BRIEFING

Requested by the TRAN Committee

European Parliament

Research for TRAN Committee - Transport and Tourism in China

This overview of the transport and tourism sectors in China was prepared to provide information for the mission of the Committee on Transport and Tourism to the country between 30 October and 2 November 2018.

1. INTRODUCTION

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China covers an **area** of around 9.6 million km^2 (thus being the world's fourth largest country in terms of area) and is populated by 1 374 million people (on 2015 figures)[1]. China borders on 14 countries, sharing frontiers with Mongolia in the north, the Russian Federation and North Korea in the north-east, Vietnam and Laos in the south-east, Myanmar, India, Bhutan and Nepal in the south, and Pakistan, Afghanistan, Tajikistan, Kyrgyzstan and Kazakhstan in the east. The urbanisation rate of China is about 59 %[2].

According to Chinese government figures, economic growth in recent decades has lifted about 740 million people out of poverty. China has also witnessed the largest migration ever from rural to urban areas[3]. However, the country's regions remain vastly diverse in terms of technology, energy mix and economic development[4]. Calculated at constant prices, the **gross domestic product** (GDP) of China multiplied 33.5 times in the period 1978-2017[5]. In 2017, China's GDP (at current prices) amounted to USD 12 014 billion[6]. Projected real GDP growth in 2018 is expected to reach 6.6 %[7]. In 2017, the Chinese economy ranked first in Asia and second in the world[8]. Thereby, its value measured by GDP is bigger than that of the economies of Japan, Germany and the UK put together. China's GDP is predicted to grow at a rate of 4.8 % per annum over the next 20 years[9]. This means that China could become the world's largest economy by 2030.

China's share of world GDP has risen from 2.7 % in 1980 to 15 % in 2017; its GDP per capita is expected to exceed the world's average by 2023 (please see Figure 1 below). The growth of China's economy is mainly driven by infrastructure investment. In the period 2009-2014, the investment contributed about 45 % to GDP growth[10].

1 http://www.stats.gov.cn/tjsj/ndsj/2016/indexeh.htm
2 https://toplink.weforum.org/knowledge/insight/a1Gb0000000pTCmEAM/explore/dimension/a1Gb00000015QrNEAU/summary
3 https://www.imf.org/en/News/Articles/2018/07/25/na072618-chinas-economic-outlook-in-six-charts
4 Zhu Liu, China's Carbon Emissions Report 2016: Regional Carbon Emissions and the Implication for China's Low Carbon Development. Belfer Center for Science and International Affairs. Cambridge, Mass: Harvard University, October 2016, p.1. https://www.belfercenter.org/sites/default/files/legacy/files/China%20Carbon%20Emissions%202016%20final%20web.pdf
5 http://www.xinhuanet.com/english/2018-09/17/c_137474548.htm
6 http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Country=CN
7 https://www.imf.org/en/Countries/CHN#ataglance
8 International Monetary Fund: www.imf.org, (accessed: 13.07.2018).
9 Boeing Commercial Market Outlook 2018-2037 https://www.boeing.com/resources/boeingdotcom/commercial/market/commercial-market-outlook/assets/downloads/2018-cmo-09-11.pdf
10 Li Kaimeng: A Brief Introduction to China's PPP Application in Transport and Logistics Sectors. https://www.unece.org/fileadmin/DAM/ceci/documents/2016/PPP/Forum_PPP-SDGs/Presentations/Kaimeng_LI-UNECE_PPP_Forum_March_2016_A_Brief_Introduction_to_China%E2%80%99s_PPP_Application_in_Transport_and_Logistics_Sectors.pdf

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PE 629.173 - November 2018

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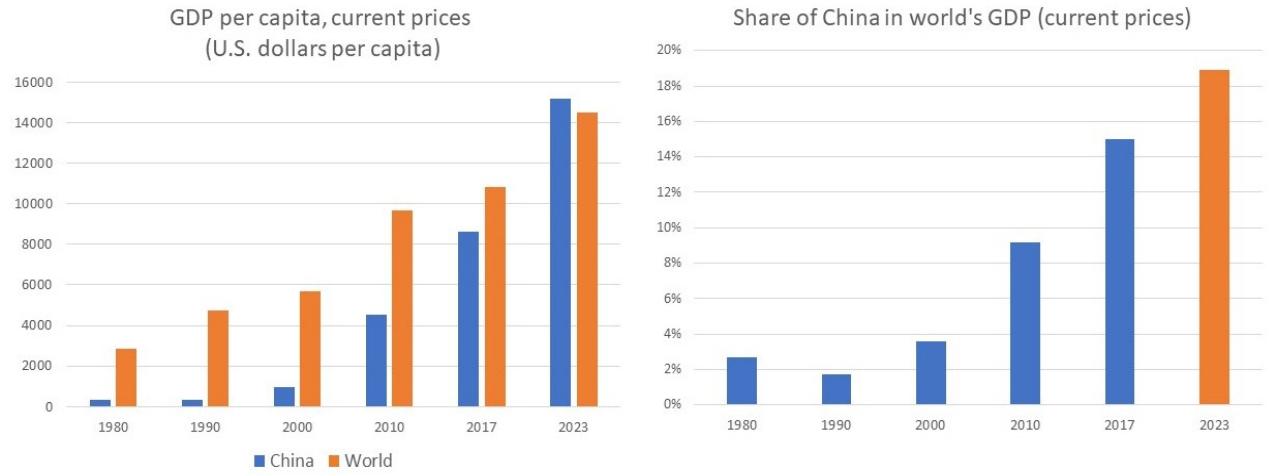
Figure 1: World's and China's GDP per capita and share of China in world GDP



Source: own calculation based on database of the International Monetary Fund

The rate of recorded **unemployment** amounted to 5 %, with 774 million of employed persons in 2015[11].

In 2017, Chinese **exports of goods** amounted to USD 2 263 billion (12.8 % of global export value), while imports of goods stood at USD 1 842 billion (10.2 % of global import value). The main markets to which Chinese goods are exported include, as of 2016, the US (18.4 %) and the EU28 (16.4 %). As for **imports**, the main partners of China include the EU28 (13.1 %), South Korea (10 %), Japan (9.2 %) and the US (8.5 %)[12].

Gross domestic spending on **research and development** (R&D), rose to approximately 2.1 % of China's GDP in 2016, from 0.9 % in 2000[13] (1.9 % for the EU in 2016).

The ruling **Communist Party of China (CPC)** has been the country's sole political party since 1949. The **General Secretary**, Xi Jinping, assumed the party's leadership in November 2012 and simultaneously became President of the People's Republic of China and Chairman of the Central Military Commission, which supervises the over two million strong People's Liberation Army (PLA). The seven-member **Politburo Standing Committee** and the 25-member **Politburo** are China's highest decision-making bodies. They are responsible to the larger **CPC Central Committee**, which meets in plenary session, usually once a year. The day-to-day administration of the country is entrusted to the **State Council** (including the State's ministries and commissions and layers of 'people's governments' below the national level). According to China's state constitution of 1982, the **National People's Congress (NPC)**, the unicameral legislative body, oversees the State Council. In practice, the NPC is controlled by the CPC and is able to exercise little oversight over any institution under its official supervision[14].

The **National Development and Reform Commission of the People's Republic of China** (NDRC) is an important body, being a management agency under the State Council. It has broad administrative and planning control over the Chinese economy, including the formulation and implementation of strategies of national economic and social development, as well as annual, medium and long-term development plans[15].

Regulatory framework for EU companies wishing to carry out business in China

According to a study by Mark Hedley[16], China's entry into the WTO in 2001 helped to liberalise the country's trade environment to some extent. However, many industries are still heavily regulated: industries are often off-limits to foreign companies or remain under severe limitations. For example, China severely restricts foreign companies' involvement in the petrochemicals, energy and telecommunications sectors. Any foreign company looking to set up local production in China should first consult the China foreign investment catalogue, which divides foreign investment projects into 'encouraged', 'restricted' and 'prohibited' categories.

EU investors can, as foreign investors, start a business in China in one of five ways, namely as a: (i) Wholly Foreign Owned Enterprise (WFOE), (ii) Partnership Enterprise (PE), (iii) Representative Office, (iv) Joint Venture, or (v) Hong Kong Company. In China, every company with foreign shares amounting to 25 % or more is considered a Foreign

11 http://www.stats.gov.cn/tjsj/ndsj/2016/indexeh.htm
12 http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Country=CN
13 https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm
14 US Congressional Research Service - Understanding China's Political System, Mar 2013, pp. 1-4 and China Information Centre - China's Political System.
15 http://en.ndrc.gov.cn/mfndrc/
16 Mark Hedley - B2B International - Entering Chinese Business-to-Business Markets: The Challenges & Opportunities, (assessed: 09.10.2019).

Invested Enterprise (FIE)[17]. If the whole company is controlled by non-nationals then it is considered as WFOE, the most common type of FIE. To start a company in China, an entrepreneur has to:

- choose business scope and structure;
- apply for approval of the Ministry of Commerce and the State Administration of Industry and Commerce (or local Administration of Industry and Commerce (SAIC or local AIC);
- be sure that all foreign investors have approval to own shares in a Chinese company;
- provide proof of registration with state and local tax bureaux;
- obtain a business license; and, finally,
- open a bank account[18].

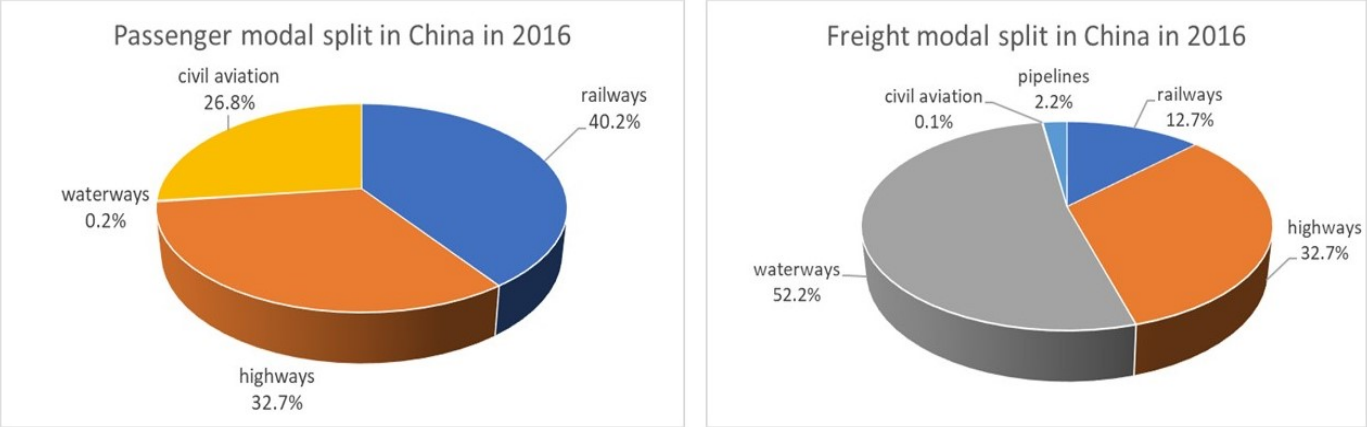
Recently, President Xi Jinping announced China's plan to open up its auto industry to foreign carmakers. Among the key measures proposed is the possibility for foreign automakers to own Chinese factories, instead of working through a 50-50 Chinese partner as is currently required[19].

2. GENERAL INFORMATION ON TRANSPORT

Development of transport in China is part of the goals mentioned in a key report delivered at the 19th CPC National Congress in October 2017, putting it high on the government agenda[20].

In China, **modal split** is quite diversified, for both passengers and freight. Rail transport has the largest share of the **passenger** market, followed by road and aviation (more than one fourth of the total number of passenger-kilometres in 2016). In the case of **freight**, waterways dominated the market, although the relevant data also includes ocean, coastal and inland waterway operations. Rail achieved nearly 13 % of market share in 2016, while freight air transport haa a vestigial share in the same year (please see Figure 2 below).

Figure 2: Transport passenger [pas-km] and freight [ton-km] modal split, 2016



Source: prepared by the author on the basis of data from the China Statistical Yearbook 2017[21]

The transport sector plays an important role in the Chinese **labour market**. Road transport accounts for more than one half of the total of 6.82 million employees (rail 27 %, road 56 %, water transport 7 %, air transport 9 % and pipelines 1 %)[22].

The 13th Five-Year Plan for Development (2016-2020) emphasised the **low-carbon development of transport**. The various transport projects include: (i) further development of high-speed rail (to reach 30 000 km by 2020); (ii) speeding up the building of the national expressway network, resulting in the construction or upgrading of 30 000 km of expressways; (iii) pressing ahead with the construction of transborder thoroughfares between China and neighbouring countries and thoroughfares along the Belt and Road routes; and (iv) building logistics platforms for international freight trains in Ürümqi, Lanzhou and other major hub cities along the routes of the One Belt, One Road Initiative (BRI)[23].

17 Establishing and Operating a Business in China 2018, 2nd edition, Dezan Shira & Associates, 2017. www.ampia.org (accessed: 08.10.2018).
18 S. Yan, J. Tang, E. Wong, Doing Business in People's Republic of China, EY, January 2015. www.ey.com (accessed: 08.10.2018).
19 Seattle Times - China is opening its car market, but auto companies say not enough - Apr 2018.
20 http://www.xinhuanet.com/english/2017-12/27/c_136855307.htm
21 http://www.stats.gov.cn/tjsj/ndsj/2017/indexeh.htm
22 ibidem
23 The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China (2016–2020). http://en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf

In 2008, **China's Ministry of Transport** (MOT) was established in the context of institutional reform in order to create an efficient government department exercising the unified management of all transport modes, as well as postal services. However, this goal was not fully achieved until 2013, when the Ministry of Railways was eliminated and the management of conventional railways was transferred to the MOT[24].

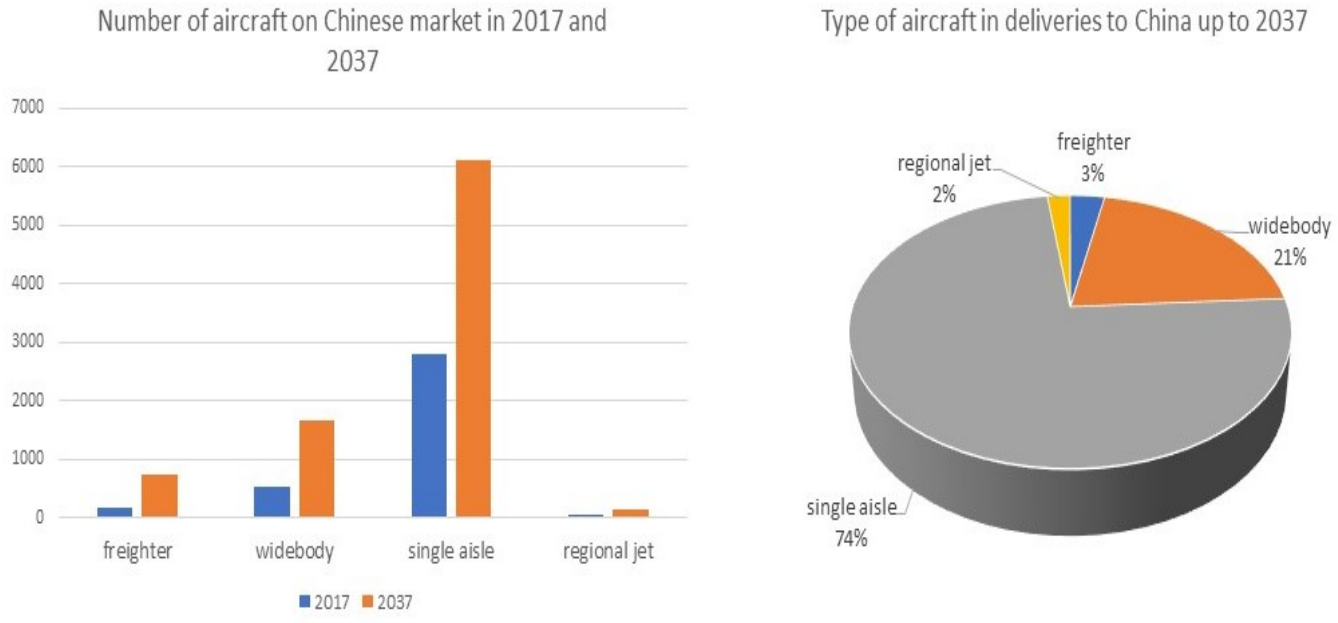
There are ten functional divisions under the umbrella of the MOT, which exist for the purpose of establishing a convenient, smooth, effective, safe and integrated transport system[25]. The current Minister of Transport, Li Xiaopeng, assumed the office in September 2016.

3. AIR TRANSPORT

Air transport is an important component of the transport system in China. In 2017, Chinese airports moved 1 227 billion passengers[26], an increase of 12 % on 2016. Domestic traffic is dominant (over 1 billion passengers). The rapid growth of China's domestic market will make it the largest in the world within the next two decades[27]. Its development will be boosted by new airlines and low-cost carriers, regional expansion and long-haul development[28]. The regional distribution of passenger traffic is as follows: North China - 15.0 %, North-east China - 6.3 %, East China - 29.0 %, Central and South China - 24.2 %, South-west China - 16.5 %, North-west China - 6.4 % and Xinjiang - 2.6 %[29].

There are 230 **airports** in China, and 85 of them moved more than 1 million passengers in 2017. 33 airports recorded an annual passenger traffic count of over 10 million in the same year. The largest airport is Beijing (96 million passengers), followed by Hong Kong (73), Shanghai Pudong (70), Guangzhou (66), Chengdu (50) and Shenzen (46). Together they were responsible for one third of the total passenger volume of Chinese airports in 2017. The first five airports are also among the 60 airports in the world that serve the world's largest passenger aircraft, the Airbus A380[30]. The total amount of cargo handled in China's airports exceeded 21 million tonnes, with Hong Kong airport being the world's busiest cargo airport since 2010[31].

Figure 3: Number of aircraft and type of aircraft deliveries to China up to 2037



Source: author's own elaboration based on data of the Boeing Commercial Market Outlook 2018-2037[32]

[24] Development of China's Transport - State Council Information Office of the People's Republic of China, December 2016. First Edition 2016. http://english.gov.cn/archive/white_paper/2016/12/29/content_281475528034734.htm

[25] The Ministry of Transport of the People's Republic of China official website. http://english.gov.cn/state_council/2014/09/09/content_281474986284076.htm

[26] http://www.caac.gov.cn/en/HYYJ/NDBG/201804/t20180409_56273.html and data for Hong Kong airport.

[27] Boeing Commercial Market Outlook 2018-2037, p. 12.

[28] Boeing Commercial Market Outlook 2018-2037.

[29] http://www.caac.gov.cn/en/HYYJ/NDBG/201804/t20180409_56273.html, Hong Kong not included.

[30] https://www.iflya380.com/a380-destinations.html

[31] 20 years of excellence. Hong Kong Airport Annual Report 2017. https://www.hongkongairport.com/en/airport-authority/publications/annual-interim-reports/annual_2017_18.

[32] https://www.boeing.com/resources/boeingdotcom/commercial/market/commercial-market-outlook/assets/downloads/2018-cmo-09-11.pdf

Today, Chinese **airlines** account for 14 % of global traffic, and their share is expected to increase to nearly 20 % in the next 20 years. The three most important Chinese air carriers are China Southern Airlines (126 million passengers in 2017 with a total revenue of USD 19.62 billion; the only carrier in China operating A380 fleet), China Eastern Airlines and Air China. The short-haul penetration rate of low-cost carriers in China is relatively low and stands at 14 % in comparison with the EU rate of 45 %.

China is on its way to becoming one of the world's largest aviation markets. In 2017, the total Chinese aircraft **fleet** exceeded 3 500 (a 15 % share of the global market) and, according to Boeing's forecast, will be as high as 8 600 in 2037 (please see Figure 3) with an 18 % share of the world fleet. 7 700 new aircraft are to be delivered to the Chinese market in the next 20 years, with a total value of USD 1 190 billion[33]. The prospects of growth in air travel demand in China are well grounded in the transition of the economy towards becoming more service-based alongside further urbanisation.

Regulations on drones

The Chinese Civil Aviation Law regulates civil aviation throughout the country. It authorises the Civil Aviation Administration of China (CAAC) to formulate regulations concerning civil aviation[34].

New regulations on the operations of civil drones implemented by the CAAC took effect on 1 June 2018. They set out the application requirements and procedures for acquiring a business license and supervision measures for drones[35]. In general, all 250-gramme or higher drones must be registered with the CAAC[36]. For commercial operations a license is required.

The largest company in the emerging drone market is the Shenzen-based firm Da-Jiang Innovations (DJI), which has an over 70 % share in the global drone market, with an annual revenue of USD 2.7 billion in 2017[37]. In a crossover move, DJI is increasingly making its new generation of drones useful for regular service operations. Drones are being utilised in various sectors in China: for example, Zhejiang province supports farmers who use drones in agriculture with subsidies of up to RMB 20 000 (around USD 3 000)[38].

4. INLAND WATERWAY AND MARITIME TRANSPORT

China was one of the first countries in the world to develop waterway transport, which has existed there since as early as 2 500 BC[39]. There are 5 800 natural **rivers** and about 900 lakes in China. The three longest rivers are the Yangtze (6 300 km), the Yellow (5 464 km) and the Lancang (4 350 km)[40]. The navigable length of rivers totalled 127 100 km in 2016[41].

In terms of **freight**, waterway transport accounted for 52 % of total freight turnover in 2016. The official statistics indicated a total volume of 6.38 billion tonnes of inland waterway freight in 2016[42]. Mineral building materials, coal and coal products account for more than one half of the total volume moved by the Chinese river ports. About 2.5 billion tonnes of cargo were shipped through the main reaches of the Yangtze River in 2017, an increase of 15 % on 2015[43]. Daily average traffic on the Yangtze River amounted to 703 vessels in 2017[44].

Investment in water transport has not been matching its contribution to freight transport, and has been far smaller than investment in rail and road taken together[45].

The **largest freight inland waterway carrier** in China is Changjiang National Shipping Group Co. Ltd., a regional subsidiary of China Merchants Group (CMG). It operates more than 800 freighters, which, thanks to market specificity, translates into only a 5 % market share.

33 Boeing Commercial Market Outlook 2018-2037.
34 Library of Congress. Regulation of Drones: People's Republic of China. https://www.loc.gov/law/help/regulation-of-drones/china.php
35 https://www.ecns.cn/2018/04-16/299195.shtml
36 https://uavcoach.com/drone-laws-in-china/
37 H. Wolf: 3 reasons why China is the global drones' leader. World Economic Forum. https://www.weforum.org/agenda/2018/09/china-drones-technology-leader/
38 http://www.xinhuanet.com/english/2018-06/29/c_137289904.htm,data [20.09.2018]
39 Promoting Inland Waterway Transport in the People's Republic of China. Asian Development Bank, 2016, p. 1.
40 Ying-En Ge: Inland River Transport in China: Current and Future Trends. In: PROCEEDINGS PIANC-SMART Rivers '17. 18-21 Sept 2017, Pittsburgh, USA.
41 China Statistical Yearbook 2017. http://www.stats.gov.cn/tjsj/ndsj/2017/indexeh.htm
42 http://www.stats.gov.cn/tjsj/ndsj/2017/indexeh.htm
43 http://english.gov.cn/news/top_news/2018/01/04/content_281476001532360.htm
44 http://www.mot.gov.cn/jiaotonggaikuang/201804/t20180404_3006639.html
45 Ying-En Ge: Inland River Transport in China: Current and Future Trends. In: Proceedings PIANC-SMART Rivers '17. 18-21 Sept 2017, Pittsburgh, USA.

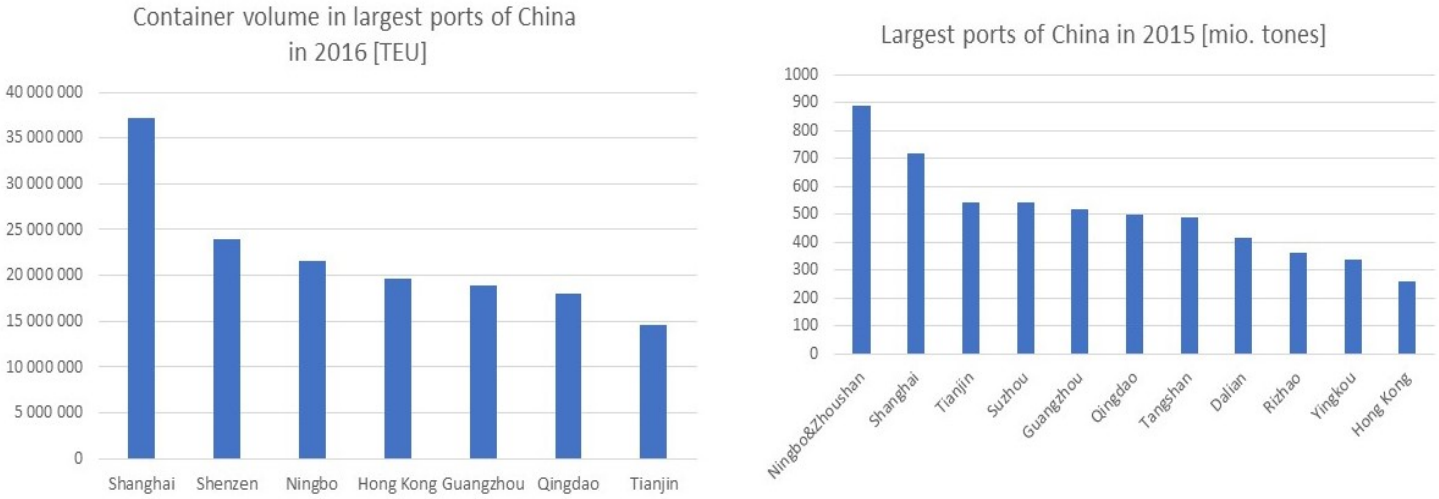
The influence of big rivers on China's economy is still important. For example, the Yangtze River Economic Belt includes 11 provinces and municipalities providing more than 2 million jobs indirectly. Shipping activity on the Yangtze River accounts for around USD 17.9 billion per annum[46]. To quote an expert, 'The Yangtze River Economic Belt is not only one of the regions with the strongest overall economy and the greatest development potential in China, but also an important functional area in the strategic pattern of China's regional economic development'[47].

In 2016, there were 5 206 **maritime vessels** (165.4 million tonnes of dead-weight tonnage) registered in China, of which the majority were bulk carriers. China has the world's second largest container ship fleet after Germany, with 9.3 % of total world capacity[48].

Chinese **shipyards** accounted for 33 % of global ship deliveries in 2016, outpaced only by South Korea (whose market share in the same year was 38 %)[49].

Seven of the ten largest **container ports** in the world (by TEU volume) are located in China. Nearly half of the volumes handled by the top 40 container ports in 2016 were attributed to container ports in China. In the same year, Shanghai registered the highest throughput of containers worldwide, exceeding 37 million TEUs (please see Figure 4 below). In 1999, container volume in the port of Shanghai amounted to 4.21 million TEUs[50].

Figure 4: Container and freight volume in largest ports of China 2015 and 2016



Source: own calculation of the author based on United Nations data[51]

Among the largest global container terminals are Hutchison Port Holdings, China Merchants Port Holdings, China Ocean Shipping and China Shipping Terminal Development[52]. **Port project developments** are also an important part of the One Belt, One Road Initiative, with countries such as Malaysia, Myanmar, Pakistan and Sri Lanka at the forefront of these plans[53].

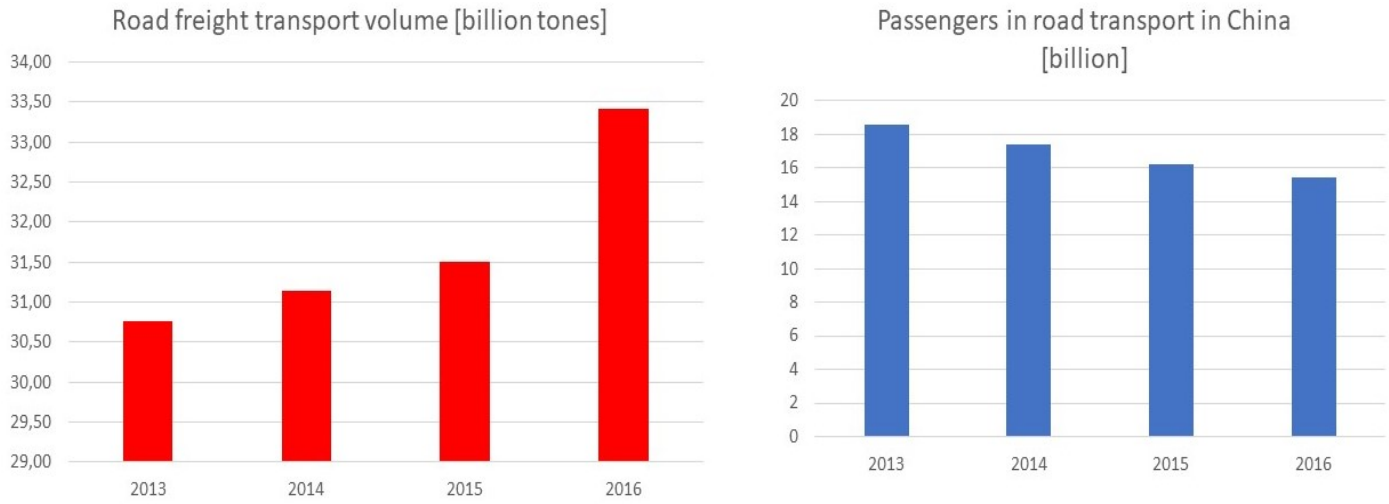
5. ROAD TRANSPORT

As at the end of 2015, China's total length of **roads** was 4.58 million km, of which 87 % were of local importance (including rural roads). The total length of expressways was 123 500 km in the same year[54]. China's road transport sector has seen rapid development, with 1.28 million km of rural roads having been built or renovated in the last five years[55].

46 http://www.bjreview.com/Nation/201809/t20180929_800143001.html
47 Xue Yanjie: Economic Development and Regional Comparison of the Yangtze River Economic Belt during the 'Twelfth Five-year Plan'. Shanghai Academy of Social Sciences 2016 Vol. 3, p. 2.
48 Review of Maritime Transport 2017. UNCTAD, United Nations, New York and Geneva 2017, p. 28.
49 Review of Maritime Transport 2017. UNCTAD, United Nations, New York and Geneva 2017, p. 34.
50 Review of Maritime Transport 2000. UNCTAD, United Nations, New York and Geneva 2000, p. 71.
51 Based on Review of Maritime Transport 2017. UNCTAD, United Nations, New York and Geneva 2017 and H. Klimek: Funkcjonowanie i rozwój portów morskich w Chińskiej Republice Ludowej. Gdańskie Studia Azji Wschodniej 2016 nr 10, s. 76-95 (H. Klimek: Operation and development of ports in People's Republic of China. Gdańsk Studies on Eastern Asia 2016 No10, p. 76-95).
52 Review of Maritime Transport 2017. UNCTAD, United Nations, New York and Geneva 2017, p. 67.
53 Review of Maritime Transport 2017. UNCTAD, United Nations, New York and Geneva 2017, p. 66.
54 Development of China's Transport - State Council Information Office of the People's Republic of China, Dec 2016. First Edition 2016. http://english.gov.cn/archive/white_paper/2016/12/29/content_281475528034734.htm
55 http://www.xinhuanet.com/english/2017-12/27/c_136855307.htm

Road **freight transport** is growing (by 9 % in the period 2013-2016, please see Figure 5) but numbers of road transport **passengers** have been in steady decline (falling by 17 % over 2013-2016).

Figure 5: Road freight and passenger volumes in 2013-2016



Source: own calculation based on data of China Statistical Yearbook 2017[56]

Road development is strongly promoted by Chinese authorities at all levels. Total investment in the road sector amounted to RMB 1.6 trillion in 2015, almost twice as much as expenditure on railways[57].

A shift of freight from road to rail and waterways is referred to as necessary in official documents of the Government of China. In the coming three years, the volume of rail and waterway freight is set to increase by 1.1 billion tonnes and 0.5 billion tonnes respectively, while bulk cargo road transport at costal ports is set to decrease by 0.44 billion tonnes.

6. RAILWAY TRANSPORT

The total length of **railway lines** amounts to 127 000 km and the density of the railway network in China is constantly increasing, reaching 1.32 km/square km[58]. The proportion of double-line railway in China was 53.5 % in 2015, while the proportion of electrified lines was 61.8 % in 2015[59] and 64.8 % in 2016. The process of electrification is one of the lesser-known achievements of the technological development of the Chinese railway system.

Passenger traffic amounted to 2.8 billion in 2016, while freight operations stood at 3.3 billion tonnes[60]. In 2016, coal and its derivatives accounted for 43 % of freight tonne-kilometres.

The railway infrastructure modernisation programme aimed at launching **high-speed rail** (HSR) is part of the market opening and dynamic economic development of China. Even in 1993, the average train speed on the Chinese railway network was 48 km/h. The programme was started in 1997[61]. The first stage was completed in 2007, putting into service the first high-speed Beijing-Shanghai line, on which trains reach a speed of 250 km/h[62].

After 2012, construction of HSR accelerated to encompass 28 out of 33 Chinese provinces. Between 2008 and 2014, the Chinese HSR carried 3 billion passengers[63]. 2014 saw the opening of the HSR line to Ürümqi, the capital of China's westernmost province, Xinjiang, was opened, enabling connection with Kazakhstan[64]. In 2017, the HSR network in China was 22 000 km long, forming 60 % of the world HSR network[65].

In the years 2001-2004, the so-called '**Transrapid**' was constructed. It is a 35-km long magnetic railway serving Shanghai's Pudong airport. The trains reach a speed of 350 km/h in 2 minutes. Their maximum speed is 431 km/h.

56 http://www.stats.gov.cn/tjsj/ndsj/2017/indexeh.htm
57 Li Kaimeng: A Brief Introduction to China's PPP Application in Transport and Logistics Sectors.
58 http://www.mot.gov.cn/jiaotonggaikuang/201804/t20180404_3006639.html
59 Development of China's Transport - State Council Information Office of the People's Republic of China, December 2016. First Edition 2016. http://english.gov.cn/archive/white_paper/2016/12/29/content_281475528034734.htm
60 https://www.export.gov/article?id=China-Rail-and-Urban-Rail
61 https://www.travelchinaguide.com/china-trains/railway/history1.htm
62 http://www.cctv.com/english/20070413/100965.shtml
63 http://documents.worldbank.org/curated/en/451551468241176543/pdf/932270BRI0Box30ffic020140final000EN.pdf
64 http://www.chinadaily.com.cn/china/2014-12/27/content_19179689.htm
65 http://english.gov.cn/archive/statistics/2017/01/04/content_281475532752798.htm

In a test on 12 November 2003, the train reached the speed of 501 km/h. The cost of construction of the rail line reached RMB 10 billion (around EUR 2 billion)[66].

The **Guangzhou-Shenzhen-Hong Kong Express Rail Link** (XRL) connects Hong Kong with the HSR system on the Chinese mainland. This is a major cross-border infrastructure project linking the Chinese mainland and Hong Kong, put forward by the Government of the Hong Kong Special Administrative Region (SAR) in 1998. Construction began in 2010 and the line was opened on 23 September 2018[67].

Chinese HSR has the potential to boost economic growth by facilitating travel and interaction among cities and regions. The construction of the HSR have increased the average accessibility of Chinese cities and reshaped the spatial-temporal landscape of China. Cities that already had relatively better accessibility before the HSR era and those connected by HSR lines enjoy greater accessibility gains compared to other cities[68].

According to the '13th Five-Year Plan for Rail', by 2025 the railway network will be approximately 175 000 km long, including about 38 000 km of high-speed railways.

Rail transport equipment has become one of the key development areas encouraged by the national industry policy known as 'Made in China 2025', and is one of China's golden cards in the 'going global' process for high-end equipment, embracing significant growth opportunities[69]. By the end of 2017, Chinese companies were carrying out more than 20 railway projects abroad, with a total investment of RMB 100 billion (about USD 15 billion)[70].

7. ONE BELT, ONE ROAD POLICY

China's continuing trade surplus is the reason why the country's exports require a smooth distribution system. The main markets for Chinese goods are Asian and European countries. Europe is also a valuable trading partner for China thanks to its importance as a food producer.

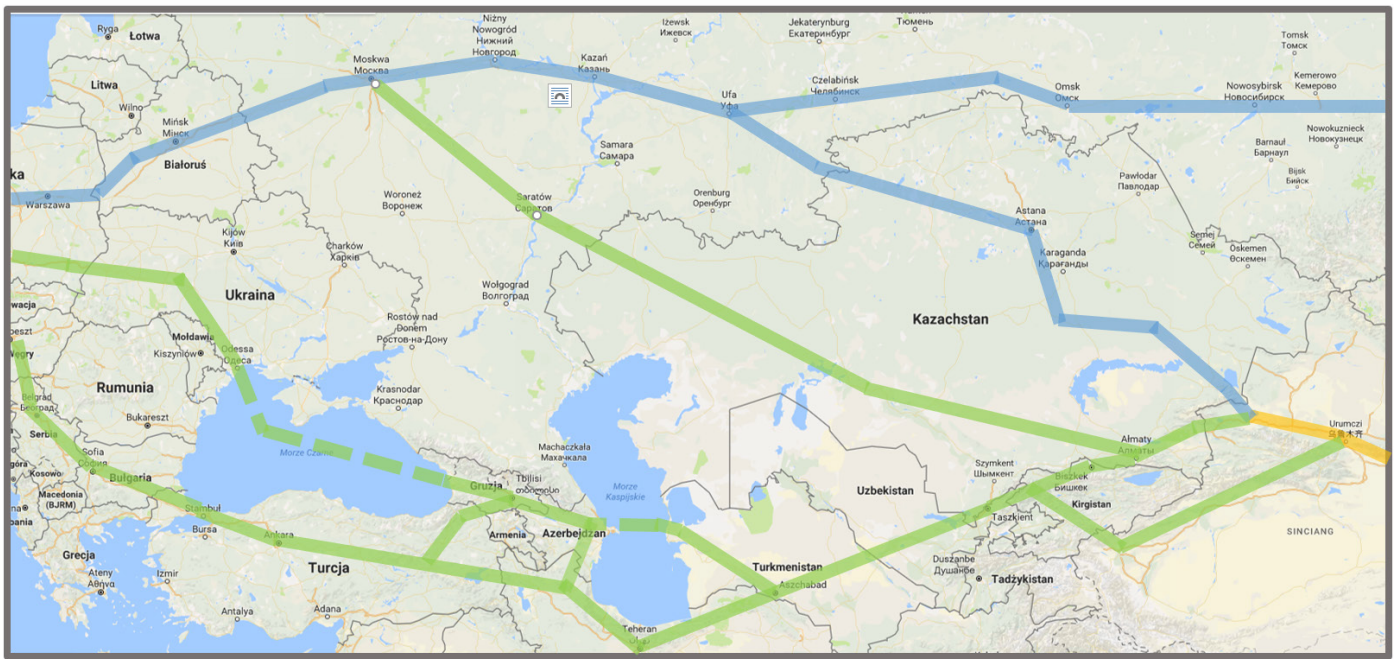
In order to improve trade and create a new development impulse, the Chinese Government has developed the 'One Belt, One Road' Initiative (also called the 'Belt Road Initiative' or BRI), aimed at the development of 'one belt' (rail corridor) and 'one road' (sea transport). This concept includes both the construction and development of transport infrastructure, as well as the expansion of Chinese entities providing financing for this investment in Europe and Asia. Currently, **most freight in China-Europe trade** is sent by sea. The almost unlimited capacity of sea transport, together with the increasing size of ships, provide huge opportunities for this mode of transport. The low price of sea freight is also an important factor influencing transport modal choice, as is the delivery time for the trading partners. In comparison with sea shipping, rail transport offers not only a shorter delivery time, but also the flexibility of providing services to countries and regions along the land route. Partners in Central and Western Asia having rich energy resources (oil and gas) are very important to China. Also, road transport has a significant role to play, especially to the eastern part of Russia[71]. Air transport offers the shortest times but is the most expensive mode. It will continue to play a major role in servicing small and express consignments[72].

All modes of transport which fit in the BRI require capital-intensive infrastructure investments, not only in China but also in other countries situated along the China-Europe route. China not only invests in buying European seaports, e.g. Piraeus (Greece)[73], or financing the construction of intermodal terminals, but also strives to create rail routes between China and Europe. The current northern rail route (the so-called new Silk Road through northern Kazakhstan and Russia) has too little capacity and bypasses many of China's partners in Central Asia and the Caucasus. At the moment, many new railways are being built in Central and Western Asia (e.g. the new rail connection between Iran and Azerbaijan[74]), as well as Europe (the high-speed line Belgrade–Budapest[75]).

Possible alternative China-Europe rail links through Russia and Central Asia are presented in Figure 6 below.

66 https://pl.wikipedia.org/wiki/Transrapid_Szanghaj
67 https://www.chinadiscovery.com/china-trains/guangzhou-shenzhen-hong-kong-high-speed-train.html
68 Mi Diao: Does growth follow the rail? The potential impact of high-speed rail on the economic geography of China. 'Transportation Research', Part A 113, 2018 No. 113, p. 289.
69 CRCC Corporation Limited Annual Report 2017, p. 15. http://www.crrcgc.cc/Portals/73/Uploads/Files/2018/4-27/636604235027673005.pdf
70 http://www.xinhuanet.com/english/2017-12/27/c_136855307.htm
71 https://www.iru.org/resources/newsroom/first-tir-transports-china-advance-belt-and-road-prospects
72 https://www.silkroadresearch.org/wp-content/uploads/2016/10/Aviatic-Silk-Road-Research-Paper.pdf
73 https://foreignpolicy.com/2018/02/02/why-is-china-buying-up-europes-ports/
74 http://www.railways.by/76642-iran-i-azerbajjdzhan-sovmestno-profinansirujut.html
75 https://euobserver.com/eu-china/140068

Figure 6: The course of the main railway lines that are part of the Belt-Road Initiative



Legend: - the current new silk road railway, - new and modernised routes emerging in Central and Western Asia, - HSR to the province of Xinjiang.

Source: own elaboration of the author based on University of Gdańsk data[76]

In order to finance investments, China has created **investment banks** that guarantee repayable funds for countries investing in infrastructure that is part of the BRI[77]. They are co-owned by countries along the BRI route. They exist to finance investments from jointly accumulated capital[78]. This creates potential opportunities for EU Member States to obtain additional financial resources for investment in railways and nodal infrastructure (e.g. border terminals between countries with respectively standard gauge and broad gauge networks).

8. DECARBONISATION AND DIGITALISATION OF TRANSPORT

At present, China is the largest emitter of carbon dioxide (CO_2) in the world. In 2017, its CO_2 emissions exceeded 9 billion tonnes, accounting for 27 % of global CO_2 emissions and was close to the total CO_2 emissions of the US and the EU combined (please see Figure 7 below)[79]. Although China's **CO_2 emissions** more than tripled between 1990 and 2010, the country also significantly reduced its CO_2 emissions per unit of GDP over the same time[80].

In July 2018, the Chinese Prime Minister, Li Keqiang, presented the 'Three-Year Action Plan on Defending the Blue Sky'. The plan focuses on the need to reduce emissions and to improve air quality, especially in the Beijing Tianjin-Hebei (Jing-Jin-Ji) region, the Yangtze River Delta, and the Yan-Ping Plain (Shaanxi and Shanxi Province). The document stipulates a 15 % reduction in sulphur dioxide and nitrogen emissions by 2020 compared to 2015, and tighter restrictions on emissions of particulate matter 2.5. In order to reach these goals, appropriate measures in the energy, industrial and transport sectors will be implemented[81].

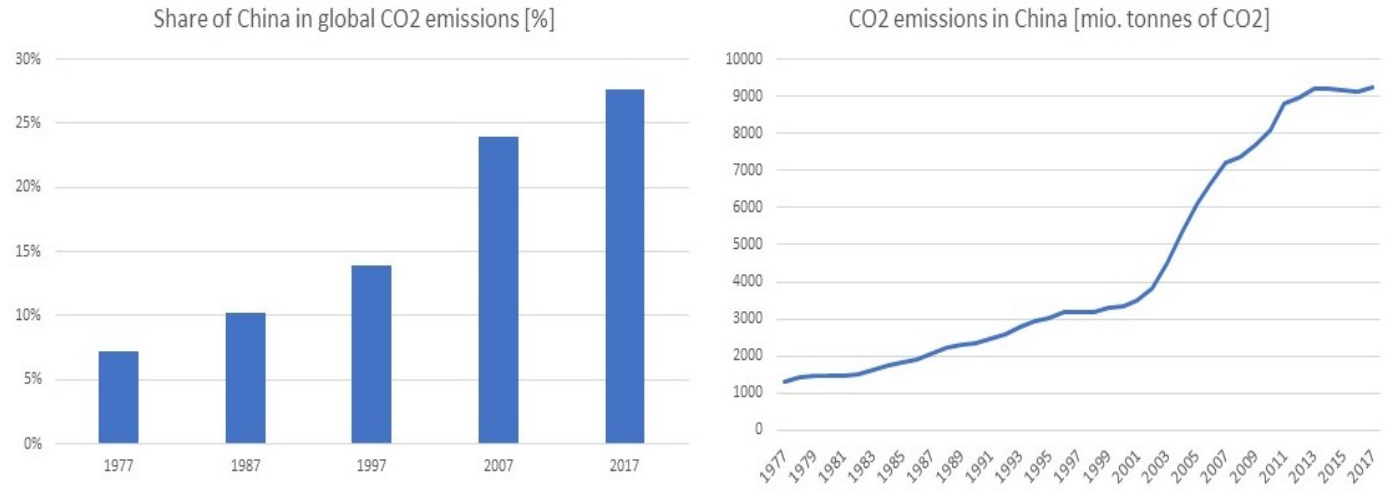
The extensive growth of individual **motorisation** is the main source of transport emissions and congestion in Chinese cities. The numbers of cars have increased significantly over the last decade.

In 2015, the individual motorisation index for the whole country was 121 passenger cars per 1000 inhabitants: it is expected to increase to 200 by 2021. However, the situation in first-tier coastal cities such as Beijing, Shanghai or Shenzhen is different, i.e. the motorisation index in Beijing has already reached level of 252 vehicles per 1000 citizens in 2016[82]. This results in traffic jams and severe air pollution. Municipal authorities try to reduce the number

76 S. Miecznikowski, T. Radzikowski: Overcapacity of container shipping as a challenge to rail Silk Road competitiveness. Research Journal of the University of Gdańsk. Transport Economics and Logistics, 2017, Vol. 70, pp. 121-132.
77 http://english.gov.cn/state_council/ministries/2018/09/20/content_281476310677016.htm
78 https://financialobserver.eu/poland/poland-joins-the-asian-infrastructure-investment-bank-and-hopes-for-benefits/
79 World Energy Outlook 2016.
80 CO_2 Emissions from Fuel Combustion. Highlights of 2012 Edition. International Energy Agency 2013, p. 11 and p. 24.
81 http://www.sustainabletransport.org/wp-content/uploads/2018/08/China-Transport-Sector-Policy-Briefing-July-2018-2.pdf
82 Own calculation based on China Statistical Yearbook 2017. http://www.stats.gov.cn/tjsj/ndsj/2017/indexeh.htm

of conventional vehicles and to promote new energy vehicles (NEVs),[83] but even full electrification of cars would not solve the congestion challenge.

Figure 7: CO_2 emissions in China and share of China in global CO_2 emissions



Source: own calculation of the author based on BP Energy Outlook 2018[84]

China is the largest **market for passenger electric cars**, with a 50 % share of the global market[85]. The market share of electric cars is expected to reach 30 % of China's total vehicle sales by 2030. By 2020, total production and sales of NEVs are expected to reach 5 million[86]. The technological development of fuel cells, the car-sharing economy and the younger generation's lifestyle are the main demand drivers for such market transformation[87]. Subsidisation of e-vehicle purchase and lack of restrictions on the sales of license plates for NEVs are also important factors stimulating demand for electric cars in China[88]. By the end of 2017, cumulative sales (2015-2017) of NEVs exceeded 1.8 million, accounting for more than half of such cars being sold worldwide[89]. In the first half of 2018, 412 000 NEVs were sold in China,[90] thus exhibiting dynamic growth.

China is a leader in the **production of electric road vehicles**. The annual production of electric buses in 2017 amounted to nearly 90 000 and has skyrocketed since 2013 when it stood at 1 600[91]. The largest number of electric buses goes to the domestic market. The Chinese **electric bus market** is dominated by Yutong (the largest bus manufacturer in the country, with 25 000 e-buses in 2017) and BYD (13 000 in 2017). The popularisation of electric vehicles in urban transport receives strong support from urban transport policy (including financial). For example, Shenzhen set targets to upgrade its fleet of city buses with electric vehicles by the end of 2018 (there are currently 16 359 e-buses in the city) and swap all its taxis for electrically powered vehicles by 2020[92]. Other supporting factors for increased use of e-buses in China include: urban pollution, reduced oil imports, blank slate (development of entirely new public transport networks), and industrial policy at national level[93].

The development of comprehensive e-mobility system is a part of the 'Made in China 2025' industrial policy. 'New energy and energy-saving vehicles' are among ten technologies targeted in the document[94].

The **urban mobility** landscape in China is strongly affected by the existence of shared mobility services. Technology and new business models driven by technology are transforming the way passengers use existing

83 New Energy Vehicles. Measures by the Chinese Government to Promote Electro-Mobility. http://www.sustainabletransport.org/archives/6366
84 https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/energy-outlook/bp-energy-outlook-2018.pdf
85 International Energy Agency (IEA), 2018.
86 http://www.xinhuanet.com/english/2018-02/27/c_137001646.htm
87 Electric vehicles on the fast track. China Daily News, 20.09.2018. http://www.china.org.cn/business/2018-09/20/content_63671485.htm
88 https://www.mckinsey.com/featured-insights/china/what-can-we-expect-in-china-in-2018
89 China's new energy automakers dealing with subsidy cut. Xinhua Agency news, 18 May 2018. http://www.xinhuanet.com/english/2018-05/18/c_137188711.htm
90 Centre for Automotive Management (CAM), 2018.
91 https://evobsession.com/
92 Electric vehicles on the fast track. China Daily News, 20.09.2018. http://www.china.org.cn/business/2018-09/20/content_63671485.htm and https://www.citylab.com/transportation/2018/05/how-china-charged-into-the-electric-bus-revolution/559571/
93 Electric Buses in Cities Driving Towards Cleaner Air and Lower CO2. Bloomberg New Energy and Finance, March 2018, p. 5. http://c40-production-images.s3.amazonaws.com/other_uploads/images/1726_BNEF_C40_Electric_buses_in_cities_FINAL_APPROVED_%282%29.original.pdf?1523363881
94 J. Wübbeke, M. Meissner, M. J. Zenglein, J. Ives, B. Conrad: Made in China 2025. The making of a high-tech superpower and consequences for industrial countries. Mercator Institute for Chinese Studies, December 2016, No. 2, p. 19.

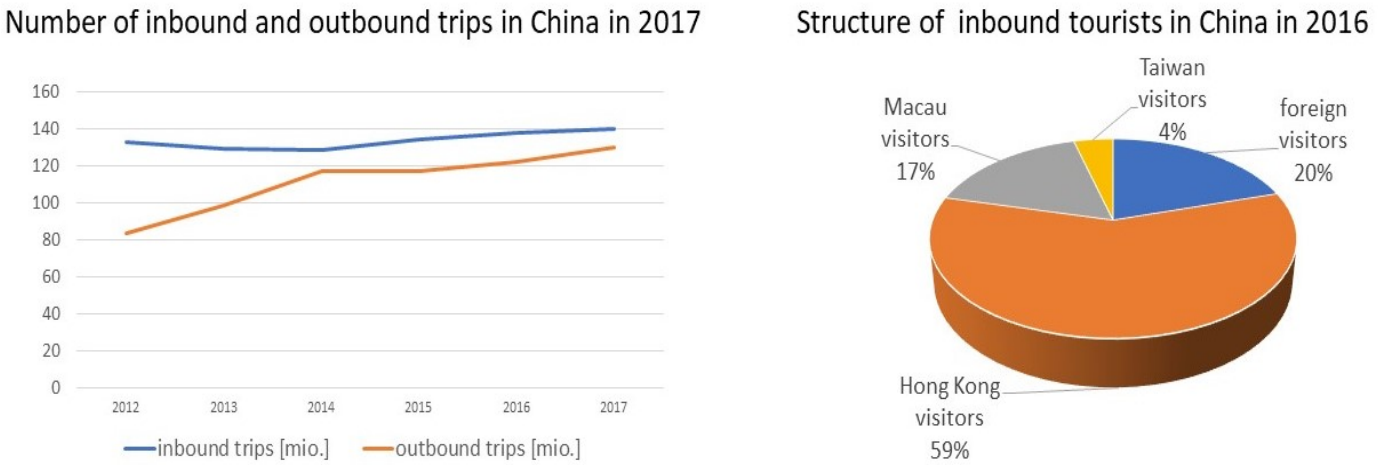
transport modes[95]. Bicycle **sharing systems** are very popular in Chinese cities and the biggest worldwide system is in Hangzhou, the capital of Zheijiang province (with around 9.5 million inhabitants), with more than 84 000 bicycles. Of the world's 15 biggest public bicycle sharing programmes, 13 are operating in China[96].

Modern shared mobility concepts based on online platforms are gaining a very high popularity in Chinese cities. The most known, Didi-Chuxing, is a **ride-hailing platform**, which acquired Uber China in 2016 for USD 35 billion. The number of journeys using Didi-Chuxing's services amounts to 7.3 billion per year, and the company is present in more than 400 Chinese cities. In Beijing and Chengdu alone, the total number of daily rides reached one million in 2017[97]. One source states that 'the country's e-hailing services and ordering car rides electronically are estimated to reach USD 72 billion by 2020, i.e. more than all other countries in the world combined'[98]. In February 2018, Didi-Chuxing began testing its autonomous vehicles in the US and China[99]. The company is expanding globally. Currently, other companies too are making strong advances in the development of self-driving technology in China (e.g. Alphabet's Waymo and Baidu).

9. TOURISM IN CHINA

In 2017, the **travel** and **tourism sector contributed directly** a total of RMB 2 719.2 billion to China's GDP (3.3 %), and it has presented constant growth over the last decade. This primarily reflects the economic activity generated by components such as hotels, travel agents, airlines and other passenger transport services[100]. Leisure travel spending constituted almost 80 % of total travel and tourism sector spending in 2017.

Figure 8: Basic data on volume and structure of tourists in China



Source: own calculation of the author based on the Travel China Guide[101]

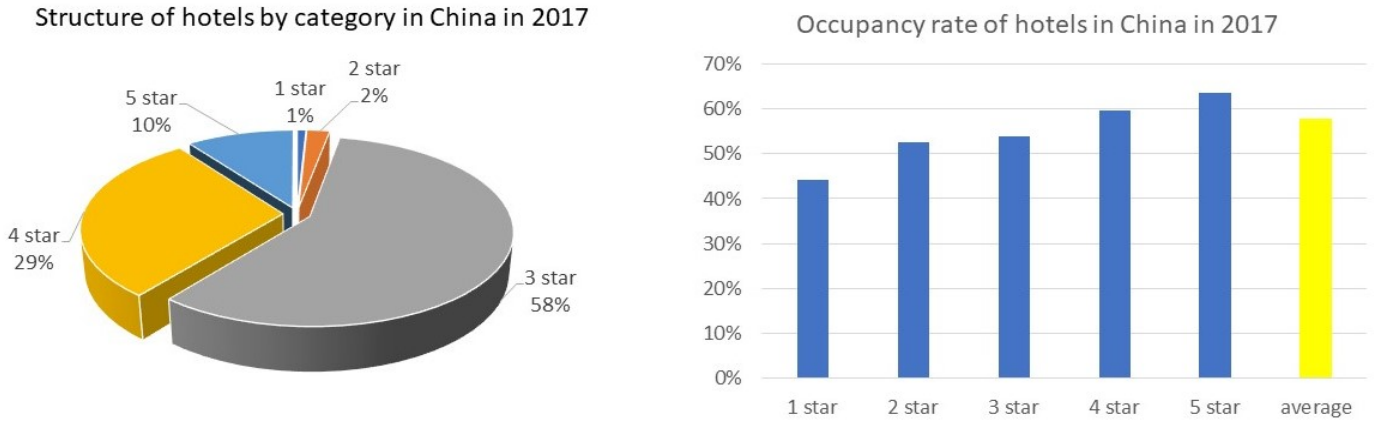
China has the world's largest numbers of outbound tourists. The number of **outbound trips** made by Chinese tourists rose from 5 million in 1995[102] to 130 million in 2017 (please see Figure 8). The Chinese outbound tourism market still has great potential, since only 10 % of Chinese citizens have applied for passports for outbound tours[103] and the middle-class population of China is expected to reach 780 million by 2022, as opposed to the present 430 million[104]. Among destinations, Thailand and Japan were the top destinations for Chinese travellers in 2017, with 9.8 million tourists visiting Thailand and 7 million tourists travelling to Japan[105]. In 2016, expenditure of Chinese citizens on outbound tourism amounted to USD 109.8 billion[106].

95 M. Finger, N. Bert, D. Kupfer, J. J. Montero, M. Wolek: Research for TRAN Committee – Infrastructure funding challenges in the sharing economy, 2017, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels, p. 40.
96 N. van Mead: Uber for bikes: how 'dockless' cycles flooded China – and are heading overseas. Guardian, 22 March 2017. https://www.theguardian.com/cities/2017/mar/22/bike-wars-dockless-china-millions-bicycles-hangzhou
97 Didi Chuxing – How China's ride-hailing leader aims to transform the future of mobility. http://www.sustainabletransport.org/archives/6317
98 https://www.weforum.org/agenda/2018/09/china-drones-technology-leader/
99 Official website of Didi Chuxing. https://www.didiglobal.com/news/newsDetail?id=324&type=news
100 Travel and Tourism Economic Impact 2018 China. World Travel and Tourism Council, 2018. https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2018/china2018.pdf
101 https://www.travelchinaguide.com/tourism
102 http://www.xinhuanet.com/english/2018-09/18/c_137476593.htm
103 http://www.travelchinaguide.com/tourism/2017statistics/outbound.htm
104 https://www.mordorintelligence.com/industry-reports/china-tourism-and-hotel-industry
105 https://www.researchandmarkets.com/research/83drkg/the_tourism_and?w=4
106 http://www.wta-web.org/eng/sjzx_4026/lytjgb_4027/201710/t20171013_842558.shtml

The majority of **inbound tourists** were from Hong Kong (59 %) and from abroad (20 %). Top tourism destinations in China are Beijing, Shanghai, Guangzhou, Xian, Chengdu, Chongqing, Guilin, Kunming and Shenyang[107]. In 2016, China's international tourism revenue reached USD 120 billion, of which 56 % was contributed by visitors from abroad.

The **domestic tourism industry** accounted for 4.44 billion domestic tourist trips in 2016, up by 11 % on the previous year. Domestic tourism revenue reached RMB 3.94 trillion in the same year, an increase of 15.19 % on 2015[108]. Rural tourism and 'red tourism' (exploration of historic revolutionary places) are two of China's new tourism trends.

Figure 9: Structure and occupancy rate of hotels in China in 2017



Source: own calculation based on Chinese tourism statistics[109]

3-star and 4-star hotels account for 87 % of nearly 9,000 hotels in China, although the highest occupancy rate is among top ranking 5-star establishments (please see Figure 9).

Regarding the means of transportation used for leisure in 2016, 3.4 % tourists entered China by ship, 16.4 % by air, 0.8 % by train and 21.9 % by car, and 57.5 % were pedestrians (crossing mainly the China/Hong Kong border)[110].

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107 https://www.travelchinaguide.com/tourism/2017statistics/inbound.htm

108 http://www.wta-web.org/eng/sjzx_4026/lytjgb_4027/201710/t20171013_842558.shtml

109 https://www.travelchinaguide.com/tourism/2017statistics/

110 http://www.wta-web.org/eng/sjzx_4026/lytjgb_4027/201710/t20171013_842558.shtml