Lessons in urban development from Jakarta's mass rapid transit project

A train in Jakarta's MRT system
Photo Credit: Irfan Muhammad/Wikimedia Commons

by Grace Stanhope

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As Southeast Asian economies mature, their development needs are changing. Indonesia, having recently graduated to upper middle income country status, is in many ways at the frontier. A rapidly modernising economy, its population is increasingly urbanised. The (current) capital, Jakarta, is a mega-city of well over 10 million people, or more than 30 million including the greater metropolitan area. Almost 50 million people travel in Jakarta every day.

Densely populated areas demand accessible and affordable transportation to reduce congestion, pollution and emissions while enhancing economic access. By 2050, 66% of Southeast Asia's population will be urbanised. Development partners would do well to closely watch the examples of infrastructure projects throughout the region that are transforming Southeast Asian cities – such as the Japan-backed Jakarta mass rapid transit system, or MRT.

In Jakarta in particular, the need is apparent and acute. The city faces severe air quality issues, and residents can spend 20% of monthly income on transport. Progress is evident, with Jakarta's public transport area coverage expanding 400% from 2015 to 2019. Informal urban passenger transport modes such as motorcycle taxis have played a significant role, and are becoming digitalised, formalised and regulated through mobility apps like Gojek and Grab.

Nonetheless, Jakarta struggled to finance the kind of transformative public transport system required to support its population and its role as the nation's economic centre. Enter the Japan Bank for International Cooperation (JBIC), which signed a concessional loan agreement in 2006 after the MRT was declared a national strategic project by Indonesia in 2005. The JBIC finance was tied to Japanese contractors to implement the project, which limited competition for tender, threatening the aid effectiveness of the project. JBIC has previously used similarly structured loans for MRT projects in Thailand and India.

A corporate structure 99% owned by the capital's provincial government ensures local ownership of institutional knowledge, maximising the potential for technology transfer which is one of the most profound benefits of large-scale infrastructure projects in developing economies.

Before construction began in 2013, particular consideration was given to compatibility with other public transport systems, and environmental concerns. Taking into account Jakarta's geography, the MRT is also built to withstand earthquakes up to magnitude 8 on the Richter scale, and its flood protection measures were informed by 200 years of data.

The planning for the MRT was informed by two best practice urban development frameworks: transit-oriented development (TOD) and land value capture (LVC). Both frameworks are increasingly being employed by development partners, including major multilateral development banks.

TOD is a planning concept that emphasises the integration of public transit with commercial and residential spaces, to limit private vehicle usage and urban sprawl among other negative externalities. The Japan International Cooperation Agency (JICA) regularly implements TOD components in its major infrastructure projects. Jakarta MRT has embedded TOD principles in its development of stations, prioritising connectivity with other transport modes and innovative public spaces such as the Taman Literasi Martha Christina Tiahahu, a blended park, library and retail facility located beneath an elevated MRT station.

Another urban development doctrine invoked in Jakarta is the LVC framework for revenue generation. LVC has been implemented very successfully to enable TOD in other Asian megacities including Tokyo, Singapore and Hong Kong. The three-step process of LVC (value creation, recovery and redistribution) facilitates a sharing of the costs of urban development with the private sector, and reinvestment of revenues back into the public space. LVC and TOD are natural complements: increased government revenue via higher property values and thus taxes is cycled back into the provision of public spaces and services around the public transport hubs.

That revenue stream is crucial for the viability of the MRT, especially considering that an initial feasibility study projected that fare revenue alone would cover a mere 15% of the costs. Non-fare revenue streams, such as advertising and renting out retail space in stations, are therefore the only means of financial self-sustainment for such an ambitious public infrastructure project. In this sense, although the non-financial benefits of the MRT – minimised pollution, congestion and commute times, for example – are substantial, private investment was not a realistic source of

finance.

Japan's provision of funds, therefore, has been the catalyst for much-needed development in Jakarta. According to calculations by JICA, the economic internal rate of return on the project is projected to be 7.38%, far above the financial internal rate of return (1.99%). That disparity is a measure of the scale of non-financial benefits and externalities that will be derived from this project, and further testament to the importance of aid financing in this sector.

Revenue from ticket sales was indeed equivalent to just 31% of non-fare revenue in 2022. Net profit in 2022 reached 97 million Indonesian rupiah – a relatively modest figure, but the MRT has only been operational since 2019 and its early earning potential was unrealised owing to the pandemic. The fact that profits are already on the books is a sign that the TOD-LVC model is working, to not only generate positive economic spillovers for neighbouring businesses, but ensure that these are at least partially captured by the project itself.

High-level political support has also been a key enabling factor. For outgoing president Joko Widodo, a former governor of Jakarta who has campaigned on urban public transit improvements, the MRT is a personal legacy project. He said the MRT had allowed Indonesia to "finally set foot in a new civilisation". Despite Jokowi's enthusiasm, a cumbersome legal system and inconsistent regulations slowed implementation at various points, including during the land acquisition phase. Procurement of land is a common barrier for infrastructure projects in Indonesia, including the Chinese-financed Jakarta-Bandung high speed rail – which Japan had also, unsuccessfully, bid for.

After some delays, the two phases of the north-south line of the Jakarta MRT are complete and operational, with plans firmly in place for the east-west route. Last year, Japan approved MRT Jakarta to host MRT operators from Vietnam for training, and to co-host a TOD forum in Tokyo to showcase potential for investors. JICA is also applying TOD to the new Metro Manila subway project in the Philippines.

One test for the MRT's success will be whether a similar system appears in the planned new Indonesian capital, Nusantara, to support its anticipated population of 1.9 million by 2040. The ultimate achievement for a transport infrastructure mega-project in a developing country is to be deemed worthy of replication.

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Author/s:

Grace Stanhope
Grace Stanhope is a research associate at the Lowy Institute's Indo-Pacific Development Centre, specialising in official development finance in Southeast Asia.

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