Outline for Building China's Strength in Transport

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Supported by

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

based on a decision of the German Bundestag

Imprint

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by:
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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Project:
The Project “Sino-German Cooperation on Low Carbon Transport” is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through its International Climate Initiative (IKI) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

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Photo credits
Adobestock/Onlyyouqj (Cover page and back page)

Beijing, 2019

Contents

Background

On September 19th, 2019, the *Outline for Building China's Strength in Transport* was released. The document was approved by the *Communist Party of China Central Committee* (CPCCC) and the *State Council* and describes the future vision and roadmap of China's transport sector with a clear message: China wants to become a global transport superpower by 2050.

The original text of the policy can be found here.

The first mention to the *Outline for Building China's Strength in Transport* dates back to January 18th, 2017, when the *Chinese Academy of Engineering (CAE) held a* kick-off meeting on "strategic research on China's strength in transportation". The policy was since then elaborated by a drafting group headed by Vice Premier Liu He and was coordinated by the *Ministry of Transport of the Government of the People's Republic of China* (MoT) with the support of relevant departments of the *State Council* and local governments. More than ten research institutions, including the CAE were involved in the drafting process.

Long-Term Strategic Development of China's Transport Sector in Two Phases

The *Outline for Building China's Strength in Transport* is a long-term oriented top-level and systematic guidance plan. It lays the foundation of China's ambition to transform from a speed- and scale-centered and comparatively isolated development model towards an innovative, quality- and efficiency-centered integrated transport model.

During the last decades China underwent a holistic socio-economic transformation, which accelerated after the opening-up reforms in late 1970s. Along with rapid economic growth and urbanization came the large-scale expansion of the country's transport infrastructure – as the foundation of overall economic development and increasing life quality. By the end of 2018, the road network in China had a total length of 4.847 million kilometers (60 times that of 1949) and the total passenger volume grew from 136 million passengers in 1949 to about 17.9 billion passengers moved by public transport in 2018 (see *Table 1*).

Year	Railway	HSR	Road	Expressway	Inland waterway	Port berth	Airport	Scheduled Flight Route	Total Passenger Volume	Total Cargo Volume
1949	26,400 km	-/-	80,783	-/-	74,705 km	160	36	12	136 million passenger	187 million tons
2018	132,000 km	29,000 km	4.847 million km[1]	143,000 km	127,000 km	23,919	235	4,945	17.9 billion passenger	50.6 billion tons
Factor	5	-/-	60	-/-	1.7	148.6	6.5	412.1	131	271

Table 1. Development of China's transport infrastructure 1949 to 2018, selected numbers (Source: Own collection based on numbers presented by Li Xiaopeng, Minister MoT)

However, with the rapid development came problems such as environmental degradation, severe air pollution, and high carbon emissions among others. The transport related carbon emissions increased from 397 million tons in 2005 to 1.04 billion tons in 2018[2], accounting for about 10 percent of the total emissions in China.

In its *13th Five-Year Plan* period (2016-2020)[3] China has set and implemented various ambitious measures to develop its transport sector in a more integrated and sustainable manner. Besides the further expansion of its basic transport infrastructure, ambitious goals are set to promote an integrated, environmental-friendly, innovative and technology driven transport sector development (see *Figure 1* and *Table 2*). Based on its national development strategies, the government of China emphasized the importance of taking action on global climate change and a "green and low carbon" future in its *Nationally Determined Contributions* (NDCs), submitted to the *United Nations Framework Convention on Climate Change* (UNFCCC) secretariat in June 2015. In its NDCs, China announced the intention to achieve its carbon dioxide emissions peak around the year 2030 while making the best efforts to achieve this goal earlier, to lower its carbon dioxide emissions per unit of GDP by 40 to 45 percent compared to 2005 levels by 2020, and to increase the share of non-fossil fuels in primary energy consumption to about 15 percent by 2020. Transport plays a significant role in achieving these ambitious goals. This is reflected in China's NDCs by prioritizing a sustainable low carbon transport sector by increasing the share of public

[1] Of which about 80 percent (4.04 million km) are rural roads (county roads, township roads and village roads)
[2] Source: China Academy of Transportation Sciences (CATS)
[3] China`s Five-Year Plans are central government blue- prints. They set the nation's course and articulate the near-term focus of development. The overall guiding document for the development of the PRC is the Five-Year Plan for Economic and Social Development, issued by the National Development and Reform Commission (NDRC). The 13th Five Year Plan for Economic and Social Development of the People`s Republic of China 2016-2020 has been issued on March 17, 2016. This plan also functions as the main framework for China`s infrastructure and transport development. Based on this document, different ministries develop sector-specific detailed Five-Year Plans (see page 5) as further implementation guidelines for provincial, city and county levels. More information can be found here

transport in in large-and medium-sized cities to 30 percent for motorized trips by 2020 and by promoting cycling and walking.

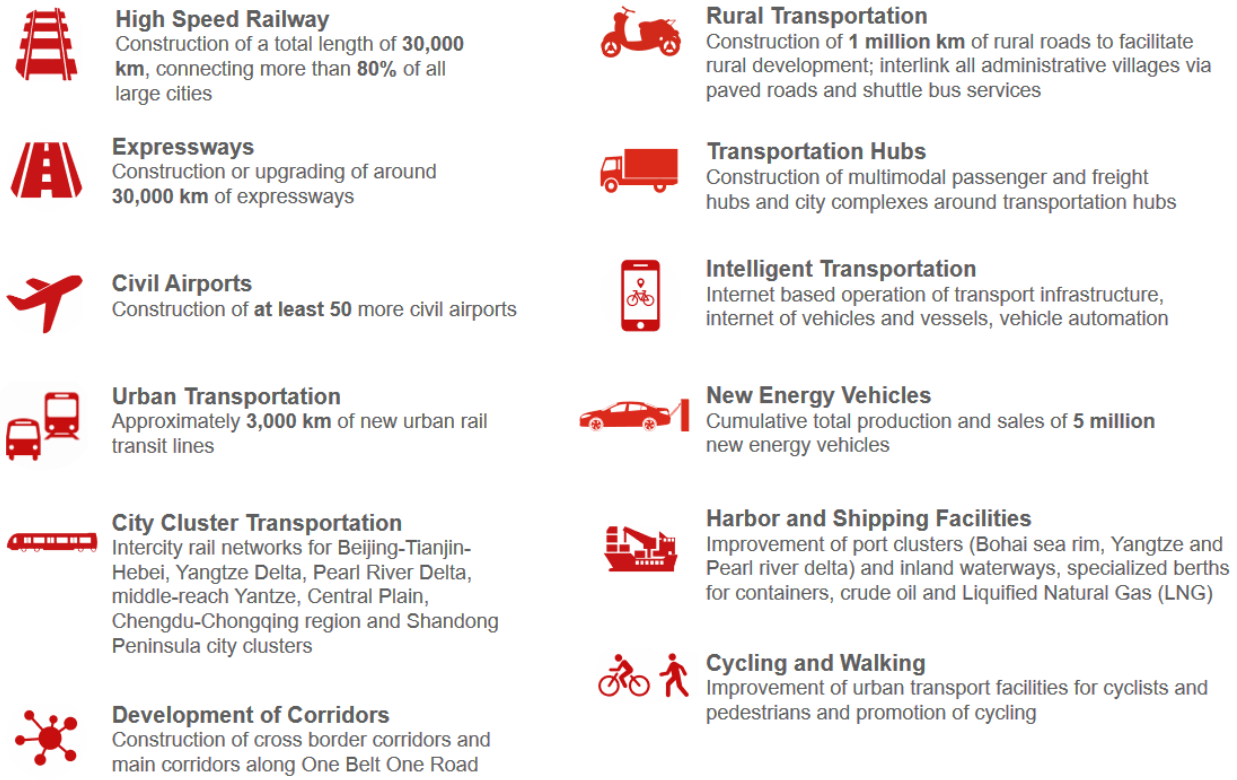

Figure 1. Key targets for transport in the 13th Five-Year Plan for Economic and Social Development of the People`s Republic of China 2016-2020 (Source: Own collection based on a China's 13th Five-Year Plan

Target	11th FYP (2006-2010)	Status 2010	12th FYP (2011-2015)	Status 2015	13th FYP (2016-2020)
Urbanisation rate – permanent urban residents (E)	47%	47.5%	51.5%	56.1 %	60 %
Reduction in energy intensity per unit of GDP (B)	20%	19.1%	16%	18.2%	15%
Reduction in carbon dioxide emissions per unit of GDP (B)	-	-	17%	20%	18%
Non-fossil fuels as a percentage of primary energy (B)	-	8.6%	11.4%	12%	15%
Railway operating mileage (E)	90,000 km	91,000 km	120,000 km	121,000 km	150,000 km
High Speed Rail network (E)	-	8,358 km	-	19,000 km	30,000 km
Highway network (E)	2.3 million km	4 million km	4.5 million km	4.58 million km	5 million km
Number of 10,000t and above costal deep sea berths (E)	1,113	1,774	2,214	2,207	2,527
Civil airports (E)	190	175	230	207	260
% villages with access to paved roads (B)	-	81.7%	90%	94.5%	99%

Table 2. Comparison of selected transport development targets in the 11th, the 12th and the 13th Five-Year Plan period (Source: Own collection based on a comparison of China's Five-Year Plan targets)
*Binding targets (B) are incorporated into the CCP's evaluation criteria of government officials at every level, while expected targets (E) are either given less weight (such as GDP growth) or not included in the CCP evaluation criteria.

Based on the *13th Five-Year Plan for Economic and Social Development of the People`s Republic of China* and other relevant policies, the recently released *Outline for Building China's Strength in Transport* establishes the long-term guideline for implementing a globally leading and quality-oriented future transport sector development. The goal is to build a so-called comprehensive modern transport system in the following two phases:

Phase 1 - 2020 to 2035: Building an advanced and globally competitive transport system.
By 2035, a "major transport country" shall be built. By then, the transport system shall fully meet the demand and serve the country's overall modernization.

Phase 2 - 2036 to 2050: Building an internationally highly competitive transport system
By 2050, an internationally highly competitive and leading transport system shall be built. China's transport system shall globally meet highest standards not only by scale but in quality of technical equipment, technological innovation capability and related professional workforce, intelligent and smart transport capabilities, environmental conditions, traffic safety and governance capacity among others.

As a general guideline for China's transport sector, the policy serves the long-term top-level strategic and coordinated development. The policy lays the foundation for the country's medium-term transport strategies, the coming Five-Year Plans and further specific implementation plans on national and sub-national level (See *Figure 2*).

The *Outline for Building China's Strength in Transport* is a key stone in achieving the *Chinese Dream* or *Great Rejuvenation of China*, a development concept of the Chinese government. According to the concept, China "stood up" in 1949, beginning with the reform towards a modern nation and solving the "problems of food and clothing", becomes "rich" until 2021 by achieving a "moderately well-off society" and will become "strong" by 2049 by achieving a "prosperous, democratic, civilized and harmonious modern socialist society".

Figure 2. The Outline for Building China's Strength in Transport in the overall planning framework (Source: Own graphic based on CAE)

According to the policy, the *Communist Party of China* (CPC) plays the leading role in the overall planning and coordination of the future development of the country's transport sector. A coordinated implementation mechanism shall be established while deeper reforms in investment, financing and management in the transport sector will continue. To implement the set goals, supporting policies must be formulated and public resources (such as financial and policy support) will be allocated in a scientific manner. The new strategy pursues a higher coordination between policies related to natural resources, environmental protection, fiscal allocation and steering and taxation, finance, investment, industry and trade. Under the policy, various key and pilot projects will be carried out.

Below listed are the nine Key Tasks of the *Outline for Building China's Strength in Transport.*

Nine Key Tasks to Implement the Outline for Building China's Strength in Transport

1. Establishing a well-connected primary infrastructure network

1.1. Building a modern high-quality comprehensive three-dimensional transport network

- Based on the national development plans, coordinating the planning and construction of infrastructure such as railways, highways, waterways, civil aviation, pipelines, and postal services, and adopting multi-center and network based forms to improve the multi-level network system,
- Optimizing the allocation of existing infrastructure resources, increasing the supply of high-quality increment, achieving three-dimensional connectivity and overall system flexibility,
- Strengthening the Western region, promoting the upgrade of the Northeast region, promoting the construction of the large-scale transport corridors and hubs in the central region and accelerating the optimization and upgrading of the Eastern region, forming a new pattern of coordinated regional development.

1.2. Building a convenient and seamless city (cluster) transport network

- Building an integrated urban transport network, focusing on the integration of trunk railways, intercity railways, urban and suburban railways, and urban rail transit and the improvement of the urban expressway network, and the

connection between highways and urban roads,
- Formulating and implementing an urban comprehensive transport system planning and integrating urban land-use and overall urban development,
- Promoting the construction of urban public transport facilities,
- Strengthening the connection between urban rail transit and other modes of transport,
- Improving the urban expressway road network, primary and secondary trunk roads, branch roads and coordinating well-structured urban road network, promoting the micro-circulation of urban roads to improve accessibility,
- Strengthening walking and non-motorized transport systems and improving the quality of walking and cycling,
- Improving barrier-free (transport) facilities[4],
- Planning and construction of urban parking facilities based on scientific evidence,
- Strengthening the construction of gas filling and electric charging stations, hydrogenation, and bus stations,
- Improving the intelligence level of urban transport infrastructure[5]

1.3. Forming a more extensive rural transport infrastructure network.

- Building an extensive infrastructure network in rural areas,
- Accelerating the implementation of the "Four Good Rural Roads" [6], constructing paved roads to connect all villages, establishing a standardized and sustainable management and maintenance mechanism,
- Promoting the organic integration of transport infrastructure construction, resource development and industrial development in rural areas,
- Strengthening the transport development in predominance-areas of special agricultural products and areas with high tourism potentials,
- Promoting the transport development in old revolutionary areas, ethnic minority areas, border areas, poverty-stricken areas, reclamation areas and forest areas, and realizing poverty alleviation through increasing the overall convenience of transport,

[4] In January, 2018, the guideline on improving transportation services for the elderly and the disabled was released

[5] refers to the promotion of Big Data based Smart City and traffic management application

[6] The policy highlights the importance of further improvement of rural roads (county roads, township roads, village roads) and their integration into the comprehensive transport system. This is based on the "Four Good Rural Roads" policy, which aims at improving construction, management, maintenance and operation of rural roads and at making rural road infrastructure development more energy and cost efficient. Key here is to establish standardized and sustainable management and maintenance mechanisms with defined rights and responsibilities as well as clearly defined governmental financial input responsibilities. This should be accomplished by 2022. By 2035, a comprehensive rural road management and maintenance system will be established with equal conditions regarding the basic public services for urban and rural road transport. Overall, the strengthening of the rural road infrastructure is seen as a key to improve rural live quality and rural village revitalization as well as the modernization of agriculture.

- Giving priority to transport construction projects in deep poverty areas to improve the accessibility of villages,
- Promoting the construction of railways, focusing on regional development in resource-rich and relatively densely populated poverty-stricken areas,
- Promoting the construction of airports to meet the needs of tourism, agricultural operation, and emergency rescue in areas where necessary conditions are satisfying,
- Strengthening the construction of transport infrastructure related to postal services in rural areas.

1.4. Constructing a multi-level, integrated multimodal transport hub system

- Based on world-class urban agglomerations such as Beijing-Tianjin-Hebei[7], Yangtze River Delta, Guangdong-Hong Kong-Macao and Greater Bay Area, building globally competitive international seaport, aviation and postal express hubs,
- Building certain amount of national and regional transport hubs to promote the planning and construction of integrated multimodal transport hubs, improving the service level of transfer or transshipment and improving the hinterland transportation system,
- Developing the (transport) hub economy

2. Developing advanced, applicable and controllable transport equipment

2.1. Strengthening research and development of new types of transport equipment

- Achieving major breakthrough in the development of 30,000-ton heavy-duty trains and 250 km/h high-speed freight trains,
- Developing intelligent and connected vehicles such as smart vehicles, autonomous driving, Cooperative Vehicle-Infrastructure System, forming an independently controllable complete industry chain,
- Strengthening the design and construction capabilities of large and medium-sized cruise ships, large LNG vessels, polar navigation vessels, smart vessels, and new energy vessels,
- Improving the spectrum of civil aircraft products and making significant progress in large civil aircraft, heavy helicopters, and general aviation aircraft.

2.2. Strengthening the R&D of special equipment

- Advancing R&D of construction machinery equipment such as tunnel engineering and whole-span lifting installation equipment,

[7] Jing-Jin-Ji

- Developing new equipment such as underwater robots, deep diving equipment, large oil spill recovery vessels, and large-scale deep-sea multi-purpose rescue vessels.

2.3. Promote the upgrading of equipment technology

- Promoting new energy, clean energy, intelligent, digital, lightweight and environmentally friendly transport equipment,
- Extensive application of intelligent high-speed rail, intelligent roads, intelligent shipping, automated terminals, digital pipe networks, intelligent warehousing and sorting systems, developing a new generation of intelligent traffic management systems,
- Improving the technical level of domestic aircraft and engines, and strengthening the R&D and manufacturing of civil aircraft, engine and construction of airworthiness certification system,
- Promoting the application of intelligent inspection, monitoring, operation and maintenance technology for transport equipment,
- Accelerating the phasing out of outdated technology, transport equipment with high energy consumption and low-efficiency.

3. Providing convenient, comfortable, economically viable and efficient transport services

3.1. Promoting rapid and convenient travel services

- Constructing high-capacity, high-efficiency inter-regional fast passenger transport services with high-speed rail and aviation as the backbone and enhance the passenger transport capacity of major transport corridors,
- Improving the aviation service network, gradually increasing the density of the airport networks, developing regional aviation, promoting the effective connection of main lines and branch lines, and improving the aviation service capability and quality,
- Improving the level of rail transit commuting in urban agglomerations, promoting the intercity commuter passenger transport bus operation mode, and overall building an integrated passenger transport system,
- Strengthening the comprehensive governance of urban traffic congestion,
- Giving priority to the development of urban public transport, encouraging and guiding "green"[8] bus commuting, rationally guiding the individual motorized transport,
- Promoting the integration of urban and rural passenger transport services,

[8] Sustainable, low carbon and low polluting

improving the level of "equalization" of public services, and ensuring that urban and rural residents have access to these services.

3.2. Creating a green and efficient modern logistics system

- Optimizing the transport structure and speeding up the construction of key projects such as railway lines for the port hinterland transport, railway sidings of logistics parks and large-scale industrial and mining enterprises' special railway lines[9], and promoting the shift of bulk cargo and medium and long-distance cargo road transport to railway and water transport,
- Promoting the development of intermodal transport, such as Rail-Water, Road-Water, Road-Water, Air-Rail-Road, promoting standardized equipment and facilities for rapid transshipment and forming unified intermodal transport standards and rules,
- Making full use of the "door-to-door" advantage of road freight transport,
- Improving the aviation logistics network and improving the efficiency of air cargo,
- Promoting the development of specialized logistics services such as e-commerce logistics, cold chain logistics, large-size and heavy cargo transport, dangerous goods logistics, etc.,
- Promoting the integration of the inter-city trunk line transport and urban distribution, and encouraging the development of intensive distribution modes,
- Comprehensively using resources, improving the rural distribution network, and promoting the logistics in two directions between urban and rural areas,
- Implementing the tax cuts and fee reduction policy, optimizing logistics organization models, improving logistics efficiency, and reducing logistics costs.

3.3. Accelerating the development of new business models

- Deepening the development of transport and tourism integration, and promoting the development of special tourism trains, tourism scenic byways, tourism channels, car and caravan camps, yachting-tourism, low-altitude air tourism, and improving the tourism service functions of passenger transport hubs and highway service areas,
- Developing shared transport, building service system based on smart mobile terminal technology and realizing Mobility-as-a-Service (MaaS),

[9] Mainly referring to ambitions to shift bulk cargo from the road to the rail

- Developing "Internet+" efficient logistics, and innovative smart logistics operation mode,
- Fostering market development for general aviation and urban (sub-urban) railway,
- Improving policies regarding the purchase of governmental services, and steadily expanding the market scale of short-distance transport, public services, and aviation,
- Establishing global postal service system to promote the upgrading of postal services,
- Accelerating the expansion, and efficiency improvement and digital transformation of express delivery, and expand new forms and modes of business such as supply chain services, cold chain express, and instant delivery, and promoting the construction of smart terminals and end public service platforms,
- Developing distribution logistics with unmanned aerial vehicle and driverless vehicle, urban underground distribution.

4. Promoting cutting-edge technological development and intelligent transport systems

4.1. Strengthening key cutting-edge technology research and development

- Strengthening R&D and application of next generation Information Technology (IT), Artificial Intelligence (AI), intelligent manufacturing, new materials, new energy, and strengthening forward-looking and disruptive technology research that may lead to transformation of the transport industry,
- Strengthening the R&D of power transmission systems for vehicles, civil aircrafts, ships and other equipment, and breaking through the key technologies of high-efficiency, high-thrust/high-power engines,
- Strengthening the coordinated operation and service technology of integrated regional transport network, coordinated urban traffic control technology, inland navigation safety control and emergency search and rescue technology based on ship-shore coordination,
- Developing 600 km/h high-speed magnetic levitation (maglev) systems, 400 km/h high-speed wheel rail (including variable gauge) passenger train systems, high-speed maglev trains in low-vacuum pipes (tunnels) etc. in a coordinated way.

4.2. Developing smart transport

- Promoting the deep integration of new technologies such as Big Data, Internet, AI, Blockchain, and supercomputing with the transport industry,
- Promoting the development and improvement of data resources to

enable (smart) transport, accelerating the integrated development of transport infrastructure networks, transport service networks, energy networks and information networks, and building an ubiquitous and advanced traffic information infrastructure,

- Establishing integrated transport Big Data center systems, enhancing the development of public transport services and e-governance,
- Promoting the application of the Beidou satellite navigation system.

4.3. Improving the mechanism of scientific and technological innovation

- Establishing a technological innovation mechanism with enterprises as the main body and deep integration of production, education and research, encouraging all kinds of innovation entities in the transport industry to establish innovation alliances, and establishing key core technology research mechanisms,
- Building a number of innovative platforms such as laboratories, test bases, and technology innovation centers with international influence,
- Increasing the open sharing of resources,
- Optimizing the investment mechanism for research funds,
- Establishing a standard system that is suitable for the high-quality development of transport and strengthen the effective supply of standards in key areas.

5. Providing safe and reliable transport systems

5.1. Enhancing the level of intrinsic safety

- Improving the safety technical standards of transport infrastructure,
- Increasing investment in infrastructure safety protection and improving the safety protection capability of critical infrastructure,
- Constructing a quality management system for modern engineering construction, and promoting quality construction and fine management,
- Strengthening the maintenance of transport infrastructure,
- Strengthening the monitoring and inspection of infrastructure operations,
- Improving the professionalization and information level of maintenance,
- Enhancing the durability and reliability of facilities,
- Strengthening the quality management of the carriers,
- Ensuring the safety of transport equipment.

5.2. Improving the traffic safety production system

- Improving the legal governance system,
- Improving the traffic safety production regulations and standards,
- Improving the safety responsibility system, strengthen the main responsibility of the enterprise, and clarify the department's supervisory responsibility,
- Improving the prevention and control system, effectively preventing and controlling systemic risks, and establishing a third-party certification system for transport equipment and engineering,
- Strengthening the investigation and assessment of safety related accidents,
- Improving the network security system, enhancing the capacity of science and technology, and strengthening the security protection of traffic information infrastructure,
- Improving the support system and strengthening the construction of safety facilities,
- Establishing a natural disaster traffic control system to improve traffic disaster prevention and resilience,
- Strengthening the comprehensive management of traffic safety and effectively improving the level of traffic safety.

5.3. Strengthening traffic emergency rescue capabilities

- Establishing and improving the comprehensive traffic emergency management system, rules and regulations and planning system,
- Strengthening the development and establishment of professional emergency rescue equipment, facilities and teams, and actively participating in international emergency rescue cooperation,
- Strengthening the coordination capacity of emergency rescue and improve the compensation mechanism for requisition.

6. Promoting green, low carbon, resource- and energy efficient, low polluting and eco-system friendly transport systems

6.1. Promoting resource conservation and intensive use

- Strengthening the efficient use of resources such as land, sea areas, uninhabited islands, shorelines, and airspace,
- Strengthening the renovation and utilization of old (transport and related) facilities,
- Promoting the recycling of construction materials, waste materials
- Promoting the “greening” and reduction of express delivery packaging, improving the level of resource reuse and recycling, and promoting the development of the transport resource recycling industry.

6.2. Strengthening energy conservation, emission reduction and pollution prevention

- Optimizing the transport energy structure, promoting new energy and clean energy applications, promoting energy conservation and emission reduction of road freight, and promoting electro, new energy and clean vehicles in the field of urban public transport and urban distribution,
- Strengthen the pollution control of diesel trucks, coordinate the management of fuels, roads and vehicles, and effectively prevent air pollution from road transport
- Strictly implement national and local pollutant control standards and ship discharge area requirements, and promote pollution prevention of ships and ports,
- Reducing noise and vibration along traffic infrastructures, and properly handle the noise impact of large airports.
- Conducting "green travel" actions and advocate green and low-carbon travel concepts.

6.3. Strengthening the restoration of transport ecological environment protection

- Strictly adhere to the red line of ecological protection, strictly implement ecological protection and soil and water conservation measures, strictly implement ecological restoration, restoration of geological environment and land reclamation, and implement the ecological and environmental protection concept throughout the entire process of transport infrastructure planning, construction, operation and maintenance,
- Promoting the site selection of ecological corridor selection, strengthening eco-friendly designs, and avoid land areas with important ecological functions such as cultivated land, forest land and wetlands,
- Building "green transport corridors".

7. Fostering international cooperation and build a well-connected transport network through a global transport governance system

7.1. Building an interconnected, globally oriented transport network

- Taking the six international economic cooperation corridors of the Silk Road Economic Belt [10] as the main body, promoting interconnection with neighboring countries by rail, road, waterways and oil and gas pipelines,
- Improving the global connectivity of maritime and civil aviation, building a world-class international shipping

[10] https://www.beltroad-initiative.com/belt-and-road/

center, and promoting the construction of the 21st Century Maritime Silk Road[11],

- Expanding international shipping logistics, developing international block trains, promoting cross-border road transport facilitation, developing aviation logistics hubs, building international logistics supply chain system, and creating new transport corridors for land and sea,
- Ensuring safe and smooth of important international shipping routes.

7.2. Increasing the opening-up to the outside world

- Attracting foreign investment into the transport sector and fully implementing the Pre-Establishment National Treatment and Special Management Measures (Negative List),
- Promoting free trade pilot zones and the construction of free trade ports with "Chinese characteristics" in a coordinated way,
- Encouraging domestic transport enterprises to actively participate in the construction of transport infrastructure and the international transport market cooperation along the "Belt and Road" and building world-class transport enterprises.

7.3. Deepening international cooperation in transport

- Enhancing the depth and breadth of international cooperation and forming multi-level cooperation channels among government, society and enterprises,
- Expanding the international cooperation platform, actively building new transport platforms, and attracting important international transport organizations to come to China,
- Actively promoting the construction and reforming of the global transport governance system, promoting the "bring in" and "going out" of transport policies, rules, systems, technologies and standards, and actively participating in the formulation and revision of rules and standards under the framework of international traffic organizations
- Improving the international "voice" and influence of transport.

8. Fostering the cultivation of innovative workforce and talents

8.1. Cultivating high-level transport technology talents

- Adhering to the guidance of high-quality, top-notch, and urgently needed training strategic, scientific and technological talents, scientific and technological leaders, young scientific and technological talents and

[11] https://www.beltroad-initiative.com/belt-and-road/

innovative teams on international level, cultivating innovative talents in transport, and supporting talents from all fields to enter the transport-related industries,
- Promoting the construction of high-end think tanks for transport and improving the expert work system.

8.2. Educating highly-qualified labor force in the transport sector

- Promoting the spirit of the model workers and the spirit of artisans, and creating a high-quality knowledge, skill, and innovation based labor force,
- Cultivating transport technology and technical oriented talents to support China's manufacturing, and building a modern vocational education system that meets the needs of transport industry and development.

8.3. Building a team of high-quality professional transport cadres

- Implementing the requirements for building a team of highly qualified and professional cadres, and building a team of high-quality loyal cadres,
- Focusing on professional ability training, and enhancing the ability of cadres to adapt to the requirements of modern integrated transport development,
- Strengthening the development of outstanding young cadres and strengthening the development of international transport organizations.

9. Improving the administrative capabilities and business environment and improving public participation mechanisms

9.1. Deepening industry reform

- Adhering to the rule of law, improving the comprehensive traffic law system, and promoting the formulation and revision of laws and regulations in relevant key areas,
- Continuing to deepen the reform of the railway, highway, waterway, and airspace management systems, and establishing and improving institutional mechanisms that are compatible with the development of integrated transport,
- Promoting the reform of the shareholding system of the national railway enterprises, the reform of the mixed ownership of postal enterprises, and supporting the healthy development of private enterprises,
- Coordinating the formulation of transport development strategies, plans and policies, and accelerating the construction of a modern integrated transport system,
- Strengthening planning coordination and achieving “multi-regulation” and “multi-disciplinary integration”.

9.2. Optimizing the business environment

- Improving market governance rules, deepening the promotion of decentralization, breaking down regional barriers, preventing market monopolies, improving the mechanism of transport price formation, and building a unified, open, competitive and orderly modern transport market system,
- Fully implementing the market access negative list system, and the establishment of a new credit-based regulatory mechanism.

9.3. Expanding social participation

- Improving public decision-making mechanisms and implementing decision-making by law and democratic decision-making,
- Encouraging transport industry organizations to actively participate in industry governance, guiding social organizations to autonomy according to law, and to obey regulations and to be self-discipline, and broadening public participation in traffic governance channels,
- Promoting the disclosure of government information and establishing and improving public supervision mechanisms.

9.4. Cultivating traffic civilization

- Promoting the inheritance and innovation of excellent transport culture, strengthening the preservation of important traffic relics, the protection, utilization and spiritual excavation of modern transport major projects, and “telling the story” of Chinese transportation,
- Improving the respectful behavior of traffic participants in an all-round way, guiding respectful travel behavior, creating a respectful traffic environment, and promoting the overall improvement of the transport “civilization level”.

Summary

The message of the *Outline for Building China’s Strength in Transport* is clear: China wants to become a global transport superpower by 2050. As a long-term oriented strategic planning and implementation guidance, the policy reflects China’s ambition to establish a highly competitive, integrated, innovative and environmental-friendly future transport system.

China will continue expanding and modernizing its transport infrastructure in the following decades. China will further promote the integrated development of the transport system and different modes of transport as well

as the integration of transport and infrastructure planning and construction with the overall urban and urban-rural development. Besides the aim of making transport more safe, inclusive, accessible, barrier-free and convenient, the goal is to promote the environmental-friendly and low carbon development of China's transport sector. Key measures to achieve this goal are the promotion of less resource intensive, integrated planning and construction of infrastructure, the formulation of policies to control emissions and air quality, the promotion of new energy vehicles[12] and the related promotion of "clean energy". In addition, China will promote cycling, walking and alternative forms of mobility such as car-sharing and platform integration such as Mobility-as-a-Service (Maas) to shift more car trips to environmental-friendly means of transport. Moreover, the country aims at making full use of technological innovation and of Big Data and Artificial Intelligence towards innovative and more sustainable passenger, freight and logistics transport. This includes smart traffic and parking management systems, smart and predictive maintenance, magnetic levitation trains, cargo drones, connected and autonomous vehicles among others.

As a foundation of these ambitions, Chinese authorities are aware of the necessity of further implementing market-based reforms and institutional restructuring, developing relevant standards and norms, increasing and effectively channel investments into R&D, improving related equipment as well as to set the framework for educating skilled labor force and to further strengthen international cooperation on sustainable and innovative transport.

The implementation of the key tasks stated in the policy will consider steady positive economic growth, changing socio-economic conditions such as an aging society, the growth potential of transport volumes and emissions associated to the growth of domestic consumption, and a demography that is increasingly demanding high quality, seamless and environmental-friendly transport services among others. The implementation of these goals will also take place against the background of increasing political pressure to make the development of the transport sector more environmental and climate-friendly. In particular aligning the national targets with the *Sustainable Development Goals* (SDGs) and the *Nationally Determined Contributions* (NDCs) is crucial to effectively tackle global climate change and to fulfill the set target of becoming a global transport superpower.

[12] Battery-electric, hybrid, plug-in hybrid and fuel cell electric vehicles

International cooperation is highlighted in the policy and will be essential to effectively implement the measures needed to make future transport more sustainable and climate-friendly. The Sino-German cooperation - with policy dialogues, joint pilot projects, and mutual exchange - will contribute to achieving this goal.

For more information, please contact Mr. Sebastian Ibold, Project Director of the Sino-German Cooperation on Low Carbon Transport Project (CLCT) or Ms. Jingzhu Li, Project Director of the Safety Improvement in the Dangerous Goods Transportation in China project, and visit the Sustainable Transport Blog of GIZ China.

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