

# Monorail and the future of Jakarta transportation

**T**he three fundamentals we all take for granted when living in a major urban environment, assuming food security, are energy (electricity), water (and to an unfortunate lesser extent its "twin" sanitation) and good transportation.

In an earlier article in *The Jakarta Post* I addressed the question of water and its usage for the city; world-wide planners and engineers now accept that this is the number one fundamental issue for a sustainable city environment.

Water, on a world level in several countries is reaching crisis point, unsustainable to human life with disease and death waiting in the wings.

In this article, I shall be taking a look at where we are and where we should be going with the transport needs of the capital city, with the land area set out for road infrastructure being only about half what a major city requires, namely more than 15 percent.

To have achieved this minimum level would have meant making and implementing very strict plans for the future development of the city 40 years ago when the population of the main city, as well as of the country generally, was less than half what it is today.

And we cannot go back; solutions have to be found that address alternatives to the congested road system that commuters face every day, a sign of the spreading wealth across the city.

Apart from a steady annual increase in cars, the number of motorcycles has shown double digit growth over the past few years and the population of these units is catching up with the number of people resident in the main city!

There is thus a very strict limit to what can be done with roads apart from the useful impact of overpasses and underpasses at busy intersections and implementing some



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or all of the city administration's tabled proposals for urban toll roads, which will be using existing rights-of-way.

Busways could be made more efficient if underpasses were introduced for busways in the city center; maybe not easy to do but perfectly possible. The needs also of vastly improving the road connections to the major port expansion for container shipping are also critical, especially in an eastward direction.

Moving the population much more efficiently logically requires other solutions that are free from congestion, quick passage through controlled junctions and capable of moving large numbers of people at frequent intervals.

Obviously, this requires dedicated routing which is fulfilled by construction of mass rapid rail systems at levels that are clear of the ground unless a clear right-of-way can be found at that level.

Much more attention has to be paid to improve the quality and quantity of regular commuter rail connections into the city to cope better with the daily influx and exodus of city workers. Obviously within the city this commuter approach is not applicable for moving people about the city, and this will have to be managed with upgraded bus and expansion of monorail routes.

Recent events have witnessed the green light to proceed in Jakarta with two rail-based projects which have been under discussion for quite some time. First there is the MRT from Lebak Bulus to Hotel Indonesia traffic circle and thence to Monas.

Apart from the last 4 km, which will be tunneled, the route to Lebak Bulus from the southern end of Jl. Sudirman, will be largely at ground level where a route exists. This project has been mooted for the past 15 years, with support using Japanese funding.

However, ground conditions in Jakarta along with continuing subsidence of the north of the city, whether ground water extraction totally ceased in the next decade (which is unlikely) or not, is not conducive to the wider application of tunneling for underground rail rapid transit.

Besides constructing underground is significantly more expensive than building in elevation.

The second very recent project go ahead has been for the city monorail, first promoted 9 years ago but which ran into a financial and bureaucratic storm in 2008.

A new well-put-together consortium has been formed and hopes are high that construction of the previously determined routes can recommence before the end of the year once all the necessary legal and funding details are finalized and the design and construction technicalities are reviewed.

One of the key features of a monorail system, apart from being well clear of street level activities, is its comparatively small footprint and its ability to master relatively tight horizontal and vertical curves, not applicable to larger rail forms of transport.

The new Jakarta monorail is being drawn up on the experience gained with the Chongking monorail in China, which is capable of handling 800,000 passengers/day as well as reference to other elevated systems in Asia.

The projected capacity for the Jakarta version is for up to 500,000 passengers/day. There is already discussion ongoing for expanding links to outside the main city boundary,

but these will have to be integrated with the city system to be properly effective. One school of thought was promoting the use of elevated busways but, apart from creating a bigger footprint, the daily passenger throughput would not match that provided by monorail.

A second and important consideration for the city of Jakarta is that monorail is well clear of the perennial flooding issues that blight the city.

What about the future? How will the city cope with onward growth, both internally and with the burgeoning satellite communities to the east, west and south as well as along the north coast, altogether a forecast urban mass of over 35 million by 2025. Huge commercial developments are earmarked within the city over the next decade, including the construction of over 230 very high rise buildings.

With a sensible revised masterplan with monorail links as a key part of future traffic movements these new building plans should be able to integrate their transport needs with all the comforts of modern structures, which in turn should embrace the Green Building Code, with efficient use of energy and water.

Finally, no transport arrangements work unless careful attention is paid to the design and application of intermodal links, which have to be highlighted within an updated plan for the city embracing proper use of bus and monorail routes.

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