security port shoreline management, shipping management, channel maintenance, construction, safety and anti-pollution and other aspects should be introduced, to provide legal support to solve the outstanding problems in the industry development. The countries must combine with the practice to draw local laws and government regulations on port management, channel management, and transportation management. Enforcement activities of laws should be standardized, and administration according to law should be actively promoted. The macro-control system of inland waterway transportation should be perfected with the comprehensive use of legal, economic, technical, administrative and other means. The port price system should be further improved, price policies that support the development of inland water transport should be implemented, policy support to the development of boundary river navigation power junction should be increased, policies and measures of aerospace hubs development and management should be perfected, and paid use of the coastline resources should be explored. Policy guarantee measures in the construction of comprehensive transportation system, and promotion of transportation

investment and financing mechanism innovation and deepen of the tariff reform should be strengthened. In the provinces, autonomous regions and municipalities, a variety of policies to support to promote local development of transport should be introduced directly, such as encouraging and guiding the private capital entering the traffic field, accelerating the water transport development, promoting the development of the aviation industry, accelerating the construction, and implementation and guidance of an integrated transport hub, to provide a fair and favorable industry environment for the development of enterprises.

Appendix

The Completion of the Main Index Proposed in the “Plan”

	The Index	2010	2015	2013	2014	Completion proportion	Expectation
Infrastructure facilities	The total mileage of road network (ten thousand kilometers)	400.8	450	434.6	446.4	93%	Can be completed
	The total mileage of highway (ten thousand kilometers)	7.4	10.8	10.4	11.2	112%	Completed already
	The total mileage of national highway opens to traffic*(ten thousand kilometers)	5.8	8.3	8.3	11.1	212%	Completed already
	The proportion of highway covering city/ town with population more than 200000(%)	80	≥90	93	/	/	Completed
	The total mileage of road with level 2 or above (ten thousand kilometers)	44.7	65	52.3	54.6	49%	Cannot be completed
	The proportion of national road with level 2 or above ** (%)	60	≥70	/	/	/	/
	The proportion of national/ provincial road under major/moderate construction annually (%)	13	≥17	/	/	/	/
	The general technical condition of national /provincial road (MQI, %)	72	>80	84.7	/	/	Can be completed

Implementation review of the 12th Five-Year Plan of Transportation Development

	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	The total mileage of rural road (ten thousand kilometers)	345.5	390	378.5	446.4	227%	Completed already
	The completion percentage of national highway transport hub for passenger and freight (%)	21、13	50、40	/	/	/	/
	The fitness of coastal port handling capacity	0.98	1.1	0.90	/	/	Cannot be completed
	The number of deep water berth of coastal port	1774	2214	2063		66%	Can be completed
	The total mileage of high level inland river channel (ten thousand kilometers)	1.02	1.3	1.21		67%	Can be completed
	The qualifications rate of high level inland river channel (%)	54	70	/		/	/
	The total mileage of improved channel with level 3or above within 5 years(kilometers)	2700	3500	/		/	/
	The total number of civil airports	175	≥230	193	200	45%	Cannot be completed
	The number of the post office (ten thousand)	4.8	6.2	/		/	/
	The operation mileage of national railway (ten thousand kilometers)	9.1	12.0	10.3	11.2	72%	Can be completed

Implementation review of the 12th Five-Year Plan of Transportation Development

	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	The operation mileage of express railway (ten thousand kilometers)	2.0	4.0	/		/	/
	The proportion of double line railway (%)	41	50	46.8	50.8	109%	Completed already
	The rate of railway electrification (%)	46	60	54.1	55.0	64%	Can be completed
	The operation mileage of urban rail transit (kilometers)	1599	3000	2746	2816.1	87%	Can be completed
Transport service	The railway passenger volume (100 million-people)	16.8	40	21.06	23.6	29%	Can be completed
	The railway freight volume (100 million-tons)	36.3	55	39.7	38.1	10%	Can be completed
	Railway rotation volume of passenger transport (100 million-people km)	8762	16000	10596	11605	39%	Cannot be completed
	Railways rotation volume of freight transport (100 million-tons km)	27644	42900	29174	27530	0%	Cannot be completed
	Percentage of operational high class bus	28	40	63	70	350%	Completed already

Implementation review of the 12th Five-Year Plan of Transportation Development

	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	Percentage of operational heavy duty vehicle, special vehicle, and van	17.9, 5.4, 19.2	25,10,25	25.7, 5.5, 18.2	/	/	Cannot be completed
	Average ship tonnage for oceangoing, coastal line and inland river (ton)	23000,4800,480	25000,6500,800	/	/	/	/
	Standardization of inland river freight ship type (%)	20	50	40	/	/	Can be completed
	Standardization of Yangtze River artery, Xijiang shipping artery and Beijing-hangzhou canal ship type (%)	<40	70	/	70	100%	/
	Motor tractor to trailer ratio of roadway drop and pull transport	1:1.2	1:2	/	1:1.8	83%	/
	Rate of villages/towns with bus passed (%)	98,88	100,92	98.2, 91.9	98.95, 93.32	10%、98%	Completed already
	The average travelling speed on national road(km/h)	57.5	60	58.7	/	/	Cannot be completed
	The decline rate of stopping time for loading every thousand tons of cargo at major coastal ports (% , base year: 2010)	15		12.5		15	100%
	Civil aviation flight punctuality rate (%)	81.5	>80	72.34	68.37	-875%	Cannot be completed
	The coverage of village (towns) post office, post station (%)	75, 51	>95, 80	/	/	/	/

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	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	The coverage of major express delivery enterprises network in municipalities, provincial capital and provincial cities (%)	95, 88.9	98, >90	/	/	/	/
	The bus ownership in cities with population more than 3 million, 1~3 million and less than 1 million. (per ten thousand people)	15, 12, 10		/		/	/
	The coverage rate of bus station within 300 meters in the cities with population more than 3 million, 1 ~3 million and less than 1 million. (%)	≥85, ≥75, ≥70		/		/	/
	The total mileage of nationwide bus transit lane (kilometers)	3725.8	10000	5890.6	6897.3	49.5%	Cannot be completed
Traffic technology and information	The contribution rate of scientific and technological progress (%)	50	55	51.7	54	80%	Can be completed
	The monitoring coverage rate of national/ provincial important road sections and inland main channel (%)	30	≥70	35*	/	/	Cannot be completed
	The monitoring coverage rate of the key operational transportation equipment (%)	70	100	80	/	/	Cannot be completed
	The average coverage rate of highway electronic toll collection (%)	20	60	/	46	65%	/

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	The Index	2010	2015	2013	2014	Completion proportion	Expectation
Green transportation	The descend rate of energy consumption and carbon emission in unit transport turnover of vehicles in operation (% , base year: 2005)	10, 11		11.7, 11.7		/	/
	The descend rate of energy consumption and carbon emission in unit transport turnover of ships in operation (% , base year: 2005)	15, 16		16.3, 16.3		/	/
	The descend rate of energy consumption in unit transport turnover of passenger/freight vehicle in operation (% , the base year: 2005)	6, 12		/		/	/
	The descend rate of energy consumption in unit transport turnover of ocean and inland waterway freight ship (% , base year: 2005)	16, 14		/		/	/
	The descend rate of comprehensive energy consumption in unit throughput capacity of port production (% , base year: 2005)	8		/		/	/
	The descend rate of energy consumption and carbon dioxide emission per ton kilometer in civil aviation transportation (% , base year: 2010)	>3		/		/	/

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	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	The descend rate of land area for unit travel volume on national/provincial highway (% , base year: 2010)	5		11.5		/	/
	The growth rate of pass capacity for unit frontage length of the coastal harbor (% , base year: 2010)	5		4		/	/
	The descend rate of main pollutant emission intensity including TSP and COD(ton/a hundred million ton km) (% , base year: 2010)	20		30*		/	/
Safety emergency	The descend rate of accidents and deaths per ten thousand operation vehicle kilometers (% annual average)	/		6.6%, 8.2%		/	/
	The descend rate of accidents and deaths per million vehicle kilometers of urban passenger transport (% annual average)	/		10.7%, 11.2%		/	/
	The descend rate of accidents and deaths per million tons of port handling capacity (% annual average)	5		16.2*, 15.1*		/	/
	Effective rate of life rescue on water (%)	>93	>93	>93	>93	100%	Completed already

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	The Index	2010	2015	2013	2014	Completion proportion	Expectation
	The arrival time of highway emergency rescue of general disaster case(h)	≤8	≤2	/	/	/	/
	The arrival time of regulatory relief plane in coastal key water area emergency rescue(min)	≤150	≤90	60	/	/	Can be Completed
	The arrival time of regulatory relief ship for emergency rescue in the Yangtze River trunk line and Pearl River water system as well as the important segments of Heilongjiang River(min)	≤45	≤45 (part ≤30)	/	≤45	100%	/
	The major accident rate of civil aviation flight per million hours (five years cumulative)	0.05	<0.2	0	0.03	100%	Completed already