

Bold investment by China in high-speed train services is helping to unlock the country's vast economic and social potential

By DAVID HO and ALFRED ROMANN in Hong Kong
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In just a decade, China rolled out its first high-speed train service and then built the longest and busiest high-speed railway network in the world.

China last year had 22,000 km of high-speed rail, more than 65 percent of the global total, and it looks to add another 16,000 km by 2025.

Under the current Five-Year Plan, China is spending 3.5 trillion yuan (\$531 billion) on railway construction, with more than 80 percent of its major cities connected by high-speed rail by 2020. By 2030, the network aims to link all cities with populations of more than 500,000.

"China is one of the countries that endorse the United Nations 2030 Agenda for Sustainable Development. The goals include aligning economic growth with social inclusiveness and environmental sustainability. Railways are the perfect way to achieve that," said Pierre Chartier, chief of the transport infrastructure section at the United Nations Economic and Social Commission for Asia and the Pacific.

"There's been a bit of rail revival around the world and here's why. Transport makes up for over a quarter of global energy consumption. Railways make up only 2.2 percent of that number, compared to aviation that consists of 10.4 percent or road transport that is 73.8 percent," he explained.

Also, transportation makes up over one-fourth of the world's carbon-dioxide emissions, he said. "Railways stand for just 3.3 percent of the number, while it's 10.6 percent and 72.6 for aviation and road transportation, respectively."

Affordability, the lack of delays often associated with conventional trains, and less dependency on weather or traffic conditions, have all made modern railways popular.

The numbers favor railways, especially as China works to cut costs and pollution.

The sheer number of railway projects, both in and outside China, translates into significant economic impact. When China first started expanding its rail network, there were concerns that the country was stretching itself thin, fiscally. The Ministry of Railway's revenues in 2010 were 686 billion yuan, while debts totaled 1.98 trillion.

But all the investment appears to be paying off, according to Eda Erbeyli, a project manager for research firm Daxue Consulting.

"Based on our research, the prof-



Chinese hostesses welcome passengers on the platform before a Fuxing high-speed bullet train leaves the Beijing South Railway Station for Shanghai on Sept 21. China plans to link more than 80 percent of its major cities by high-speed rail by 2020. SONG FAN / IMAGINECHINA

Riding the rail revival

2.2
percent

Proportion of global energy consumption that railways account for

7.2

trillion yuan

China's total asset value for railways in 2016

102
meters

Distance below the ground of Badaling station

16,000
kilometers

Length of high-speed rail line that China aims to add by 2025

its have been increasing steadily in the last few years. In 2014 it was 636 million yuan and grew to 680 million the following year. Their railway asset value also saw a huge increase, going from 5.6 trillion yuan in 2014 to 6.2 trillion in 2015.

"China's total asset value for railways was 7.2 trillion yuan as of last year. Their total revenue for 2016 was 900 billion yuan, with a total profit of 1 billion yuan," she said.

All this infrastructure and connectivity creates significant economic dividends. Rail lines bring life, sprout satellite towns and generate traffic to rural areas.

"Transport is considered crucial to the development of China as it directs development wherever it goes since connection drives business," said Erbeyli.

"An example would be Chengdu (capital of Southwest China's Sichuan province) which is now considered a transport hub. The railways can serve as an economic lifeline to the more rural parts of the country"

Chinese railway projects also have lower costs. "The main reason for this is that their railways are mainly built on viaducts. This gives them savings of up to 85 percent on the cost," Erbeyli said.

Railways can also boost exist-

ing businesses and new industries. Chartier from the UN pointed to estimations from the Malaysian government that a railway line linking Singapore to Kuala Lumpur will bring about 80 projects in six major industry groups along the corridor and create 67,000 jobs for 10 years after the line comes into operation in 2026.

And there is also a psychological shift. "Railways increase trade, not just at the beginning and end of the line, but also create economic clusters along it. That can change the socioeconomic mentality and the landscape of the people," Chartier said.

The upshot is the potential for much greater domestic tourism spending and a boost to industries tied to it.

There has been a learning curve associated with the development of China's high-speed railway network.

In July 2011, in Wenzhou in East China's Zhejiang province, a Beijing-Fuzhou train crashed into a stationary train, causing 40 deaths and more than 200 injuries. In August 2011, Beijing temporarily put a halt on new projects.

"The security of passengers is of course paramount to any transport service. Big projects like these high-

speed railways usually face some teething problems in the early stages," Erbeyli from Daxue said.

The debut of the new Fuxing, or "rejuvenation", bullet trains this year has generated a lot of positive attention, with China now embarking on a monumental project to build a new railway line in the southwest between Chengdu, in Sichuan, and Lhasa in the Tibet autonomous region.

China Railway Eryuan Engineering Group is tasked with designing the line, which will pass through 21 snowcapped mountains and cross 14 major rivers.

The 1,700-km Sichuan-Tibet Railway will cost a hefty 250 billion yuan, but it will cut a 48-hour journey down to just 13 hours. It is set to be a major construction achievement and will open a vital economic door for Tibet.

On Aug 8, construction officially began on a Dunhua-Baihe high-speed line in the northeastern province of Jilin. The 113.5-km, 250 km/h line will provide the Yanbian Korean autonomous prefecture with direct access to Changchun, Jilin's capital.

Also under development is the world's deepest and largest underground high-speed railway station

— at the Great Wall of China. Located at the tourist attraction's most popularly visited section, Badaling station will be 102 meters below ground.

The underground station will form part of a 174-km high-speed railway line linking Beijing with the city of Zhangjiakou in North China's Hebei province.

According to Erbeyli, these impressive achievements will elevate and strengthen the credibility of China's railway technology and construction services in the eyes of potential customers in other countries.

"This helps build trust and confidence in those from other markets," she said. "But just as importantly, it also helps to gain and grow your own market as well."

Chartier at the UN believes China's advances in rail put it on track to tap the country's potential.

"The internal Chinese markets are not fully open yet. There are huge segments of population in the hinterland areas. These railway projects are opening them up for social inclusiveness and economic development," he said.

"Railways are a powerful tool for China to open up vast expansive markets, including its own."