

SPOTLIGHT

Bay Area to see fast-paced development

The 55-kilometer sea-spanning route will connect more urban regions across the Pearl River Delta

By HE SHUSI
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The opening of the Hong Kong-Zhuhai-Macao Bridge, the first road link to span the Pearl River Estuary, will provide a crucial boost to the development of the Guangdong-Hong Kong-Macao Greater Bay Area, according to experts.

They said the improved connectivity will release the vitality of the regional economy and merge Hong Kong and Macao, two special administrative regions (SARs), with China's overall development.

The bridge, one of the most important national infrastructure projects in recent years in the Bay Area, is expected to open in the second quarter, possibly in May or June, according to people familiar with the matter who spoke to *China Daily* in January.

The bridge will drive the expansion of the economy in the Greater Bay Area, according to Gordon Wu Ying-sheung, chairman of Hopewell Holdings, an infrastructure and property developer in Hong Kong.

In 1983, Wu spotted the great potential of the manufacturing sector in the Pearl River Delta. Realizing that Hong Kong's limited market meant its development would be reliant on neighboring Guangdong province in South China, he initiated the idea of building the link across the estuary.

At present, the economic development of cities on the eastern side of the delta, including Shenzhen and Huizhou, is surging, while west bank cities such as Zhuhai and Jiangmen lag behind.

By connecting Hong Kong with highways in Guangdong that run all the way to the Guangxi Zhuang autonomous region and the southwestern province of Yunnan, the bridge will consolidate the city's role as an international trading and air transportation hub, and accelerate development in Guangdong's western areas.

"If there is no developed transportation infrastructure, the economy will never soar," Wu told *China Daily* in an exclusive interview.

Hu Xijie, former deputy minister of transport, echoed Wu's opinion. He said the bridge will improve communication within the Bay Area, especially between cities in Guangdong, and with Hong Kong and Macao.

Hu believed the power of the bridge will be highlighted as the SARs further integrate into the country.

"The bridge is vital to the overall development of the Bay Area politically, economically and culturally," he said.

Construction of the world's longest sea-spanning project began at the end of 2009, and the 55-kilometer-long bridge-island-tunnel complex will connect Hong Kong on the east side of the delta with Macao and Zhuhai on the west.

Development blueprint

The bridge cost about 120 billion yuan (\$19 billion). Once operational, it will cut the journey time between Hong Kong and Zhuhai by car from four hours to less than 60 minutes.

According to Lin Ming, chief engineer of the bridge's island and tunnel project, the bridge will promote the development of more urban areas within the Bay Area because China's urbanization process relies mainly on the coastal regions.

"The delta in Guangdong is the perfect location for metropolises. Sustainable development in the delta will require more roads — the more, the better," he said.

He dismissed criticism that the bridge will only benefit Hong Kong, and said it will help the long-term integration of the entire Bay Area.

"If you only see the benefits to Hong Kong, you may only be talking about a 20-year time scale. If you foresee the future in 30 to 50 years, the bridge will be for the Bay Area as a whole. The further you look at the development, the better you will understand the significance of the bridge," he said.

Su Quanke, chief engineer of the Hong Kong-Zhuhai-Macao Bridge (HZMB) Authority, the operator of the bridge, said the structure will play a major role in China's development blueprint.



Strategic lifeline: The Hong Kong-Zhuhai-Macao Bridge Authority will play a key role in the sustainable development of southern China. D.J. CLARK / CHINA DAILY ASIA WEEKLY

He added that at least five bridges will be needed to connect the western and eastern sides of the estuary and cope with the increase in traffic as the local economy expands.

"As the first physical connection across the Bay Area, the bridge will bring greater economic power to the region," he said.

The bridge will also straddle the differences between social systems.

The 14 years of preparatory work and construction of the structure have provided a wealth of cross-governmental experience, as the HZMB Authority cooperated with the governments of Guangdong, Hong Kong and Macao, according to Su, who said that experience could be spread across the entire Bay Area.

Su was a newly elected member of the 13th National Committee of the Chinese People's Political Consultative Conference — the political advisory body of the People's Republic of China — at the recent two sessions. The two sessions refer to the dual meetings of the National People's Congress, China's

national legislature, and the CPPCC.

He said the authority, as the first entity jointly founded by the mainland administration and the two special administrative regions, could play a bigger role in future infrastructure projects in the Bay Area as a result of its experience in cross-governmental management and cooperation.

Lau Ching-kwong, a prominent bridge expert in Hong Kong, said the project is a testament to the positive exchanges in civil engineering and management concepts between Hong Kong, Macao and the mainland.

Cross-cultural link

"The bridge has promoted cross-cultural and cross-background communication in the Bay Area," said Lau, a fellow of the Hong Kong Academy of Engineering Science and a former director of the city's Civil Engineering and Development Department.

Su Yi, head of the Working Group on Cross-boundary Policy Research for the HZMB Authority, hoped the cooperation between Hong Kong, Macao

and Guangdong for the construction of the HZMB will also boost the Bay Area's "software".

The key lies in knowing how to merge the region, according to Su Yi. "The bridge will open a door for people from different political systems to have a greater exchange of thoughts and coordination," he said.

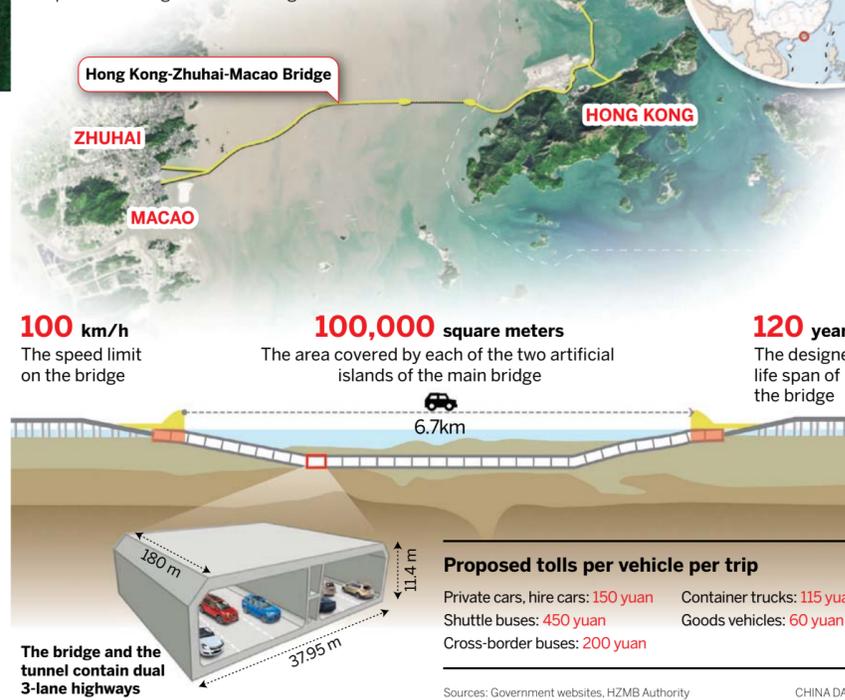
He added that the project will also promote similar exchanges and communication across the Bay Area in terms of capital, trade and policies, and winning people's hearts.

The blueprint for the Bay Area is part of the national development strategy put forward in the Government Work Report delivered by Premier Li Keqiang in March last year.

Similar to the San Francisco Bay Area in the United States, the strategy is designed to merge cities in the Pearl River Delta — such as Hong Kong, Macao, Guangzhou, Shenzhen, Zhuhai, Foshan, Zhongshan, Dongguan, Huizhou, Jiangmen and Zhaoqing — into an integrated economic and business hub.

Gateway to the future

With a total length of 55 km, the bridge-island-tunnel complex is the longest sea-crossing structure in the world



Chinese solutions break new ground

Techniques used by the island and tunnel project meet very high quality standards and provide key lessons for the global civil engineering industry

By HE SHUSI

The island and tunnel project of the Hong Kong-Zhuhai-Macao Bridge (HZMB) has provided the world's civil engineering industry with precious experience and broken the stereotypes of Chinese construction, said major engineers on the project.

The project was conducted offshore in the middle of the Pearl River Delta with no land support. To make the process easier, the team led by chief engineer Lin Ming built a prefabrication factory to manufacture tunnel elements on an island nearby, which largely accelerated the efficiency and minimized the effects of unpredictable weather in the Pearl River Delta.

Deputy chief engineer Dong Zheng said the 560,000-square-meter prefabrication factory is the largest and most advanced of its kind in the world.

Unlike traditional civil engineering projects that produce reinforced concrete on-site, Dong, who was in charge of managing the factory, said flow line production in the prefabrication factory guaranteed high-quality concrete for each tunnel element, due to its stable temperature and humidity. "It is the world's only immersed tunnel that doesn't leak water," Dong said with pride.

While ensuring quality, Dong's team also paid great attention to the management of workers in the factory. In civil engineering, he said, the management of people is even more difficult than that of technology.

Dong said his team applied various automation and assembly techniques to minimize the use of manpower, liberating workers from repetitive and tedious work so they could focus on more intelligence-required tasks. He believes this is a development trend that will be used more in future.

"It is of great significance for promoting the concept of large-scale factorization ... It's a typical example of green development, for higher production efficiency, higher quality, and it is more environmentally friendly than on-site manufacture," Dong said.

"Many people and projects will be influenced and inspired by this (HZMB) project."

After being prefabricated in the factory, all 33 tunnel elements were floated to the installation site. Wang Qiang, also a deputy chief engineer on the project, was a supervisor for the

"It is the world's only immersed tunnel that doesn't leak water."

DONG ZHENG

Deputy chief engineer for the island and tunnel project of the Hong Kong-Zhuhai-Macao Bridge

joining and installation of the tunnel elements.

Each element is 180 meters long and weighs about 80,000 tons on average — the largest volume of any of the world's offshore immersed tunnels. "It's like 33 60-floor towers lying on the seabed," Wang said.

It was extremely challenging to limit the errors of installation while manipulating objects weighing that much undersea, he said.

Acknowledging the risks of installing tunnel elements with the complicated geographical conditions in the Pearl River Delta, Wang said he has no regrets participating in the project. "The island and tunnel project has the highest overall engineering level in the industry," he said.

"The leading role this project plays in the civil engineering industry, I think, is very obvious and strong as it breaks people's stereotypes of traditional construction. The installation of tunnel elements was finished by managing in the control room rather than dealing with rebar (steel rods) and concrete on-site," Wang said.

"The delicate and informationized operations were all supported by data, which is a qualitative leap. I think this represents a trend in the industry — more human-based and more intelligent, which I feel will lead to evolution gradually," he added.