Elevated BRT: Is Higher Better? Lessons from China and Indonesia

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The Xiamen BRT has shown high ridership since opening in 2008, but is still plagued with integration and operational problems.

Image: Wikimedia Common

A bus zooms down a city street in its own lane, oblivious to traffic, stopping briefly to pick up and discharge passengers who enter and exit from every door with just a step forward.

Those are the telltale signs of a well-run bus rapid transit (BRT) system that meets ITDP's best practice standards. Such systems are an increasingly common sight in cities around the world, but carving out an entire lane exclusively for buses can still be a political challenge. As a result, some cities are adding a new twist, with mixed results: elevated BRT.

Xiamen, a southeastern Chinese city, opened an elevated busway in 2008. It consists of three main corridors serving 42 stations along 53 kilometers, including a 5.5-kilometer bridge and tunnel section with dedicated BRT lanes. With such elaborate infrastructure, Xiamen is home to the first genuine "trunk and feeder" BRT system in Asia. The city opted for elevated BRT largely because its light-rail plans didn't get central government approval. Instead, it built elevated BRT corridors with the intention of later upgrading to light rail; once the BRT proved successful, however, the upgrade plan was shelved.

As with most Chinese BRT systems, Xiamen provides user-friendly passenger information, smart-card fare collection, and shiny new vehicles that are a radical improvement on earlier bus systems. So far, the elevated busway is delivering strong results. With 9,850 passengers an hour per direction, it has the second-highest passenger flow of any BRT system in Asia behind Guangzhou. What's more, peak period operational speeds are very high—around 27 kph.

However, Xiamen is still plagued with problems that have nothing to do with the elevated nature of the system. The transfer mechanism between trunk and feeder is still rudimentary. Information on feeder routes is provided in

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Top left: Transjakarta BRT Corridor 13, the first elevated BRT in the Jakarta transit system, opened in 2017.
Above: Jakarta's elevated BRT corridor does not offer adequate access for everyone. There is no elevator at this station.

system maps, but there is no physical integration other than the close proximity of the feeder bus stops, and passengers transferring from trunk to feeder routes have to pay twice, with no transfer discount. Also, the BRT stations have relatively small platforms, which severely limits both carrying capacity and the number of buses that can serve passengers simultaneously at the same station. The small number of access ramps to the elevated busway constrains the operational options, too. Elevated or on the street, any transit system without proper integration is not going to provide the best service.

Elsewhere in Asia, the massive metropolis of Jakarta started riding BRT in 2004. Since then, the Indonesian capital has developed a citywide mass transport system with 12 BRT corridors, more than 1,500 buses, and over 400,000 passenger daily. But dedicated lanes are not always respected, and the police have been known to direct private car drivers into bus lanes during peak hours. That makes an elevated system an enticing prospect.

Transjakarta, the city-owned BRT system, opened its first elevated lane this year, called Corridor 13. The project began in late 2014 and was due to be finished in 2016, but land disputes pushed completion to mid-2017. Corridor 13 connects the transit hubs of Ciledug in Tangerang and Tendean in South Jakarta, and it is built almost entirely as an elevated corridor. Transjakarta buses travel on an elevated road an average of 12 meters above street level and in some places up to 25 meters.

However, the first elevated BRT lane in Indonesia is not without issues. The elevation means slower bus speeds—negating one of the key advantages of BRT. Three different contractors worked on the project, which created some design and color differences that might confuse passengers, though the entire system is structurally fine. While Corridor 13 overlaps with the four other Transjakarta corridors, there is no actual integration or connecting link to the other corridors. As this corridor is built without an exit and entry ramp in the middle, buses will only be able to enter the corridor from the very beginning or the end. Without physical integration, passengers cannot easily change their route in the middle of their trip, which discourages them from using this corridor. The corridor also has accessibility issues, especially for disabled and elderly passengers. There is no elevator, and a picture of a steep access staircase went viral on social media.

These drawbacks appear to be hurting ridership. Projections of 40,000 daily passengers have fallen way short—the number of passengers in September 2017 was just 9,500 per day. These poor numbers are evidence that BRT should not be elevated if it all possible. BRT works well because it's a swift mode of surface transportation that's easily accessible for people at street level. Elevated rail systems built in an earlier era cast long shadows over streetscapes, and newly built BRT would do the same. But some transit is better than no transit, so as an absolute last resort, Xiamen and Jakarta show that elevated BRT is possible.

Images: ITDP Indonesia