Better but not best: Incremental improvements and bus rapid transit planning

Jinan, China

Summary
China’s rapid urbanization over the last 30 years has meant major changes to the size and nature of the country’s cities. China’s urban population nearly doubled between 1990 and 2005, requiring new infrastructure, city services, and housing. In particular, urban growth has required China to rethink its transit systems to better accommodate the growing urban population. At the same time, the local automobile industry has also been slowly gaining momentum, and personal car ownership is skyrocketing. Between 1995 and 2005, car ownership rose from a little over one million personal cars to around 14 million. As a result, traffic congestion has quickly risen, and worsening air pollution has led to an increasing number of premature deaths. Despite the rapid rise in car ownership, owning a car is still attainable for only a small proportion of China’s one-billion-person population. Most trips—over 70 percent—are still done by bus, walking or biking. Therefore, there is a growing need for more sustainable, environmentally conscious, and equitable transportation options. Bus rapid transit (BRT)—a bus system that typically has off-board fare collection, bus priority at traffic lights, station platforms, and a dedicated right of way lane—is an affordable, fast option for cities looking for auto-alternative transit options.

You are an international BRT expert with the Sustainability Works Foundation consulting in the city of Jinan, where officials are exploring options for new public transportation systems. Despite Jinan’s openness to a BRT system, midway through the process you realize that the political context, rapidly growing economy, and dominance of the auto industry will make the implementation of the BRT system much more difficult than you initially thought. A plan you have spent months on has just been shattered by news that the right of way promised for the BRT through land acquisition by the Construction Commission will no longer be possible. Therefore, you must take the right of way from another mode of transportation in order to implement the plan.

Your first instinct is not to accept a compromise and instead to push for local officials to follow through with their end of the deal and find a way to add an additional BRT lane. However, your time as a consultant in Jinan has taught you that you do not have the energy, time, or political prowess to fight every issue. In fact, it is clear that if you keep pushing on so many different issues, you will stop being invited to meetings and will be removed from the project altogether, as other insistent international consultants have recently experienced. You have accepted that having a flawed BRT is better than not having a BRT at all. But you know that this compromise, if not thought about strategically, may be detrimental to the use of the system and the future of BRT systems in China. Therefore, your team from the Sustainability Works Foundation has decided to narrow your focus to resolve only one issue. In order to implement the project, you

realize you must advocate for the right of way to be taken from the standard size of the BRT stations, from the bike lanes and street trees, or from a lane of car traffic.

Background
Jinan is the capital of Shandong province in eastern China. The city is currently experiencing rapid in-migration, and the population is growing. Jinan has also been selected as a site for the Chinese National Games. These factors have put pressure on officials to start thinking about the city’s transit system. Kunming, a city in southwest China, has just completed a new BRT system. A number of China’s city mayors gathered for a mayors’ conference on sustainable transportation in Kunming to learn more about the successes of BRT in South America and to see Kunming’s BRT system. Jinan’s vice-mayor attended the conference and since then has enlisted the help of a foundation you are working with in China, the Sustainability Works Foundation, as well as a number of other foundations and international experts to help research the feasibility of a BRT system in Jinan. This is a wonderful opportunity to help better establish BRT systems in China and to continue to showcase how BRT could be transferred to more cities across the Global South.

Once you and your foundation begin to conduct research and look into the realities of BRT in Jinan, you realize that there will be many hurdles to overcome. The first hurdle is transportation culture in China. Although subway funding from the central government was cut, Jinan recently received ample government funds to construct an elevated expressway that will run across the city’s belt-like geography, from east to west. Despite the shape of the city, most traffic moves north and south, especially around the central city. Therefore, the expressway will do little to alleviate existing traffic congestion. Further complicating the nature of transit in Jinan, the city does not have a particularly dense road infrastructure network. Jinan’s road network is comprised mostly of arterials and a few feeder streets with very few side street options. This leads to major traffic congestion throughout the day.

The vice-mayor has agreed to begin constructing a BRT system in Jinan. However, government staff want to start by implementing an east-west line of the BRT. Like the expressway, the east-west BRT is not likely to be heavily used. Therefore, you and your team are excited to start planning a more challenging but useful north-south BRT line. Lishan Road, in the center of the city, has been chosen as the ideal corridor for the north-south BRT line. While this corridor will provide the ridership demand needed to make a BRT successful, you have run into multiple barriers that threaten the BRT’s success. First, the amount of right of way that was initially promised for a BRT on Lishan Road has been reduced significantly. The municipal government planned to tear down a number of buildings along the route so that a designated BRT lane could be added to the existing lanes. However, the government was unable to follow through with this demolition, which means that a few compromises would be necessary to integrate BRT infrastructure into the existing right of way. Furthermore, Lishan Road is a major thoroughfare in Jinan. A number of major grocery stores, educational institutions, and banks exist along Lishan Road, making it one of the busiest corridors in the city. You must decide how to obtain the necessary space to implement the system.
**Actors & Institutions**

**Public works director:** The director has been involved with the Jinan BRT project since the onset, even attending the mayor’s forum with the city’s vice-mayor. Because of his/her political prowess, he/she has received various promotions and now coordinates all infrastructure projects in the city. Although he/she is still a champion of the project, his/her attention is now split among countless projects across the city.

**Police:** The local police force is tasked with maintaining and structuring the traffic light timing systems. They have cameras and sensors located at each intersection and timing cycles for each of the various possible movements at the intersections, but the police officers do not have the training to take full advantage of the capacity that this sophisticated technology and data offer. Additionally, their main concern is vehicle-based metrics; they seek efficiency by maximizing the number of *vehicles* that can pass through a traffic intersection rather than the number of *individuals* (which would increase if they accounted for individuals riding buses). Thus, they emphasize vehicle circulation over other forms and are opposed to the idea of removing a lane of car traffic for bus-only traffic.

**City engineers:** These engineers are highly capable and educated; however, their main focus is implementing the infrastructure. They show little comprehension of or concern for economic or political dynamics. They take official street standards seriously and will not reduce vehicle lane width.

**Your foundation/international consultants:** Your team and other consultants have assisted in technical support and design ideas, as well as bringing in individuals involved with the Bogota, Colombia Transmillenio BRT project.

**Political leaders and local elites:** This is a growing group of upwardly mobile and politically influential car owners who emphasize the efficiency of car circulation. Most have opposed removing general traffic lanes to implement bus-only lanes.

**Bus riders:** Existing bus users in Jinan might also be the first users of the new BRT system. Although the east-west BRT line does not seem to have created new bus riders, those who have shifted from the previous bus system view the new BRT system as an improvement in efficiency, time to destination, and ease of access.

**The Decision**

You are now at a crossroads. To get the Lishan Road BRT line implemented, you must take right of way from somewhere to construct the BRT lane and BRT stations. You do not have the political prowess to come up with an alternative option; therefore, you must compromise to make a decision. To ensure that the project moves forward, your options are as follows:
1) Create right of way from the planned BRT station space by making the stations narrower. This will likely make the speed at which people can get on and off the bus much slower. Furthermore, it may affect how many people can wait in the station to board the bus. These two issues combined could greatly reduce the efficiency of the system and reduce incentives to use the BRT system. The first Jinan BRT line exists in a low-ridership area, and if the station size also restricts use of the Lishan Road BRT, then Jinan and other cities may decide that BRT is not a good option for them. However, this is the only option that will not completely remove the right of way from another mode of transit.

2) Create right of way by removing bike lanes and street trees on Lishan Road. This would force bikers, using mostly motorized bikes, to relocate to the sidewalk. This option would put pedestrians and bikers in danger, as there will be high amounts of bike traffic on an already crowded sidewalk. Additionally, the loss of shade trees will make the pedestrian and biker experience much less comfortable as the climate can be quite hot. Because the blocks in Jinan are large and there are very few side street options, pedestrians and bikers will not necessarily be able to take alternative routes to compensate for the loss of their right of way. If you advocate for taking right of way from bike lanes and street trees, you will affect a large number of pedestrians and bikers who use this form of transit to carry out their daily trips. Most of these people do not own a car. While the BRT may supplement as a mode of transit, it cannot completely fill in the gaps for pedestrians and bikers. However, most influential stakeholders will likely prefer this option. Officials in other Chinese cities have already begun dismantling their bike lane systems. By choosing this option, you may be setting an undesirable precedent by suggesting that the most environmentally friendly transit options of walking and biking should not be supported in China, and the safety of the least affluent is not important.

3) Advocate for a dedicated, bus-only lane on Lishan Road by taking right of way from an existing car lane. With this option, bus station size could meet the suggested standards, and there would be no need to reduce the sidewalk size or remove street trees. The new bus line would also meet the highest standards of a true BRT system. Nonetheless, the local political leaders and elite are very much opposed to the removal of a lane of car traffic. Many stakeholders you have worked with, including police who are responsible for traffic flow, are concerned only with the efficient movement of cars. Lishan Road is already very congested, and taking away a car lane does not guarantee that those who own a personal car will switch to another mode of transit. This means that traffic would most likely get worse on Lishan Road. This option would also require considerable political capital in order to persuade stakeholders, and if this effort fails, it could jeopardize your organization’s ability to consult on future transportation projects in China.

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