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King Abdullah Petroleum Studies and Research Center

Commentary

China's Green Freight Policy

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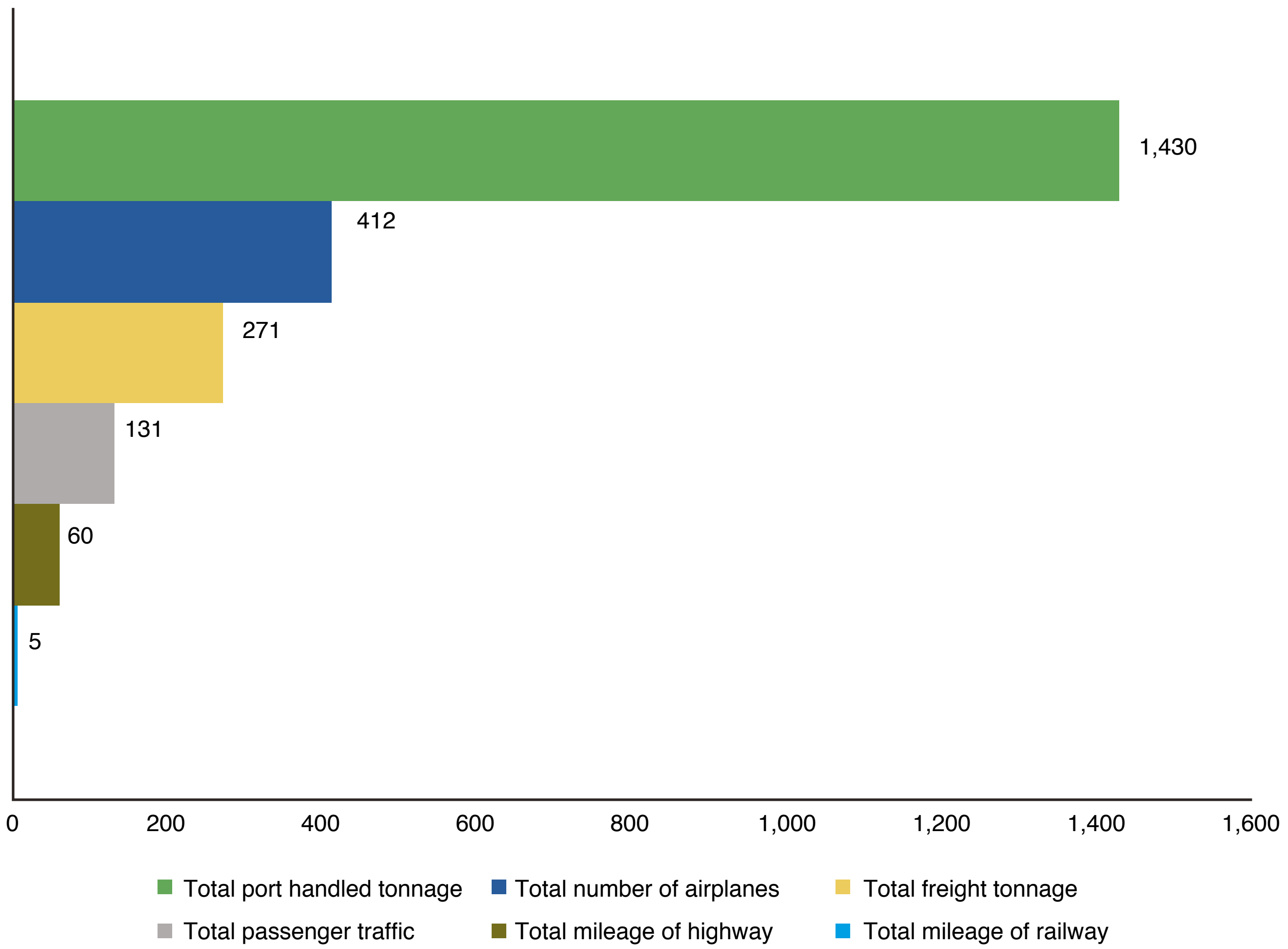
China's freight and passenger transportation demand grew by as much as one hundred-fold from 1949, when the People's Republic was founded, to 2018

In September 2019, China's National Development and Reform Commission (NDRC), together with the Ministry of National Resources, the Ministry of Transport, the National Railway Administration, and the State Railway Group, issued the policy announcement, "Guiding opinions on accelerating the development of dedicated railway lines" (NDRC 2019). It stipulated that, by 2020, 80% of China's primary coastal ports, its large industrial and mining companies with an annual freight transportation volume of over 1.5 million tonnes, and all newly constructed logistics parks need to be connected to dedicated railway lines.

The new policy is a follow-up to the "Three-Year Action Plan for Promoting Transportation Structure Adjustment 2018-2020" (State Council 2018), enacted in 2018 by the State Council, China's chief government authority. It aimed to improve China's energy efficiency and reduce the air pollution caused by freight transportation. As the world's second-largest economy, China has the longest mileage of expressways, high-speed railways and inland waterways globally. It also has the highest domestic freight turnover. China's freight and passenger transportation demand grew by as much as one hundred-fold from 1949, when the People's Republic was founded, to 2018 (Figure 1).

Figure 1. Growth of China's key transport indicators (1949-2018) (1949=1).



Source: Ministry of Transport, China Statistical Yearbook, calculated by authors.

The fast growth of China's transportation demand, both domestically and internationally, underpinned by its rapid economic development, has had important implications for energy consumption and the environment. China is now the world's second-largest consumer of energy for transportation and is the largest carbon emitter, to which transportation is an important contributor (IEA 2017). The overly fast growth of road trucking in China, at the cost of other traditionally important modes, such as railway (Figure 2), has led to a more energy- and carbon-intensive modal structure for freight transportation. Increasing quantities of bulk commodities are being moved long distances by trucks instead of being carried by more energy-efficient, less carbon-intensive and less polluting modes, such as railway and waterway. Policy initiatives to reverse this trend, such as the development of intermodal freight transportation, has been slow and, as a result, has hindered the shift of freight away from trucking. For instance, intermodal ship-to-rail container transfers currently account for only 2% of all container shipping at coastal ports (Shen 2018). Further, the lack of infrastructure between ports, railways and roads makes it even more difficult and costly to switch to railway transportation.

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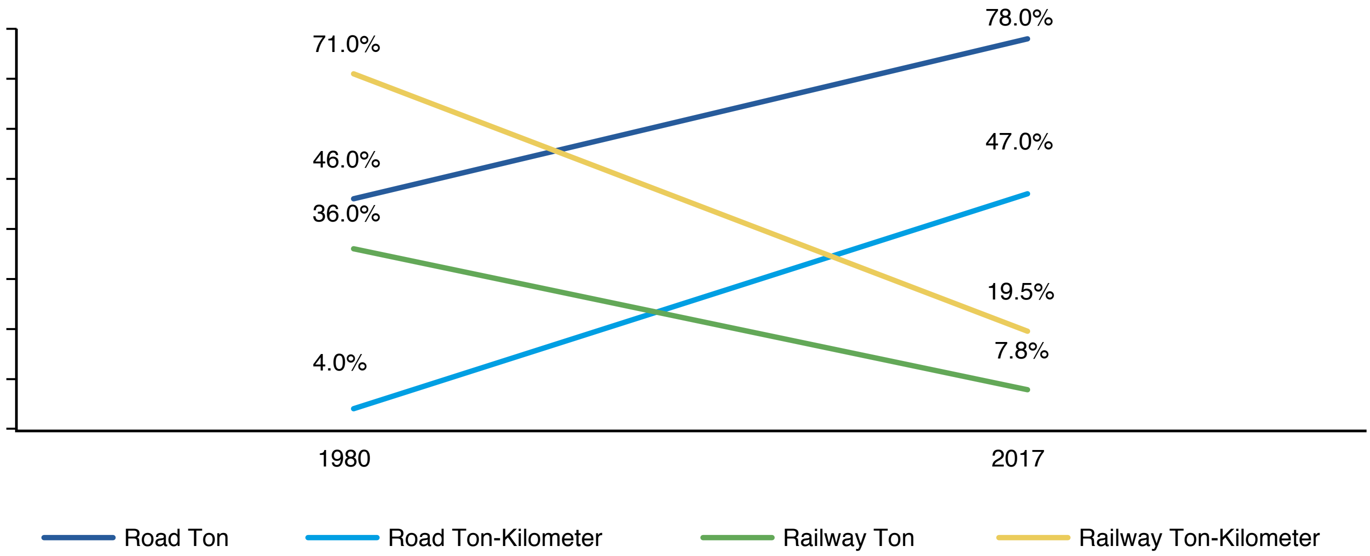
Figure 2. Shares of road and railway freight transportation, 1980 vs. 2017.



Source: China Statistical Yearbook.

Its primary focuses are on shifting freight movement from road trucking to railway and waterways, reducing the quantities of bulk commodities carried by trucks, and promoting intermodal container shipping (ship-to-rail) at coastal ports

The “Three-Year Action Plan for Promoting Transportation Structure Adjustment 2018-2020,” implemented to optimize China’s freight transportation modal structure, comprises six key policy measures (Table 1). Its primary focuses are on shifting freight movement from road trucking to railway and waterways, reducing the quantities of bulk commodities carried by trucks, and promoting intermodal container shipping (ship-to-rail) at coastal ports. Some of these policies have already borne fruit. For example, pilot projects involving non-truck-operating common carriers (NTOCCs), a form of freight transportation intermediary, have demonstrated their ability to increase vehicle mileage utilization by 50% and reduce trade costs by 6%-8%. Also, evidence from 310 demonstration lines suggests that, compared with road transportation, multimodal use can achieve a cost reduction of 35%, and savings in energy consumption and logistics expenditure of 750,000 tonnes of standard coal and 10.3 billion Chinese yuan (Ministry of Transport 2019).

As China has accounted for the largest share of global transportation oil consumption growth in the last two decades, the successful implementation of its green freight strategy may have important implications for the world energy market

Looking ahead, one of the primary policy focuses of China’s green freight blueprint is to improve its integrated transportation infrastructure network. This will entail developing integrated transportation channels, constructing networks with well-connected trunks and branches, and establishing more freight hubs. Another key component is the acceleration of the transformation and upgrading of China’s freight transportation structure by promoting the use of railways and waterways for long haul movement and bulk cargo shipping. As China has accounted for the largest share of global transportation oil consumption growth in the last two decades, the successful implementation of its green freight strategy may have important implications for the world energy market. The mode-switching policies outlined above are expected to curb the fast growth of China’s freight transportation oil demand, and shift part of the demand for diesel used in road trucking to heavy fuel oil (HFO) used in waterway shipping. Increased demand from waterway shipping may partially offset the negative impact on demand for HFO from the recent International Maritime Organization (IMO) rule (IMO 2020), according to which from 2020, a lower maximum sulfur content of fuel oil must be used by ships, from the previous level of 3.5% to 0.5%.

Altogether, these policy initiatives provide a useful reference for fast-growing economies faced with strong freight transportation demand growth on the one hand, and energy consumption and carbon/pollutants emissions constraints on the other

Altogether, these policy initiatives provide a useful reference for fast-growing economies faced with strong freight transportation demand growth on the one hand, and energy consumption and carbon/pollutants emissions constraints on the other. For transitioning economies that often undergo rapid economic expansions and increased freight transportation demand, road transportation may be the lowest-threshold mode to respond to that demand. Railways and waterways often face infrastructure, quality of service and several other challenges. However, the fast growth of road trucking in a country’s transportation modal mix also leads to increased energy consumption and negative impacts on the environment, as witnessed in China and India. Therefore, policymakers need to be aware of this ex-post evidence and devise a balanced transportation modal structure in order to meet policy goals that sustain economic growth and improve energy efficiency.

Table 1. Six policy goals in the "Three Year Action Plan for Promoting Transportation Structure Adjustment 2018-2020."

Enhance the capacity of railway transportation	
	Follow the "Guidance on Accelerating Construction of Dedicated Railway Lines"
	Solve the 'last mile' problem of railway transportation
Upgrade the water transportation system	
	Enhance the capacity of inland water transportation
	Develop river-sea direct transportation and river-sea intermodal transportation
	Develop ship-to-rail intermodal shipping at coastal ports
Improve road freight transportation	
	Promote pioneering projects on non-truck operating common carriers (NTOCCs)
	Reduce and eliminate oversized and overloaded freight trucking activities
	Promote standardized vehicles and green vehicles
	Upgrade/eliminate non-compliant vehicles
Accelerate the development of multimodal transportation	
	Implement pilot projects on multimodal transportation
	Implement pilot projects to promote drag-and-drop practices
	Provide grant and subsidy for construction of freight hubs and logistic parks
Green urban freight distribution	
	Implement pilot projects to promote sustainable urban freight distribution
	Strengthen efforts on the promotion and application of alternative fuel vehicles for urban freight distribution
Integrate information resources	
	Facilitate and strengthen information exchange and sharing for multimodal transportation
	Improve the quality of logistics information services
	Establish national public platforms for transportation logistics information

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About the project

The “Future freight transport energy demand for China” project aims to analyze the economic and technological determinants of freight transport energy demand in China, one of the largest contributors to world oil consumption growth since 2000. The project explores the current markets and future scenarios for freight transportation energy consumption in China, focusing on two specific questions. First, how will China’s new economic paradigm as a result of the industrial upgrade and shift in consumption pattern determine its future freight movement and energy consumption trends? Second, what is the potential for energy conservation from technology disruptions (such as digital-freight-matching for road trucking) in the freight logistics sector in China?

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