

# Drafting Motorbike Master Plan under Market Orientation and Globalization<sup>\*</sup>

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## 1. Introduction

### 1.1. Methodology and Content

As the process of market orientation and international integration deepens in Vietnam, industrial strategy formulation must adapt to the changes which are brought about by this process. Market forces and global competition increasingly determine the performance of each industry as well as the winners and losers among enterprises. In many industries, private enterprises, including foreign private enterprises, are becoming major players instead of state-owned enterprises. Multinational corporations decide products, output, production sites, procurement, investment, export and import as integral parts of their global business strategies. This means that a large portion of industrial activity in Vietnam is now taking place outside the direct control of the government. These trends are also visible in the motorcycle industry. This master plan tries to respond to these changes by adopting a new drafting methodology and a new content structure.

With respect to drafting methodology, *stakeholder involvement* and *inter-ministerial coordination* have been strengthened. For any industrial master plan, the most important stakeholders are business enterprises that must carry out the plan. In the second quarter of 2006, the Joint Working Group (JWG) was formed to draft the motorcycle master plan under the official recognition of and in close cooperation with the Ministry of Industry. Its members included policy makers, businesses and experts. The Vietnam Development Forum, a joint research project between the National Economics University in Hanoi and the National Graduate Institute for Policy Studies in Tokyo, acted as a coordinator. JWG conducted a large number of internal discussions, and received information and views from motorcycle-related

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<sup>\*</sup> This manuscript is combination of the first two chapters in the preliminary draft on Motorbike Master Plan. The draft was prepared by the Motorbike Joint Working Group (JWG), which included producers, experts and officials, in the period from April 2006 to April 2007. The Vietnam Development Forum (VDF) coordinated its activities. Producers, experts and officials outside the Motorbike JWG were also consulted. This draft is an open document made available to everyone for comments. For inquiries or comments, please contact VDF at [hellovdf@vdf.org.vn](mailto:hellovdf@vdf.org.vn) or +84-4-9362633. The full draft can be read at <http://www.vdf.org.vn/jwg.htm>

enterprises and researchers as broadly as possible. In preparing each chapter and determining policy measures, consultations with related ministries and agencies were held. These methodological innovations were pursued within a relatively tight schedule under which JWG worked. Except for a few confidential cases, key documents and meeting minutes of JWG were uploaded in a website for openness and transparency.

With respect to content structure, demand-side issues are given approximately the same weight as supply-side issues. User concerns such as traffic safety, congestion and air pollution are analyzed fully in separate chapters, in addition to more standard chapters dealing with production, demand forecasts and industrial capability. The future of motorcycles is considered to be not only an industrial issue but also a social issue. This is necessitated by the fact that motorcycles take up a very unique position in the Vietnamese society, whose popularity and density in use, especially in urban areas, have an enormous bearing on the quality of life of all people, including motorcycle riders and non-riders. For this reason, the present master plan covers a much wider ground than the existing guideline for master plan content set forth by the Ministry of Planning and Investment and the Ministry of Industry.

## **1.2. The Role of Government**

In an increasingly integrated market with a large presence of foreign producers, such as the motorcycle market in Vietnam, the basic role of the government should be to *support the healthy growth of the industry* by understanding and responding to its needs instead of dictating it. Private business enterprises are the primary decision-makers and executors of industrial dynamism, but the government also has an important role of providing supportive visions, rules and measures to ensure that the industrial playground is predictable, fair, and in line with the general interest of the nation.

More specifically, three roles of the government are identified as crucial for the healthy growth of the motorcycle industry, and chapters are arranged accordingly to discuss them. First, the government should clarify policy orientation and make indicative projections so that enterprises can use them as a basis for their business decisions. Second, the government should set and enforce realistic and meaningful standards for quality, safety, environment and intellectual property rights. Third, the government should help to upgrade Vietnam's industrial capability with particular attention on supporting industries and industrial human resources.

This master plan contains projections of motorcycle use, sales and production. These are the results of intensive discussion among businesses, policy makers and experts. They are meant to be indicative and guiding, and subject to modification as circumstances change, rather than rigid targets that are set officially and must be fulfilled under any circumstances.

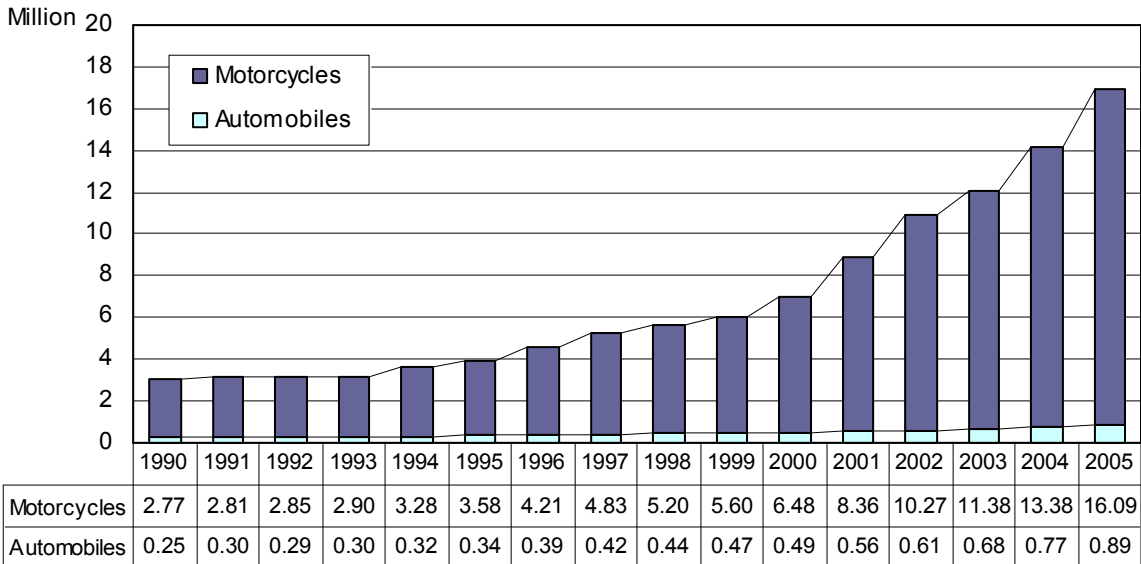
## 2. The Role of Motorcycles in Vietnamese Society

### 2.1. Overview

When society develops, demand for personal and commercial transport also rises. The means of transport must respond to increasing demand in all aspects of quantity, quality, and modal diversification. Each transport means has its merits and demerits. The problem is to select and combine each transport means in a way that maximizes merits and overcome demerits, under the specific natural, economic, and social conditions of our country in this particular development stage. We must satisfy people’s travel need by providing convenient transport modes while at the same time ensuring traffic safety, clean environment, and other social demands.

During the period 1995-2005, the Vietnamese economy continued to operate under the market mechanism with socialist orientation, achieving relatively high growth of 8% or higher in consecutive years. As a result, the speed of urbanization as well as demand for trips and commercial transport also increased. Since public transport systems are currently underdeveloped, people tend to possess personal means of transport such as motorcycles and automobiles to satisfy their travel demand.

*Figure 1: Motorcycles and automobiles in circulation*



Source: National Traffic Safety Committee. Auto data in 1990-1994 are obtained from VRA.

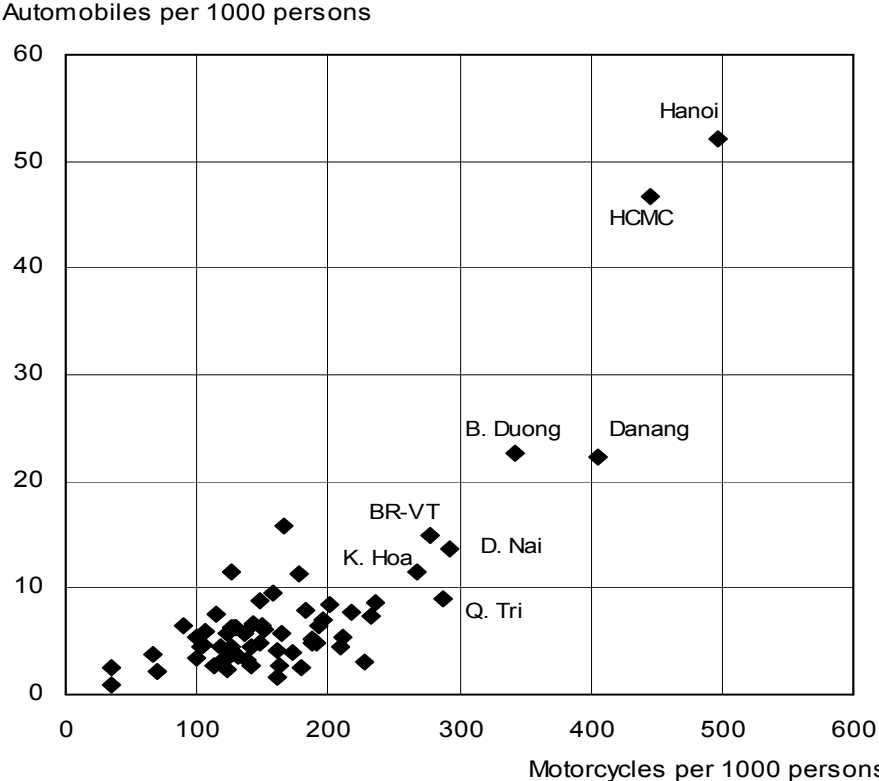
According to the data of the National Traffic Safety Committee and the Traffic Police Road and Railroad Department (Figure 1), motorcycles and automobiles have long been the two principal means of transport in Vietnam in terms of absolute volume as well as contribution to cargo transport in the whole country, especially urban areas and economically

developed areas. Between them, motorcycles are by far the dominant means of transport.

At the end of 2005, Vietnam had 16.09 million registered motorcycles and 0.89 million registered automobiles in use. Compared with the year 1990, this is an increase of 5.8 times for motorcycles and 3.6 times for automobiles. The use of both transport means rose very rapidly, especially motorcycles.

The studies of Hanoi and HCMC urban planning by the Ministry of Transport and JICA confirm that motorcycles are the dominant transport mode of residents in large cities<sup>1</sup>. In 2005, motorcycles served 62.7% (Hanoi) and 77.9% (HCMC) of travel needs, while the shares of passenger cars and taxis were only 3.5% (Hanoi) and 5.9% (HCMC), and the shares of buses were 8.4% (Hanoi) and 5.9% (HCMC). Clearly, the motorcycle is the preferred choice of urban population, providing personal mobility in relatively short distances and frequent trips, under the condition that public transport is underdeveloped, car prices are too high for the general public, and motorcycles often travel faster than automobiles. Many people also use motorcycles to make living.

**Figure 2: Motorcycle and automobile density by province, 2005**



Source: National Traffic Safety Committee. See Appendix for original data.

<sup>1</sup> The Study on the Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area (HOUTRANS), 2004, and the Hanoi Integrated Development and Environmental Programme (HAIDEP), 2007. Both plans were supported by JICA technical assistance.

Although the “Master Plan for Transport Infrastructure in Hanoi and Ho Chi Minh up to the Year 2020” prioritizes investment in transport infrastructure such as roads, railroads, subways, and public buses, it also foresees that the use of motorcycles in Hanoi and HCMC will remain relatively high in the future, namely 30% in Hanoi and 35% in HCMC in 2020.

At the same time, living conditions in rural areas are expected to improve by 2020, and rural road systems are also likely to be upgraded. Under these circumstances, rural demand for motorcycle use will surely rise, especially in light of the fact that current density of motorcycle use in rural areas is still very low.

At present, the geographical distribution of motorcycle use is not uniform within Vietnam. In absolute volume, the registration and circulation of motorcycles are concentrated naturally in cities and provinces with a large population or a dynamic economy, or both. They include HCMC, Hanoi, Dong Nai, Hai Phong, An Giang, Thanh Hoa, and Nghe An. In terms of density of use, Hanoi and HCMC again lead the nation with one motorcycle for every two persons, followed by Da Nang, Binh Duong, Dong Nai, Quang Tri, Ba Ria-Vung Tau, and Khanh Hoa, where there is at least one motorcycle for every four persons. All other cities and provinces have less motorcycles per person. Incidentally, the density of automobile use is positively correlated with the density of motorcycle use (Figure 2).

The above considerations lead us to the conclusion that motorcycles will continue to contribute significantly to road transportation in Vietnam, at least up to the year 2020. Thus, the development of motorcycles is an objective requirement for Vietnam, and we should continue to study how motorcycles can co-exist harmoniously with other transport means and how they can better serve consumers’ needs.

## **2.2. Development of the Motorcycle Industry from 1990 to 2005**

Before 1995, Vietnam had a relatively small motorcycle stock in use, at about 2-3 million units, and it increased slowly by tens of thousands of units per year. Most of the motorcycles were imported.

During the period 1995-1999, FDI motorcycle assemblers invested in Vietnam and began production, at first using imported parts but gradually increasing parts localization. Consumers’ demand for motorcycles increased annually. However, production volume remained relatively low during this period, and prices were high in comparison with the income level of most people.

Around 2000, local motorcycle assemblers suddenly increased in number, producing motorcycles with parts originating mostly in China, with average to moderate quality and reasonable prices relative to people’s income. From 2000 to 2003, this type of motorcycles occupied as much as 60-70% of the domestic market. In response, FDI enterprises adjusted business strategies and changed models to regain market share. Some FDI producers

introduced popular, low-priced models while other FDI producers targeted up-markets with fashionable style and new colors. At the same time, people's living conditions continued to improve. As a result, motorcycles in use increased rapidly by about 2 million units per year, except in 2003 when Hanoi and HCMC applied policies to limit the number of motorcycles.

At the end of this process, over-capacity and severe competition exerted significant downward pressure on the prices of "Chinese" motorcycles produced by Vietnamese assemblers. Many consumers also turned away from their products which failed to satisfy their quality demand. This prompted them to revise business strategies for survival, which included enhancing in-house production, becoming suppliers of FDI assemblers, building supplier networks, turning to sales and marketing, or exiting from the industry. Direct parts import from China fell and domestic production of "Chinese" parts increased.

From around 2003 to present, motorcycle demand continued to expand strongly, with market shares shifting decisively back to FDI assemblers. Apart from robust income growth, motorcycle demand has been fueled by the removal of demand-restrictive measures such as parts import quotas (2002-2005) and registration control in large cities (2003-2005). By 2006, Vietnam's motorcycle market reached nearly 2 million units per year, with an expectation of further expansion in the future. This domestic demand size is sufficient for major assemblers to aggressively introduce new models and for parts suppliers to willingly invest in Vietnam.

### **2.3. International Comparison and Vietnam's Uniqueness**

Asia dominates in the global market of motorcycles, with roughly 95% of total production originating in several Asian countries. Asian markets are also dynamically growing in sharp contrast to saturated markets in developed countries. China, India and Indonesia are the top three producers, with annual production volumes of 17.2, 12.7 and 5.1 million units each. Japan, Thailand and Taiwan also have significant production size, with each producing 1.8, 1.5, and 1.4 million units in 2005<sup>2</sup>. With an expected production volume of over 2 million units in 2007, Vietnam has now joined the group of largest motorcycle producers in the world.

There are three reasons for the popularity of motorcycles in Asian developing countries. First, the region contains large tropical and subtropical areas with high temperature and frequent showers, a climate particularly suitable for motorcycle use. Second, rapid income growth, and associated industrialization and urbanization, are boosting individual trip needs. Third, despite that, public transportation generally remains underdeveloped. For example, Bangkok, Jakarta, Manila, Hanoi and HCMC have no or few urban rail lines in comparison with more advanced cities such as Tokyo, London, Paris and New York which have extensive networks of commuter rails and buses, subways, sky trains and other urban mass rapid transit (UMRT) systems.

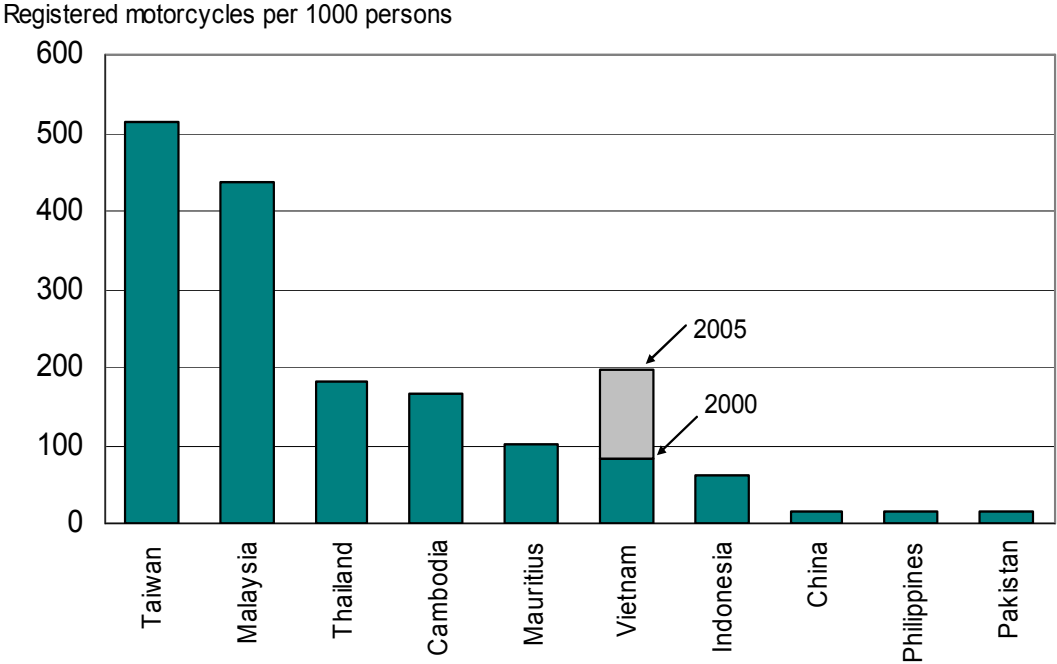
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<sup>2</sup> Honda, *World Motorcycle Facts and Figures*, 2006.

But even by Asian standards, Vietnam’s use of motorcycles is highly intense and unique. The motorcycle is a “popular vehicle” in Vietnam across all ages, genders and occupations. It is used not only for delivering commercial goods but for virtually all personal purposes--commuting, shopping, dating, visiting friends, shuttling children to and from school, and even for sheer fun<sup>3</sup>. Motorcycle use is particularly heavy in urban areas, where it is by far the preferred means of transport for all residents. Both Hanoi and HCMC have flat terrain, compact urban areas relative to population size, and deep and narrow lanes crisscrossing the built-up areas. These characteristics are particularly amiable to motorcycle use. The contrast between severe shortages of automobile parking and well-developed motorcycle parking at present also tends to sustain the popularity of motorcycles. Thus, the motorcycle is the key determinant of the mobility, comfort, safety, and health of the Vietnamese people, with a great influence on their life style and life quality.

Additionally, the motorcycle market in Vietnam has the following features which are not seen in most other developing countries.

**Figure 3: Motorcycle holdings in Asia, 2000**



Source: Fukuda, Nakamura, and Takeuchi (2004)—see footnote 4.

<sup>3</sup> The survey by Prof. Atsushi Fukuda (Nihon Univ.) conducted on 130 families in Hanoi in March 2003 shows that 97% of families possess at least one motorcycle, and each motorcycle is often used by more than one person. Top reasons for the primary user are commuting (54%), going to school (14%), relaxing (10%), going to hospital (7%), shopping (4%), and dating (3%). Top reasons for other users are relaxing (28%), commuting (18%), going to school (10%), shopping (15%), additional study (8%), and dating (7%). It can be said that most people use motorcycles for multiple purposes, in addition to the basic use of commuting or going to school.

First, motorcycle use in Vietnam is disproportionately high relative to its automobile use. There are only 12 countries in the world where the number of registered motorcycles surpasses that of registered automobiles<sup>4</sup>. Among them, Vietnam is by far the leading country, with the ratio of motorcycle stock to automobile stock of 13.3 in 2000 and 18.1 in 2005. According to the 2000 data, the next country in this ranking was India (5.6), followed by Thailand (5.4), Indonesia (4.6), Cambodia (4.2), China (3.1), Pakistan (3.0), Taiwan (2.4), Bangladesh (2.4), Philippines (1.6), Mauritius (1.3), and Malaysia (1.3). Vietnamese people are extremely fond of motorcycles, and this fact should be taken into account in formulating transport policy.

Second, as noted above, there is a significant urban-rural gap in motorcycle use. Motorcycles in Vietnam are concentrated in two largest cities and their vicinities. In rural and remote areas where income levels are still low, fewer motorcycles are owned per person (Figure 2). Vietnam's urban markets are near saturation in terms of number of motorcycles, but rural markets are likely to grow strongly and the urban-rural gap is expected to narrow in the medium to long run. Although Taiwan, Malaysia and Thailand had higher motorcycle-per-person ratios than Vietnam in 2000 (Figure 3), cars are far more visible than motorcycles in Taipei, Kuala Lumpur or Bangkok. This is because motorcycles in these countries are more uniformly spread geographically<sup>5</sup>. National average comparison hides the unevenness of motorcycle distribution within Vietnam.

Third, the Vietnamese motorcycle market is very dynamic. Not only the sale has increased, but what consumers expect from motorcycles is also changing rapidly. Until the late 1990s, the motorcycle was considered a means of saving that retained good value over time as well as a practical means of transport. Around 2000, with a large inflow of cheap but low-quality "Chinese" products, the motorcycle suddenly became a commodity. After 2003, the popularity of "Chinese" motorcycles declined as demand shifted toward high-quality, stylish motorcycles and scooters, especially in urban areas. These shifts are brought about by an interaction of changing consumer tastes, international influences, and manufacturers' business strategies. Now, with a domestic market of over 2 million units per year, motorcycle assemblers will have many business options including the broadening of market segments

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<sup>4</sup> Compiled from Atsushi Fukuda, Fumihiko Nakamura, and Kenzo Takeuchi, "Current Situation of Motorcycle in Metropolis of Southeast Asia and its Issues," *Kokusai Kotsu Anzen Gakkaishi* (Journal of International Association of Traffic and Safety Sciences), vol.29, no.3, Dec. 2004 (in Japanese). However, numbers in the text should be treated with care since international comparison data are somewhat inconsistent.

<sup>5</sup> In Thailand, the urban-rural gap is not very large. In 2003, there were 2.47 persons for each motorcycle in Bangkok, and 3.61 persons for each motorcycle in all other areas, with the national average of 3.46 persons per motorcycle (IDE-JETRO, *Motorbike Industries in Asia*, 2005, in Japanese). In Vietnam, the corresponding figure in 2005 for Hanoi and HCMC was 2.16 persons for each motorcycle, and 6.14 persons for each motorcycle in the rest of the country, with the national average of 5.11 persons per motorcycle (Appendix to Chapter 1). Hanoi and HCMC have higher motorcycle density than Bangkok, but rural Vietnam has lower motorcycle density than rural Thailand.



with new models and reorganizing domestic and global suppliers.

## 2.4. Transport Modal Balance

Cars, motorcycles and public transportation systems are three pillars of transportation in any developing country. Each of these transport modes has merits and demerits. It is people who make the final modal choice based on their income, travel need, climate and geography, and the existing state of transport infrastructure. However, policy can also make a significant difference by guiding people's choice. The crucial policy question is how to combine the three principal modes to achieve maximum transport benefits while reducing social and economic costs. This will require encouragement of certain modes and restraint on others with effective policy instruments under a consistent roadmap.

The motorcycle excels in personal flexibility, allowing the rider to make door-to-door trips at any time without waiting, walking or transfer. It is also efficient in space use, occupying about one-fourth of space on road and in parking in comparison with a car when motorcycles are dominant, and about one-half of space of a car in mixed traffic. Its small size and agility permit faster urban travel than a car, which reduces congestion and overall pollution. However, if motorcycle use and maintenance are unregulated, there is a risk of excessive traffic accidents and exhaust emission.

*Table 1: Comparison of three principal modes in urban travel setting*

	<i>Motorcycles</i>	<i>Automobile (personal use)</i>	<i>Urban Mass Rapid Transit (UMRT)</i>
Personal flexibility	<b><u>High</u></b>	High to moderate	Low
Comfort and privacy	Moderate	<b><u>High</u></b>	Low
Space efficiency	High to moderate (moderate if mixed traffic)	Low (depends on occupancy)	<b><u>High</u></b>
Energy efficiency	Low to moderate (depends on occupancy)	Low (depends on occupancy)	<b><u>High</u></b>
Predictability of peak-hour travel time	Moderate	Low	<b><u>High</u></b>
Traffic safety	Low (if unregulated)	Moderate (if unregulated)	<b><u>High</u></b>
Environment friendliness	Low (if unregulated)	Low (if unregulated)	<b><u>High</u></b>

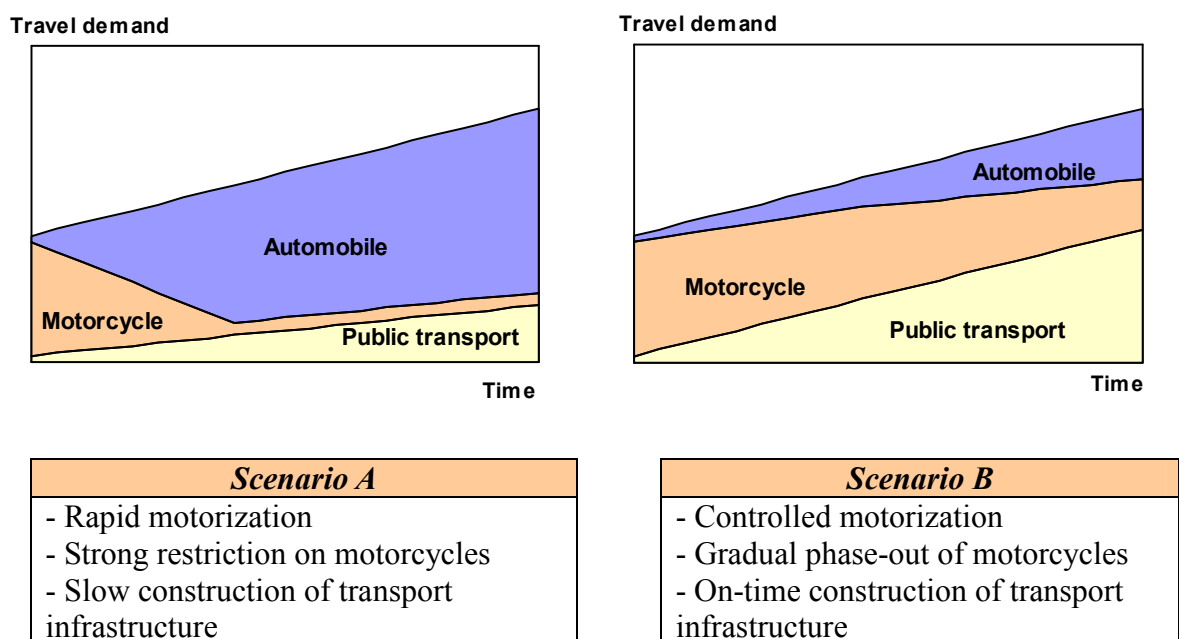
The strength of the automobile is comfort and privacy. In a closed air-conditioned space with soft seats, travelers can enjoy scenery, audio or conversation, or just take a rest. For this reason, private car use becomes increasingly popular as income rises. However, automobiles are not very efficient in space and energy use, especially in single occupancy. If urban road capacity is insufficient, peak-hour travel time becomes very long and highly unpredictable in

comparison with other modes.

The urban mass rapid transit (UMRT) system, which combines commuter rail networks with rapid bus transit, is highly desirable in modern cities with large travel demand. If it is operated competently and used by most people, it can significantly reduce road congestion, traffic accidents and environmental damage. Cities such as Tokyo, Seoul, London and Paris all have extensive UMRT systems that crisscross the entire urban and suburban areas. While public transport commuters in these cities sacrifice personal flexibility, comfort and privacy, they usually feel better off because air is cleaner, travel time is shorter and more predictable, and there is no need to compete with other drivers.

*Motorization*, or the expansion of personal car use, is inevitable in any rapidly growing developing country, but its speed is controllable by policy. In more developed countries, personal means of transport shifted from motorcycles to automobiles as income rose. Vietnam's motorization is at a very early stage, and it is expected to continue for a considerable time, provided that robust GDP growth is sustained. However, a rapid increase of automobiles from a small base even now is already causing traffic conflicts with motorcycles and bicycles in urban areas. Vietnam's cities are not yet equipped with infrastructure required for a large number of automobiles, such as expressways, bypass and ring roads, multi-lane trunk roads, overpasses, bridges, tunnels, and parking facilities. Building them in sufficient numbers will take time and large financial resources.

**Figure 4: Rapid Motorization vs. Controlled Motorization in Urban Areas**



The need for public transport systems, such as commuter rails, subways, sky trains, and rapid bus transit, is keenly recognized in Hanoi and HCMC. Many projects are planned, and some are already under construction. In the long run, public transport should become the main means of urban and suburban mobility as in most of the advanced countries. This will greatly reduce road congestion as car and motorcycle use is reduced. However, completing these infrastructure projects will also take a large amount of time and money. While very desirable, an efficient and comprehensive UMRT system cannot be realized in the short run, and can only be partly realized in the medium run, in Vietnam.

Figure 4 illustrates two hypothetical modal combinations in a rapidly developing country. In Scenario A, motorcycle use is discouraged by policy while motorization proceeds rapidly without restraint. Building of transport infrastructure, including UMRT, is assumed to be slow. In this scenario, severe urban congestion is inevitable, and commuters are forced to spend a long time in gridlocks in the absence of alternative transport means. With severe congestion, fuel consumption rises and air quality deteriorates. This is a situation observed in many mega cities around the world, including Bangkok in the early 1990s where one had to allow at least two hours to get one part of the city to another. In contrast, Scenario B suggests one possible way to avoid such a disastrous situation, by allowing motorcycles to be phased out only gradually and building public transport sufficiently and on time. As a result, motorization proceeds modestly, and traffic time loss and environmental damage can be minimized.

The view that motorcycle use should be curbed immediately by administrative measures to reduce pollution, congestion and accidents is short-sighted. Suppressing travel demand by depriving people of motorcycles, without giving them alternative transport modes, can be considered a policy failure. Traffic demand is predictable, and there should be a long-term strategy to respond to it well in advance. Both Hanoi and HCMC have drafted urban master plans<sup>6</sup> which aim to provide public transport services for about 30-50% of total travel demand by 2020, as compared with less than 10% today. These goals are highly consistent with the policy direction of this master plan. Motorcycles should be the principal mode of urban transport in Hanoi and HCMC until new public transport systems are introduced, step-by-step, to replace them. Moreover, this transport strategy must be accompanied by another set of policies to deal effectively with the problems associated with continued motorcycle use, as explained below.

## **2.5. Policy Direction**

Policy that affects the use and production of motorcycles should be designed from a broad perspective, which includes the life style and life quality of the people, urban and traffic planning, and industrial promotion. Motorcycle policy should be consistent with, and constitute an integral part of, an overall transportation master plan as well as an overall industrial master plan. For this purpose, all related ministries and organizations should have

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<sup>6</sup> See footnote 1.

close and continuous consultation to coordinate their policies.

Motorcycle policy should pursue the following four objectives.

- (i) *People's mobility and convenience*--in the circumstance of rising income and increasing travel demand, people's mobility and convenience associated with transportation should be ensured. At present, the residents of Hanoi and HCMC enjoy relatively shorter commuting and more frequent trips than the residents of other large cities in the region (chapter 5). This situation should be maintained while modal options for non-motorcycle transport should be expanded.
- (ii) *Quality of life*--traffic congestion, traffic accidents and air pollution associated with transportation should be reduced for the safety, health and comfort of the people. Even though travel demand increases, these situations should be improved, not just be prevented from worsening, in comparison with the current situation.
- (iii) *Reasonable cost and timing of building transport infrastructure*--Vietnam must build many subways, trains, expressways, roads, bridges, tunnels, and so on. However, the total cost of building them is enormous, and time required for planning, financing, resident relocation and construction is substantial. Motorcycle use should partly cover the increasing traffic need while new transport infrastructure is being built at a reasonable and realistic speed.
- (iv) *Leveling-up of industrial capability*--Vietnam's motorcycle industry has reached a domestic demand size which is sufficiently large for aiming at production efficiency and supporting industry development. With proper policy support, the motorcycle industry should strengthen its role as a core industry for industrial agglomeration and technology improvement, with spillover effects to other industries. Capability of parts production should be raised with respect to quality, cost and delivery. Industrial property rights should be protected and illegal copies should be eliminated.

These objectives can be restated as follows: *motorcycles should continue to be used to ensure people's mobility and reducing infrastructure cost per year, provided that sound and sustainable solutions are found and effectively implemented to cope with traffic congestion, traffic accidents, environment, and industrial property rights. At the same time, the motorcycle industry should become the principal industry by which supporting industry base is built and indigenous industrial capability is promoted.*

It is noteworthy that, in the case of motorcycles, the Vietnamese government does not have to worry about the competitiveness of major producers, since motorcycle production in Vietnam is dominated by FDI assemblers with high technology and global reputation. The government has to be engaged in close dialogue with them to compile and revise policies, but there is no need to dictate their production, investment, marketing, export or R&D activities.

These are decided by markets as well as business strategies of individual companies. Instead, supply-side policies should be mainly directed to the promotion of supporting industries and industrial human resources, which improves local capability and indirectly helps FDI assemblers, and additionally to reorganize or streamline Vietnamese assemblers. Apart from supply-side policies, people-oriented policies to improve motorcycle use, as discussed above, are extremely important in the case of motorcycles, since motorcycles have great impact on the general welfare of Vietnamese people.

Motorcycle industry promotion and addressing the problems associated with motorcycle use are not contradictory. In fact, from the long-term perspective, addressing these problems adequately is the pre-condition for the healthy growth of Vietnam's motorcycle industry. Industrial development and comfortable life have been achieved simultaneously in many advanced countries. Motorcycle manufacturers should not pursue, and policy makers should not allow, unregulated expansion of motorcycle sales at the severe social cost of increasing deaths, injuries, and health problems of the general public. The industry can develop sustainably and competitively only if producers accept corporate social responsibility associated with their products and if the government adopts policies to cope with them effectively.

### Appendix: Registered Motorcycles and Automobiles by Province, 2005

<i>City or Province</i>	<i>Population x1000</i>	<i>Number of Motorcycles</i>	<i>Number of Automobiles</i>	<i>Motorcycles/ 1000 persons</i>	<i>Automobiles/ 1000 persons</i>
Ha Noi *	3,145	1,565,641	163,796	498	52.1
HCMC *	5,891	2,619,525	275,160	445	46.7
Da Nang *	777	315,041	17,311	405	22.3
Binh Duong	915	313,002	20,775	342	22.7
Dong Nai	2,193	640,143	29,913	292	13.6
Quang Tri	622	178,920	5,605	288	9.0
Ba Ria-Vung Tau	913	253,990	13,640	278	14.9
Khanh Hoa	1,123	301,272	12,900	268	11.5
Can Tho *	1,135	268,001	9,722	236	8.6
Tay Ninh	1,039	242,062	7,593	233	7.3
Hai Phong *	1,793	409,229	5,352	228	3.0
Lam Dong	1,161	252,009	8,996	217	7.7
Tien Giang	1,701	357,664	9,026	210	5.3
Phu Yen	861	180,187	3,892	209	4.5
Thai Nguyen	1,109	222,809	9,352	201	8.4
Thua Thien-Hue	1,136	222,797	7,972	196	7.0
Dak Lak	1,711	329,385	10,994	193	6.4
Binh Thuan	1,151	220,155	5,587	191	4.9
Ninh Thuan	562	105,737	2,922	188	5.2
Quang Ngai	1,269	237,587	6,180	187	4.9
Binh Dinh	1,557	283,446	12,417	182	8.0
An Giang	2,194	393,462	5,541	179	2.5
Gia Lai	1,115	198,743	12,612	178	11.3
Long An	1,413	243,945	5,638	173	4.0
Quang Ninh	1,079	180,049	16,991	167	15.7
Quang Nam	1,463	240,007	8,396	164	5.7
Dong Thap	1,655	268,252	4,560	162	2.8
Ving Long	1,055	170,386	4,364	161	4.1
Ben Tre	1,352	217,577	2,166	161	1.6
Hai Duong	1,711	271,244	16,352	158	9.6
Kon Tum	375	56,790	2,299	151	6.1
Binh Phuoc	796	118,980	5,181	149	6.5
Phu Tho	1,328	196,855	11,644	148	8.8
Bac Ninh	998	147,935	4,883	148	4.9
Vinh Phuc	1,169	166,740	7,679	143	6.6

Tuyen Quang	727	103,232	3,252	142	4.5
Tra Vinh	1,028	145,205	2,807	141	2.7
Nam Dinh	1,961	270,991	6,508	138	3.3
Bac Giang	1,582	217,321	4,974	137	3.1
Ninh Binh	919	125,595	5,316	137	5.8
Bac Lieu	798	104,795	2,866	131	3.6
Ha Tay	2,526	325,896	15,786	129	6.3
Yen Bai	732	94,275	2,796	129	3.8
Lang Son	739	94,971	4,678	128	6.3
Dak Nong	398	50,435	4,544	127	11.4
Quang Binh	842	106,472	3,807	126	4.5
Lao Cai	576	72,644	3,617	126	6.3
Hung Yen	1,134	140,647	4,165	124	3.7
Thai Binh	1,861	230,223	4,443	124	2.4
Bac Kan	299	36,611	1,692	122	5.7
Kien Giang	1,655	199,828	5,660	121	3.4
Nghe An	3,042	360,325	13,596	118	4.5
Cao Bang	515	58,652	3,864	114	7.5
Soc Trang	1,272	142,964	3,436	112	2.7
Ha Tinh	1,301	138,697	7,608	107	5.8
Son La	989	103,385	4,532	105	4.6
Hoa Binh	813	83,231	3,701	102	4.6
Thanh Hoa	3,677	367,736	12,418	100	3.4
Dien Bien	450	44,875	2,421	100	5.4
Ha Nam	823	74,007	5,265	90	6.4
Ca Mau	1,219	84,498	2,671	69	2.2
Ha Giang	673	45,297	2,578	67	3.8
Hau Giang	791	27,733	648	35	0.8
Lai Chau	314	10,958	805	35	2.6
<b>Total or average</b>	<b>83,120</b>	<b>16,251,066</b>	<b>887,865</b>	<b>196</b>	<b>10.7</b>

Note: The asterisk (\*) shows five cities under central administration.

Source: National Traffic Safety Committee