

Motorized Two- and Three-Wheelers in Asia – What Do We Know?

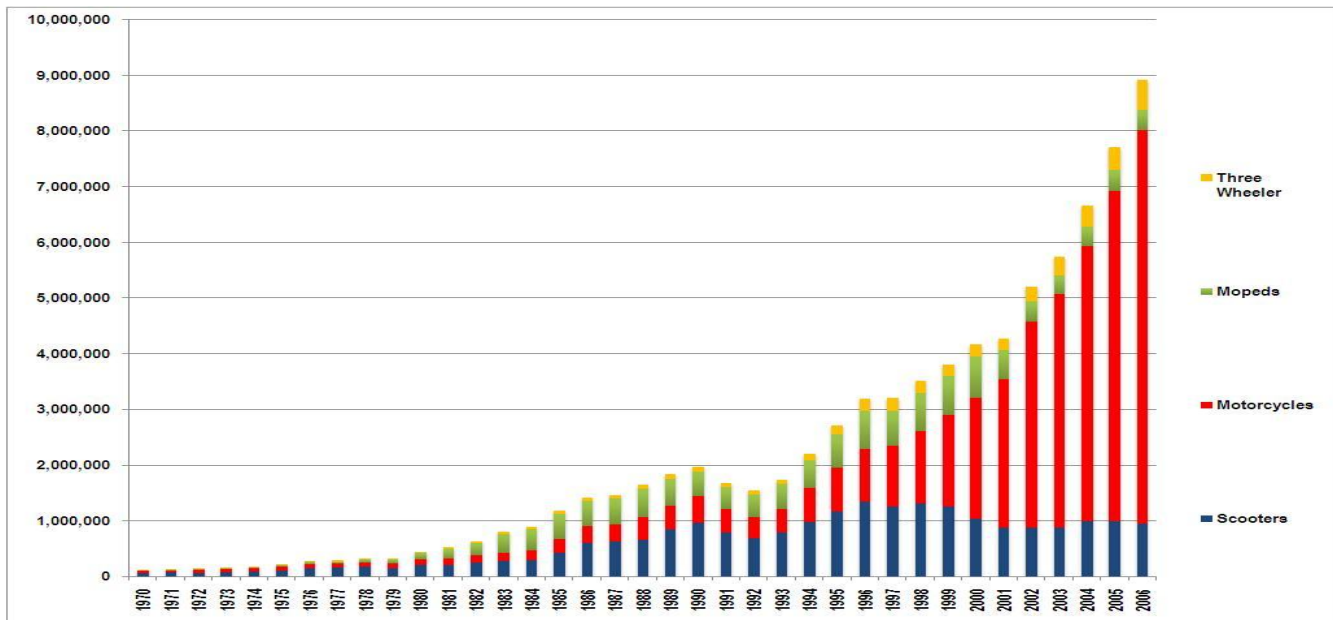
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In the past few decades, motorized two- and three-wheelers have grown exponentially and repercussions are being felt on urban roads across Asia. For too long, policymakers have considered this as a transition phase; they have often swept the issue under the carpet and have never faced the issue head-on. During the Better Air Quality 2008 conference recently held in Bangkok (www.baq2008.org), experts from across the world compared research notes, exchanged ideas and debated the exact role that two- and three-wheelers should have in Asia. Although to date there have been few studies on two- and three-wheelers, many experts opined that policies addressing these types of vehicles have been contradictory. For example, some policymakers believe in “leap frog” theories, hoping that the challenges would resolve itself in due time. This is the wrong approach.



Source: a cartoon from times of India spoofing the safety issues of two wheelers (left) and two wheelers in Bangalore using footpath to escape the traffic jam.



Source: Production of Vehicles in India (SIAM – 2008). The trend towards powerful vehicles needs to be understood in context of current urban transport problems

During the course of discussions, experts strongly agreed that two- and three-wheelers have an important role to play and that existing policies should be modified to attract car owners to adopt these fuel efficient modes in their daily commute (instead of encouraging pedestrians and cyclists to use two- and three-wheelers).

But how do we do this? How can policies be developed and implemented to attract people from four wheels to two wheels?

The experience in Bangkok and Nigeria suggest that *congestion levels* trigger the use of two-wheelers as taxis. As congestion levels increase, especially during traffic jams, people may prefer to travel by two-wheeler taxi rather than ride a car. In fact, we have seen many people in Bangkok using the two-wheeler taxi as a means of *last-mile connectivity*: they use public transport (e.g., metro) and two-wheeler taxi as a feeder to reach far away homes in economical neighborhoods without actually having to acquire their own vehicle. With virtually no research showing conclusive results on two-wheeler taxis, it is difficult to understand if this trend can be duplicated across other Asian cities.

Do we have any information on this?



Source : CAI-Asia : Average Occupancy in Asia – Is it 1 or 2 or 3 or.. ? (left) and why are two wheelers always first in a queue? (right)



Source: CAI-Asia: Two wheeler taxi driver waiting for passengers near a metro station (left) and two wheeler performing the “last-in-first-out” ritual in an urban junction to claim the first position in the traffic queue. With such maneuvers would you recommend exclusive lanes at junctions?

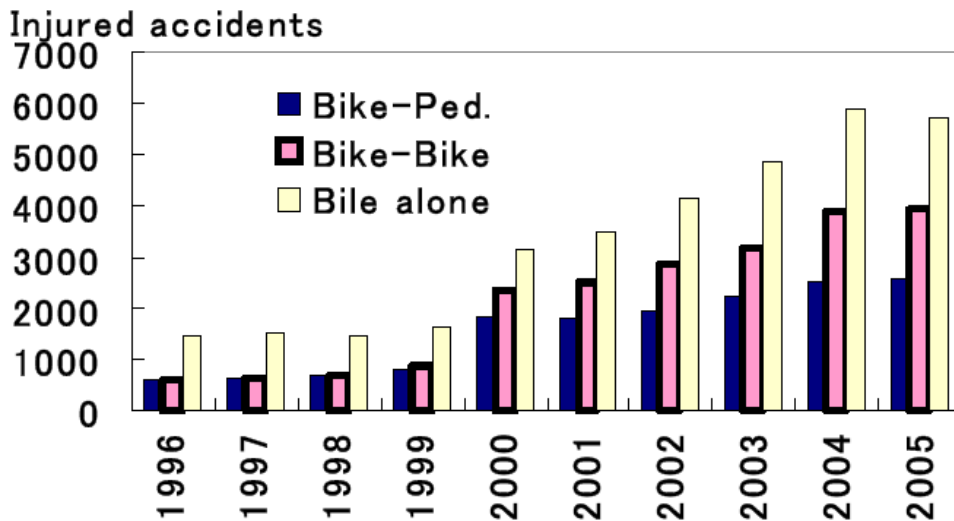
During the conference, there were many arguments on the issue of mixing the two-wheelers with bicyclists and pedestrians (non-motorized transport, NMT) in common lanes.

Is it going to work?

Many experts cite the speed differentials and accidents as main deterrent to this logic. Those who have observed the Japan accident statistics between cyclists and pedestrians on shared facilities agree that

the aspect of speed differential needs to be considered before mixing the two-wheelers with NMT to free up the congestion for car users.

But why should cars get the bulk of traffic space to increase its speed, while NMT and two-wheelers get confined to narrower spaces?



Source: 2008. P. Zhe, H. Yamanaka & K. Kakiyama - Evaluation of shared use of bicycles and pedestrians in Japan Urban Transport XIV. Can we predict the scenario with motorized bikes with cyclists and pedestrians in exclusive lanes?

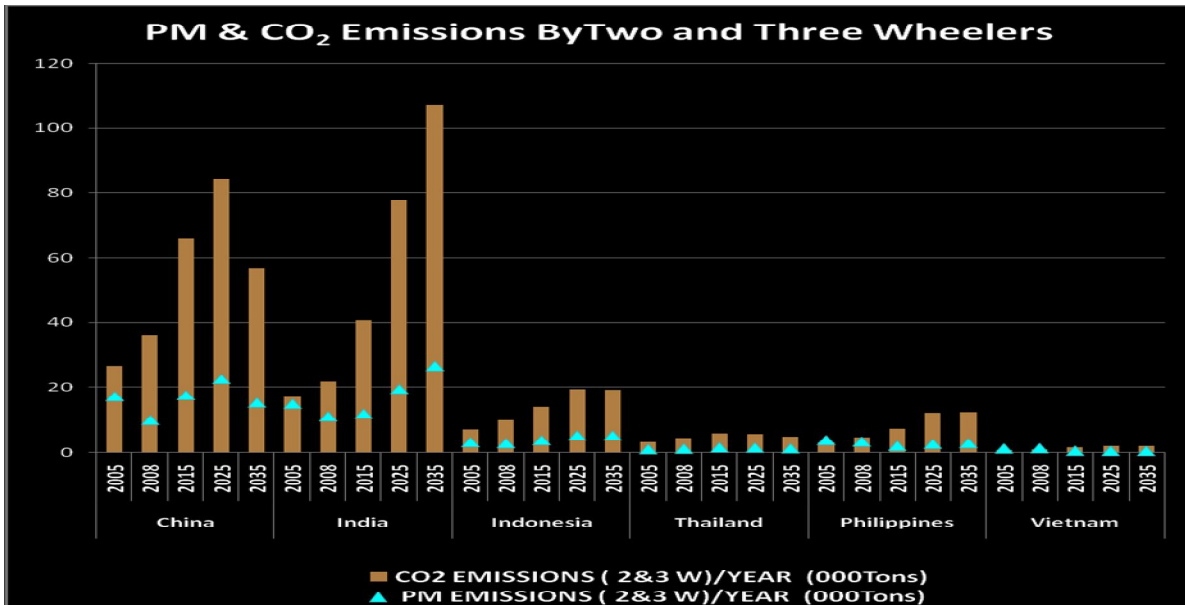
Across Asian cities, records show that a high share of accidents and traffic violations involve two- and three-wheelers.

Would the exclusive lane solve this problem? Is banning two-wheelers a viable option? Will banning these vehicles solve the safety and congestion problems? Will providing junction treatments with exclusive lanes for two wheelers adequately prevent these violations? What are the various experiences?

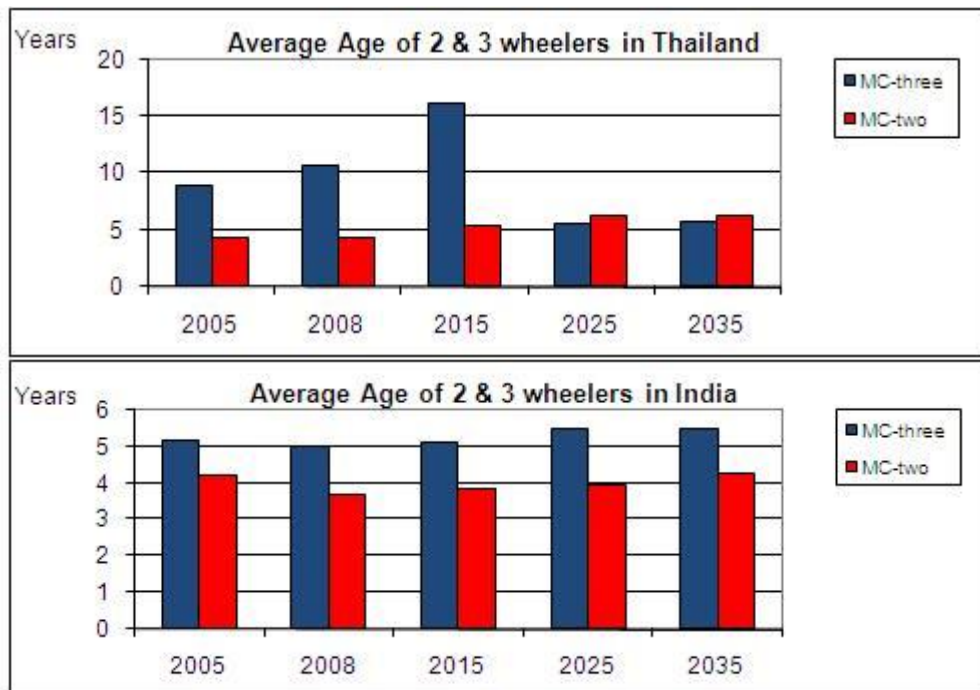
In many Asian secondary and tertiary cities, three-wheeler taxis remain as the dominant public transport mode. They serve as main transport mode in residential areas and feeders to mass transit such as buses and urban rail. However, one of the major issues confronting Asian cities is air pollution and noise brought about by these ubiquitous three-wheelers. For example, in Metro Manila, analysis by Anglo (2004) shows that three-wheelers account for 80% of the total particular matter (PM) emissions from gasoline vehicles in the metropolis. There are still a large number of 2-stroke three-wheeler taxis in Asian cities, and their emissions are a great health concern, both for drivers and passengers.

What measures should be adopted to further decrease the emissions from two- and three-wheelers?

Research by ADB and the CAI-Asia Center is looking into the issue of *vehicle age*. Current figures suggest that *average* age of two- and three-wheelers range from 4 to 10 years in some Asian countries. With such an ageing fleet, and with virtually ineffective inspection and maintenance strategies in place, authorities have a problem that will escalate with each coming year.



Source: 2008. ADB-CAI-Asia-Segment Y . Role of Emission standards can be seen in the graphs.



Source: 2008. ADB-CAI-Asia-Segment Y . The fleet is aging thus increasing the emissions and fuel consumption – a need for better I&M

Mr. Narayan Iyer, a two- and three-wheeler expert, suggests a multi-pronged action plan with *inspection and maintenance (I&M)* being the foundation of *tail-pipe measures* to mitigate these challenges.

Should we use the I&M model adopted in cities like Taipei? Can countries tailor this model for their own I&M needs?

Many industry experts believe that the introduction of new technologies should neither be through promotion of a specific product nor through a ban of a specific technology; instead new technology should be introduced through *technology forcing*.

Do we agree to this logic? What kind of tail-pipe solutions would make a difference and what are Asian cities proposing?

A lot needs to be done to curb the problems associated with motorized two-and three-wheelers in Asian cities and to make these vehicles part of a sustainable urban transport solution. The CAI-Asia Center -- together with the United Nations Partnership for Clean Fuels and Vehicles (www.unep.org/pcf), and other partners, such as the Institute for Transport Development Policy (www.itdp.org) and the International Council for Clean Transportation (www.theicct.org) -- will conduct more research on technology and non-technology based solutions in 2009.

Please email your comments, suggestions and experiences to Sudhir Gota (sudhir@cai-asia.org) or visit our website to take part in the discussion on two- and three-wheelers (www.cleanairnet.org/caiasia).