INTERVENTION 2

Rapid Mass Transit

SUMMARY

Rapid Mass Transit systems operate as high capacity vehicles moving along dedicated ways. They include buses on separate road lanes, tramways, subways, and aerial mono- or dual-rails. To the degree that they substitute for passenger cars, they can greatly reduce the air emissions emitted in a city. Rapid Mass Transit requires expensive infrastructure and (usually) specialized rolling stock, and, therefore, is a costly approach but normally justified by reductions in travel times and improved air quality. Successful RMT systems need to continue to upgrade in order to avoid becoming overcrowded and slowed.

Air Quality and Health benefits: Low to medium. An RMT system can produce major pollution and health benefits if it takes (and keeps) private vehicles off the roads.

A practical challenge is that the systems need to keep up successfully with growing demand so that riders do not revert back to private vehicles.

Carbon benefits: Medium or low. The carbon benefits can be significant, reflecting the number of private vehicle trips eliminated.

Costs: RMT systems are very expensive, although they return positive net benefits in terms of travel times and health benefits. Large infrastructure projects such as some RMT systems are prone to delay and cost overruns.

Political Feasibility: RMT systems are fundamentally popular with citizens for the convenience that they can provide. The political risks lie in sourcing adequate finance and in avoiding major disruption during construction.

EXAMPLES

MEXICO. Bus Rapid Transit System (BRT). The BRT system was adopted in 2005, where prime road space was allocated to low-emission, high-capacity buses. The BRT system initially replaced conventional transport modes along 20 km of the main avenue and had a cost of USD $80 million (Schipper et al., 2009). Following the introduction of the Metrobus, the city's old buses and micro-buses operating on the same route were reallocated or scrapped. The replacement of these old units resulted in an important upgrade in local air quality. A study concluded that the implementation of the Metrobus network resulted in reductions in commuters' exposure to CO, benzene and PM2.5 ranging between 20% and 70%. One downside is that the demand for Metrobus services has continued to grow rapidly, requiring the introduction of more

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buses per lane and increasing travel time, which may reduce some of the benefits of the investment.

BANGKOK. Advanced public transport systems. Advanced public transport options implemented included the Mass Transit System (Skytrain) in 1999, the subway system in 2004 and Bus Rapid Transit in 2010. (Mitchell et al., 2014). However, despite these public transport options, vehicle numbers have been increasing due to population growth and by 2017 totaled nearly 9.5 million vehicles. Bangkok has plans to continue to expand the public transport system during the 2020s.

TRANSANTIAGO PUBLIC TRANSIT SYSTEM, SANTIAGO. The Transantiago public transport system comprises a bus rapid transit (BRT) network, feeder bus lines, expansion of and linkages to the metro system, and commuter rail system. It has been in service since 2017 and involved an investment of around US$6 billion over 10 years. The system has faced financial, institutional, legal, technical, and operational problems since its inception. Nevertheless, a study that focused on the impact on particulate matter air pollution levels in the city from 2007–2010 concluded that Transantiago directly contributed to a reduction of the daily average PM10 concentration levels in at least 3.9 μg/m3.