

# In China, A New BRT for The Green City

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Nanning is a midsize city of more than 7 million in southern China and is known as “the Green City” for its lush, tropical landscape. The city has seen explosive growth of the e-bike, a successful bike-sharing system, sidewalk improvement, and improved pedestrian crossings, and all of these are helping to grow the city into an important hub in the region for industrial, economic, and technology development. Early this year, the city opened Phase 1 of its bus rapid transit (BRT) corridor, a project that ITDP considers a best practice in public/private partnerships (PPP).

The Nanning BRT runs from the Nanning Railway Station along a 13-km corridor with 17 stations spaced at an average of 650 meters to the Nanning Dong High-Speed Railway Station. Using a direct service operation model that allows bus routes in and out of the corridor, the Nanning BRT system operates a total of 22 BRT routes and 448 buses. The trunk route runs both 12- and 18-meter buses. Eight months after it opened, operations are running smoothly and daily passenger volume is 132,000, including an increase on the main trunk route of more than 60 percent. Average peak-hour speed is 15.6 km/h, or a 38 percent improvement over bus speeds before the BRT.

Nanning BRT is the first PPP for an urban public transport infrastructure project in Guangxi province, and it is the first in China to integrate investment, construction, and operations using best practices. The governmentally run Nanning public transport company set up the Special Purpose Vehicle (SPV), which provided 90 percent of construction and operations costs. The SPV is responsible managing the project financing, construction, and operation, as well as the maintenance of BRT facilities. It receives the operations income until the concession period is over, when the facilities will be transferred to the government without charge.

The concession period for this project is 11 years, including the construction period of 16 months (three months for preparation; 12 months for civil engineering, traffic engineering, and equipment installation; and one month for system debugging and trial operation). Dur-



ing the concession period, the SPV will balance investment and income through operation income (ticket revenue, advertising revenue, etc.) and payments and subsidies from the government. The government conducts regular performance appraisals of the SPV and pays a service charge to the SPV each year based on the results.

Two terminal stations of the Phase 1 corridor—Nanning Railway Station and Nanning Dong High-Speed Railway Station—provide transfers to metro line 1 stations. Nanning Dong High-Speed Railway Station, in particular, integrates well with the metro, BRT, regular bus, and bike-sharing systems. The Nanning “citizen card” also connects these modes with its fare payment.

Protected and continuous bike lanes are provided along the entire corridor, and dockless bike-sharing systems—such as Mobike, Ofo, and Cool Qi bikes—are spread all over the city center. This also helps connect the different traffic modes.

The corridor has many best-practice features that provide high-quality service. ITDP China was heavily involved in the conceptual design with Guangzhou Municipal Engineering Design and Research Institute and conducted impact analysis, offered TOD and TDM optimization advice, and supervised the whole construction process. The smooth operations of





The Nanning BRT corridor is significant not only as a best practice of BRT but also in its integration with other traffic modes, driving them to improve together.



Opposite page: Nanning's streets are considered among the safest for pedestrians in Chinese cities. Wide surface crossings along the BRT corridor give priority to pedestrians.

Left: The BRT Station and corridor of the Nanning BRT, featuring best practices including passing lanes and median-aligned stations.

Right: The BRT has sliding doors and level platform boarding, as well as live bus information.

Nanning BRT are furthered by its excellent design and high-quality facilities, such as clear signage, separated and dedicated bus lanes in the center of the roadway, and passing lanes at stations. These improvements include the sliding doors and off-board fare collection system, the real-time passenger information system, a CCTV system that monitors the operation of the whole station, climate control in the stations, complete way-finding systems for both in and outside the station, platform-level boarding and alighting, footbridges covered with shades, and elevators for better access for the elderly, disabled commuters, and people with strollers. Most of the BRT stations even support online payment via WeChat, a popular Chinese social media and messaging app.

The Nanning BRT Phase 2 corridor started construction in September. When completed, it will have 18 stations as well as 16 footbridges and one tunnel to help passengers access the stations along the 17.2 km corridor. The Phase 2 corridor will improve access with elevators at every station, and it will operate electric or hybrid buses with solar panels to achieve its “no emissions” goal. Phase 2 will connect to metro lines 2, 3, and 4 and open in July 2018 to serve the upcoming Nanning Garden Expo. The Phase 2 corridor is also a PPP project—the estimated investment for the preliminary design of the project is about 1.3 billion RMB. Phase 3 is planned to start construction in 2018 and open in 2020. These three corridors will function as an extension to the metro system, forming the main frame of Nanning’s urban transit network.

As the first PPP BRT project, the Nanning BRT corridor is significant not only as a best practice of BRT but also in its integration with other traffic modes, driving them to improve together.

In addition to metro and BRT, e-bikes are very popular in Nanning, with ownership at 2 million. Nanning has required an e-bike license since 2013, and it has invested significant time in educating riders about

traffic behavior. ITDP China conducted surveys about e-bike in Nanning in 2016 and found that 45 percent of private car owners prefer to use e-bike for trips within the city. The official Nanning bike sharing system is massive, with 896 stations and 25,000 bikes spread over six districts in the city and covering 70 percent of the roads, and the fifth phase of the Nanning bike-sharing system is now in preparation. More stations and bikes will be distributed along metro lines 1 and 2 and BRT corridors to connect the stations and supplement the distribution of the first four stages.

The most interesting best practice in the city of Nanning, however, may be what is known in China as “courtesy driving.” In Chinese cities (as in many other places), it is common for drivers to ignore crosswalks, and the onus is on pedestrians to avoid harm. Nanning is an exception, with officials taking an active role and enforcing traffic laws on drivers. A citizen volunteer team also helps maintain traffic order at main intersections during peak hours. More than 2 million volunteers have participated in “courtesy driving” activities, and all the 4,350 bus drivers and 18,000 taxi drivers have signed the letter of acceptance of “courtesy crossing.” So whether you prefer to walk, bike, take transit, Nanning is the place to be.