

# Overview of China`s Five-Year Plans in the Transport Sector

- Issue 1 -

Transportation in the 13th Five-Year Plan for Economic and  
Social Development of the People`s Republic of China 2016-2020



## Overview of

# China's Five-Year Plans in the Transport Sector

An overview of how sustainable transportation policy and infrastructure development in China is steered and implemented by Five-Year Plans (FYP).

Issue 1

Transportation in the *13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020*

Over the past decades, the People's Republic of China not only underwent rapid urbanization and an impressive socio-economic transformation but also a tremendous development of its transport infrastructure. Today China has the longest high-speed railway network and has just brought its 350 km/h *Fuxing* (复兴 - renaissance) bullet train back on line, connecting Beijing and Shanghai (1,300km) with just four and a half hours of travel time. The same impressive development counts equally for the expansion of China's highway, aviation, shipping and public urban transport system.

However, along with progress came challenges. Today, the transport sector is also associated with traffic congestion and clogged cities, this accounts for the high shares of carbon emissions and is a significant source of noise and (urban) air pollution with up to 30 percent shares of particulate matters in some of the big cities.

The Chinese government is aware of these threats and therefore has been pushing hard for more sustainable infrastructure development since the 12th Five-Year Plan (2011-2015). The *13th FYP for Economic and Social Development of the People's Republic of China 2016-2020* along with the submission of China's Intended Nationally Determined Contributions (INDC) in 2015 was the turning point as this was when the development

goal of a low carbon transport system was described in these documents for the first time. Together with China's engagement and innovation strength in IT, Big Data and technology applications such as smart bike sharing, electro mobility or autonomous driving, this represents the country's ambition and commitment to seriously tackle global climate change and domestic challenges towards more eco-friendly transportation and more livable cities.

The series *Overview of China's Five-Year Plans in the Transport Sector* aims to provide an overview of the system of Five-Year Plans in China and how the transportation sector is steered by these political development blueprints. Furthermore it provides insights into how sector specific Five-Year Plans on national, provincial, city and county level shape transport infrastructure planning and implementation, and ensure an innovation driven future.

This first edition will focus on the *13th FYP for Economic and Social Development of the People's Republic of China 2016-2020*, its role as a central government guideline for sustainable and low carbon transport development and as a framework for the implementation bodies on different administrative levels in China.

We wish you an enjoyable read!

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The *Overview of China's Five-Year Plans (FYP) in the Transport Sector* is presented to you by the Sino-German Cooperation on Low Carbon Transport Project, commissioned by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

## From then till now - The development of the transport sector in China

Within the last decades China has made significant progress, not only regarding the development of its basic infrastructure. Today with the ambition of becoming a

forerunner in „green“ transportation and the integration of smart mobility concepts, the country aspires to become a global leader in innovation, shaping the mobility of the future.

### 1949 - Establishment of the PRC

- Establishment of China's Ministry of Communications (MoC) and Ministry of Railways (MoR) and the Civil Aviation Administration of China (CAAC)

**1949**  
21,800 km railway  
80,800 km highway  
51,000 motor vehicles  
12 civil air routes in operation

### 1953-1962 - 1st and 2nd Five-Year Plan period

- Focus on basic infrastructure development (railways, highways, ports, piers and civil airports) and expansion of infrastructure into the western and remote regions

### 1978 - The Reform and Opening-Up Policy

- Introduction of a vehicle purchase tax and a policy on building highways with toll financed loans
- Public bidding was adopted to highway construction and water transport engineering projects
- Ports were the first to be opened up to the outside world, and maritime transport was the first sector going global
- Civil aviation began to operate as an enterprise, and an air transport market took shape

**1980**  
53,300 km railway  
888,300 km highway  
1.78 million motor vehicles

### 1988

- Shanghai-Jiading Expressway was opened, the first expressway on China's mainland

### 1992

- Policies on the collection of civil airport construction fees were introduced
- Focus on the development of road infrastructure in rural areas to facilitate urbanisation

**1999**  
67,400 km railway  
1,351,700 km highway  
14.5 million motor vehicles  
142 civil aviation airports  
1,686 berths in main coastal ports

### 2008

- Merging of MoC, CAAC and the State Postal Bureau into the Ministry of Transport (MoT)
- Start of China's high-speed rail era with the Beijing-Tianjin intercity railway

### 2013

- Merging of MoR into MoT

### 12th Five-Year Plan (2011-2015)

- Promotion of a comprehensive, smart, green and safe transport
- Formulation of development plans to serve the Three Initiatives - The Belt and Road Initiative, the Beijing-Tianjin-Hebei Integration Initiative and the Yangtze River Economic Belt Initiative

### 13th Five-Year Plan (2016-2020)

- Low carbon development of the transport sector has been mentioned for the first time
- Strong focus on the four development columns „smart“, „green“, „safe“ and „integrated“

### 2015

121,000 km railway  
4,577,300 km highway  
162.8 million motor vehicles  
206 civil aviation airports  
6,115 berths in main coastal ports

### The Future of Transportation?

- Digitalisation and Big Data, Artificial Intelligence, Electrification of Transport, Alternative Propulsion and Fuels, Autonomous Driving, Sharing Economy, Mobility as a Service (MaaS)

## What are China's Five-Year Plans?

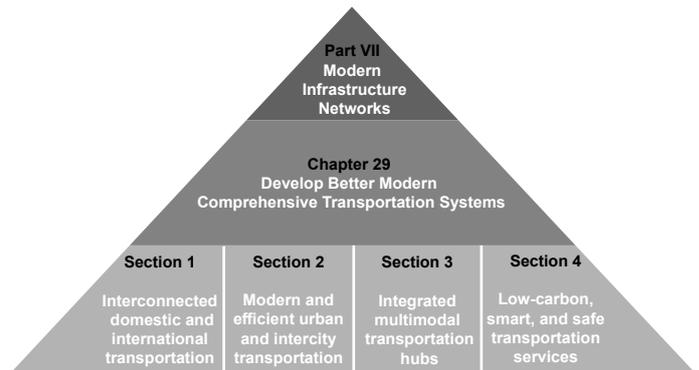
China's Five-Year Plans are central government blueprints. They set the nation's course and articulate the near-term focus of development. The overall guiding document for the development of the PRC is the Five-Year Plan for Economic and Social Development, issued by the National Development and Reform 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.

### The hierarchy of China's Five-Year Plans



### Transport in the structure of the 13th Five-Year Plan for Economic and Social Development of the PRC 2016-2020



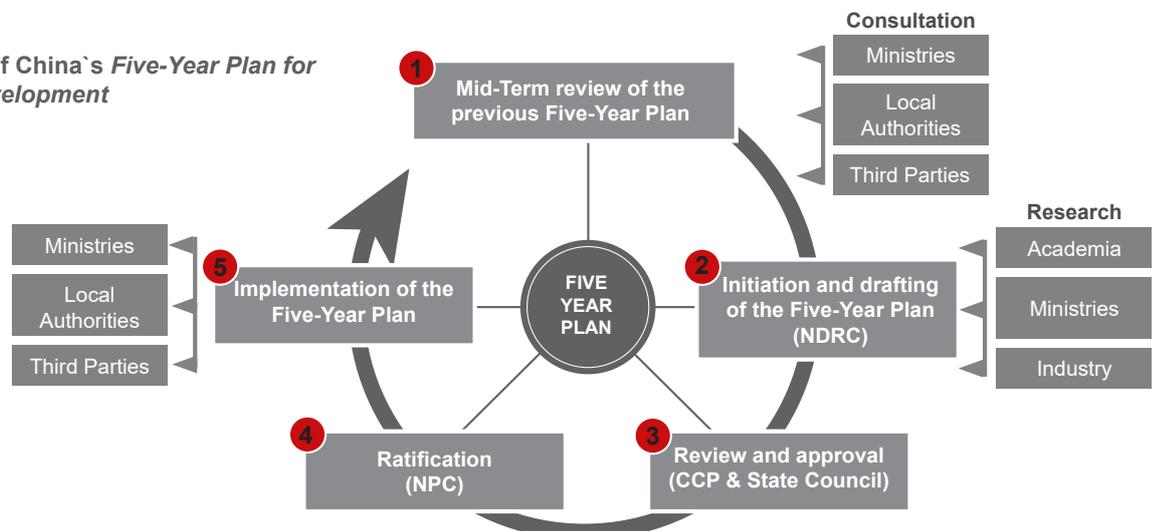
## How is China's Five-Year Plan for Economic and Social Development formulated?

The formulation of the *Five-Year Plan for Economic and Social Development of the People's Republic of China* starts with the review of the previous Five-Year Plan, usually as a mid-term review after two years.

In a first step (1), the State Council commissions NDRC with the elaboration of the plan. In a consultative process, ministries, local authorities and third parties engage in the review process. Third parties (World Bank, State Council's Development Research Center (DRC) and the Center for China Studies at Tsinghua University) were involved for the first time in 2008.

In a second phase (2) the NDRC sets up precise focus topics and commissions stakeholders from academia, ministries and the industry to do research on these specific topics. This is the world's largest policy consulting and research activity. Based on the review as well as the research results, the NDRC formulates the Five-Year Plan. After a review and approval of the Chinese Communist Party (CCP) and the State Council (3), the plan is ratified (4) by the National People's Congress (NPC). The plan is the ultimate blueprint for the implementation (5) of policies and measures on national, provincial, city and county level.

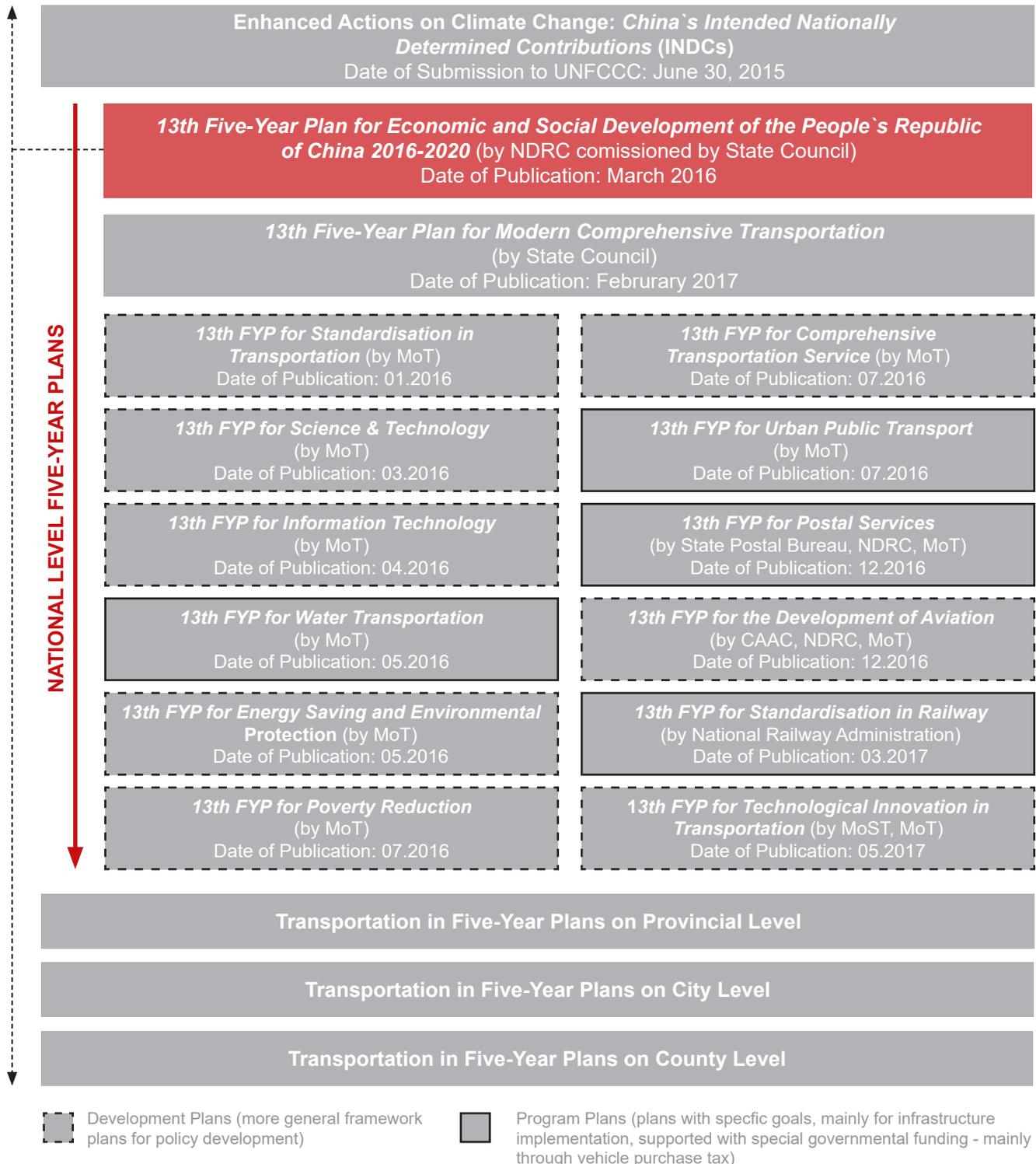
### The formulation system of China's Five-Year Plan for Economic and Social Development



## Which 13th Five-Year Plans (2016-2020) shape and steer the Chinese transport sector?

In China the development of the transport sector is steered and implemented on various administrative levels. Within the *13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020*, the transport sector development is described in „Part VII“, called “Modern Infrastructure

Networks”. This is the basis on which various ministries (mainly the Ministry of Transport (MoT)) elaborate own sector-specific Five-Year Plans as guidelines for transport and infrastructure development on provincial, city and county level. Based on this, all provinces but not all cities and counties develop own Transport-Five-Year Plans.



\*These documents are a selection of plans, relevant for the steering and implementation of the Chinese transportation sector development, mainly issued by MoT. Further relevant planning documents and guidelines issued by other ministries are not in the focus of this overview.

## The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020 and China's Intended Nationally Determined Contributions (INDCs)

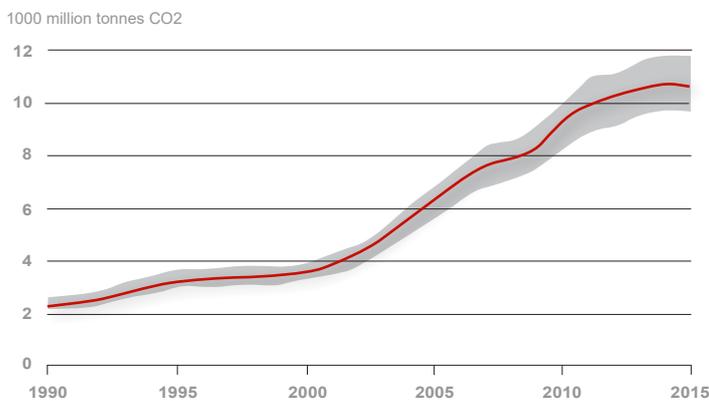
In its Intended Nationally Determined Contributions (INDCs) submitted to the UNFCCC secretariat in June 2015, China emphasizes the importance of taking action on global climate change and a "green and low carbon" future as a significant national strategy for its socio-economic development. China publicly announced its intention to achieve its carbon dioxide emissions peak around the year 2030 while making the best efforts to peak earlier. China is also determined to lower 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. Transportation plays a significant role in achieving these ambitious goals and is well reflected in China's INDCs through giving priority to a sustainable low carbon transport sector and defining specific targets in this regard, e.g. China wants to increase the share of public transport in motorised travel in large- and medium-sized cities to 30 percent by 2020.

By enacting its 12th Five-Year Plan (2011-2015) China embarked on a green economic transition. In March 2016, China released its *13th Five-Year Plan for Economic and*

*Social Development of the People's Republic of China 2016-2020*, a national strategy set by the country's top leaders to guide the social, political, and economic Development. For the first time in the history of Five-Year Plans *Low Carbon Transport* has been specifically mentioned. The 13th Five-Year Plan acts as a turning point for China's green development. It states the concept of „ecological civilisation“, setting a prime focus on reasonable land use planning and environmental protection in order to tackle its environmental challenges and steer China's low carbon development path.

The 13th Five-Year Plan points out that an efficient, intelligent, green, integrated and inter-connected infrastructure network has to be built to contribute to the overall economic and social development. The main tasks for the transport sector within the 13th Five-Year Plan period are to promote a low carbon and „intelligent“ development and to further improve modern comprehensive transportation systems, which support the three major national strategies: The One Belt One Road Initiative, the Beijing-Tianjin-Hebei Integration Initiative, and the Yangtze Economic Belt Initiative.

### China - Carbon dioxide emissions



Source: EDGAR v4.3.2 FT2015 (JRC/PBL 2016; IEA 2014 (suppl. with IEA 2016 for China, BP 2016, NBS 2016, USGS 2016, WSA 2016, NOAA 2016)

### Two milestones for sustainable transport:

1. China's submission of **INDCs to the UNFCCC (2015)** pledging to achieve the peaking of carbon dioxide emissions around 2030 and aiming for a low-carbon transport system
2. First mentioning of the aim to achieve a low-carbon transport system in China's 13th Five-Year Plan



**In China, the transport sector accounts for about 10 to 12 percent of the country's carbon dioxide emissions and in some cities for up to 30 percent of particulate matters (PM2.5).**

### The main columns of transport development in China's 13th Five-Year Plan

- **Green and Low Carbon Transportation**  
Innovation driven promotion of public transport, efficiency in transport, alternative fuels, new energy vehicles, cycling and pedestrian infrastructure and general „green“ technologies in transport
- **Interconnected and Multimodal Transportation**  
Promotion of multimodal passenger and freight hubs, optimisation of existing transport hubs and strengthening of interconnectivity of transport infrastructure

- **Smart Transportation**  
Innovation driven promotion of IT and Big Data based transport management and operation, online ticketing and vehicle and fleet automation
- **International Transportation Networks**  
Promotion of cross border infrastructure development, expansion and improvement of international and domestic airports and ports
- **Safe Transportation**  
Improvement of safety standards and emergency rescue

## The key targets for transport in the 13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020

- 

**High Speed Railway**  
Construction of a total length of **30,000 km**, connecting more than **80%** of all large cities
- 

**Rural Transportation**  
Construction of **1 million km** of rural roads to facilitate rural development; interlink all administrative villages via paved roads and shuttle bus services
- 

**Expressways**  
Construction or upgrading of around **30,000 km** of expressways
- 

**Transportation Hubs**  
Construction of multimodal passenger and freight hubs and city complexes around transportation hubs
- 

**Civil Airports**  
Construction of **at least 50** more civil airports
- 

**Intelligent Transportation**  
Internet based operation of transport infrastructure, internet of vehicles and vessels, vehicle automation
- 

**Urban Transportation**  
Approximately **3,000 km** of new urban rail transit lines
- 

**New Energy Vehicles**  
Cumulative total production and sales of **5 million** new energy vehicles
- 

**City Cluster Transportation**  
Intercity rail networks for Beijing-Tianjin-Hebei, Yangtze Delta, Pearl River Delta, middle-reach Yantze, Central Plain, Chengdu-Chongqing region and Shandong Peninsula city clusters
- 

**Harbor and Shipping Facilities**  
Improvement of port clusters (Bohai sea rim, Yangtze and Pearl river delta) and inland waterways, specialized berths for containers, crude oil and Liquefied Natural Gas (LNG)
- 

**Development of Corridors**  
Construction of cross border corridors and main corridors along One Belt One Road
- 

**Cycling and Walking**  
Improvement of urban transport facilities for cyclists and pedestrians and promotion of cycling

### Comparison of selected transport development targets in the 11th, the 12th and the 13th Five-Year Plan

Target	11th FYP (2006-2010)	Status 2010	12th FYP (2011-2015)	Status 2015	13th FYP (2016-2020)
Urbanization rate - permanent urban residents (%) (E)	47%	47.5%	51.5%	56.1%	60%
Reduction in energy intensity per unit of GDP (B)	-	-	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)	-	8.3%	11.4%	12%	15%
Railway operating mileage (E)	75,000 km	91,000 km	120,000 km	121,000 km	150,000 km
High-speed railway network (E)	-	5,100 km	-	19,000 km	30,000 km
Highway network (E)	3,345,000 km	4,008,000 km	4,500,000 km	4,580,000 km	5,000,000 km
Number of 10,000 t and above costal deep sea berths (E)	1,113	1,774	2,214	2,207	2,527
Civil airports (E)	142	175	230	207	260
Proportion of villages with access to paved roads (B)	-	-	-	-	99%

\*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.

## Summary

The ambitions of the *13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020* and China's INDCs within the framework of the Paris Agreement show clearly that China already embarked upon a development path towards a more sustainable and climate friendly transport sector that is green, smart and eco-friendly.

The message of China's national 13th Five-Year Plan is clear: besides a further increase of basic road, rail, shipping and aviation infrastructure, the focus is obviously laid on an innovation driven development to enable livable environments and efficient, dense and safe infrastructure networks. To achieve all of that, China will channel an impressive amount of 15 trillion RMB (USD 2.27 trillion \*exchange rate November 2017) into transport infrastructure projects during the Five-Year Plan period up to

2020, including 3.5 trillion RMB for railways, 7.8 trillion RMB for roads and 500 billion RMB for water transport.

But China wants to achieve more than an expanded modern transportation network. Big Data, IT and smart technologies are the catchwords. **China aspires to become a global leader in innovation, shaping the mobility of the future.**

In the next issue of this overview we will provide you with insights on how the *13th Five-Year Plan for Modern Comprehensive Transportation 2016-2020* (issued by the State Council) sets the next framework level for China's transport and infrastructure development.