

# アジア大都市におけるバイク交通の長期的需要管理に関する研究

## Longterm Strategies for Motorcycle Management in Asian Cities

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### 1. Introduction

In developing Asia, motorcycles increase rapidly at low incomes and may continue to increase at high incomes as experienced by Taiwan. These caused problems of fatal road accidents, urban sprawls and congestions, but these issues have never been addressed adequately. It is time to seriously take actions against the motorcycles, but there are controversies. While China has banned motorcycles in cities, Taiwan has accepted motorcycles and tried to improve its safety and efficiency. Most developing Asian countries are confused, what should be future roles for motorcycles, how to address it and whether to follow China's, Taiwan's or take a different way.

This research is aimed to suggest effective policy frameworks for managing motorcycles in the longterm for Asian cities. In the first part of the study, the following works were conducted:

- (1) Understanding urban transport trends;
- (2) Defining future role for motorcycles;
- (3) Reviewing and suggesting the best practices for motorcycle management.

Case studies: Hanoi, Jakarta, Bangkok, Guangzhou (developing) and Taipei (developed).

### 2. Overview of urban transport trends

Time-series data were collected on road transport, public transport systems and services, motorcycle ownership, car ownership, modal splits and policies and regulations. The trends showed that road infrastructures and public transport services (Bus & Rail) have remained poor or inadequate despite the significant improvements so far in the developing cities. However, motorcycle ownerships have been increasing rapidly at low incomes. In the longterm, if there are no drastic improvements in the infrastructures and services, the high usage of motorcycles would remain.

### 3. Performance comparison between motorcycle and other modes

To explore solutions for the motorcycle problem, motorcycle mode is compared with other modes in terms of parking space, transport capacity, energy use and emissions, and safety. It showed that motorcycle is much more parking space efficient than car. A motorcycle lane (3.6m) may carry a number of passengers significantly higher than a regular bus lane, several times higher than a car lane, but lower than BRT, and much lower than LRT and MRT line. Motorcycle is

inefficient than fully loaded bus, and much inefficient than rail in terms of energy use and CO2 emissions. Especially, motorcycle is the most dangerous mode among the motorized modes in spite of great efforts to improve (Taiwan).

### 4. Future role for motorcycles

In the midterm and longterm, rapid transit systems (MRT, LRT and BRT) need to be developed to serve the increasing travel demand. Until that time, cities dominated by motorcycles (Hanoi and Jakarta) may introduce measures to accommodate safe motorcycle use, such as motorcycle lanes, to help improve the increasing congestion and parking problem, considering the motorcycle's space efficiency. However, the motorcycle use must be reduced dramatically in the longterm to avoid its serious impacts on traffic safety and urban sprawls.

Given the picture of the future transport systems, motorcycles should be converted to feeder service for transit systems and limited to short distances. By setting such a role for motorcycles, it will be possible to minimize its negative impacts and maximize its space efficiencies in the future.

### 5. Policies for motorcycle management – Case studies

As motorcycles are a new traffic phenomenon, there lacks effective policy measures for realizing the future role of motorcycles. This research reviewed the current policy practices in the studied cities. It is found that measures to control motorcycle usage seem to be much more effective than measures controlling the ownership. The effective usage control measures included motorcycle roadside parking control and pricing, park-and-ride systems for motorcycles, regulation of motorcycle taxis, motorcycle prohibition on expressways and trunk roads, and dedicated lanes for motorcycles. Such policies and regulations might be useful for motorcycle dominated cities (Hanoi, Ho Chi Minh City, Jakarta, etc.) to formulate their longterm strategies for motorcycle management.

### 6. Conclusions

It is recommended that Asian cities which are currently or will be dominated by motorcycles should develop effective strategies for reducing motorcycle use and converting it to feeder service for the transit systems in the longterm. These cities could adopt the best policy practices but these are not enough. They need to deliberately formulate their own strategies considering their specific contexts and longterm visions.