

FOR SOUND DEVELOPMENT OF THE MOTORBIKE INDUSTRY
IN VIETNAM
BY
THE MOTORBIKE JOINT WORKING GROUP

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This volume contains the policy proposal of the Motorbike Joint Working Group submitted to the Ministry of Industry of Vietnam in May 2007. The Motorbike Joint Working Group is a non-government group of producers, experts and officials which was formed in Spring 2006 to work jointly for the purpose of drafting the motorbike master plan.

This document is not the same as the motorbike master plan approved by the Minister of Industry and Trade in August 2007.

The Vietnam Development Forum (VDF) is a joint research project between the National Graduate Institute for Policy Studies (GRIPS) in Tokyo and the National Economics University (NEU) in Hanoi. VDF served as coordinator and secretariat of the Motorbike Joint Working Group.

AN EXPLANATORY NOTE

This introductory note explains the background for the policy proposal contained in this volume.

MOI and VDF

In Vietnam, a large gap has emerged between the old method of drafting economic policies and the rapidly changing reality under market-orientation and global integration. Many of the officials at the Ministry of Industry (MOI)¹ are well aware of this situation, and seek practical and concrete intellectual inputs to revise their policy formulation method.

Since its establishment in 2004, the Vietnam Development Forum (VDF), a policy research project between Vietnam and Japan, has cooperated closely with MOI to improve industrial policy. Many workshops, symposiums and publications were sponsored by VDF in cooperation with MOI for this purpose.

In 2005 and 2006, VDF and MOI organized three joint missions to Thailand, Japan and Malaysia to collect key industrial policy documents and study how these countries conducted industrial policies. From these missions we identified two major weaknesses of Vietnam's industrial policy formulation in comparison with the neighboring countries, namely, (i) the lack of stakeholder involvement, especially the business community; and (ii) the lack of inter-ministerial coordination, in the process of drafting, implementing and monitoring industrial policy².

VDF and MOI continue to work together to take the initial step in improving policy formulation. The formation of the Motorbike Joint

¹ In August 2007, the Ministry of Industry was merged with the Ministry of Trade to become the Ministry of Industry and Trade. In this volume, the term *Ministry of Industry*, abbreviated MOI, is used throughout to indicate the Vietnamese ministry responsible for the motorbike industry. The terms *motorbike* and *motorcycle* are also used interchangeably.

² The missions' findings are published in VDF, *Industrial Policy Formulation in Thailand, Malaysia and Japan: Lessons for Vietnamese Policy Makers*, 2006, in Vietnamese and English. VDF also has a number of related publications on industrial policy, supporting industries, Japanese development, etc. free of charge in hardcopies or downloadable from www.vdf.org.vn.

Working Group and its activities to draft the motorbike master plan in 2006 and 2007 were part of such effort.

Initiation of joint work

The drafting of industrial strategies and master plans³ is the responsibility of the Industry Policy Strategy Institute (IPSI) under MOI. Apart from the Ministry's regular work schedule to draft key industrial master plans one by one, the drafting of the motorbike master plan was one of the 44 agreed items for action (Item no.41) in the Vietnam-Japan Joint Initiative Phase 1 (2003-2005) for the purpose of improving business environment with a view to strengthen Vietnam's competitiveness. The Japan International Cooperation Agency (JICA) dispatched an industrial expert, Mr. Taizo Otani, to IPSI in late 2005 to support the drafting process.

Subsequently, the drafting of the motorbike master plan was assigned to an IPSI team headed by Mr. Nguyen Anh Nam (see footnote 3 for the distinction between *strategy* and *master plan*). During 2005 Mr. Nam had sought VDF's advice in preparing another master plan (supporting industries). Mr. Nam re-approached VDF in early 2006 for joint work toward the drafting of the motorbike master plan, and VDF consented on the conditions that (i) the work must involve stakeholders deeply, especially major motorbike producers; and (ii) methodology, content and structure should not be constrained by past practices.

A small informal gathering was arranged to mutually introduce IPSI, experts, and major motorbike producers. In a separate meeting, VDF asked the general directors of Honda and Yamaha, the two largest motorbike assemblers in Vietnam, about their intention to actively participate in the drafting of the master plan. They both highly welcomed the opportunity to work with MOI although that would take a large amount of their time and the end result was still uncertain. Both IPSI and

³ In Vietnam, it is customary to produce a short *strategy* (chiến lược) before drafting a more detailed *master plan* (quy hoạch). Both are submitted to prime minister or responsible minister, with possible revisions before final approval. The master plan is accompanied by a short summary document which is signed by prime minister or responsible minister for approval. The motorbike strategy was approved by the MOI Minister in September 2006 and the motorbike master plan was approved by the MOIT Minister in August 2007.

the two assemblers requested VDF to be the coordinator and facilitator of joint drafting. VDF supported the drafting process through networking, drafting, editing, translation and interpretation, logistic support, and additional funds supplementing the IPSI budget.

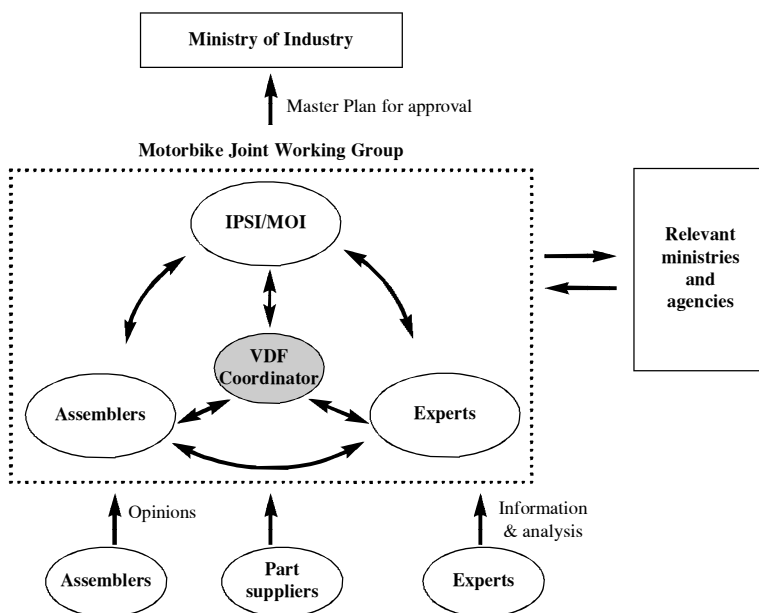
In April 2006, preliminary study meetings were organized to work out the scope, framework and time schedule. Participants included IPSI, Honda, Yamaha, Japanese industrial experts, and VDF. Subsequently, preliminary study meetings were upgraded to the Joint Working Group (JWG), which was officially recognized by MOI and the Vietnam-Japan Joint Initiative Phase 2 (2006-2008) as a joint drafting body of this master plan. The VDF and MOI signed an agreement for joint work in September 2006.

Purposes and activities

The most important purpose of joint drafting, which deviated from MOI's existing procedure, was to produce a master plan which can be owned and supported by both producers and government. For this, joint work based on mutual trust was considered absolutely necessary from initial design to drafting and implementation. JWG also aimed to make progress in correcting the two weaknesses of Vietnam's policy formulation mentioned above, namely, the lack of stakeholder involvement and the lack of inter-ministerial coordination.

The diagram below shows the drafting framework. Within JWG, officials, assemblers, and experts were brought together under VDF's coordination. This triangular structure copies Thai industrial policy formulation under the Thaksin Administration but on a much smaller scale⁴. Due to limited financial and human resources, as well as the trial nature of this scheme, the size of JWG had to be kept small. It consisted

⁴ Under the Thaksin Government (2001-2006), several industrial institutes were set up to activate policy making among businesses, officials, and experts. For example, the Thai Automotive Institute, headed by Mr. Vallop Tiasiri, played an instrumental role in tripartite dialogue as well as in drafting and implementing the automotive master plan. The Thai system differed from our framework in the following aspects: (i) official status of the institute; (ii) strong directives from the prime minister; (iii) much broader participation of stakeholders; (iv) direct private-sector access to the prime minister; (v) the fact that the master plan did not require official approval to be effective, etc.



of 10 core members (4 officials, 3 producers, 3 experts) and 8 non-core members⁵. JWG enjoyed active participation of members including the general directors of Honda and Yamaha. All JWG work was on a voluntary basis; no member or supporting staff received remuneration for their work.

Even with limited time and budget, involving as many stakeholders (assemblers, suppliers, officials, experts, and consumers) was regarded as very important. Using the information and networks of MOI and VDF, JWG communicated drafting information to all motorbike-related assemblers and suppliers that could be located and contacted. Assemblers other than top 3 and all of part suppliers, who were not JWG members, were consulted through factory visits and producer meetings organized in the North and South of the country.

⁵ There were personnel rotations of general directors at both Yamaha and Honda toward the end of the drafting period. The new general directors replaced the old in JWG membership.

Transparency was also emphasized. Key drafts, minutes and presentation materials were posted in the VDF website (www.vdf.org.vn/jwg.htm) except in a few cases where sensitive corporate information had to be protected.

Throughout the drafting process, and especially during the first several months, a large amount of time was spent on administrative matters. Since JWG tried to break from the routine, many operational issues had to be debated and solved regarding official status, budgeting, time frame, allocation of responsibilities, etc. One issue that consumed a considerable amount of time was the nature of the document being drafted. The non-government members of JWG wanted assurance that their output would become the substantive core of the master plan, even with subsequent revisions, rather than an attachment or a reference paper⁶. Another issue was the deadline; JWG hoped to secure one-and-half years of work to produce a good draft, as administrative matters were sure to cut into the time available for discussing substance. However, MOI needed to produce tangible output within an annual budget cycle. Ultimately, the deadline of end May 2007 was agreed. This meant that JWG had about one year for drafting.

In all, JWG had 27 internal meetings. In April and May 2006, JWG mainly discussed administrative procedures. From May to August 2006, JWG held 9 brainstorming sessions to share basic information and identify possible issues. External experts were also mobilized for information and views. In September 2006, the skeleton draft was completed and drafting assignment by chapter was decided. Drafters included both JWG members and outside experts. Additional 14 meetings were held during drafting and one more meeting was held in October 2007 after the approval of the master plan.

On two occasions, in November 2006 and March 2007, JWG organized hearing sessions and related factory visits in the North and South to report drafting progress to motorbike assemblers and suppliers and receive their

⁶ JWG did receive such assurance from MOI. However, the JWG final draft did not become the core document of the approved version as explained below.

opinions. Also in March 2007, VDF conducted consumer surveys on streets and in electronic media⁷, and organized a motorbike symposium in Hanoi. From January to March 2007, JWG received three groups of Japanese experts to assist the drafting work⁸. In addition, the results of the VDF-MOI joint survey of part suppliers in the North and South in February-March 2006, and ongoing VDF research in supporting industries, were also used as reference materials⁹. The JWG completed the final draft in Vietnamese and English and submitted it to MOI at end May 2007.

The JWG final draft

The main features of the JWG final draft can be summarized as follows.

First, as intended, this document deviates significantly from the norm set by MPI for all master plans and by MOI for industrial master plans in particular, in both content and structure. The traditional master plan typically starts with the general review of domestic, regional and global markets. Vietnam's situations are further analyzed including positive and negative factors. Then the vision, targets, and plans were presented often with detailed instructions for production, investment, technology and geographical distribution. A list of policy measures, which are relatively short and without concrete actions or schedule, follows. At the end, allocation of responsibilities among different ministries and agencies is shown. Since this format was not suitable for what JWG intended to propose, a new structure was used instead. However, it remains unclear

⁷ Street interviews were conducted from March 5 to 18, 2007 in Hanoi, HCMC and Can Tho with 1,981 respondents. Separately, online surveys were conducted in the websites of Vnexpress, Dantri, Thanhnien and VDF from March 5 to 20, 2007 with 7,763 hits (about 4,000 people). Both asked the same simple questions about the volume of motorbikes, and whether or how they should be controlled. The combined direct and online surveys showed that 50.3% preferred control with a roadmap, while 26.3% did not want any control and 23.4% wanted immediate control. Among those favoring control, 49.0% recommended administrative measures and 51.0% preferred economic measures. Although these surveys may not have been strictly scientific, they were nonetheless conducted to raise consumer awareness and publicize master plan drafting activities.

⁸ Mr. Kiyoyuki Minato (Japan Automobile Research Institute) for air pollution analysis; Mr. Shosei Hiroe (Expect Consulting) for supporting industries; and Mr. Taisuke Kawashima (Yamaha), Mr. Hiroshi Nakagawa (Honda), and Japan Automobile Manufacturers Association (JAMA) officials for intellectual property rights.

⁹ These are available in both hard and soft copies from VDF.

whether the indicated structure is required for official approval or just a guideline that may or may not be followed.

Second, unlike most other industrial master plans which are mainly concerned with supply-side issues, this document places equal weights on supply-side issues and social issues such as people's mobility and comfort, air pollution, and traffic congestion and accidents. This is a special feature of the Vietnamese motorbike industry which may not be repeated in other industries. MOI recognizes that FDI producers dominate and will continue to dominate the domestic motorbike market. For globally competitive FDI producers, support of the Vietnamese government in R&D, technology, finance etc. is hardly necessary. At the same time, in view of the fact that the motorbike has become such an important factor in Vietnamese life, uncontrolled growth of its use which causes serious damage should not be tolerated. The sound development of Vietnam's motorbike industry thus requires proper management of social issues related to motorbike use. This is the reason why social issues are highlighted as an area that requires effective policy actions.

Third, on the supply side, the government should present clear policy direction and assist Vietnamese producers to improve competitiveness, in which the promotion of supporting industries and industrial human resources are the key factors. The JWG final draft argues that production, investment, export, and choice of technology should be left to individual companies and market competition. The private sector is the leader and the government is the follower. The government should not hand down numerical targets to businesses unilaterally.

Fourth, to elaborate further on numerical targets, we do not think that numerical targets are always undesirable. If government and businesses trust each other and always work closely together, it is natural to have some indicative targets. For example, in the Thai Automotive Master Plan 2002-2005, output, export and localization targets were spelled out for automobiles and motorbikes. However, these targets were agreed by producers' collective initiative and not imposed by the Thai government. In Vietnam, however, trust and cooperation between government and businesses have not reached the level where numerical targets can be

safely set. Under such circumstances, unilateral setting of numerical targets without sufficient consultation with businesses only causes problems. That is why JWG did not propose any supply-side numerical targets.

Fifth, the JWG document contains a large amount of analysis on current situations. In many countries, industrial master plans do not dwell much on past or current situations and go directly into goals, action plans, and monitoring criteria. However, that the JWG document is verbose and explanatory is largely intentional. As we noted above, trust and cooperation between government and businesses is still weak in Vietnam, and we wanted to provide as many background materials as possible to foster common understanding on the status of the industry, a process we consider is still necessary in Vietnam. In the future, when government-business relations improve significantly, Vietnam will be able to draft leaner and more operational master plans.

Sixth, the JWG document was drafted by Vietnamese and Japanese authors. This partly reflects the fact that three out of four largest FDI motorbike assemblers in Vietnam are Japanese, and partly because of the difficulty of organizing a multinational group for an entirely new process like this. VDF's access to non-Japanese FDI companies was limited, and it had no time, budget or personnel to include others. However, when the inclusive process is well established and necessary resources become available, every master plan should seek participation of all related parties regardless of nationality.

Finally, while stakeholder involvement and inter-ministerial coordination were the two main goals for JWG, there was not enough time to activate the latter because JWG had only one year to complete the draft. By May 2007, JWG was able to stimulate participation of a fairly large number of stakeholders, but policy proposals were still general and unready to be discussed by relevant ministries, agencies and donors. Nevertheless, JWG still believes that concretizing actions, resources, timetables and monitoring criteria is crucial for effective implementation. It hopes to continue to assist in this matter provided that conditions are favorable.

JWG admits that its final document, produced under the constraints of time, budget and existing procedures, is far from perfect. It should however be

recognized that this is the first industrial master plan draft in Vietnam that was discussed jointly by government and major producers from the beginning to the end of the drafting process.

Revision and approval

After the JWG final draft was submitted to MOI, it was reviewed by the MOI's master plan review committee. Internal views as well as the views of Vietnamese producers were heard. JWG was not informed of the plan for revision. While the internal review of the motorbike master plan was in progress, the government proposed to merge MOI and MOT and create the Ministry of Industry and Trade (MOIT), a proposal which was approved by the National Assembly in August 2007. There were also changes in ministers.

On August 29, 2007, news media reported the approval of the motorbike master plan by MOIT Minister Vu Huy Hoang. VDF obtained the text of the approved master plan, studied the content, and convened JWG to discuss it. Unfortunately, the approved master plan differed substantially from the JWG final draft¹⁰. While using a large amount of arguments and proposals of JWG, which amounted to 80% of the JWG final draft according to IPSI, the approved version was a newly drafted document rather than a revised JWG final draft.

Major differences included the following: (i) chapter structure was altered and reverted to something close to the traditional format; (ii) assertion that government should not impose numerical targets was rejected and such targets, including export and local supply targets, were inserted; (iii) the weight of supply-side issues was increased relative to social issues; and (iv) policy goals and supporting measures for enhancing local enterprises were newly introduced.

Non-government members of JWG regretted that such significant revisions were made and officially approved without consulting JWG in advance.

¹⁰ The approved motorbike master plan is available from IPSI or VDF. An unofficial English translation will also be made available from VDF shortly.

While the JWG final draft did not become the core of the motorbike master plan this time, JWG wishes to report its drafting process, including achievements and limitations, and publish it for the record. Improvement of policy formulation is a long-term process. Members of JWG sincerely hope that Vietnam will overcome its policy problems and draft many effective industrial master plans in the future.

Hanoi, October 2007

The Motorbike Joint Working Group

**THE MASTER PLAN FOR THE DEVELOPMENT OF
THE MOTORCYCLE INDUSTRY**

FINAL DRAFT

HANOI, MAY 2007

THE MOTORBIKE JOINT WORKING GROUP

ABOUT THE MOTORBIKE JOINT WORKING GROUP

The Motorbike Joint Working Group was established in the spring of 2006 at the request of the Vietnam-Japan Joint Initiative Phase 2, a bilateral effort to improve Vietnam's business conditions. The members consisted of policy makers, motorcycle businesses, and industrial experts. The Vietnam Development Forum (VDF) acted as a coordinator. In September 2006, the Ministry of Industry (MOI) and VDF signed an agreement to cooperate in drafting this master plan. The Industrial Policy Strategy Institute (IPSI) of MOI was the official drafter of this master plan working closely with the Motorbike Joint Working Group.

The Motorbike Joint Working Group aimed to introduce new methodology and content by involving related businesses in the entire drafting process and interacting actively with major stakeholders, including consumers, assemblers and parts makers, related ministries and other official bodies, and experts and researchers. It worked for about one year, holding 27 internal meetings, organizing four opinion hearing tours, surveys and symposiums, and receiving three groups of foreign experts. The final draft was submitted to MOI in May 2007.

The members of the Motorbike Joint Working Group were as follows. Asterisks indicate core members. Some served only part of the time due to personnel rotation within their organizations.

Nguyen Anh Nam (IPSI/MOI) *

Ngo Van Tru (MOI) *

Pham Gia Thuc (IPSI/MOI) *

Duong Hong Quan (IPSI/MOI) *

Hiroaki Funami (Honda Vietnam) *

Koji Onishi (Honda Vietnam) *

Takahiko Takeda (Yamaha Motor Vietnam) *

Masaki Asano (Yamaha Motor Vietnam) *

Yoshihiko Kakei (Vietnam Suzuki) *
Kyoshiro Ichikawa (JICA expert) *
Shizuo Iwata (ALMEC) *
Kenichi Ohno (VDF/GRIPS) *
Atsushi Kikuchi (Honda Vietnam)
Kazushige Sasaki (Yamaha Motor Vietnam)
Tetsuji Masujima (ALMEC)
Tsuneo Takahashi (JICA expert)
Yoshito Nakajima (Japanese Embassy)
Mai The Cuong (VDF)
Ngo Duc Anh (VDF)
Le Ha Thanh (VDF)

INTRODUCTION

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 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.

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 (chapters 1-3). Second, the government should set and enforce realistic and meaningful standards for quality, safety, environment and intellectual property rights (chapters 5-9). Third, the government should help to upgrade Vietnam's

industrial capability with particular attention on supporting industries and industrial human resources (chapters 4 and 9).

This master plan contains projections of motorcycle use, sales and production in chapters 2 and 3. 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.

About policy measures

Chapters 4, 5, 6, 7 and 8 contain general policy directions. Some of them are developed into proposals of concrete policy measures in chapter 9. Other policy directions are desirable but not developed into concrete measures. This selectivity is partly due to the limited time and human resources available to JWG, and partly for the purpose of increasing the possibility of properly implementing proposed measures in the current policy environment of Vietnam.

Chapter 1

The Role of Motorcycles in Vietnamese Society

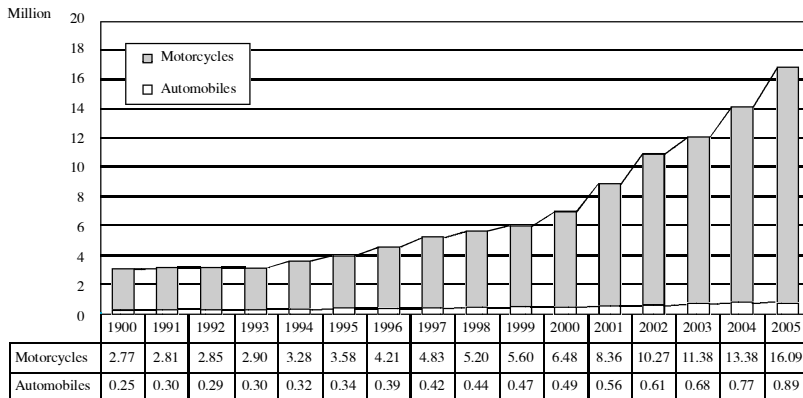
1-1. Overview

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.

According to the data of the National Traffic Safety Committee and the Traffic Police Road and Railroad Department (Fig. 1-1), 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.

Fig. 1-1 Motorcycles and Automobiles in Circulation



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

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 cities¹. 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, cars are beyond the reach of the general

¹ 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.

public at the current income level, and motorcycles often travel faster than automobiles. Many people also use motorcycles to make living.

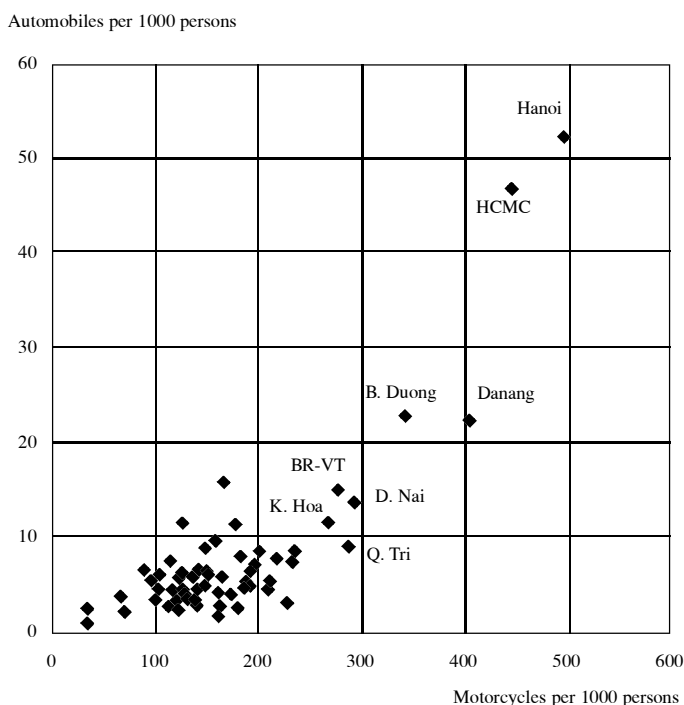
Although the "Master Plan for Transport Infrastructure in Hanoi and Ho Chi Minh up to the Year 2020" prioritizes investment in transport infrastructure such as roads, railroads, subways, and public buses, it also foresees that the use of motorcycles in Hanoi and HCMC will remain relatively high in the 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 (about 6 person/unit).

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 fewer motorcycles per person. Incidentally, the density of automobile use is positively correlated with the density of motorcycle use (Fig. 1-2).

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.

Fig. 1-2 Motorcycle and Automobile Density by Province, 2005



Source: National Traffic Safety Committee. See appendix to chapter 1 for original data.

1-2. 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. All 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 at 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.

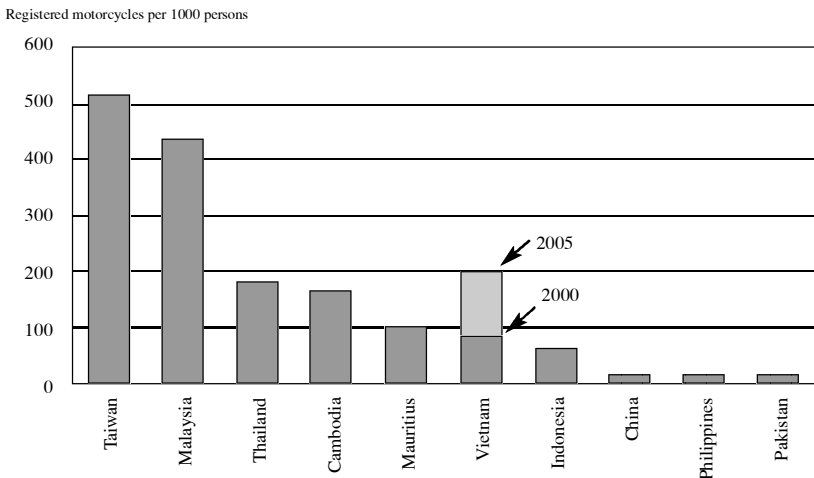
At the end of this process, over-capacity and severe competition exerted significant downward pressure on the prices of "Chinese" motorcycles produced by Vietnamese assemblers. Many consumers also turned away from their products which failed to satisfy their quality demand. This prompted them to revise 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.

1-3. International comparison and Vietnam's uniqueness

Asia dominates 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 2005². 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.

Fig. 1-3 Motorcycle Holdings in Asia, 2000



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

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

² Honda, *World Motorcycle Facts and Figures*, 2006.

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.

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 fun³. 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 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.

First, motorcycle use in Vietnam is disproportionately high relative to its automobile use. There are only 12 countries in the world where the number

³ 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.

of registered motorcycles surpasses that of registered automobiles⁴. 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).

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 (Fig. 1-2). 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 (Fig. 1-3), cars are far more visible than motorcycles in Taipei, Kuala Lumpur or Bangkok. This is because motorcycles in these countries are more uniformly spread geographically⁵. 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

⁴ 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.

⁵ 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.

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 with new models and reorganizing domestic and global suppliers.

1-4. Transport modal balance

Cars, motorcycles and public transportation systems are three pillars of road 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.

The strength of the automobile is comfort and privacy. In 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 generally 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.

Tab. 1-1 Comparison of Three Principal Modes in Vietnam's Urban Travel Setting

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

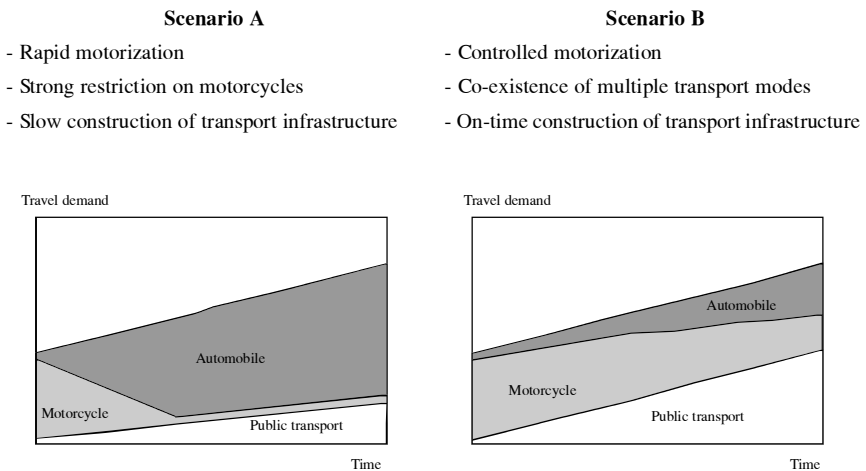
Motorization, or the expansion of personal car use, is inevitable in any rapidly growing developing country, but its speed is controllable by policy. In more developed countries, personal means of transport shifted from motorcycles to automobiles as income rose. Vietnam's motorization is at a very early 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.

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 in Hanoi and HCMC as in the large cities of 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.

Fig. 1-4 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 from 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.

Fig. 1-4 Rapid Motorization vs. Controlled Motorization in Urban Areas



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 plans⁶ 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

⁶ See footnote 1.

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.

1-5. 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 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 to Chapter 1

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
Vinh 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

The Role of Motorcycles in Vietnamese Society

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
Total or average	83,120	16,251,066	887,865	196	10.7

Source: National Traffic Safety Committee. The asterisk shows five cities under central administration.

Chapter 2

Industrial Structure and Production Orientation

2-1. Current situation of production

The motorcycle industry of Vietnam was born about a decade ago and developed quickly, especially in the period 2001-2005. At first, four foreign-invested firms, VMEP, Honda, Yamaha and Suzuki, assembled motorcycles in the 1990s. Subsequently, a large number of indigenous firms entered the market to assemble motorcycles, initially with parts imported from China, but later with locally produced parts with Chinese and Vietnamese technology.

During 2001-2005, at least 67 firms existed in the motorcycle industry, which were located all over the country and collectively produced nearly 2.2 million units at the peak time. Supporting industries also began to form, which belonged to various ownership types and included suppliers of different nationalities such as Taiwan, Japan, Thailand, China and Vietnam.

Prior to 2000, total production was only hundreds of thousand units per year, which was mainly attributable to FDI assemblers and a handful of local assemblers. Motorcycle prices up to that time were relatively high, and this prompted a number of local producers to set up assembly lines to produce low-priced motorcycles of Chinese origin in 2000 and 2001. Since new comers' prices initially matched the income level of consumers, their production rose sharply to capture 87% of the market in 2001.

However, in 2003 and 2004, almost all assemblers had to reduce output due to a number of policy reasons, including the imposition of import part quotas, restriction on motorcycle registration by some localities, and stricter

regulation over production activities of assemblers. However, by 2005, these policy constraints on motorcycle assemblers had all been lifted, and production volume began to surge.

Under the price pressure from the so-called "Chinese" assemblers, FDI assemblers adjusted business strategies, reorganized production, developed new supplier systems and after-sale services, and gradually regained customer base. By 2005, their combined market share rose to 53.6%. Meanwhile, the sales of inexpensive motorcycles with Chinese origin dropped significantly.

According to Vietnam Register (Table 2-1), in 2006, only 18 assemblers which had the sales of more than 20,000 units of motorcycles per year collectively occupied the market share of 88% with four FDI firms accounting over 50%. Six of the local assemblers, whose sales exceeded 40,000 units expanded their collective sales and market share. Including two other local assemblers, which produced more than 39,000 units, the total sales of the leading 8 local assemblers is 770,000 units with the market share of 30%. The number of assemblers with sales of 20,000 to 40,000 units decreased to 6 compared to 10 in 2005. Those with sales of 10,000 to 20,000 units also fell from 14 in 2005 to 9 in 2006. The rest were the local assemblers with the sales less than 10,000 units, which operate irregularly and seasonally. 20 of them even did not have any product officially registered in 2006.

It can be said that, among totally 54 motorcycle assemblers (three of which were approved to operate since 2006), there are only 10 firms, three of which were FDI firms, i.e. Honda, Yamaha, Suzuki and VMEP, operated efficiently.

Tabs. 2-1 and 2-2, which contain similar data, are compiled from different sources and show some discrepancies between them, which are sometimes quite large. The main reason for the gap is that some motorcycles produced during the year, mainly by local assemblers, are registered by producers but are not sold within that year. Unsold vehicles are sometimes re-modeled and re-registered, which causes double counting. Another reason seems to be that, in some remote areas, unregistered motorcycles are put into use.

Tab. 2-1 Development of Motorcycle Assembly Production

	2001	2002	2003	2004	2005	2006
Newly registered motorcycles (x1,000)	2,485.6	1,818.6	1,789.6	2,138.8	2,188.4	2,553.6
Scooters	22.43	82.17	101.47	180.98	192.32	n.a.
Manual transmission	2,463.17	1,736.43	1,688.17	1,957.81	1,996.10	n.a.
Market share (percent)	100%	100%	100%	100%	100%	100%
FDI assemblers	12.94%	42.37%	47.59%	51.71%	53.55%	54.53%
Honda	6.84%	21.02%	23.68%	23.85%	28.63%	31.57%
Yamaha	0.92%	3.78%	6.77%	9.80%	11.72%	13.74%
Suzuki	1.04%	2.31%	2.88%	3.59%	3.89%	1.69%
VMEP	3.18%	13.55%	11.80%	12.02%	7.75%	5.87%
Other	0.97%	1.71%	2.47%	2.46%	1.56%	1.65%
Local assemblers	87.06%	57.63%	52.41%	48.29%	46.45%	45.47%
Over 40,000 units/year (6 firms in 2005)	8.07%	10.20%	12.59%	19.35%	22.42%	27.09%
20,000-40,000 units/year (10 firms in 2005)	40.54%	31.10%	30.64%	24.57%	13.43%	7.35%
10,000-20,000 units/year (14 firms in 2005)	21.07%	10.03%	9.16%	4.20%	8.83%	5.46%
Less than 10,000 units/year (in 2005)	17.38%	6.29%	0.03%	0.16%	1.77%	5.57%

Source: Compiled from Vietnam Register data.

As of September 2005, cumulative capital invested in the motorcycle industry was about 9,000 billion VND, of which one-third (3,200 billion VND) was by local producers. FDI firms, as a group, had a total registered capital of 394.4 million USD and at present are continuing to expand output capacities of assembly and part production.

Under strong competitive pressure, smaller FDI enterprises have re-oriented their business strategies. For example, Lifan Vietnam reduced output of completed motorcycles and shifted to engine production for the domestic market. Vina-Siam started to assemble scooters from parts which are almost all imported, and simultaneously supply a number of components such as brake, chain gear, brake cable, speedometer cable, shock absorber, etc. with reasonable quality for the domestic market. GMN was split into new GMN which handled trading and VAP which produced automobile and motorcycle components. VAP has become a Honda group

member and a part supplier of Honda Vietnam, with the latter contributing 70% of its capital.

Tab. 2-2 Market Share by Assembler

	1998	1999	2000	2001	2002	2003	2004	2005
Total sales (x1,000)	302	475	1686	1983	2058	1280	1437	1641
Share (percent)								
Honda	27.2	19.5	9.7	8.6	19.4	33.3	35.7	36.9
Honda (import)	40.0	43.6	9.7	3.3	0.0	0.0	0.0	0.0
Yamaha	0.0	2.7	1.0	1.3	2.7	7.7	13.3	13.2
Suzuki	7.2	3.6	1.0	1.4	2.2	4.0	4.9	4.1
VMEP	11.7	4.2	2.3	3.3	7.4	13.6	15.6	7.5
Scooter CBU	0.4	2.5	1.1	1.7	3.4	3.7	1.0	2.7
Local and other	13.5	23.8	75.2	80.5	65.1	37.8	29.6	35.7

Source: Compiled from Enterprise Survey Data.

As for local assemblers, which initially relied on imported parts from China, some of them invested in internal part workshops to respond to the government policy of localization. However, such investment often lacked effectiveness and balance. When the government abolished localization requirement, many of them gave up internal part production and began to use purchased parts again.

As for R&D, the four largest FDI assemblers all belong to a global group with the parent company conducting most of the key R&D activities. Assemblers in Vietnam conduct supplementary research only, such as market survey and adjustments on the group's basic models. However, it is notable that VMEP is now investing in the R&D center in Dong Nai. For FDI companies, the largest obstacle in R&D is the dearth of high skill human resources. On the other hand, R&D activities of local suppliers remain insignificant at present.

2-2. Current situation of supporting industries

The supporting industries (part suppliers) of the motorcycle industry are the largest in number and production volume among all supporting

industries in Vietnam, thanks to the rising production volume of finished motorcycles in recent years. For some Japanese assemblers with large volumes, the process of building the part procurement system is approaching the final stage.

During the period 2000-2003, partly due to the policy to encourage localization, many assemblers invested or helped to establish supporting industry activities, which contributed to the rising localization ratio. At present, almost all parts of manual transmission motorcycles, including engine parts, can be produced domestically. Apart from internal part production of assemblers, there are several hundred enterprises that produce motorcycle parts in Vietnam, although part production is often a side job or part-time activity for most of them. However, the quality and cost of such parts are not always satisfactory in comparison with imported parts. Important and difficult parts, such as engine parts and functional parts, are at present not produced completely or in reliable quality in Vietnam. Nevertheless, an increasing number of local suppliers invest in necessary equipment to improve quality, and some of them can now supply parts with international quality. These suppliers have become a part of FDI assemblers' procurement system.

For manual transmission motorcycles, the Ministry of Industry survey shows that local assemblers have achieved relatively high part localization, some of which have a localization ratio above 80% for all parts, and above 60% for engine parts. As for FDI assemblers, localization is also relatively high, ranging between 70% and 90% depending on production volume and the company's procurement strategy. For scooters, localization is still low since production volume is small at present.

By 2002, over 80 FDI part producers came to Vietnam to supply parts to Honda, VMEP, Suzuki and Yamaha with the total capital of 260 million USD. In particular, VMEP initially brought 11 suppliers to an industrial cluster in Dong Nai, and their number subsequently increased. The average quality of parts is highest among Japanese FDI and lowest among Vietnamese, with Taiwanese FDI coming in the middle. However, quality differs significantly across individual suppliers. Some Vietnamese suppliers

perform better than some Japanese FDI suppliers in terms of quality, cost and delivery (QCD).

In addition, assemblers also produce parts internally. In 2004, VMEP achieved a localization ratio of 70% for engines and exported 18,000 engines. In 2005, Honda installed an integrated engine production line on the premise. In 2006, Yamaha invested in a new factory to produce head cylinders and mission gear sets for internal use as well as for export to Japan.

Among three Japanese assemblers, the current situation and future strategy of part procurement differ significantly, depending on production size as well as the global procurement strategy of the parent company (see Appendix to Chapter 2 for collective procurement pattern of Japanese assemblers). For assemblers with large volume, the localization ratio has already reached or is about to reach 90%, which can be considered a saturation point. In globally integrated markets, procuring everything locally goes against scale economy and optimal allocation of production sites around the globe. For such assemblers, the part procurement system is nearly complete, and there is no strong need to increase localization further. However, diversifying domestic suppliers for each part to avoid the risk of relying on only one supplier, or switching to new suppliers with better QCD performance, still remains desirable for them. In contrast, assemblers with relatively small volume still look for new domestic suppliers in order to replace low-performing suppliers. For them, the part procurement system remains incomplete and there is urgent need to increase the number of domestic suppliers and the localization ratio.

Notwithstanding these differences, part procurement of Japanese assemblers shows a clear pattern. Tab. 2-3 indicates their combined procurement structure in 2007 based on part item counts (not necessarily proportional to value). For engine parts, imports from Thailand are the largest supply while the rest are supplied mainly by Taiwanese and Japanese FDI firms and in-house production. For electric parts, which are relatively difficult, Japanese FDI firms dominate. Exhaust and body parts are mainly supplied by Japanese and Taiwanese FDI firms. Vietnamese

suppliers mainly supply "other" items and some body and electric parts, which have relatively low value.

Tab. 2-3 Part Procurement Structure of Japanese Motorcycle Assemblers, March 2007

(Percent of part items)

	<i>In-house</i>	<i>Domestic purchase</i>				<i>Imports</i>						<i>Total</i>
		<i>JP</i>	<i>TW</i>	<i>VN</i>	<i>Other</i>	<i>JP</i>	<i>TH</i>	<i>INDO</i>	<i>MAL</i>	<i>TWN</i>	<i>Other</i>	
All parts	2.6	28.1	28.4	10.6	4.0	2.3	19.5	2.3	0.7	0.7	1.0	100.0
Engine	6.3	14.3	16.1	5.4	0.0	2.7	47.3	4.5	1.8	0.9	0.9	100.0
Exhaust	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Body	0.8	32.0	44.3	9.0	9.0	0.0	3.3	0.0	0.0	0.8	0.8	100.0
Electric	0.0	75.0	7.1	10.7	3.6	0.0	0.0	3.6	0.0	0.0	0.0	100.0
Other	0.0	15.2	24.2	36.4	0.0	12.1	6.1	3.0	0.0	0.0	3.0	100.0

Source: VDF Survey, 2007.

Note: JP: Japan, TW: Taiwan, VN: Vietnam, TH: Thailand, INDO: Indonesia, MAL: Malaysia. These percentages are based on the questionnaire on supply sources of 82 part items conducted on three Japanese motorcycle assemblers in Vietnam (see Appendix to Chapter 2). The results are combined over all assemblers. Since each part item may contain more than one individual part, and there may be more than one supplier for each part item, numbers in the table are not proportional to the number of individual parts or their value.

Since 2005, there is a sharp increase in the marketing activity and even investment in Vietnam by FDI part producers from India, Thailand, Indonesia, and Malaysia as well as from more traditional source countries such as Japan and Taiwan. They vigorously approach large motorcycle assemblers in Vietnam in order to receive orders from them. This reflects the attractiveness of Vietnam's motorcycle part market with increasingly large volume, as well as the improved capability of these foreign suppliers, many of whom already have business relations with Japanese FDI assemblers in their home countries. Japanese FDI assemblers all state clearly that QCD is the primary criteria for selecting suppliers and that they have no particular preference as to the nationality of suppliers. Under these circumstances, the remaining niche in the localization need of Japanese

FDI assemblers may be filled by new FDI part producers rather than Vietnamese part producers, since the latter do not engage in equally aggressive marketing (chapter 4).

2-4. Exports and imports

The exports and imports of motorcycles and their parts are presented in Tab. 2-4.

Tab. 2-4 Exports and Imports of Motorcycles and Parts

	2000	2001	2002	2003	2004	2005
Export value (million USD)	2.2	6.2	9.0	22.9	46.4	70.8
Share (percent)						
Complete units	12.1	1.4	3.3	1.6	0.6	0.5
CBU	0.0	0.0	53.4	66.7	57.2	47.5
Engines	0.0	0.0	0.0	1.9	10.8	24.4
Engine part set	0.0	0.0	0.0	0.0	0.9	0.0
Separated parts	87.9	98.6	43.3	29.8	30.5	27.6
Import value (million USD)	810.4	713.3	465.2	319.6	451.6	541.4
Share (percent)						
Complete units	0.1	0.3	0.3	12.8	8.8	12.0
CBU	95.5	88.2	64.2	28.0	0.0	0.2
Engines	0.0	0.1	1.6	0.7	0.5	1.1
Engine part set	0.0	4.7	2.4	3.0	2.9	0.2
Separated parts	4.5	6.8	31.6	55.5	87.9	86.5

Source: Compiled from General Customs Office data.

Exports rose dramatically, albeit from a very low base, from 2.2 million USD in 2000 to 70.8 million USD in 2005. Main export products are CKD parts, engines and loose parts. Honda is the largest exporter of motorcycles and parts in Vietnam, with the Philippines, Laos and Indonesia as main destinations. The second largest exporter following Honda is VMEP. Exports of complete units have been mainly for marketing and providing samples only, and never exceeded 1,000 units per year. Only FDI assemblers, especially VMEP, conduct such exports.

Meanwhile, Honda and VMEP are the only producers that have exported engines in recent years. Two companies with Taiwanese capital, Machino and Chunfun, also export motorcycle parts, together accounting for 13% of total export of this industry in 2005. Overall, Japanese FDI assemblers in Vietnam mainly target the domestic market and do not seem to have clear export strategy, especially beyond Southeast Asia, at this point. On the other hand, VMEP, a Taiwanese FDI assembler, has a clear strategy to build an export base in Vietnam and already exported to EU. Vietnamese assemblers are also exploring the possibility to export to such markets as Africa, Middle East and Latin America, but outcome is yet to be seen.

Imports exhibited a declining trend in the period 2000-2003, from 810 million USD to 320 million USD, as the supporting industries for motorcycle continued to develop in Vietnam. However, this trend was more than offset in the period 2004-2005, with imports rising to 541 million USD in 2005, by the increased parts import by FDI assemblers which raised production volume in response to strong domestic demand. As to the structure of imports, CKD parts fell drastically and loose parts and complete units increased. Imports of complete units are mainly scooters of average to high quality. Complete units of the value over 2,000 USD, such as SH, Dylan, @, and Vespa come mainly from EU, US and Japan, while complete units of the value less than 1,000 USD come mainly from China and Malaysia. In 2005, Vietnam imported 45,700 complete units with the total value of 65 million USD, with the average unit price of 1,424 USD. Urban demand for expensive scooters is rising rapidly.

If the motorcycle industry of Vietnam develops successfully in the future, with a sufficiently large domestic market, broad-based supporting industries, and high-quality industrial human resources, it is quite possible that Vietnam may be able to participate in the vertical or horizontal division of labor in global motorcycle production, and secure a meaningful position in the global value chain. The Vietnamese government generally and strongly encourages such development, and urges domestic motorcycle producers, FDI and local as well as assemblers and part suppliers, to seize every opportunity to increase exports with ambitious business plans.

Nevertheless, feasibility and desirability of exports constitute a crucial part of the decision making of each enterprise, and are also strongly affected by competition and market trends. At this point, it is not yet clear where Vietnam's dynamic comparative advantage lies in the motorcycle industry. Moreover, for FDI producers, the decision to export or import usually belongs to the parent company in the context of its global business strategy. For Vietnamese producers, ability to conduct effective international marketing and build an efficient global supply chain is lacking. In either case, concrete planning for export seems hardly possible at this point. For this reason, the government does not set any numerical export targets for the period up to 2010 with a view to 2020.

2-5. Business architecture

With high production technology, design initiative, and large market share, FDI assemblers are the leaders of Vietnam's motorcycle market and play an important role in its development. However, competitiveness, output trend, investment plans, and marketing orientation differ significantly according to nationality as well as each firm. Using the terminology of Prof. Takahiro Fujimoto of Tokyo University, business architecture can be classified into two main types: *integral manufacturing and modular manufacturing*⁷. Japanese manufacturers are mostly integral and Chinese manufacturers are mostly modular. This observation also applies to the motorcycle industry.

The basic feature of integral manufacturing is that products are designed and produced with parts that are unique to each model. Such parts have original design which continues to evolve and improve over time, and which cannot be used in any other model. The industrial structure of integral manufacturing consists of a system of vertically organized

⁷ Takahiro Fujimoto, *The Monozukuri Philosophy of Japan*, Nihon Keizai Shimbunsha, 2004, in Japanese; Takahiro Fujimoto and Junjiro Shintaku, eds, *Architecture-based Analysis of Chinese Manufacturing Industries*, Toyo Keizai Shimposha, 2005, in Japanese; Kenichi Ohno and Takahiro Fujimoto, eds, *Industrialization of Developing Countries: Analyses by Japanese Economists*, GRIPS, 2006, in English and Japanese, Vietnamese edition forthcoming in 2007.

producers which have close, long-term relations with each other. At the top, there is an assembler that designs products, sets standards, and provides technology and market for suppliers. Suppliers in turn produce parts which satisfy quality, cost and delivery (QCD) required by the assembler. Through this process, original technology is created and internalized. If successful, this architecture can produce high quality products and capture high-end markets. To be effective, however, integral manufacturing requires a business environment characterized by healthy and fair competition, stringent protection of intellectual property rights, and strong linkage between assemblers and suppliers based on long-term trust, reputation, and protection and active development of industrial secrets. Moreover, long-term perspective is required since it takes a long time for efforts to bear fruits.

According to the Japanese motorcycle producers in Vietnam, there are very few local suppliers at present that can participate in such a rigorous manufacturing system. For this reason, they have so far had to rely heavily on FDI part producers, especially Japanese, as well as internal part production. They have met many difficulties in trying to expand this system to include local suppliers. This problem should be solved with the help of policy measures proposed in this master plan (chapters 4 and 9).

By contrast, modular manufacturing uses parts which are common to all models and available in the market. Part purchase contracts are short-term and depends on the price and quality offered. In such a market, there is no need to organize suppliers into long-term, vertical production system. The market is characterized by free entry and excess competition, where low price is the only winning strategy. The merits of modular manufacturing are speed and flexibility, appeal to low-income consumers, and dynamic outsourcing of resources. On the other hand, its demerits are low quality, low profit and low R&D. Motorcycles produced by modular manufacturers show little difference among models, and their quality is low to average. Part suppliers are also under strong pressure to lower prices, so the quality of parts is also low and unstable. Illegal copies and other violations of the intellectual property law are rampant. Crucial technology is not created or

accumulated within producers. This is the vicious circle which Prof. Fujimoto calls "technology lock-in."

Modular manufacturing is practiced widely in China as well as in Vietnam. Since little capital or technology is required, this type of manufacturing is very popular among local producers in many developing countries. Moreover, in such countries, the business environment required for integral manufacturing, as noted above, often does not exist. The market is not fair or stable, business practice lacks trust and transparency, and policy is highly uncertain which prevents long-term investment. Under such circumstances, only modular manufacturing is possible.

In Vietnam, all Japanese motorcycle assemblers are integral manufacturers. They have built a system of suppliers that are long-term, interactive and disciplined. Their production processes are standardized and strictly supervised from raw material to part production, inventory management, quality control, delivery, and contract settlement. Meanwhile, production of Chinese and local firms is organized according to the modular model, using common, interchangeable parts to reduce the cost. Some of these firms have also built a system of suppliers, by inviting part investors from the home country as well as using some local suppliers.

For a latecomer country like Vietnam, parallel development of integral and modular manufacturers is acceptable and even inevitable. Modular manufacturing provides employment and income, and can be organized easily by local entrepreneurs without government assistance. However, because of "technology lock-in," modular manufacturing has little scope of upgrading skills and technology. Moreover, the possibility of modular motorcycle production, which heavily relies copied models, may be severely limited if standards on quality, environment and intellectual property rights are strictly enforced. Government assistance should target local firms that are learning to become integral, rather than helping all local firms across the board.

Appendix to Chapter 2

Part Procurement of Japanese Motorcycle Assemblers in Vietnam, March 2007

Section	No.	Part	In-house	Local purchase				Imports					
				Ja panese	Tai wanese	VN	Other	Japan	Thai land	Indo nesia	Malay sia	Tai wan	Other
Engine	1	Head cylinder	o						o				o
	2	Cover cylinder head		oo	oo								
	3	Gasket		ooo									
	4	Body cylinder	oo						o	o			
	5	Crank shaft		o	oo			o	o	o			
	6	Connecting rod		ooo					o				
	7	Pin crank							ooo	o			
	8	Piston							ooo				
	9	Piston ring							ooo				
	10	Pin piston							ooo	o			
	11	Valve							ooo				
	12	Valve spring			o				oo				
	13	Rocker arm			oo			o	oo				
	14	Cam shaft assy							ooo				
	15	Guide stopper							o		oo		
	16	Cam chain							ooo				
	17	Cam chain tensioner				oo			oo				
	18	Oil pump assy			oo				oo				
	19	Joint carburetor			oo				o				
	20	Air cleaner assy			ooo				o				
	21	Carburetor							ooo				
	22	Crank case	oo	o									
	23	Cover crank case	o	oo									
	24	Mission gear set	o						oo	o		o	
	25	Kick cranck assy				ooo							
	26	Starter clutch		oo				o	oo				
	27	Clutch assy		oo					oo				
	28	Shift cam assy							ooo				
	29	Fork shift			oo				oo				
	30	Shift shaft assy							ooo				
	31	Shift pedal			oo	o							
Exhaust	32	Pipe exhaust		oo	oo								
	33	Muffler assy		oo	oo								
Body	34	Frame complete	o	o		o							
	35	Stay			oo	o							
	36	Bracket			oo	o							
	37	Fender		ooo									
	38	Leg shield		ooo									
	39	Side cover		oo			o						
	40	Graphic		ooo									
	41	Rear arm		oo	o								

Appendix to Chapter 2 (Continued)

Body	42	Rear shock absorber		oo	ooo								
	43	Front fork assy		oo	oo								
	44	Fuel tank			ooo								
	45	Fuel cap			ooo								
	46	Double seat		oo	ooo								
	47	Handle seat			ooo								
	48	Rim		oo	ooo								
	49	Spoke					ooo						
	50	Nipple					ooo						
	51	Hub		oo	ooo								
	52	Tire set		oo		oo							
	53	Wheel assy		o		oo	oo						
	54	Cast wheel			o		o		oo				
	55	Brake		ooo									
	56	Disk plate			oo			oo			o		
	57	Sprocket			ooo		o						
	58	Drive chain			ooo								
	59	Handle complete			ooo								
	60	Cable wire		ooo	o								
	61	Rear view mirror			ooo								
	62	Head light		ooo									
	63	Tail light		ooo									
	64	Speedometer assy			oo							o	
	65	Side stand			oo	o							
	66	Main stand			oo	o							
	67	Foot rest			oo	o							
	68	Brake pedal			oo	o							
Electric	69	Rotor assy		ooo									
	70	CDI unit		ooo									
	71	Stator assy		ooo									
	72	Starting motor		ooo									
	73	Ignition coil/switch		oo	o								
	74	Battery		oo		oo							
	75	Electronic wire		ooo	o	o							
	76	Switch set		oo			o			o			
Other	77	Rubber parts		oo	ooo	oo			o				
	78	Plastic parts		ooo	o	o							
	79	Bolt nut washer			ooo	oo		ooo	o				
	80	Bearing			o	oo		o		o			o
	81	Tape				oo							
	82	Tool kit				ooo							

Source: VDF survey, 2007.

Note: This table shows the part procurement situation of three Japanese motorcycle assemblers, Honda, Yamaha and Suzuki, as of March 2007 when this survey was conducted. The procurement manager of each firm was asked to fill in a questionnaire, followed by an interview by VDF staff at the factory. Each circle represents one of these companies. An assembler may outsource any part from more than one supplier, so the number of circles for each part may exceed three. An assembler may procure the same part from more than one supplier in the same nationality or source country. Part procurement information from other assemblers was unavailable.

Chapter 3

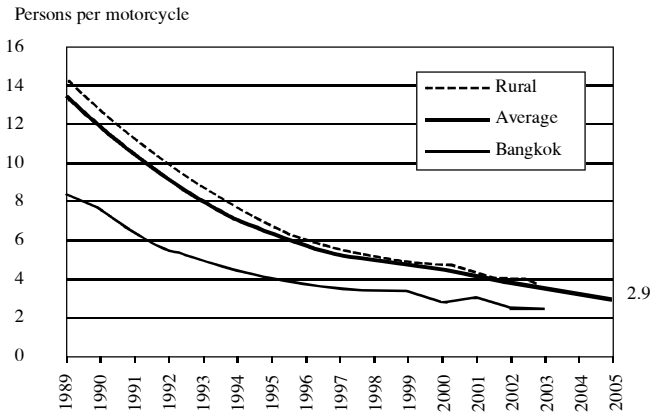
Demand Forecast

3-1. Benchmark and assumptions

At present, the Vietnamese motorcycle market is booming, and strong demand is expected to continue in the near future. However, as the domestic market approaches the saturation point, increases in the ownership and sales of motorcycles are likely to slow down. In Vietnam, the urban market and the rural market must be considered separately. The former is already near saturation (2.16 persons per motorcycle), while the latter has less motorcycles at present (6.14 persons per motorcycle) with more room to grow before saturation is reached.

For projection purposes, we take Thailand as the benchmark. Past and current Thailand has many similarities with Vietnam regarding climate and culture, road traffic situation, and economic development patterns. Vietnam is expected to reach the per capita income level of current Thailand by 2020 or earlier. Thailand has the population of 65.4 million and the motorcycle stock of 22.4 million in 2005, which means that there is one motorcycle for every 2.9 persons (Fig. 3-1). Moreover, the urban-rural gap is small-there was one motorcycle for every 2.5 persons in Bangkok, and for every 3.6 persons in the rest of Thailand (2003 data)⁸. This situation can be regarded as reasonably close to saturation at the national level. In the future, motorcycle production in Thailand will mainly satisfy replacement demand and exports, rather than expanding new domestic market segments. In any country, the person-to-motorcycle ratio of between 2 and 3 is the maximum limit, since that implies almost everyone, except very young, old, and weak, has a motorcycle.

⁸ IDE-JETRO, *Motorbike Industries in Asia*, 2005, in Japanese.

Fig. 3-1 Thailand as the Benchmark: Motorcycle Ownership

Source: See footnote 8. Regional division is unavailable for 2004 and 2005.

In projecting the motorcycle market in Vietnam, it is assumed that relatively high economic growth will continue from present to 2020. People's living standards will rise, and urbanization will also proceed rapidly. Up to 2010, no significant completion of large urban transport infrastructure is expected while rural roads will continue to be upgraded gradually. For these reasons, popular demand for motorcycles is likely to be robust. The saturation point of motorcycles for the country is expected some time between 2015 and 2020. However, even after saturation, Vietnamese people may continue to use motorcycles in various travel needs, if not as intensively as in urban areas at present.

We first forecast motorcycle stock demand (circulation) up to 2020 using three alternative approaches. They all yield very similar results. After that, flow demand (annual sales) is projected under different assumptions.

3.2 Stock demand

Approach 1-Persons per motorcycle

In this approach, it is assumed that the person-to-motorcycle ratio will reach 3.67 by 2010 and about 3 by 2015, after which this ratio stabilizes. This development is considered to be consistent with the expected GDP

growth, construction of urban and rural infrastructure, and people's attitude in the coming years.

Tab. 3-1 Stock projection from the person-to-motorcycle ratio

	2000	2005	2010	2015	2020
Population (x1000)	77.635	83.120	88.633	94.154	99.675
Motorcycle stock (x1000)	6.387	15.670	24.151	31.702	33.561
Persons per motorcycle	12.16	5.30	3.67	2.97	2.97
Growth in motorcycle stock (%/year)	--	19.7	9.0	5.6	1.1

Approach 2-Motorcycles per household, with urban-rural gap

The saturation point in terms of household ownership of motorcycles is considered to be about 2 motorcycles per family at the national level. By 2020, the average urban household is expected to have 4-5 family members and own 2.65 motorcycles, while the average rural household is expected to have 6-7 family members and own 1.51 motorcycles. Saturation at the national level will begin from 2015, but even after that, there will be a shift of motorcycle use from urban to rural families. With these assumptions, the following projection is produced.

Tab. 3-2 Stock projection from the motorcycle-to-household ratio

	2000	2005	2010	2015	2020
Households (million)	12.244	13.176	14.181	15.199	16.233
Urban	4.037	4.555	5.318	6.120	6.977
Rural	8.207	8.621	8.863	9.079	9.256
Motorcycles per household	0.52	1.19	1.69	2.00	2.00
Urban		2.32	3.08	3.34	2.65
Rural		0.59	0.85	1.10	1.51
Motorcycle stock (million)	6.387	15.670	24.108	30.398	32.465
Urban		10.562	16.600	20.423	18.511
Rural		5.108	7.508	9.975	13.954

Approach 3-Persons per motorcycle, with urban and rural gap

Recent data confirm that, while urban areas have high density of motorcycles per person, the speed of increase in motorcycle ownership tends to slow

down. The annual increase of motorcycles in the five large cities under central administration fell from 666,800 in 2001 to 323,600 in 2005. Similarly, the corresponding figures for the next tier of economically dynamic cities were 166,500 in 2001 and 125,300 in 2005. By contrast, the annual increase in all other areas slightly increased from 1.192 million to 1.264 million during the same period.

From this, it is assumed that, in the period 2006-2015, urban motorcycles will continue to increase by 500,000 and rural motorcycles by about 1 million annually. After that, growth will slow down in both areas for a number of reasons, including the availability of other transport modes (rails, cars, buses, etc.), leveling off of urban travel demand, and improvement of rural life and rural infrastructure. Eventually, increases of motorcycles in both areas are expected to converge to a lower level, say 200,000 per year.

Tab. 3-3 Stock projection from the urban and rural person-to-motorcycle ratios

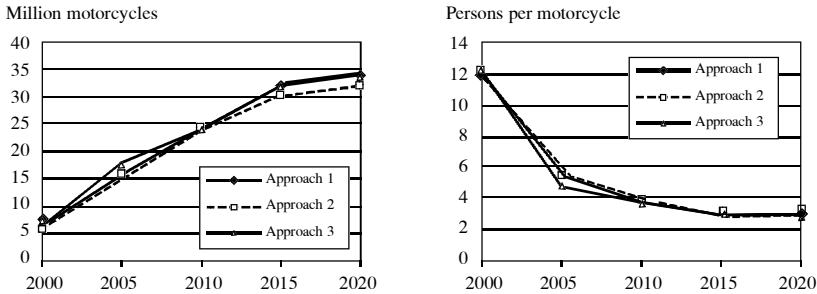
	2000	2005	2010	2015	2020
Urban					
Population (million)	20.185	22.775	26.590	30.600	34.886
Persons per motorcycle	8.63	4.82	3.61	3.10	3.21
Motorcycle stock (million)	2.340	4.730	7.368	9.868	10.868
Increase over previous period (million)	--	2.390	2.638	2.500	1.000
Rural					
Population (million)	57.450	60.345	62.043	63.554	64.789
Persons per motorcycle	14.20	5.52	3.30	2.92	2.84
Motorcycle stock (million)	4.047	10.939	18.802	21.802	22.802
Increase over previous period (million)	--	6.892	7.863	3.000	1.000
All nation					
Persons per motorcycle	12.16	5.30	3.39	2.97	2.96
Motorcycle stock (million)	6.387	15.669	26.170	31.670	33.670

The results of these three approaches are fairly similar, with the stock demand for motorcycles of about 24 million in 2010, about 31 million in 2015, and about 33 million in 2020 (Fig. 3-2).

The above projections show that, even if other transport modes develop, Vietnam will continue to be a country that uses a large number of

motorcycles into the foreseeable future. A good motorcycle policy is therefore required to respond to this market demand.

Fig. 3-2 Alternative Forecasts for Motorcycle Stock

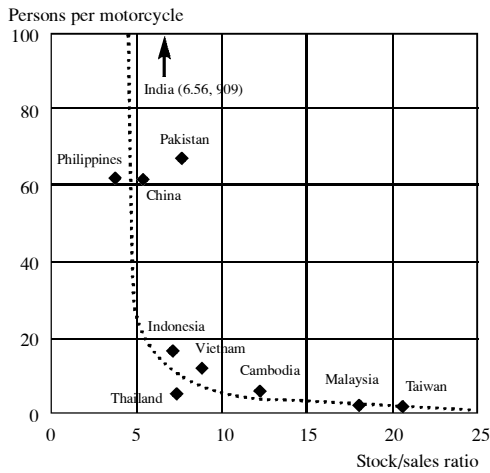


3.3 Flow demand

Based on the stock demand projections above, annual demand for new motorcycles is now forecasted. In general, the ratio of motorcycle stock to annual sales depends on two factors.

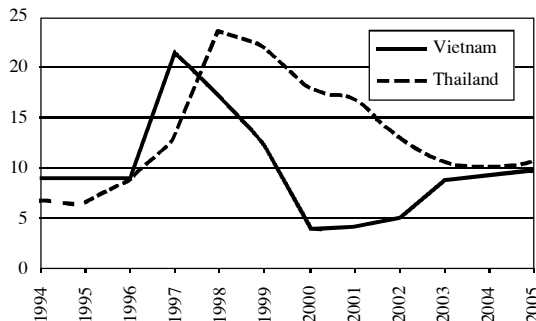
First, a period of dynamic growth of the motorcycle market is associated with a relatively low stock-to-flow ratio of 5 to 10. In such a country, annual sales are large compared with the stock, because there is significant new demand (by first-time users) in addition to replacement demand (by existing users). Currently, this situation is observed in China (stock-to-flow ratio of 5.4), India (6.6), Indonesia (7.1), Thailand (7.4) and Vietnam (8.8). By contrast, in a more mature market, where there is only replacement demand and little new demand, the stock-to-flow ratio tends to rise to 15-20. Taiwan (20.5) and Malaysia (17.9) belong to this group⁹. This domestic market dynamics can explain the long-term trend in the stock-to-flow ratio.

⁹ These figures are for 2005, except Indonesia (2003), China (2003) and India (2001). The original data comes from Honda, *World Motorcycle Facts and Figures*, 2006.

Fig. 3-3 Motorcycle Density and Stock-to-flow Ratio, 2005

Source: See footnote 9.

Another factor is temporary shocks. For example, in Thailand, the collapse of domestic market in the aftermath of the Asian financial crisis pushed up this ratio to an abnormally high level in 1998, from which the country recovered only slowly. In Vietnam, a large inflow of inexpensive "Chinese" motorcycles artificially reduced this ratio during 2000-2002. Such temporary shocks are inevitable in any market economy under globalization. However, since they are unpredictable and do not last forever by definition, we ignore them in our projection.

Fig. 3-4 Vietnam and Thailand: the Motorcycle Stock-to-flow Ratio

Source: Honda, *World Motorcycle Facts and Figures*, 2006.

Vietnam, with its dynamically growing motorcycle market, has a stock-to-flow ratio of about 10 at present. However, this does not mean that each motorcycle is on average used for 10 years before it is scrapped. Because annual demand is a sum of new demand and replacement demand, even if Vietnamese people ride each motorcycle for 20 years, the stock-to-flow ratio can be much lower than 20 if vigorous new demand exists. But when the saturation point is reached and new demand is diminished, the stock-to-flow ratio may rise toward 15-20.

However, there are two possible reasons that may make Vietnamese people continue to purchase a large amount of new motorcycles even after the saturation point. The one is concerned with *economic* life-cycle and the other is concerned with *physical* life-cycle of motorcycles.

First, purchase frequency will be high if the motorcycle is regarded as a fashion product (as with ladies' dresses) rather than a practical product (such as an electric fan). In the former case, people (especially young people) will switch to new models even if old ones still run. Producers may also cultivate such consumer behavior through business and marketing strategy.

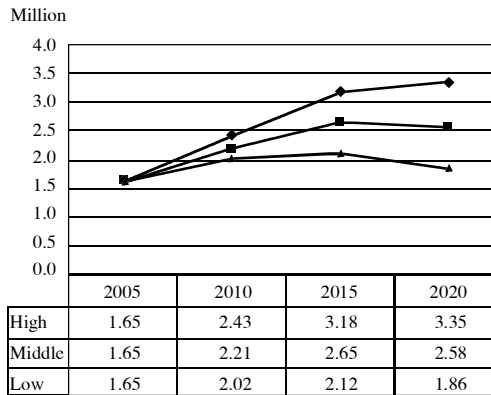
Second, if some existing models are low quality, and break down quickly or fail to pass quality and environmental tests required by the government, consumers are forced to buy other products. In the past, Vietnamese people usually repaired motorcycles many times before scrapping them. This tendency may continue, but there is also a possibility that they will abandon them sooner as income and wage rise, the repair cost also rises relative to the price of new models, and charges and penalties for noncompliance of various standards are increased.

Currently, Vietnam's motorcycle scrap market is virtually non-existent. However, as the stock rises and market characteristics change, Vietnam may have more "normal" second-hand and scrap markets for motorcycles as in advanced countries. Old models will then be sold in the second-hand market, exported, or scrapped.

Since the future stock-to-flow ratio is uncertain, three alternative scenarios are examined.

- (i) High Scenario—the stock-to-flow ratio will stay at 10 throughout the period. In this case, annual demand will be 2.43 million in 2010, 3.18 million in 2015, and 3.35 million in 2020.
- (ii) Middle Scenario—the stock-to-flow ratio will gradually rise to 11, 12 and 13 in the years 2010, 2015 and 2020, respectively. Annual demand will be 2.21 million in 2010, 2.65 million in 2015, and 2.58 million in 2020.
- (iii) Low Scenario—the stock-to-flow ratio will rise sharply to 12, 15 and 18 in the years 2010, 2015 and 2020, respectively. Annual demand will be 2.02 million in 2010, 2.12 million in 2015, and 1.86 million in 2020.

Fig. 3-5 Alternative Scenarios for Annual Domestic Demand



The results are illustrated in Fig. 3-5. It is evident that annual demand will be significantly affected by consumer behavior and market characteristics, even under the same assumed path of stock demand.

Comparing stock forecasts and these flow demands, it is possible to calculate the implied share of replacement demand in total annual sales. For the middle scenario, this share is 28% in 2010, 46% in 2015, and 85% in 2020. The rising share of replacement demand is consistent with our

assumption of approaching saturation. The high and low scenarios also produce similar results¹⁰.

It should be noted that, even under the same assumption on the motorcycle stock, the level of traffic congestion or air pollution attributable to motorcycles in urban area is also affected by the number of trips made per motorcycle per day as well as the duration of each trip. The former depends on the characteristics of the motorcycle as a transport means (for example, whether it is used for daily commuting or only occasionally), and the latter depends on the average distance of travel as well as road infrastructure, traffic management and the degree of mixed traffic.

¹⁰ The share of replacement demand in total flow demand is 35% in 2010, 55% in 2015, and 88% in 2020 under the high scenario, and 22% in 2010, 33% in 2015, and 79% in 2020 under the low scenario.

Chapter 4

Supporting Industries and Industrial Human Resources

4-1. The new phase of supporting industry development

It is generally stated that Vietnam's supporting industries are at an early stage of development, and assembly-type manufacturing industries can therefore achieve only low part localization. However, in the case of the motorcycle industry, the traditional negative view of Vietnamese supporting industries no longer applies.

The situation surrounding the supporting industries of Vietnam's motorcycles is changing rapidly in the last several years for three reasons. First, domestic demand, which now surpasses 2 million units per year, is large enough to build strong supporting industries. Second, free trade initiatives at the global, regional and national level, including Vietnam's accession to WTO, completion of AFTA, and a number of FTAs involving Vietnam in particular and ASEAN in general, is changing the dynamics of production site allocation of multi-national corporations. Third, competitiveness of supporting industries in some of the neighboring countries, such as Thailand, Indonesia, Malaysia, China and India, has improved significantly thanks to their large domestic demand or long effort of promotion.

These developments have led to the following new phenomena in Vietnam (see also chapter 2).

First, the part procurement structure of FDI motorcycle assemblers, especially those with large and growing sales, has deepened. From international experiences, the part localization ratio of about 90% can be regarded as optimal, combining in a most efficiently way local parts which are simple, bulky or requiring frequent adjustments and just-in-time delivery, with

imported parts which are compact, subject to scale merit, or too difficult to produce locally¹¹. Some FDI assemblers in Vietnam have already reached this stage, and their localization ratios are not expected to rise further toward 100%. Other FDI assemblers hope to reach this stage within a few years, provided that strong domestic demand continues. Still other FDI assemblers need a longer period before completing their procurement systems.

Second, competition among existing and potential suppliers is increasingly harsh. The fact that FDI assemblers' procurement structure has matured does not mean that competition is over or existing suppliers are secure within that structure. Far from that, suppliers are constantly challenged by the possible entry of new players and the desire of assemblers to have more than one procurement source to reduce cost and diversify risk. Previously, the supplier of any part had a captive market in Vietnam. But now, they have to compete with rivals from all over the world. Selection of suppliers is becoming more sensitive to differences in logistics, lead-time, taxes, tariffs, and other trade-related cost elements. Procurement pattern may change drastically, especially when a new model is introduced or when new policy is introduced.

Third, despite increasing competition, foreign suppliers are now willing to invest in Vietnam even without special incentives. This is because domestic demand has reached a size that is highly attractive to part producers, who require relatively large volume in order to operate efficiently and reduce cost. Since around 2005, motorcycle part suppliers from neighboring countries such as Taiwan, Thailand, Japan, India, Malaysia and Indonesia are aggressively entering the Vietnamese market. They have the advantage over Vietnamese suppliers in terms of higher performance in QCD, more experience in working with FDI companies at home, and strong networks and skillful marketing. Meanwhile,

¹¹ See VDF, *Improving Industrial Policy Formulation*, Publishing House of Political Theory, 2005, in Vietnamese and English, especially ch.5; VDF, Kenichi Ohno, ed, *Building Supporting Industries in Vietnam*, vol.1, VDF, 2007, in Vietnamese and English; Kenichi Ohno and Nguyen Thi Xuan Thuy, "Part Procurement of Japanese Motorbike Assemblers in Vietnam: Situation and Prospects as of Spring 2007," VDF, 2007, in Vietnamese and English.

Vietnamese suppliers are slow to seize this opportunity. One procurement manager of an FDI assembler predicts that these new comers will crowd out Vietnamese suppliers in the part procurement structure of motorcycle assemblers.

While foreign suppliers are formidable competitors for Vietnam's burgeoning part manufacturers, that does not mean the end of the game for Vietnamese suppliers. The entry of new foreign suppliers is inevitable, and even desirable, from the viewpoint of long-term development of Vietnam's motorcycle industry. A strong supporting industry base, of any nationality, will boost the competitiveness of motorcycles assembled in Vietnam. This in turn further broadens the domestic part market and business opportunities, albeit under severe competition among suppliers.

Vietnamese suppliers should not hope to win over foreign suppliers in the short run, or erect barriers to prevent their entry. Vietnam's policy target should be the leveling up of local suppliers *in the medium to long run*. As long as domestic motorcycle assembly continues to grow dynamically with frequent model changes, assemblers are always willing to switch to Vietnamese suppliers if they improve QCD performance and marketing. At that time, it becomes possible to re-capture the domestic part market from at least some of the foreign suppliers that entered Vietnam earlier, under the condition of open and fair competition. That is the natural process of part localization which Vietnam should pursue, rather than artificial part localization under coercive policies.

When that is achieved in the medium to long run, the supporting industries of the motorcycle industry will become the foundation of other assembly-type manufacturing industries as well as the source of international competitiveness. Motorcycle part suppliers may, for instance, also produce parts for the electronic and electrical industry or the automobile industry, although they may need to upgrade skills or invest in new equipment to get new customers. In Vietnam, the supporting industries of the motorcycle industry are the largest and most advanced

among all supporting industries to take up this responsibility and create a positive nexus of development.

Ultimately, development of supporting industries will depend on the effort of the business sector. However, Vietnam's market mechanism is in the process of forming and the indigenous private sector is still weak. In this situation, the government should initially assist the nascent market mechanism and remove barriers that impede the development of supporting industries.

4-2. The need for high-quality industrial human resources

The importance of human resource development in industrial growth is well known. However, with limited time and financial resources available to Vietnam, the types of human resources to be promoted must be carefully selected with concrete targets and effective policy measures. As noted above, we expect the motorcycle industry to become the principal industry around which strong supporting industries are created, human skills are upgraded, and competitiveness of all assembly-type manufacturing industries in Vietnam is improved. Human resource policies must support this goal.

There are three groups of industrial human resources needed by the motorcycle industry that merit official support.

First, Vietnam needs a sufficient supply of top-level professionals who can manage manufacturing enterprises or design and supervise production processes competitively. This elite group must be educated at the university level or higher, for example at the institute of technology, the engineering faculty of a university, or a foreign university. They need to study basic theory, relevant skills and knowledge, proper attitude toward manufacturing, and international perspective. To make this possible, good instructors, curriculums, teaching materials and equipment are necessary, with emphasis on practicality and relevance to the competitiveness of global manufacturing enterprises. The government should improve each of these ingredients, with international support if necessary.

Second, factory workers must be upgraded. This is particularly important for production processes that heavily rely on machinery and equipment and their proper design, adjustment and operation, and where workers must accumulate skills and knowledge over a number of years. Such manufacturing enterprises need a large supply of *multiple-skill workers* who can perform various tasks and know the overall production process. They should initially study at a technical high school or an industrial college, then move to the factory floor to receive on-the-job training. Good instructors, curriculums, teaching materials and equipment which are practical and relevant are needed, as in the case of the elite group. In supplying them, close cooperation between schools that teach the students and enterprises that plan to hire them is essential. By contrast, official support is not required for single-skill assembly workers or garment workers that undertake cut, make and trim (CMT), for whom the required level is low and short-term training provided by the factory is sufficient.

Third, general directors, factory managers, engineers and multi-skill workers who face difficulties in their work but have the right mindset and willingness to learn should be assisted. Among these, the attitude and enthusiasm of the general director is by far the most crucial, without which no company can improve performance. Once the serious commitment of the top management is confirmed, a company-specific problem-solving program should be launched with the help of an experienced industrial expert ("factory doctor") or a consultant company specializing in such improvements. The content, method and duration of the program may differ in each case. Additional support may be mobilized from FDI partners, government or foreign organizations. Such order-made diagnosis and cure is the most effective. However, ready-made external courses can also be used if the problem is clearly identified and suitable courses are available at a convenient time and location for the company.

In many countries, there is social prejudice that professionals who work in clean, air-conditioned offices are "superior" to factory managers and engineers who work in noisy and humid factories with lower-level workers.

Such stigma does not exist in Japan, where Mr. Sakichi Toyota (1867-1930), Mr. Konosuke Matsushita (1894-1989), and Mr. Soichiro Honda (1906-1991) initially were all engineers happily working on greasy workshops. Japan's *monozukuri* (manufacturing) spirit, which pursues manufacturing with skill, pride and long-term dedication, was born from such positive attitude toward factory operation. However, in Vietnam, manufacturing does not seem to be accorded with the same social respect as lawyers, doctors, or web designers. Students prefer business, banking and computer classes rather than engineering. To promote industrialization, the Vietnamese government should change such attitude by initiating a campaign to re-orient people's mind, giving social recognition and respect for talented factory managers and engineers, and prioritizing and supporting technical education and training.

Industrial human resources and supporting industries are the two sides of the same coin, the one dealing with human aspects and the other highlighting physical aspects, which together enable a country to achieve excellence in industrial production. This will enable Vietnam to break through the low technology trap as well as cope effectively with the China challenge. In the terminology of Prof. Takahiro Fujimoto, Vietnam should master *integral manufacturing* (chapter 2). Industrial human resources and supporting industries are the pre-conditions for mastering integral manufacturing.

In what follows, policies to strengthen supporting industries and industrial human resources are proposed.

4-3. Incentive measures

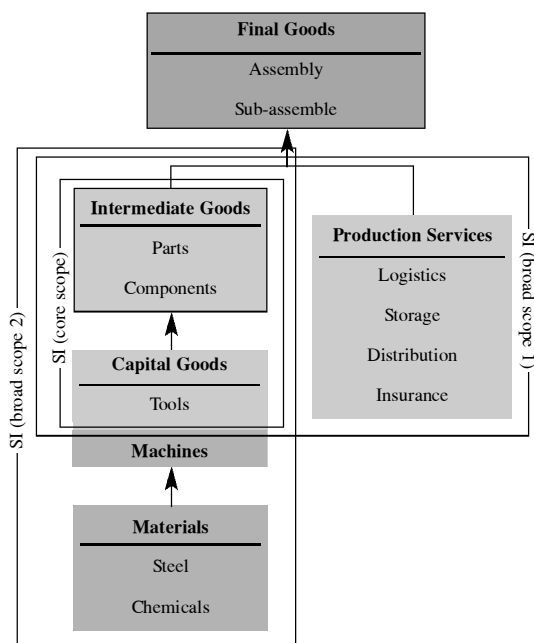
Preferential taxes and financial support are standard policy instruments for promoting supporting industries. They are commonly used in ASEAN countries, often in the form of SME promotion measures, because the importance of supporting industries has been clearly recognized in these countries. In Vietnam, however, such policy is not yet in place, and incentive

measures are mainly reserved for investing in "high-tech" sectors or remote and mountainous areas. This master plan proposes that Vietnam should introduce incentive measures for supporting industries, which are competitive enough to attract domestic and foreign investors vis-à-vis neighboring countries, but not excessive. Incentive measures, while not sufficient by themselves, can prepare basic conditions in which investment in skills and equipment is encouraged. To implement this policy, however, the working definition of supporting industries must be clarified at first.

Generally speaking, supporting industries refer to a group of producers located in a country, both local and FDI, that supply intermediate inputs to assemblers in that country. The precise scope of supporting industries depends on each case as well as the intention of policy makers¹². The scope of supporting industries may be as narrow as just one particular industry or as broad as all manufacturing industries including food, textile, garment and chemicals. However, the term supporting industries was originally used by Japan in the 1980s to refer to the suppliers of assembly-type manufacturing industries only, such as automobiles, motorcycles, electronics and electricals, and precision machinery.

The scope of inputs is another issue (Fig.4-2). One way to define supporting industries is to include both physical inputs (parts and components) as well as industrial services such as logistics, storage, distribution and insurance. Another way is to include physical inputs only, but all the way from raw materials. These two scopes have an overlapping segment, which can be considered the core scope of supporting industries. This core includes parts and components which are made of metals, plastics or rubber, and processes of producing them such as pressing, casting, forging, welding, molding, machining, plating, and heat treatment. In particular, technology of making, adjusting and repairing dies and molds occupies a central position in the core scope.

¹² Nguyen Thi Xuan Thuy, "Supporting Industries: A Review of Concepts and Development," in K. Ohno, ed, *Building Supporting Industries in Vietnam*, vol.1, VDF, 2007, in English and Vietnamese.

Fig. 4-2 Scope of Supporting Industries

Source: see footnote 12.

Our definition of supporting industries, for the purpose of giving special treatment for promotion, is a narrow one and includes only *pressing, casting, forging, welding, and production of dies and molds*, which are very important for the healthy growth of machinery industries but seriously lacking in both quality and quantity in Vietnam at present¹³. The concept is limited for concentrating limited budget for promoting some focal industries. But the scope of assistance can and should be expanded in the future.

Preferential tax treatment is a standard policy instrument for promoting supporting industries. Neighboring ASEAN countries, especially Malaysia

¹³ These five items have been identified as crucial in a number of interviews conducted by MOI and VDF with motorcycle assemblers and suppliers in Vietnam.

and Thailand, already provide such incentives under well-focused national campaigns for upgrading SMEs. Exemption or reduction of corporate tax, reduction of taxes or tariffs for machinery imports, and subsidies for R&D are popular measures which should also be introduced in Vietnam for the five activities mentioned above. In addition, a special financial institution to provide loans to small, non-SOE companies should be established and its lending should be activated.

All incentive measures must be available equally to all types of economic sector, as.

4-4. Linking retired Japanese and young Vietnamese

In Japan, a large number of experienced factory managers and engineers are reaching the retirement age of 60 ("The 2007 Problem"). Many of them are still healthy and want to contribute to improving industrial skills of developing countries. However, they cannot realize this plan individually due to language barrier, procedural complexity, and uncertain living conditions abroad. On the other hand, Vietnam has a large number of young people who can perform well in high-quality manufacturing if proper instruction and training are given. But they are also unable to receive such instruction and training since schools can teach only basic theories and general skills.

It is therefore proposed that the Vietnamese government, in close cooperation with the Japanese government and business community, should launch a program in which retired Japanese talents work with Vietnamese managers and engineers in Vietnam in order to transfer their manufacturing skills and attitude in practical setting. The program, which may be called Japan-Vietnam Skill Exchange, should include (i) registration and matching services, (ii) administrative and procedural support, (iii) support for Japanese retirees to live and work comfortably in Vietnam including travel, language, housing and medical services, (iv) reasonable but not high payment for Japanese retirees, and (v) evaluation, monitoring and problem-solving mechanisms. The style and duration of work should be

flexible enough to accommodate the needs of both Japanese retirees and Vietnamese enterprises.

The Vietnamese government should draft a preliminary proposal of this plan and present it to the Japanese side, to be concretized and revised subsequently. A special agency should be created to implement this program. A pilot program may start in a small scale, which can be expanded as experience is gained. Private and public assistance from Japan should be sought if necessary. Through this program, Vietnam should become the most favored destination among all developing countries of old Japanese managers and engineers who want to transfer their skills and knowledge.

4-5. Technical and vocational education and training

To supply a large number of high-quality human resources, existing programs should be enhanced and new programs should be added through joint public-private effort.

First, the government should subsidize 50% of the cost incurred by enterprises belonging to the five processes specified above--*pressing, casting, forging, welding, and production of dies and molds*--for the purpose of training their management, staff or workers, whether internal or external, and including foreign dispatch. Eligible training activities are: (i) classes given within an enterprise; (ii) on-the-job training; (iii) short-term and long-term training courses offered by private, public or foreign agencies; (iv) dispatch of workers to another location, domestic or abroad, for training; and (v) worker competition such as QC Circle Olympics or Skill Olympics in which workers belonging to the same business group in different countries or locations meet in one place to compete for high performance. In addition, existing training programs by public and foreign agencies, such as those listed in Tab. 4-1, should be fully advertised and utilized.

**Tab. 4-1 Foreign-funded Technical Training
Programs Currently Available in Vietnam**

<i>Program</i>	<i>Location</i>	<i>Sponsor</i>	<i>Main activities</i>
Association for Overseas Technical Scholarship (AOTS)	On demand	Japan	Supporting technical training in Vietnam and Japan
JODC expert service	On demand	Japan	Expert service in industries
Vietnam Japan Cooperation Center (VJCC)	Hanoi, CMC	Japan	Business courses, training, customized advice
JETRO - JEXSA	On demand	Japan	Expert service
JETRO - J-Front	On demand	Japan	Expert service
JETRO - Business matching between Japanese and Vietnamese enterprises	Hanoi, CMC	Japan	Japanese enterprises come to Vietnam to look for partner companies
JBIC - Small and Medium Sized Enterprises Finance Project	All nation	Japan	Two-step loans via State Bank of Vietnam and financial institutions
JBIC & JICA - Education Development Supplier Project for ITCP (internet telecommunication) in Hanoi Industrial University	Hanoi	Japan	JBIC provides infrastructure and JICA supports IT human resource
JICA - Human Resource Project	HCMC	Japan	Upgrading teaching and administrative staff at universities
JICA - The grass-roots international exchanges	Hanoi	Japan	Supporting environmental human resource
JICA - Vietnam Human Resource Center	Hanoi	Japan (Vietnam in future)	Business courses, Japanese classes, interchange project
MPI Technical Assistance Center (TAC)	Hanoi	Japan	Database, SME support
JICA experts	On demand	Japan	Expert service
Vietnam-Singapore Technical Training Center (VSTTC)	Binh Duong, Hanoi	Singapore	Technical and vocational training
GTZ Vietnam	On demand	Germany	Consulting service, training of vocational school teachers

Abbreviations--AOTS: Association for Overseas Technical Scholarship; JICA: Japan International Cooperation Agency; JBIC: Japan Bank for International Cooperation; JETRO: Japan External Trade Organization; JODC: Japan Overseas Development Corporation; JEXSA: JETRO Expert Service Abroad; GTZ: Deutsche Gesellschaft für Technische Zusammenarbeit.

Second, teaching staff, curriculums and equipment at vocational schools, colleges and universities must be strengthened in both quality and quantity to offer practical and up-to-date engineering education and training. Collaborative training programs involving both FDI firms and local suppliers should be strongly encouraged¹⁴. In such programs, teaching method and materials must be determined and revised with strong participation of client firms. A large number of FDI manufacturers already express interest in participating in such programs, and even sending their experienced engineers as instructors or making their equipment available for training, provided that the government makes serious effort to initiate such programs. The government should set up a framework to implement such programs, and seek international cooperation if necessary. Official support should also be provided to improve the quality of teaching staff to an international level.

Third, a national certification system of *Industrial Meisters* (highly skilled engineers or multiple-skill workers who can teach others) should be established. The government should set up an agency for certifying technical skills, with clear achievement criteria for each specific skills. Nationwide exams should be organized and successful candidates should be given Industrial Meister certificates. This system will broaden the base of skilled workers and encourage good engineers to do even better and be socially recognized. The government should also encourage manufacturing enterprises to link company personnel policy with national Industrial Meister certificates. Certificate holders should be promoted and given higher salaries in exchange for an obligation to teach young workers¹⁵.

¹⁴ One of the most successful programs in collaborative training is the Penang Skills Development Centre (PSDC) in Malaysia. For details and possible lessons for Vietnam, see Junichi Mori, "Development of Supporting Industries for Vietnam's Industrialization: Increasing Positive Vertical Externalities through Collaborative Training," Master Thesis, Fletcher School, Tufts University, 2005.

¹⁵ In Japan, the Industrial Meister certification system is well developed and coordinated among national, prefectural, and firm levels. For example, one large electronics company has an internal meister system for lens polishing, painting, and electrical wiring. Candidates are classified into three ranks A, B, and C. A-ranked engineers are sent to the Meister license offices of the central or local government to receive official certificates. If they are successful, the company additionally awards them with internal Meister titles and a bonus of 500,000 yen (about \$4,200). Meisters in this company are required to train two successors within two years.

4-6. Strategic FDI marketing

Strategic FDI marketing, based firmly on marketing theory and backed by strong commitment of the Vietnamese government, is needed to accelerate the inflow of FDI part suppliers into targeted sectors. Such marketing requires the following steps.

First, the targeted sector must be narrowed down. To initiate strategic FDI marketing, Vietnam should know what kind of FDI suppliers it wants to attract most. Supporting industries in general are too broad for effective targeting. For the motorcycle industry, five specific processes of pressing, casting, forging, welding, and *production of dies and molds*, as proposed above, should be targeted in the period to come.

Second, aggressive marketing must be launched. Three basic measures for investment promotion are: (i) seminars in foreign countries by central government, local governments or industrial estate developers, (ii) inviting site-visiting missions to Vietnam, and (iii) establishment of investment promotion offices in potential foreign cities. Although Vietnam already organizes all of these activities, the quality and volume of information is insufficient in comparison with, for example, Thailand or Malaysia. Using these channels, Vietnam must approach targeted clients individually and vigorously instead of passive, general marketing. To save the cost of maintaining offices abroad, targeted cities must be selected carefully. Local governments may also want to outsource promotion services from a public organization or NPO¹⁶. It should also be noted that potential foreign investors are interested in hearing not just general merits of coming to Vietnam but also province-specific information as well as any negative aspect of investing in Vietnam.

¹⁶ While Hanoi has established an independent promotion office in Tokyo, Da Nang, Ha Tay, and Lam Dong have set up promotion offices without regular staff inside the Vietnam Economic Research Institute in Tokyo.

Third, rental factories and industrial parks for attracting particular investors should be built. Most FDI suppliers are SMEs in their home countries with little international experience. Compared with big-name multi-national corporations, they are highly risk-averse since any failure in foreign investment will bankrupt their entire business. They are very weary of policy uncertainty and procedural complexity, especially in Vietnam. The risk is higher when SMEs come on their own, rather than to follow and serve one large assembler. Such SMEs prefer to start with small scale since demand in Vietnam is likely to be small initially. To minimize their risk and investment cost, Vietnam should build industrial parks with good location, superb infrastructure, and responsive management with administrative and language support. Alternatively, apartment-type rental factories with small lots of 300-400 m², also with sufficient support, may be built. Such industrial parks and rental factories are a good marketing tool which can convey the seriousness of host countries in reducing the cost of doing business for foreign investors.

Well targeted FDI supplier marketing is routinely conducted by other Asian countries, often in close cooperation with Japanese organizations. Partnership between Tokyo's Ota Ward and Thailand's Amata Corporation is one example. The Board of Investment (BOI) in Thailand had targeted Japanese mold and die makers to strengthen the automobile industry. Ota Ward was selected as the suitable partner, and Amata Corporation was asked to construct Ota Techno Park, apartment-type rental factories, in Chon Buri near Bangkok, to receive Japanese SMEs. Eight factories in the first phase were rented out in 2006 and Amata is now building the second phase. In India, the State of Rajasthan, in cooperation with JETRO, is building Nimurana Japanese Industrial Park on National Highway No.8 near Delhi, near where Suzuki, Honda and Nissan assembly factories are located. The industrial park will have an area of 4.5 km², to be completed by January 2008. In Indonesia, the Indonesian Mold and Dies Industry Association (IMDIA) was established in 2006, as a result of bilateral public-private cooperation between Indonesia and Japan to promote this sector.

4-7. Supporting industry database and business matching

In Vietnam, there is an information gap which impedes business interaction between FDI assemblers and local suppliers. Although many FDI assemblers desperately look for good local suppliers, they do not know where they are located. To search for local partners, many FDI assemblers use telephone directories or workers' personal connections. However, this is inefficient and time-consuming. A supporting industry database can greatly reduce the cost of finding potential suppliers.

However, domestic and international experiences show that most such databases fail to be used by targeted groups because of poor design or lack of proper maintenance. To avoid such a situation, systematic preparation is necessary before launching a database.

To be effective, a supporting industry database must understand and respond to the supplier selection criteria of FDI assemblers. In addition to basic information such as company name, contact address and main products, FDI manufacturers usually need to know (i) general director's attitude, (ii) quality, (iii) cost, (iv) on-time delivery capability, and (v) production scale, before deciding to even contact the candidate company. The database must supply such information in order to be useful¹⁷.

Effective operation of databases is even more difficult than designing them. The common problem is that SMEs do not participate actively in databases which intend to help them. The database becomes useless if targeted companies do not list or update their information. To solicit participation, the database should be coupled with additional services that are appreciated by SMEs, such as finding new customers, training workers,

¹⁷ For this purpose, the following items in the database are useful: (i) self-introduction stating company policy, special skills, JIT experience, and so on; (ii) production facility inventory including machine models and names of manufacturers; (iii) processing accuracy in milli- or micro-meters; (iv) quality certification such as ISO; (v) customer list; (vi) annual sales; (vii) capital; and (viii) number of employees. For details, see Junichi Mori, "Designing and Managing Supporting Industry Databases," in VDF, *Building Supporting Industries in Vietnam*, vol.1, 2007.

or business consultation¹⁸. For policy makers, close contact with suppliers can be a valuable source of information for receiving business opinions and responding to their needs.

4-8. Quality, safety and environmental standards

To build supporting industries that are internationally competitive, Vietnam must have quality, safety and environmental standards that are consistent with global standards. Vietnam-specific requirements may be added, if there is a legitimate reason, but that should not make Vietnamese motorcycles and parts inconsistent with global standards. Internationally incompatible standards impede export and import and achievement of optimal procurement pattern. They will also increase costs because manufacturers must design and produce unique motorcycles and parts for Vietnam instead of using globally common designs (within a company) to enjoy scale merit.

For example, Vietnam requires that there should be only one headlight, while most other ASEAN countries allow both one-beam and two-beam headlights. Vietnam's regulation is also unique and stricter on beam angles. This makes it difficult to export Vietnamese motorcycles to other ASEAN markets without significant and costly re-modeling. Another example is environmental standards which are different among East Asian countries. Different national roadmaps on EURO air quality standards make it difficult to trade motorcycles and related parts (chapter 7). There should be a comprehensive survey on the compatibility of quality, safety and environmental standards between Vietnam and the rest of the world, with active participation of assemblers and part suppliers in Vietnam. Except for a limited number of cases, if any, which respond to

¹⁸ In early 2007, MPI's SME Technical Assistance Center (TAC) organized a pilot program to invite Mr. Tatsuya Hoshino, Japanese expert, to teach 5S and QCD to eight local SMEs and bring them to several Japanese FDI companies to practice marketing of their products. The program will be expanded to include more SMEs. Such practical training can be usefully combined with the construction of a supporting industry database.

Vietnam's unique road situation, global standards should be adopted to reduce the design and production cost of motorcycle manufacturers in Vietnam.

Vietnam does not have clear industrial and safety standards comparable to national standards of neighboring countries such as Malaysia's JBE SIRIM and Thailand's TISI. The lack of consistent standards encourages importation of low-quality finished products as well as low-quality parts, making Vietnam a dumping ground for defective goods. Without well-established grading criteria of rubber tires, for instance, it is impossible to stop the inflow of low-quality tires. This is an undesirable situation for consumer protection as well as for healthy industrial development. Without national standards, it is also difficult for individual local suppliers to set and aim at their own quality targets.

The Vietnamese government should provide timely information and effective guidance on industrial, safety and environmental laws in other countries which may affect enterprises in Vietnam. For example, in January 2006, EU introduced the Law on the Restriction on Hazardous Substances (ROHS) which prohibited importation of products containing any of the six substances, namely, cadmium, lead, hexavalent chrome, mercury, PBB, and PBDE. Although Vietnam has not adopted a similar environmental law, any firm that wants to remain internationally competitive and continue to do business with EU would adopt ROHS as soon as possible. However, local suppliers in Vietnam have not been informed of ROHS and are not prepared to supply ROHS-consistent parts. One Taiwanese motorcycle part manufacturer complained that it could not switch to the ROHS standard because there was no local supplier of trivalent chrome, which was to replace the banned hexavalent chrome in metal plating.

Finally, to implement national standards effectively, Vietnam needs to establish testing centers and accrediting agencies with sufficient staff and measuring equipment. They can help suppliers to check and prove their product quality, eliminate low-quality products, and save testing costs which are too large for individual producers. In Vietnam, the Directorate of Standards and Quality (STAMEQ) is currently responsible for setting

standards, metrology and testing, and accreditation. STAMEQ has testing laboratories in Hanoi, Da Nang, and HCMC, but they focus mainly on textiles and food processing products. There should also be testing centers for machinery products, either through creating a new organization or expanding STAMEQ functions¹⁹. Moreover, entry of private accreditation organizations should also be welcomed in order to expand services and introduce competition.

¹⁹ UNIDO, EU and France each have conducted capacity building projects with STAMEQ.

Chapter 5

Urban Planning and Transport Modes

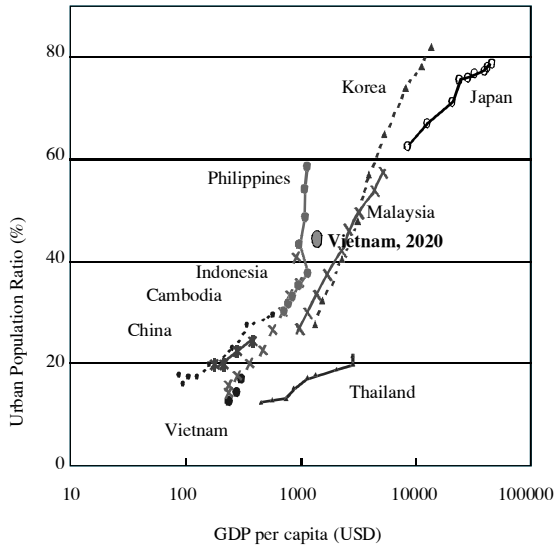
5-1. Urban planning and development in Hanoi and HCMC

Urbanization trend and impacts

Vietnam currently has a relatively low rate of urbanization, at 24% in 2000 and 30% in 2005, but is likely to undergo continued rapid urbanization as experienced in other fast-growing developing countries. Vietnam's urbanization is expected to continue until the urbanization rate reaches 70-80%. This implies that Vietnam will face long-lasting challenges associated with urbanization in the coming decades. It is estimated that urban population of about 23 million in 2005 will double to nearly 47 million by 2030 and continue to grow subsequently.

Urbanization will be particularly significant in the two largest cities of Hanoi and HCMC. In both cities, urban development master plans were recently updated with technical assistance from the Japan International Cooperation Agency (JICA). The Study on the Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area (HOUTRANS) was completed in 2004, and the Hanoi Integrated Development and Environment Programme (HAIDEP) was completed in 2007. This chapter relies heavily on the data and analyses of these master plans.

Vietnam's urbanization is driven by strong economic growth propelled by industrialization, foreign trade, and investment. With the recent accession of Vietnam to WTO and continued Asian dynamism as background, Vietnam's urbanization is expected to basically follow the path taken by other industrializing or industrialized Asian countries, such as Japan, Korea, Malaysia, and China (Fig.5-1).

Fig. 5-1 Urbanization Trend in Asian Countries

Source: HOUTRANS household interview survey.

Impacts of urbanization are extensive and include both positive and negative sides. On the one hand, as national income grows, ownership of cars and motorcycles rises which produce diverse service industries and changes in people's lifestyle. Information access and people's mobility improve, employment opportunities expand, and overall quality of life is enhanced. On the other hand, rapid urbanization exerts severe pressure on existing infrastructure and people's living and working conditions, as traffic congestion worsens, agricultural land is encroached upon, and environment deteriorates. The key policy objective should therefore be to find an effective way of maximizing the benefits of urbanization while minimizing its negative consequences.

Urbanization in and around Hanoi and HCMC is proceeding at much higher rates than expected a decade ago, and these cities are starting to form greater metropolitan areas. It is expected that they will become mega cities sprawling beyond the current administrative boundaries, with

a population of about 5 million²⁰ for Hanoi and about 10 million for HCMC by 2020. The two cities will continue to play the leading role in economic development, attracting investments and human resources for further industrial growth and employment. The average urban household income is likely to increase from the current level of US\$1,350 -1,460 to US\$5,000 -6,000 by 2020 (Tab. 5-1). This will accelerate ownership of various durable goods. In particular, it is predicted that about 20% of households in Hanoi and HCMC will own cars by 2020.

Tab. 5-1 Selected Indicators of Urban Growth in Hanoi and HCMC

		<i>Hanoi</i>		<i>HCMC</i>	
		<i>2005</i>	<i>2020</i>	<i>2005</i>	<i>2020</i>
Area (km ²)		921	921	2,095	2,095
Population	Total (x1000)	3,183	4,500	6,240	10,000
	Urban (%)	62.5	87.8	83.9	100
GRDP per capita	VND million	20	90	22	75
	US\$	1,350	6,000	1,460	5,000
No. of vehicles (x1000)	Motorcycles	1,385	1,986	2,040	3,362
	4-wheeled	161	384	158	434
	Total	1,546	2,370	2,198	3,796

Source: HAIDEP study team, 2006.

Note: GRDP stands for gross regional domestic product.

Urban master plan orientation

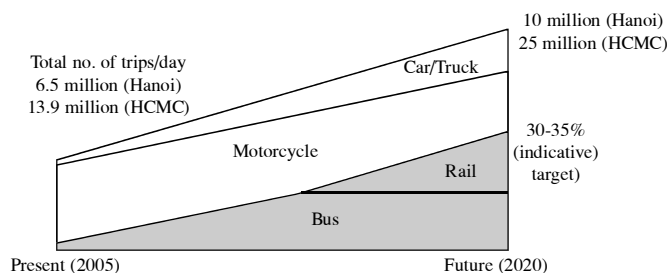
A large population with an increasingly high average income demands better infrastructure services in many fields including transportation, water supply, sanitation, telecommunications, education, health, and recreation, all of which contribute to improved living conditions. In the future, Greater Hanoi and Greater HCMC are certain to have an urban structure

²⁰ Including the population of 500,000 in urban areas in adjoining provinces which will be integrated into Hanoi.

different from today's centripetal structure. As the urban area expands, subcenters will emerge to provide services and employment. While business and commercial activities will remain in the city center, residents will move to outer areas for better living environment. Although both cities are trying to check growth and create a mechanism for managing future development, controlling urban development is not an easy undertaking.

Both Hanoi and HCMC recently updated urban master plans in response to rapidly changing socio-economic environment. Both cities plan to provide public transport services that can cover about 45-50% of total trip demand by 2020 (Fig. 5-2)²¹. The bus system alone is incapable of providing required public transport services, because road space is insufficient to accommodate a large fleet of buses²². For this reason, both cities are determined to build an urban mass rapid transit (UMRT) network, composed of urban rail and rapid bus transit, as the backbone of public transport. This policy direction is basically correct and is an effective way for Hanoi and HCMC to solve urban transport problems in the future.

Fig. 5-2 Planning Target for 2020



Source: HOUTRANS household interview survey (2002).

²¹ This is an ambitious policy target. In projecting modal share, we must also take into account the possibility that this target is not reached in time.

²² Up to now, public bus systems have been unsuccessful in providing competitive services except for limited market segments such as regular "to work" and "to school" trips over relatively long distance using much discounted monthly pass.

In order to realize this scenario, a large amount of capital investment is necessary. According to HOUTRANS and HAIDEP studies, each city requires a total of about US\$14 billion to satisfy its transport needs by 2020 (Tab.5-2). Main areas of investments are as follows:

(a) *Road development*--this includes an early completion of missing links, improvement of bottlenecks, as well as the construction of a substantial length of primary and secondary roads, especially in urbanizing areas. Flyovers, interchanges at critical intersections, and bridges across the rivers must be built. For efficiency, roads must be developed as an effective network, rather than unconnected local improvements. HAIDEP proposed a total of 600 kilometers of main roads to be developed for Greater Hanoi by 2020 while HOUTRANS proposed a total of 750 kilometers of main roads including 46 kilometers of urban expressways for Greater HCMC.

(b) *UMRT network*--this comprises of urban rail and bus rapid transit (BRT) along major corridors to add transport carrying capacity and improve accessibility of and mobility in the central business district (CBD). HAIDEP proposed four UMRT lines with a total length of about 200 kilometers in Hanoi, while HOUTRANS proposed four UMRT lines with a total length of about 140 kilometers excluding BRT in HCMC.

(c) *Improving traffic management*--this includes various minor improvements of roads as well as implementation of traffic management measures and safety facilities such as traffic signals and signs, pedestrian bridges, parking facilities, etc, to ensure a safe and smooth flow of vehicular and pedestrian traffic.

(d) *Bus and other public transport services*--even when UMRT becomes operational, buses will remain the most important public transport mode, providing services in non-UMRT corridors and feeder services to UMRT. Other supplementary public transport, such as taxi, motorcycle taxi, and factory and school buses, are also expected to play specific roles.

**Tab. 5-2 Required Investments in Urban Transport Sector
in Hanoi and HCMC, 2005 to 2020**

	<i>Investment cost (US\$ million)</i>	
	<i>Hanoi</i>	<i>HCMC</i>
Urban roads	7,993	10,090
Traffic management	444	520
Public transport	5,130	3,455
Total	13,567	14,065

Sources: HOUTRANS and HAIDEP.

5-2. Future demand for urban transport

Travel demand in Hanoi and HCMC has increased rapidly and is expected to increase further in the future (Tab. 5-3). Changes are expected not only in transport volume but also in the composition of transport modes. Both cities have experienced a significant shift from walking and bicycles to motorcycles over the last decade, and a further shift from motorcycles to cars is very likely as experienced in other cities in the world. However, whether there will also be a shift to public transport is less certain because it largely depends on government's policy intervention. In particular, the large share of public transport in Hanoi and HCMC projected for the future will not be realized unless a high-quality public transport system is created as proposed in the HAIDEP and HOUTRANS plans.

A transport modal analysis by HAIDEP and HOUTRANS shows that motorcycles will account for a relatively high percentage of travel in Hanoi (30%) and HCMC (35%) even in 2020. It must be stressed that these figures on future demand are subject to the availability of UMRT and the management of cars. Without an effective UMRT system, the share of private transport would be higher. Similarly, in the absence of proper control measures on the use of private cars and motorcycles, the share of public transport would be lower. In order to achieve the projected high share of public transport in Hanoi (50%) and HCMC (45%) by 2020,

it is necessary to develop the UMRT network and to control car use through demand management measures such as high fees for parking and other pricing schemes.

Tab. 5-3 Travel Demand in Hanoi and HCMC

City	Mode		Number of trips (000/day)			Share (%)		
			1995 ¹⁾	2005 ²⁾	2020	1995	2005	2020
Hanoi	Bicycle		2,257	1,598	452	73.2	24.6	4
	Motorcycle		632	4,075	3,390	20.5	62.7	30
	Car and taxi		7	226	1,808	0.2	3.5	16
	Public transport	UMRT	-	-	4,294	-	-	38
		Bus, etc.	165	547	1,356	5.4	8.4	12
	Truck and other		21	57	-	0.7	0.8	-
	Total		3,082	6,503	11,300	100.0	100.0	100
HCMC	Bicycle		2,633	1,988	106	32.0	13.6	0.4
	Motorcycle		5,267	10,806	8,606	64.0	77.9	35
	Car and taxi		82	212	4,709	1.0	1.6	19
	Public transport	UMRT	-	-	4,551	-	-	18
		Bus, etc.	247	782 ³⁾	6,792	3.0	5.9	27
	Truck and other		-	132	-	-	1.0	-
	Total		8,229	13,920	24,764	100.0	100.0	100.0

Sources: DFID-MVA (1996, HCMC), HOUTRANS (2004), and HAIDEP (2007).

1) 1996 for HCMC.

2) 2002 for HCMC.

3) Including bus, lambro, motorcycle taxi, cyclo, private bus and ferry.

5-3. Factors influencing motorcycle use

Extremely high presence of motorcycles in urban areas such as Hanoi and HCMC is not seen anywhere else in the world. Their extraordinary popularity seems to be related to history as well as collective psyche. However, there are a number of factors which are certain to have influenced the use of motorcycles in Hanoi and HCMC. Apart from robust income growth which enables continued purchase of consumer durables, the following factors can be pointed out.

(a) *Compact urban areas with narrow access roads*--urban areas of Hanoi and HCMC are compact and densely developed with complex access roads which are too narrow for cars but wide enough for bicycles and motorcycles. Besides the limited coverage of main roads, distance from residence to a main road, where public transport is available, is usually too far to be reached on foot. Moreover, land use is highly mixed, so much so that basic urban services can be obtained in relatively short distance.

(b) *Lack of public transport services*--the lack of attractive alternative transport services has also contributed to the high use of private transport. Trams which once were popular have been removed, the quality of bus services has been low, cyclos have become obstacles on main roads, and informal services such as lambro and motorcycle taxi have limited capacity. In the past, the government paid little attention to the development of attractive public transport services. This led to the high ownership of motorcycles (Tab.5-4).

Tab. 5-4 Ownership of Motorcycles in Hanoi and HCMC

(% of households)

		<i>Hanoi 2005</i>	<i>HCMC 2002</i>
Bicycle only		8.5	5.8
Motorcycle	One	33.9	37.5
	Two or more	52.0	53.7
Car		2.1	1.7
None		3.0	1.3
Total		100.0	100.0

Sources: HAIDEP (2005) and HOUTRANS (2002).

(c) *Affordability and convenience of owning motorcycles*--people's long-lasting habit of riding bicycles and the unique urban structure mentioned above made transition to motorcycles

smooth and convenient. Income growth and increasing affordability also contributed to a quick shift from bicycles to motorcycles which are supplied with a wide price range.

(d) *Weak regulation on the use of motorcycles*--the way Vietnamese people use motorcycles is extraordinary and can hardly be observed anywhere else in the world. Excessive freedom given to drivers such as overloading, driving without helmets, reckless driving, on-road parking without fees or with minimum fees, etc. may have also encouraged the use of motorcycles at the risk of traffic accidents²³.

(e) *Motorcycles being more than a simple transport mode*--motorcycles in Vietnam are not simply a transport mode but also an object to inspire the spirit and cater to people's broader needs. Motorcycles are a means of recreation, a fashion item, and a communication tool. Motorcycles are so much in tune not only with the physical structure of urban areas but also with the life and activities of the people.

5-4. Motorcycles in urban planning

While motorcycles are inseparable from Vietnam's urban system, they have not been incorporated adequately into urban planning and development. In the minds of planners, motorcycles were considered a transitional or supplementary mode and did not receive as much serious attention as the so-called main modes of transport such as cars and urban rail. In addition, the conventional methodology of urban and transport planning fails to provide reliable data, adequate analytical methods, or practical planning guidelines for motorcycles. In reality, motorcycles have been a political target of criticism and control rather than something to be supported and promoted.

²³ Regulations concerning these behaviors are quite strictly enforced in other cities in Asia. In many large cities in China, motorcycle use is basically banned, while bicycles and buses are promoted.

In contrast, international transport experts generally agree that motorcycles and bicycles contribute to equity in mobility and service access in developing countries, and generate positive impacts on urban development. Vietnamese cities offer unique and interesting cases where motorcycles already play such a dominant role in transport. Since motorcycles will continue to exist on Vietnamese roads in the foreseeable future, there is an acute need to define their proper role in the context of the entire transport system, including their merits and demerits, and reflect this in industrial and urban development policies.

Positive roles

The negative effects of a large number of motorcycles, as currently operated on Vietnamese roads, are well known and analyzed in detail in this master plan (chapters 1, 6, 7, 8). However, the positive effects of motorcycles must also be recognized clearly.

As mentioned above, motorcycles fit Vietnam's urban structure and people's lifestyle. At present, motorcycle use on the one hand and urban and transport development in Hanoi and HCMC on the other are complementary in many ways, and urban residents can hardly stop using motorcycles without sacrificing convenience. Contributions of motorcycles can be summarized as follows.

(a) *Motorcycles enhance mobility and accessibility*—thanks to high ownership of motorcycles, average trip rates (number of trips made by a person per day) in Hanoi and HCMC are relatively high compared with other Asian cities²⁴. Moreover, motorcycles can negotiate traffic congestion far more easily than cars and buses, which cuts travel time for each trip. The average travel time of a trip is 22 minutes in Hanoi and 18 minutes in HCMC (Tab. 5-5). Trip length is longer but travel speed is higher in HCMC than in Hanoi, probably because of better

²⁴ Trip rates, including walking, in Hanoi and HCMC are 2.7 and 3.0 respectively, which are higher than in Manila (2.2), Jakarta (1.7), Kuala Lumpur (2.5), Bangkok (2.3), Chengdu (2.6), or Tokyo (2.3).

roads, better traffic management and better driving behavior in HCMC.

Tab. 5-5 Average Travel Time of Motorcycle Users

<i>Travel purpose</i>	<i>Hanoi</i>			<i>HCMC</i>		
	<i>Length (km)</i>	<i>Time (min)</i>	<i>Speed (kph)</i>	<i>Length (km)</i>	<i>Time (min)</i>	<i>Speed (kph)</i>
To work	5.0	21.2	13.4	5.6	20.0	17.3
To school	4.5	20.8	12.4	4.7	16.4	16.4
Private	4.0	20.7	11.4	4.8	16.5	17.8
Business	4.6	26.4	12.1	5.3	28.2	16.2
All trips	4.8	21.9	12.5	5.1	18.2	17.3

Sources: HAIDEP (2005) and HOUTRANS (2002).

(b) *Motorcycles are space-efficient*--road space required by different types of vehicle can be measured and compared by equivalent passenger car unit (PCU), which is a number of passenger cars that can occupy the space used by the vehicle in question. The PCU value of a motorcycle depends on actual traffic situation and varies from 0.25 to 0.5. When motorcycle traffic is dominant, its PCU is low. However, if traffic is more mixed in vehicle type, friction between motorcycles and other vehicles increases, resulting in a higher PCU of a motorcycle. This implies that the PCU of a motorcycle is low today but will increase in the future when there are more traffic modes on road. Space efficiency of motorcycles, cars, and buses under the current condition is compared (Tab. 5-6). The number of passengers of motorcycles per PCU is 5.4 and those of car and bus are 2.0 and 7.2, respectively. This clearly shows the efficiency of motorcycle especially against car and even against bus when its load factor is low.

(c) *Motorcycles are cost-efficient*--the cost of operating motorcycles is also compared with cars and buses (Tab. 5-6). At the speed of 20kph, motorcycles cost VND435 per passenger-km, while cars and buses cost VND1,573 and VND284, respectively. When the cost of maintaining pavement and other facilities, such as parking lots and terminals, are considered, the advantage of motorcycles further increases.

Tab. 5-6 Space and Cost Efficiency of Motorcycles, Cars, and Buses under Current Traffic Conditions in Hanoi

		<i>Motorcycle</i>	<i>Car</i>	<i>Bus</i>
Space efficiency	PCU ¹⁾	0.25-0.5	1.0	2.5
	No. of persons/vehicle ³⁾	1.36	2.02	17.9
	No. of persons/PCU	2.7-5.4	2.0	7.2
Cost efficiency (VOC ²⁾ at 20 kph)	VND/vehicle-km	582	3,178	5,078
	VND/passenger-km	435	1,573	284

Source: Calculation using HAIDEP data.

1) PCU = Equivalent passenger car unit

2) VOC = Vehicle operating cost

3) Actual figures obtained from the survey conducted by HAIDEP

Traffic simulations

Impact of motorcycles on the current overall urban traffic was assessed by converting the number of trips to PCU-km for motorcycles, cars, and buses. In terms of number of trips, motorcycles meet 84% of current total demand, while cars (including taxis) cover 5% and buses cover 11%. However, in terms of PCU-km, motorcycles' share is 71% while cars (including taxis) and buses shares are 17% and 12%, respectively. This means that car travel, although still at a low level, occupies relatively large space on the road for the same amount of trips (Tab. 5-7).

Tab. 5-7 Impact on Road Traffic in Hanoi, 2005

<i>Mode</i>	<i>Trip demand</i>		<i>Average trip length (km)</i>	<i>Average occupancy (persons per vehicle)</i>	<i>PCU</i>	<i>PCU-km/day</i>	
	<i>Thousands of trips per day</i>	<i>%</i>				<i>Million</i>	<i>%</i>
Motorcycle	4,075	84	4.9	1.36	0.25	3,649	71
Car and taxi	226	5	7.9	2.02	1.0	847	17
Bus	547	11	8.2	17.92	2.5	627	12
All trips	4,848	100	-	-	-	5,123	100

Source: HAIDEP (2007).

Note: PCU-km/day refers to demand in terms of vehicle-kms, which indicates space requirement on the road. Different types of vehicles are converted into passenger car unit for comparing their space use efficiency.

To see the efficiency of motorcycles in the overall urban traffic, calculations are made for Hanoi with alternative traffic mixes of motorcycles, cars, and buses. The exercise was structured to answer the following questions: (i) if buses meet more demand, what will be the overall traffic efficiency?; (ii) if car traffic increases, to what extent will the traffic situation worsen?; and (iii) how does a change in the share of motorcycle affect overall traffic efficiency? The main findings are as follows (Tab. 5-8).

(a) The current traffic mix dominated by motorcycles gives the least impact on overall road traffic with a space use of 5.1 million PCU-kms per day. If the bus load factor improves from 18 to 30 passengers per bus, traffic situation will further improve with a total space use of 4.9 million PCU-kms per day.

(b) All other scenarios give a worse situation than the existing condition. Even if bus traffic increases, total space load rises because of an increase in motorcycle PCU²⁵. A mix of large vehicles and motorcycles generally leads to an inefficient use of road space. The advantage of bus is offset by this effect.

²⁵ As the percentage share of motorcycle traffic falls, the PCU of motorcycle rises due to increased conflict with other traffic. The assumed PCU of a motorcycle is as follows: 0.25 when motorcycle traffic share is 80% or above, 0.3 for 70%, 0.4 for 60% and 0.5 for 50% or below.

(c) Traffic load on roads will rise significantly when the share of cars increases. For example, if car traffic occupies as much as 30% of the demand, required road space will double to more than 10 million PCU-kms.

(d) The development of UMRT greatly contributes to the improvement of the situation. When the UMRT system accommodates 30% of traffic demand, total road space load is reduced to 4.2 million PCU-kms. However, if car demand is high, the benefit of UMRT is offset by the crowding effect of cars and the overall situation may not improve.

The question is not simply choosing one preferred transport mode, but achieving the optimum mix of the three main modes of urban transport, namely motorcycles, cars, and buses. They have different characteristics and functions which compete with and complement each other on the same road space. If motorcycles comprise the majority of

Tab. 5-8 Impact of Traffic Mix on Overall Traffic Efficiency in Hanoi

Scenario			Assumed traffic mix (%)			Total PCU-km (000/day) ⁴⁾		
			M/C	Car	Bus	Bus load factor = 18	Bus load factor = 30	
Existing situation (2005)			84	5	11	5,123	4,870	
Without U M R T (2020)	Poor bus ¹⁾	Moderate car ²⁾	70	20	10	7,336	7,612	
		High car ²⁾	60	30	10	10,174	9,950	
	Good bus ¹⁾	Low car ²⁾	60	10	30	7,651	6,980	
		High car ²⁾	40	30	30	10,590	9,919	
With UMRT ³⁾ (2020)			Low car ²⁾	40	10	20	4,217	3,951
			High car ²⁾	20	30	20	6,983	6,711

Source: Calculated from HAIDEP data.

Notes:

- 1) "Poor bus" means a bus share of 10% of total transport demand while "good bus" means a bus share of 30%.
- 2) For car share, low, moderate and high represent 10%, 20%, and 30% of total transport demand, respectively.
- 3) It is assumed that 30% of transport demand is served by UMRT.
- 4) Total PCU-kms were calculated from average trip length of passengers and average load factor of bus, car and motorcycle.

road users, they are efficient. However, when they are mixed with other vehicles, their advantages decrease significantly unless they are effectively managed. As to car traffic, its increase poses a serious threat to the traffic situation in the future. It must be properly regulated before the situation becomes unmanageable as observed in other large cities in the region.

5-5. Concerns and drawbacks

While motorcycle users currently enjoy a high level of mobility and accessibility which are also economically and financially advantageous to the society, the situation is gradually changing. For one thing, traffic is becoming more mixed. Moreover, as urban areas expand, longer travel is required for those residing in outer areas. According to the recent surveys by HAIDEP (2005) and HOUTRANS (2002) in the two cities, the use of motorcycles is becoming a serious concern of the residents under the heightened awareness of safety and travel distances. The surveys' findings are as follows:

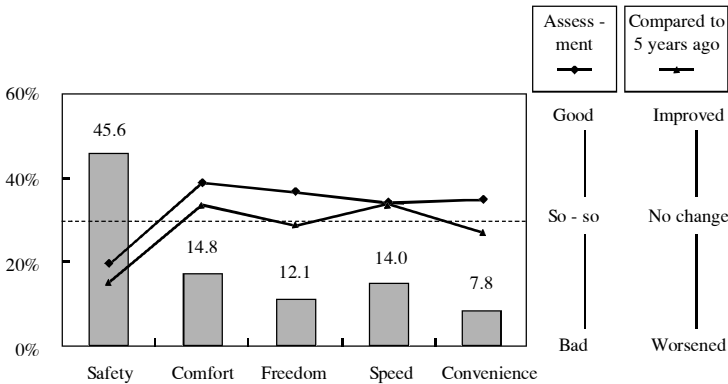
(a) The main reason for choosing motorcycle as the preferred traffic mode is convenience. As many as 60% of the respondents in Hanoi and 64% of the respondents in HCMC say that they use motorcycles for convenience. Other main reasons include no other choice, faster travel time, and comfort.

(b) Urban people are generally satisfied with their travel conditions. In Hanoi, 52% of the motorcycle users find travel conditions to be good, while 42% think they are so-so. In HCMC, the corresponding figures are 20% and 65%, respectively. HCMC people are less satisfied with the travel conditions. These responses are surprisingly favorable in comparison with the large cities in the region. However, subjective perception can turn much worse when congestion and conflict among motorcycles and other vehicles visibly increase. This situation is already beginning to occur, and people's perception may become very negative quickly.

(c) Safety is now the number one concern among motorcycle users. The surveys clearly show that almost half of motorcycle users worry about their safety on the road, although they still use motorcycles for convenience and freedom (Figure 5.3).

(d) Travel distance is also becoming a concern. Surveys results indicate that those who travel by motorcycle for 30 minutes or longer feel uncomfortable. This may be one of the reasons for the success of the bus transport capacity expansion policy implemented in 2002 in Hanoi and HCMC.

Fig. 5-3 People's Assessment of Motorcycles in HCMC



Source: HOUTRANS household interview survey (2002).

Another important fact is that motorcycles cannot serve everybody. Although the majority of the adult population can take advantage of the motorcycle, there are groups who cannot, including children, the elderly, and the physically-challenged. Moreover, motorcycles should not be used when drivers are tired, sleepy or drunk. Although they can still ride motorcycles as passengers, riding on a motorcycle requires alertness and balance. Passengers in a car or a bus (when not over-crowded) can rest and even sleep, but motorcycle passengers will risk their lives if they do so.

While the majority of residents in Hanoi and HCMC use motorcycles, 95% of the respondents the HOUTRANS survey in HCMC thought that the city should become more oriented toward public transport. As many as 90% of the respondents support more regulation on urban transport such as stricter control on the ownership and use of motorcycles, provided that it does not impose excessive financial burden on users²⁶.

5-6. The future role of motorcycles

The future role of motorcycles in Vietnam's urban areas will not be the same as before due to newly emerging factors. Among them, an increase in car traffic and planned urban rail are the two critically important factors. From the viewpoint of road space efficiency, the former is a negative factor which will seriously aggravate congestion while the latter is a positive factor which will greatly reduce congestion. The policy should aim at properly regulating the expansion of car use while building an urban rail system as soon as the budget allows. However, to be efficient an urban rail system requires feeders, in which motorcycles can play a very important role.

Car traffic inevitably increases as income and car ownership rise. It is expected that about 20% of the households in Hanoi and HCMC will own a car by 2020. As car traffic increases, conflicts in traffic flow will escalate. Traffic congestion will become more serious, traffic accidents will rise, and urban environment is likely to deteriorate if no regulatory measures are taken and if no UMRT is available. This is highly predictable from the experiences of other cities such as Bangkok, Manila and Jakarta. If this worst scenario happens, motorcycles will become an unpleasant private mode for people who are unable to own a car but do not want to

²⁶ In the consumer interview survey conducted by the Vietnam Development Forum (VDF) during March 5-18, 2007 in Hanoi, HCMC and Can Tho (1,981 valid answers), 62% of respondents supported motorcycle control with a roadmap, while 21% wanted no control and 17% favored immediate control. A separate VDF on-line survey during the same period (7,763 hits) gave the following results: control with a roadmap (45%), no control (29%) and immediate control (26%).

use low quality public transport. The current advantages of motorcycles such as convenience and comfort will disappear and disadvantages such as traffic accidents and air pollution will increase. Clearly, this situation must be avoided.

On the other hand, policy orientation of Hanoi and HCMC authorities, as stated in HOUTRANS and HAIDEP, is to realize public transport-based urban areas, in which UMRT will be the backbone that provides fast, high quality services along major corridors as well as to, from and within the central business district. Buses will cover secondary corridors in most of the urban areas in a way that is closely integrated with UMRT. Cars and motorcycles must play the role of not only door-to-door transport, which is their unique advantage, but also effective feeders to the public transport system. Along major corridors, priority should be given to public transport and cars, while on secondary and local roads, motorcycles and bicycles should be prioritized, including the provision of roadside parking for them. In the central business district, the UMRT network should be configured in such a way that people can easily access an UMRT station within a reasonably short walking time, while the use of both cars and motorcycles must be strictly regulated through physical controls and congestion pricing to ensure smooth and comfortable traffic flows.

Under this desirable scenario, motorcycles will continue to perform a significant role particularly for short to medium distances and for private travels, in an environment which is well organized for safety and amenity. The benefits of motorcycle use will be further enhanced if it is closely integrated with other transport modes, especially UMRT and buses. Since physical structure in the existing urban areas in Hanoi and HCMC, such as dense population and narrow lanes, is likely to remain basically unchanged in the future, motorcycles can continue to provide various transport services there. They will remain an important but complementary transport mode which contributes to socio-economic activities of urban residents, the urban transport system, and overall urban development.

5-7. Policy recommendations

Motorcycles and bicycles have played critical roles in providing mobility and accessibility to Vietnamese people. In the future, motorcycles will remain and can play better roles in urban transportation when they are properly integrated into the overall urban transport policy framework. To realize this, the most important pre-condition is to raise the awareness and understanding of the good use of motorcycles among all people, including users, law enforcers, and leaders. Without this, no policy measures will work.

Actions should be taken in the following three directions.

Short-term measures

(a) *Regulated use of limited road space*: this requires establishing clear rules and guidelines, and informing them to users and enforcing them strictly (see chapter 6 for motorcycle riding rules).

(b) *Expansion of time-based parking fee*: Long stay parking on roads and sidewalks in urban centers with minimal fee benefits users at the sacrifice of all others. Road space is not a garage for motorcycles and other vehicles. Time-based parking fee promotes an efficient use of road space, and collected fees can contribute to further improvement of traffic management facilities. By combining traffic control with a proper parking system, which reflects the function of roads and roadside situations at each location, overall efficiency of traffic flow and accessibility to roadside activities can be improved.

Long-term measure

Proper design of rail stations and terminals: as urban areas grow, travel distance beyond 30 minutes cannot be served by motorcycles due to increasing discomfort. As Hanoi and HCMC expand, a high quality mass transit system must provide core services as recommended in HOUTRANS and HAIDEP. As

noted above, motorcycles and bicycles should play important roles in providing feeder services through the park-and-ride system. Cars can also do this through the kiss-and-ride system. Motorcycle traffic should be directed away from main corridors and toward local services in catchment areas of mass transit lines. To realize this concept, interchange areas such as stations and terminals must be properly designed for smooth connection of feeder and line haul services.

Traffic Management in Hanoi's Ancient Quarter

Traffic situation in the Ancient Quarter of Hanoi should be improved by implementing the following measures with close cooperation of local communities.

(a) *Car and truck regulation*: ban the use of cars and trucks within the designated areas of the Ancient Quarter, except those directly owned and used by residents or those delivering goods. Permitted cars and trucks can operate during certain hours only. They should be issued official stickers which must be displayed clearly.

(b) *Other restrictions*: the speed limit of all vehicles should be 15 kph or 20 kph within the Ancient Quarter, on-road parking of cars and trucks are banned except in designated areas and time, and motorcycle parking should also be limited to designated space with time-based parking fees.

(c) After the completion of the UMRT Line, which will serve the Ancient Quarters with underground stations, the use of cars, trucks and motorcycles should be restricted more extensively and the entire Ancient Quarter should become an area for pedestrians and non-motorized vehicles, except for the minimum use of vehicles by residents and commercial establishments.

Chapter 6

Reducing Traffic Accidents

6-1. Basic data on traffic accidents

The situation of traffic accidents is serious in Vietnam. It has become a major social problem, in which traffic safety is now regarded as one of the most urgent policy issues of the government.

The open door policy of Vietnam has accelerated economic development with the participation of many economic sectors. Demand for passenger and goods transport also rose sharply since the 1990's. At the same time, Vietnam's road system, which consists of national highways and local and rural roads, is being built or renovated significantly with domestic funding as well as loans from bilateral and multilateral organizations. Income growth and improvement of transport infrastructure together contributed to a sudden increase in the number of motorized vehicles, especially motorcycles, in the last decade. As traffic volume expanded, traffic accidents also increased. Traffic conflicts and bottlenecks in urban areas became apparent, and traffic accidents in rural areas, which used to be very few in the past, began to soar. On the other hand, the level of understanding and compliance of traffic safety requirements remains very low among the public. Authorities have also been largely unaware of their critical role in restoring traffic safety and order.

In terms of transport mode, most traffic accidents occur on roads (96-97%), and most of the fatalities (94-97%) and most of the injuries (98-99%) are also attributed to road traffic. The share of road traffic in total traffic accidents, fatalities and injuries has been highly stable in the

period of 1996-2005²⁷. Clearly, road traffic is at the center of the problem of traffic accidents in Vietnam.

Table 6-1 shows the reported counts of road traffic accidents, fatalities and injuries. According to this data, road traffic accidents increased rapidly from 6,110 in 1990 to 27,993 in 2002, or 4.6 fold with the average annual increase of 13.5%. In the peak year of 2002, the number of fatalities and injuries reached 13,186 and 30,999, respectively. However, reported numbers of accidents and injuries dramatically fell in the period beginning 2003, although the number of fatalities remained high and relatively constant around 12,000 per year. This means that there were 1.5 fatalities per 10,000 persons in recent years.

There may be a systematic bias in the reported data on road traffic accidents since 0.87 fatalities per accident on average (2006 data) is extremely high in comparison with neighboring countries. The corresponding ratios are 0.20 in Thailand and 0.02 in Malaysia. Fairly constant fatalities from 2002 to 2006, in contrast to rapidly declining accidents and injuries in the same period, also point to statistical inconsistency. Significant under-reporting of accidents and injuries are suspected, relative to the number of fatalities which should be more reliable.

According to the sampled data analysis of the National Traffic Safety Committee conducted in 2001, almost half (48.9%) of road traffic accidents occurred on national highways where traffic volume and cruising speed were both high, followed by provincial roads (26.2%), urban roads (17.1%), and district and commune roads (7.8%). By transport mode, 71.4% of road traffic accidents were caused by motorcycle drivers, 22.5% by automobile drivers and 6.1% by other road users²⁸.

²⁷ In 2005, the total number of reported traffic accidents was 14,711, in which road accidents occupied 14,141 or 96.1%. In the same year, road fatalities were 11,184 or 97.0% of total, and road injuries were 11,760 or 97.9% of total. The rest of traffic accidents, fatalities and injuries were attributed to railway, inland waterway and maritime.

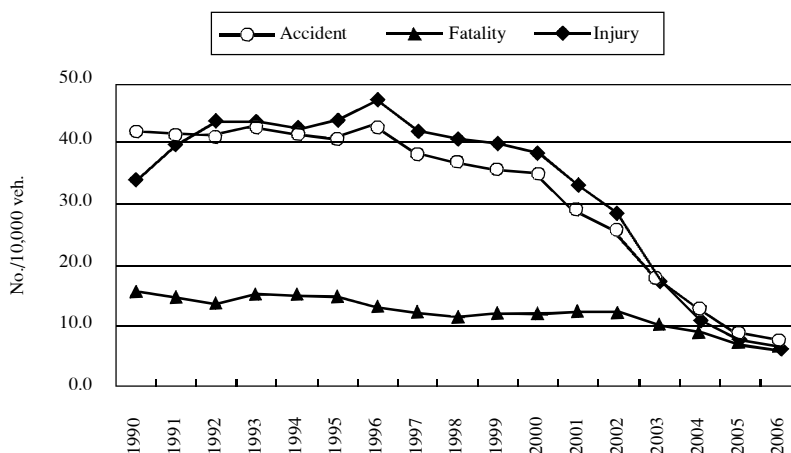
²⁸ When many traffic modes are involved in an accident, the one responsible for causing it is counted in this data.

Tab. 6-1 Road Traffic Accidents (1990-2006)

<i>Year</i>	<i>Accidents</i>	<i>Fatalities</i>	<i>Injuries</i>
1990	6,110	2,268	4,956
1991	7,382	2,602	7,114
1992	9,470	3,077	10,048
1993	11,582	4,140	11,854
1994	13,760	4,897	14,174
1995	15,999	5,728	17,167
1996	19,638	5,932	21,718
1997	19,998	6,152	22,071
1998	20,753	6,394	22,989
1999	21,538	7,095	24,179
2000	23,327	7,924	25,693
2001	25,831	10,866	29,449
2002	27,993	13,186	30,999
2003	20,774	11,864	20,704
2004	17,663	12,230	15,417
2005	14,711	11,534	12,013
2006	14,727	12,757	11,288

Source: National Traffic Safety Committee.

The number of road traffic accidents is related to the number of motorized vehicles on the road, including motorcycles and cars, both of which have increased greatly in recent years (chapter 1). However, the relationship between accidents and motorized vehicles may not be simple or linear. In Fig. 6-1, the number of fatalities per 10,000 motorized vehicles fell gradually over the years, but still remained at a critically high level of 6.5 fatalities per 10,000 motorized vehicles in 2006. The numbers of accidents and injuries per 10,000 motorized vehicles declined more sharply, but these trends should be interpreted with care due to the data problem mentioned above.

Fig. 6-1 Traffic Accidents per 10,000 Motorized Vehicles

Source: National Traffic Safety Committee.

Tab. 6-2 Main Causes of Road Traffic Accidents in Selected Years

Cause		2001		2003		2005	
		Count	%	Count	%	Count	%
Number of total accidents		25,040	--	19,852	--	14,711	--
Number of analyzed accidents		14,332	100.0	771	100.0	8,485	100.0
1	Road user's error, of which:	10,896	76.0	647	83.9	5,629	70.7
	Speeding	4,686	32.7	212	27.5	2,656	31.3
	Dangerous overtaking	3,686	25.7	155	20.1	1,317	15.4
	Drunk driving	841	5.9	42	5.4	506	6.0
	Poor road observation	1,183	8.3	103	13.4	1,015	12.0
	Misuse of lanes	-	-	109	14.1	134	1.6
	Pedestrian error	500	3.5	26	3.4	371	4.4
2	Unsafe vehicle condition	191	1.3	3	0.4	56	0.7
3	Roads and bridges	33	0.2	2	0.3	12	0.1
4	Other	3,212	22.4	119	15.4	2,418	28.5

Source: National Traffic Safety Committee.

According to the sampled accident analysis presented in Tab.6-2, about three-fourths of road traffic accidents in Vietnam are identified as caused by road users' errors, among which speeding is the primary cause. Road infrastructure, especially national highways, has improved significantly in the last decade, but drivers' mindset has not changed accordingly. As a result, road users tend to speed up on highways with relatively less traffic. Dangerous overtaking by trucks, buses and passenger cars expose low-speed vehicles, such as motorcycles and bicycles, to great risk in a mixed traffic situation.

Under these circumstances, strict enforcement of traffic rules and effective traffic education of road users are crucial in reducing traffic accidents. In addition, physical measures such as improvement of surface conditions, paving of shoulders, re-designing of roads, and installation of traffic signs and signals are also necessary.

6-2. International comparison

Global Road Safety Partnership (GRSP) data shows that nearly 1 million people are killed and more than 10 million people are injured in road traffic accidents in the world every year. More than 75% of these occur in developing and transition countries.

According to regional data, shown in Tab.6-3, the level of traffic safety in Vietnam is very low. Regarding the total number of fatalities, Vietnam ranked third after Thailand and Indonesia in 2000 but overtaken them to become No.1 by 2006. In terms of fatalities per population, Vietnam's figure is 1.5 per 10,000 persons (2006 data), which ranks third after Malaysia (2.6) and Thailand (2.0). In terms of fatalities per motorized vehicles, which include motorcycles, Vietnam's figure is 6.5 per 10,000 vehicles (2006 data), again ranking third after Myanmar (24.3) and Laos (19.1). In comparison, fatalities in Japan are 0.7 per 10,000 persons and 1.0 per 10,000 motorized vehicles.

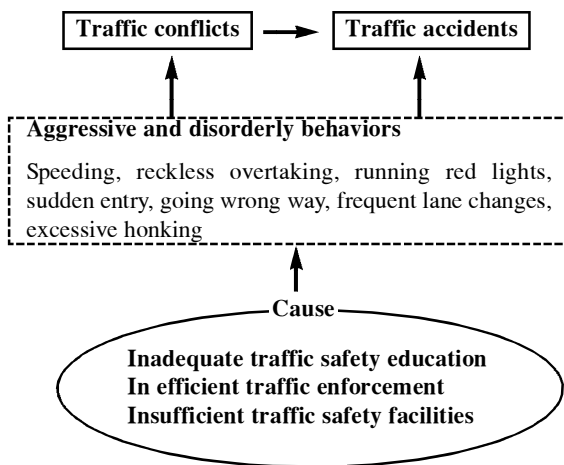
Tab. 6-3 Comparison of Road Traffic Accidents in Asian Countries in 2000

<i>Country</i>	<i>Population (000)</i>	<i>Motorized Vehicles (000)</i>	<i>Accidents</i>	<i>Fatalities</i>		
				<i>Number</i>	<i>Per 10,000 persons</i>	<i>Per 10,000 vehicles</i>
Vietnam (2006)	84,500	19,589	14,727	12,757	1.5	6.5
Vietnam (2000)	77,635	6,695	23,327	7,924	1.0	11.8
Brunei	338	213	2,861	41	1.2	2.0
Cambodia	12,000	331	556	196	0.2	5.9
Indonesia	210,400	18,224	13,000	9,500	0.5	5.2
Laos	5,300	187	3,159	362	0.7	19.1
Malaysia	23,300	10,590	250,417	6,035	2.6	5.7
Myanmar	47,700	424	3,459	1,021	0.2	24.3
Philippines	75,600	3,506	10,595	969	0.1	2.8
Singapore	4,000	689	77,475	189	0.5	2.7
Thailand	60,700	19,728	67,800	12,040	2.0	6.1
Japan	129,260	89,250	917,609	9,066	0.7	1.0

Sources: National Traffic Safety Committee (Vietnam) and Global Road Safety Partnership Conference Report, Hanoi, 2002 (other countries).

6-3. Causes of traffic lawlessness

The basic mechanism of chaotic traffic situation is illustrated in Fig.6-2. In Vietnam, the majority of traffic conflicts and accidents are caused by aggressive and lawless driving such as speeding, reckless overtaking, running red lights, sudden entry into road section, going wrong way, frequent lane changes, and excessive honking. While careless drivers should be blamed and bear direct responsibility for such conducts, shortcomings in public policies also indirectly permit and encourage such dangerous behaviors. These shortcomings include (i) inadequate traffic safety education, (ii) inefficient traffic enforcement, and (iii) insufficient traffic safety facilities. To reduce road traffic accidents, policy effort must be directed to these three areas.

Fig. 6-2 Causes of Traffic Conflicts and Accidents

6-4. Traffic laws and regulations

On June 29, 2001, the National Assembly approved the Road Traffic Law, which came into effect on January 1, 2002. This law laid out the basic traffic policy and became the basis of addressing the problem of traffic accidents in Vietnam. The Road Traffic Law consists of 77 articles and includes 28 road traffic regulations such as (i) road signal system, (ii) speed and distance between vehicles, (iii) use of lanes, (iv) overtaking, (v) changing course, (vi) stopping and parking, (vii) giving way at intersection, (viii) traveling on expressway, (ix) drivers and riders of motorcycles and engine-equipped bicycles, and (x) drivers and riders of bicycle, pedestrian, and others. The Law covers most of the current traffic situations in Vietnam, although some articles need to be elaborated further.

Subsequently, two decrees have been issued to supplement this law. Decree No.14, which includes one amendment and 30 additional articles, prescribes detailed definitions to supplement the Law. Decree No.15 describes penalties for administrative violations.

Even though the present traffic law is relatively complete by international standards, the largest problem in Vietnam is the lack of awareness and

therefore non-compliance of the Road Traffic Law and related regulations among drivers and other road users. Moreover, standard traffic laws and regulations are not specific enough to cope with Vietnam's uniquely mixed traffic with an overwhelming number of motorcycles. Thus, the existence of laws and regulations is not enough to promote traffic safety in Vietnam. Tab.6-4 gives an assessment of the effectiveness of the current Road Traffic Law based on the observation of actual traffic flows.

Tab. 6-4 Evaluation of the Current Road Traffic Law

<i>Traffic Accident Causes and Dangerous Behavior</i>	<i>Prescriptions in the Current Road Traffic Law</i>			<i>Current Situations/Issues</i>
1. Speeding	/	The Minister of Transport shall provide specific regulations.	Article 12	Insufficient usage of the Speed Limit Sign.
2. Reckless Driving	/	Before changing lanes, drivers must give a signal and ensure safety before changing lane.	Article 12	Not many drivers use signals when they change their lane.
	/	When turning, driver must give priority to pedestrians and bicycles and must give way to vehicles running in the opposite direction	Article 15	No priority for vulnerable road users. Turning-traffic and through-traffic competes on road space.
	/	Motorcycles are prohibited from running side by side, to run on pedestrian lane and to use mobile phones.	Article 28	Motorcycles run on sidewalk and drivers using mobile while driving, particularly the young drivers.
3. Careless Overtaking	/	The vehicle intending to overtake another vehicle must give a signal either by light or horn.	Article 14	Practiced by most of the motor vehicle drivers, but not motorcycle drivers.
	/	The vehicle must pass on the left hand side of the other vehicle.	Article 14	Many motorcycle drivers ignore the regulations.
4. Misuse of Lane	/	On one-way roads with lane-separated lanes, light vehicles must run in the right-most lane and other vehicles must run on the left-most lanes.	Article 13	Not strictly enforced thus resulting in mixed and congested traffic flows.
5. Misuse of Lane (Bicycle)	/	Bicycles are prohibited to proceed in pedestrian path or lanes.	Article 29	Most regulations are same as the ones for motorcycles. At least provide safety rules for the left-turners at intersection.

6. Jaywalking Pedestrian	/	Pedestrian must only use the sidewalk and roadsides.	Article 30	There are many obstructions on the sidewalk; thus, many people walk on the carriageway.
	/	At designated pedestrian crossings which have traffic lights, pedestrians must follow the signal and cross the road accordingly.	Article 30	Many pedestrians ignore the signal and crossing.
7. Failing to give way at intersection	/	Upon reaching intersections, drivers must slow down their vehicles and give way.	Article 22	Drivers sometimes just cross intersections without slowing down. Stop sign should be applied effectively. No mention about 'Stop Sign'.
	/	At intersections without roundabouts, drivers must give way to vehicles coming from its right-hand side.	Article 22	Common among most of the users.
	/	At intersections with roundabouts, drivers must give way to vehicles coming from its left hand side.	Article 22	The traffic from the left side seems to be the priority.
8. Drunk Driving	/	Prohibited Acts, the alcohol content exceeding 80mg per 100ml of blood or 40mg per 1 liter of exhaled breath.	Article 8	Many drunk driving cases are observed but penalties are not being enforce.
9. Helmet Use	/	Drivers and passengers of motorcycle, three wheeled vehicles and motorized vehicles must wear helmet when traveling on the roads where helmet use is required.	Decree 14 Article 8	Helmet use should be enforced at all times and not only limited to designated sections.
10. Motorcycle Drivers and Riders	/	Aside from the driver, motorcycle may carry only one adult and one child as maximum load.	Article 28	Overloading is very common for both goods and people.

Source: JBIC SAPROF Final Report for Traffic Safety Improvement Project in Vietnam, October 2006.

For example, the top cause of traffic accidents is speeding. The Road Traffic Law states that the speed limit will be decided by the Ministry of Transport according to the technical standard. However, the existing technical standard sets speed limits mechanically by official road classification, without regards to actual traffic and roadside conditions.

Thus, in addition to the technical design standard, operational speed limits based on the existing situation must be introduced.

Other important issues include how to control a large volume of motorcycle traffic and how to curb reckless driving. For these, one option is to introduce lane segregation by vehicle type, which is not mentioned clearly in the existing road traffic law or regulations.

In order to implement the road traffic law and regulations effectively, it is necessary to introduce traffic control and management suitable for individual roads, location by location. Traffic safety facilities including signal systems, road signs, pavement markings, and so on, should be installed properly. However, guidelines or standards for installing them are not established yet.

6-5. Law enforcement

Since 1995, the government has issued one road traffic law, two ordinances on punishment of administrative violations, eight decrees, one governmental resolution, and ten instructions on road traffic safety and order by the Prime Minister. In addition, ministries and branches have issued various resolutions, circulars, decisions, and so on, to guide the implementation of these documents.

However, some stipulations require reconsideration. For example, administrative ordinances allow the head of traffic police to penalize violators only up to 200,000VND. If violation requires a higher penalty, he has to submit the case to his superior, which is time-consuming and impractical for officers at the site of traffic violation. Decree 15/CP also contains various problems regarding marking of driver's license, temporary confiscation of violator's vehicle, penalizing the violator, competence of traffic police, etc. Moreover, some violations such as dangerous overtaking and non-helmet use carry very soft penalties.

In addition to the problems in the contents of laws and regulations, the following areas must be cited as currently lacking or insufficient to enforce the traffic law effectively.

- A mechanism to ensure systematic implementation of traffic law
- The amount and content of traffic safety education
- Traffic safety devices, such as traffic signs and markings
- Road facilities such as the necessary number of paved lanes, lane widths, paved shoulders, and bus-bays
- Effective traffic operational strategies such as procedure to turn right or left at intersections
- Fundamental traffic operational methods such as the way to set traffic lanes and which position should be reserved for pedestrians and bicycles
- Criteria for selecting the type, site and time of traffic enforcement appropriate for each traffic situation
- Enforcement equipment for the traffic police such as patrol vehicles, speed gun, and alcohol detector

6-6. Existing traffic safety programs

Traffic safety education is being carried out at various levels of society, for example at schools and work places. Moreover, the government has launched a number of traffic safety programs, often with the assistance of international donors and FDI companies.

- The National Traffic Safety Program for the period 2001-2005 by the Ministry of Transport, together with Ministries of Police, Education and Training, Health, and National Defense, the Civil Aviation Administration of Vietnam, and a number of other agencies. However, most components were not implemented due to the lack of available funds.
- Traffic Safety Enforcement Program implemented by Traffic Police.
- The World Bank's Vietnam Road Safety Project (VRSP), Phase 1.

- The National Road Safety Action Plan by the Vietnam Road Administration with ADB's support (March 2004).
- The Japan International Cooperation Agency (JICA)'s Hanoi Traffic Safety Improvement Project, 2001 to 2003.
- The Japan Bank for International Cooperation (JBIC)'s Pilot Study on Stakeholder Traffic Safety Program on Interurban National Road.
- JICA's Traffic Safety Human Resource Development Project in Hanoi, from 2006.
- Honda Vietnam's "Toi Yeu Viet Nam" media campaign for traffic safety awareness.

6-7. Drivers' licensing

Before 1995, training and testing for issuance of drivers' licenses was conducted by the Ministry of Public Security (formerly the Ministry of Internal Affairs). This responsibility was transferred to the Ministry of Transport in May 1995 based on the Decree No.36/CP. From September 2000, Vietnam Road Administration (VRA) under the Ministry of Transport has set requirements for drivers' licensing and managed licensing activities nationwide. Each province has a testing and licensing committee, which is audited by the VRA.

Driving a motorcycle with an engine capacity less than 50cc does not require a license. Licenses for two- and three-wheeled motorcycles do not require renewal. For all other licenses, renewal is required every five years for non-professional licenses and every three years for professional licenses. For renewal, license holders are required only to go to the provincial licensing committee and pay the renewal fee. Only those who have committed serious traffic violations are required to attend a seminar or a training course to enhance their consciousness on traffic safety.

Applicants for drivers' licenses must be at least 18 years old. First-time applicants for any type of drivers' license must attend a seminar or a

training course in any of the 150 drivers' training schools nationwide. These training schools are operated and managed by various government agencies as well as the private sector. The driver training period varies according to vehicle type. The training for motorcycle drivers requires about 10 hours and includes both theory and practice. The training for car drivers consists of 10 hours of theory and 20 hours of practical experience, which includes on-road training.

To enhance road traffic safety, the following adjustments should be made to the licensing system.

- Licensing should also be required for driving a motorcycle with an engine capacity of less than 50cc.
- Enforcement of elimination of unlicensed driving, particularly drivers of two- and three-wheeled motorcycles.
- A compulsory license renewal system for two- and three-wheeled motorcycles with appropriate re-training programs.
- A compulsory re-training program for renewal of licenses for four- or more-wheeled vehicles.

6-8. Setting clear rules for motorcycle users

Apart from improving the licensing system, Vietnam should organize a taskforce to study its unique traffic safety problems in which motorcycles dominate, unlike any other countries. The taskforce should pay special attention to formulating effective regulation of motorcycle use. Authorities with major responsibility in traffic safety as well as leading motorcycle assemblers in Vietnam should participate in the study. The taskforce should produce a report with concrete policy recommendations with timetables, which will be announced and deliberated publicly. Based on sufficient discussion among users, experts and policy makers, a set of new traffic rules governing motorcycle use should be drafted to supplement the Road Traffic Law.

The new regulation on motorcycle use should cover the following, among others:

- Use of helmet
- Drunk driving
- Maximum number of people on a motorcycle
- How to carry baby or child on a motorcycle
- How to carry cargo
- How to use road lanes among other vehicles such as cars and bicycles
- How to enter main road
- How to make left turns and right turns
- Overtaking
- Use of mobile phone or other devices while driving or riding
- Parking
- Use of headlight
- Honking
- Drivers' licensing and associated training and re-training programs (see section above)
- Owner's duty to maintain motorcycles in good condition
- Motorcycle inspection system (see chapter 7)
- Illegally copied motorcycles (see chapter 8)

Initially, care should be taken not to set rules that are too ideal or advanced for Vietnam as they tend to be ignored by people. Unfortunately, driving manners in Vietnam are extremely hazardous and primitive at present, and realistic steps must be taken to educate people and prepare authorities to implement new regulation fully. In the long run, Vietnam should aim to become a country in which motorcycle use is most sophisticated and safest in the world.

Appendix to Chapter 6

Organizations Responsible for Traffic Safety

<i>Organization</i>		<i>Responsibility</i>
National Transport Safety Committee/ Traffic Safety Project Management Unit (TS-PMU)		Monitoring and managing traffic safety in general.
Ministry of Transport	Planning and Investment Department	Making investment plans on upgrading, rehabilitation and maintenance of transport infrastructures to reduce black spots.
	Financial and Accounts Department	Monitoring and financing investment in upgrading, rehabilitation and maintenance of transport infrastructures.
	Transport Legislation Department	Setting up and monitoring transport legal documents.
	Science and Technology Department	Setting up all technical standards on transport infrastructures and transport means.
	Vietnam Road Administration	Managing, monitoring and investing in transport infrastructures in the assigned sub-sector.
Ministry of Planning and Investment		Making investment plans for construction of infrastructures, including transport infrastructures and transport means.
General Statistics Office		Collecting, managing and monitoring all statistical data.
Ministry of Public Security	Road and Railway Traffic Police Bureau	Managing and monitoring road and railway traffic accidents, and enforcing road and railway traffic rules and regulations.
	Social Order and Administrative Management Police Bureau	Preventing pavement and roadway encroachment, illegal construction, and illegal motorcycle races.
Ministry of Finance		Financing, managing all taxes, charges, fees and penalties (including those in the transport sector).
Ministry of Education and Training		Educating and disseminating traffic laws and regulations in schools and universities.
Ministry of Health		Giving emergency treatment, supporting and curing injuries caused by traffic accidents.
Vietnam Fatherland Front		Coordinating with other organizations in promoting and disseminating traffic safety laws, regulations, and institutions to all population levels, so that people can understand and abide by them.
Youth Union		Mobilizing youths to participate in the movement of traffic safety and order.
Ministry of Justice		Laws in Vietnam.
Ministry of National Defense		Ensuring safety for transport means managed by military force.

Reducing Traffic Accidents

People's Committees in large cities (Hanoi, HCMC, Hai Phong, Da Nang)	State administration on transport, traffic safety in the city.
Provincial and Municipal Traffic Safety Units	Giving advice on local traffic safety to the chairmen of provinces and cities.
Provincial Transport Authorities	Matters related to transport infrastructures, transport means, drivers, traffic accidents and transport inspectors.
Local Traffic Police	Enforcing traffic rules and regulations, dealing with traffic accidents, collecting traffic accidents data at local level, and making reports.

Chapter 7

Environmental Protection

7-1. Urban air pollution

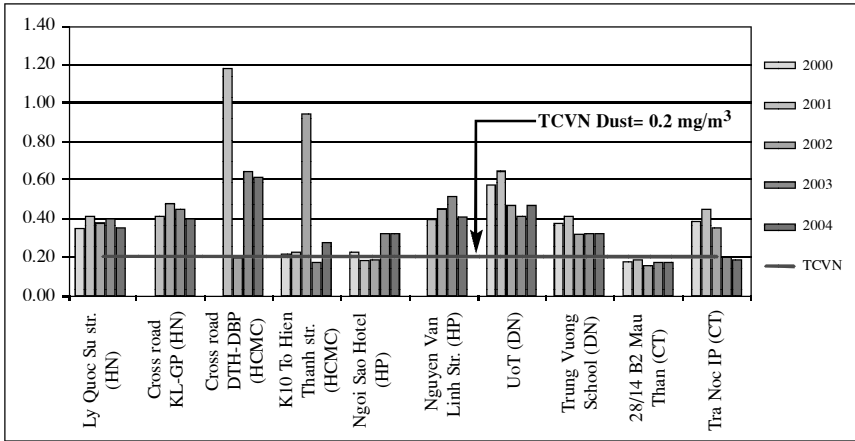
In the last ten years, Vietnam has been transformed from a country with relatively few motorized vehicles to a country with a large number of motorized vehicles, especially in urban areas. Unlike other countries where automobiles dominate, motorcycles occupy by far the largest share of transport in Vietnam (chapters 1 and 5). With one motorcycle for every two persons, virtually all households in Hanoi and HCMC have access to private transport. Although motorcycles in Hanoi and HCMC are individually no more polluting than those in other large cities in Asia, the sheer density of motorcycles gives rise to air pollution and high exposure to exhaust in these cities.

The monitoring data of the Center for Environmental Engineering of Towns and Industrial Areas (CEETIA) shows that, in the period from 2000 to 2004, air pollutants such as carbon monoxide (CO), nitrogen dioxide (NO₂), dust and particles at a number of locations exceeded nationally stipulated standards for ambient air quality (TCVN 5937--see below) as shown in Fig.7-1. The noise level is also persistently high.

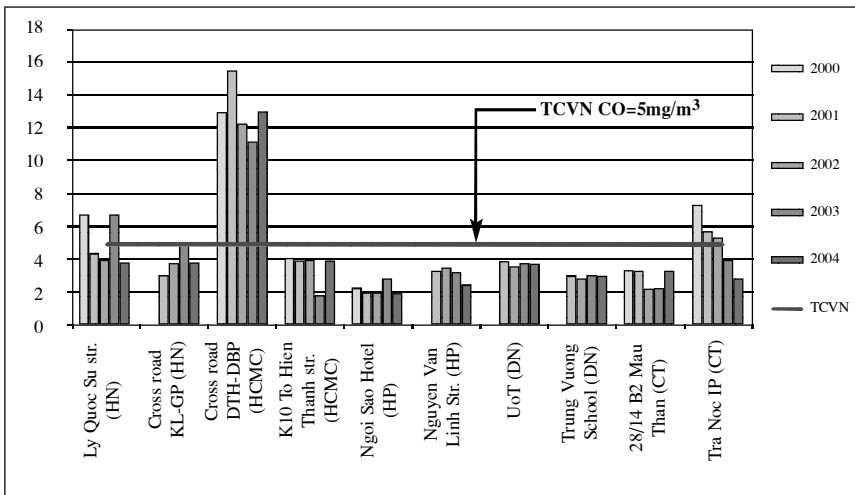
The study of the National Institute of Occupational and Environmental Health (NIOEH) in 2003 indicated that, in rush hours, dust content in air environment was 4 times, CO was 2.5-4.4 times, and hydrocarbon was 12.1-2,000 times higher than the national standard mentioned above. The concentration of other pollutants, such as nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO) and volatile organic compounds (VOC) also exceeded limits by 5 to 35 times.

Fig. 7-1 Air Pollution in Urban Areas, 2000-2004

(a) Dust (mg/m^3)



(b) Carbon Monoxide (mg/m^3)



Source: Center for Environmental Engineering of Towns and Industrial Areas (CEETIA), various years.

**Tab. 7-1 Pollutant Concentration at Intersections
in Hanoi during Rush Hours, 2003**

<i>Monitoring station</i>	<i>Pollutant concentration (mg/m³)</i>			
	<i>NO₂</i>	<i>SO₂</i>	<i>CO</i>	<i>VOC</i>
Vong	3.9	3.6	360	170
Kim Lien	3.7	3.5	350	160
So	3.8	3.7	355	165
National standard (TCVN 5937-1995)	0.4	0.5	40	5.0

Source: NIOEH survey (2003).

Concentrations of CO and PM₁₀ (particulate matter less than 10 microns in diameter) in the air of Hanoi and HCMC have remained relatively stable in recent years. According to the Vietnam Register data, motorcycles are the major source of air pollutant emissions, accounting for 54.4% of total CO emitted, 54.1% of HC, 54.5% of Pb and 43.0% of dust.

7-2. Health impact of air pollution

It is well known that people's health is adversely affected by primary pollutants from vehicles such as PM₁₀ and PM_{2.5} (particulate matter less than 10 or 2.5 microns in diameter, respectively), nitrogen oxides (NO_x), SO₂ and CO, as well as secondary pollutants such as ozone. These cause respiratory problems, sinusitis, bronchitis, asthma, lung cancer, cardiovascular diseases and premature death. Particles have also been shown to increase the mortality rate. People with asthma and respiratory diseases in turn are highly susceptible to particles, NO_x, SO₂ and ozone. In addition, lead particles have serious effects on children's growth and development. Children with high lead levels in their blood are often deficient in weight and tend to have a low count of red blood cells. Their IQ levels on average are also lower than those with lower lead levels.

In Vietnam and other countries in the region, air pollution is now acknowledged as a serious public health threat. WHO estimates that globally about 800,000 people die prematurely every year because of exposure to urban outdoor air pollution. Among them, about 500,000

are believed to be in Asia. The Disability Adjusted Life Years (DALY) indicator²⁹ shows that out of the 6.4 million affected by air pollution, 3.8 million are in Asia. According to the Vietnam Statistical Year Book 2005, the majority of respiratory diseases in Vietnam are related to air pollution³⁰.

The health effect of air pollution was first studied in Vietnam as early as in 1995 with a focus on traffic police officers³¹. Due to extended exposure to high levels of air and noise pollution, 2.9% of traffic policemen were infected with tuberculosis, compared with an average infection rate of 0.075%. Moreover, 76% of traffic policemen suffered from ear, nose, and throat infection, and 32% of them had reduced hearing ability.

Separately, NIOEH conducted a study on the health impacts of air pollution in 2005. It showed that 83.1% of the respondents suspected that dust pollution came from transportation. Examination of persons who worked more than 8 hours per day on roadside found a significant difference in the health conditions between targeted and reference groups (Tab.7-2).

Tab. 7-2 Disease Frequency of Persons Working in Roadside

<i>Symptom</i>	<i>Targeted group</i> Persons working more than 8 hours per day on roadside	<i>Reference group</i>
Chronic bronchitis level III	3.8%	0.0%
Chest pain	51.2%	42.1%
Difficulty in breathing	21.5%	4.5%
Nose, throat, sinusitis and dermal diseases	15.1%	4.7%
Abnormal X-ray	44.4%	11.7%

²⁹ According to WHO's definition, the DALY for a disease is computed as the sum of years of life lost (YLL) due to premature mortality and the years lost due to disability (YLD) for incident cases of the health condition. It is a broad health gap measure which includes, in addition to premature deaths, equivalent years of "healthy" life lost in states of less than full health, which may be termed disability. One DALY represents the loss of one year of equivalent full health.

³⁰ According to the Statistical Yearbook 2005, the most common diseases related to air pollution in Vietnam are lung diseases (415.09 per 100,000 persons), throat and tonsil diseases (309.40 per 100,000 persons), and bronchial tube diseases (305.51 per 100,000 persons).

³¹ The study of Labor Protection Unit of HCMC, 1995. Also see Dang Dinh Nguyen, "Air Pollution in Urban Areas: Reality and Solutions," *Saigon Giai Phong Thu Bay*, no.276, 1995.

The costs related to health problems caused by air pollution in Hanoi were estimated at US\$23 million in 2006, or about VND1 billion per day. Meanwhile, the World Bank Environment Monitor Reports 2002 estimated the health-related air pollution costs to be US\$392 million for Metro Manila in 2001 and US\$424 million for Bangkok in 2000. Compared with these cities in the region, the health costs of air pollution in Vietnam, which is at an early stage of motorization, is much lower. However, it is likely to grow rapidly unless preventive measures are taken.

7-3. Current regulation for controlling vehicular pollution

The Vietnamese government recognizes that air pollution causes rapid deterioration of environment and negative health effects. After the Environment Law was adopted in 1994, the government issued Instructions on Strengthening Environmental Protection in the Period of Industrialization and Modernization (No.36-CT/TW, 1998, Vietnam Communist Party).

Air pollution from vehicles is regulated by the following legislations:

- Air Quality, Ambient Standards (TCVN 5937, 1995)
- Air Quality, Hazardous Substance Standards (TCVN 5938, 1995)
- Standards for Noise in Public and Residential Areas (TCVN5945, 1995)
- Standards for Noise on Road Motor Vehicle (TCVN5948, 1995)
- Instruction No. 24/2000/CT-TTg on Using Non-lead Petrol (2000)
- The National Action Plan on Emission Reduction from Transport Vehicles (2003)
- Decision 249/2005/QD-TTg on Setting the Roadmap for Application of Emission Standards to Road Motor Vehicle (2005)

Despite these regulations, the country remains in violation of the air ambient quality standards. To comply with the standards, controlling pollution from motorized vehicles, especially motorcycles, is crucial.

7-4. Policy direction

The overall policy goal should be to place the total amount of motorcycle emission on a declining trend and attain meaningful (not small) improvement in the atmospheric environment of Vietnam's urban areas by 2020, with appropriate steps between now and 2020, under the projected increase in the number of motorcycles (chapter 3).

Total pollutant load and air pollutant concentration are related but not the same. International experiences show that environmental and health costs from air pollution may rise greatly as total pollutant sources increase and affected areas expand, even with the same or lower level of pollutant concentration at any location. In Vietnam, it is also possible that air pollution level at any location may remain stable or decrease slightly in the next 15 to 20 years, even under the predicted increase in the number of motorized vehicles and fuel consumption, provided that the currently proposed policies are fully and effectively implemented. Even in that case, the total cost of urban air pollution may increase.

However, Vietnam lacks scientific studies on the situation and causes of urban air pollution. For some pollutants, motorized vehicles in general and motorcycles in particular are the predominant source, and for others they are a contributor but not the dominant source. Vietnam first needs reliable data and analyses on the mechanism of urban air pollution in Hanoi and HCMC before setting concrete policy goals and designing action plans³².

³² The study by Hoang Xuan Co and Nghiem Trung Dung (2006) offers scientific projections regarding one source, namely total suspended particulate matter (TSP). Taking the environmental situation in 2002 as the base, they projected three scenarios for TSP concentration in ambient environment in Hanoi in 2010 as follows: (i) without any additional countermeasure; (ii) countermeasures suggested by the JICA project; and (iii) with 75% reduction on total emission sources relative to 2002. The dispersion model ISC3-AIRMOD was first used to analyze the air quality of Hanoi in the base year, which revealed that some areas near industrial zones and some areas of high population density had high counts of TSP. Under scenario (i), air quality of Hanoi in 2010 will be much worse. Under scenario (ii), with current planning plus measures suggested by the JICA project, some sources will be reduced but the total amount of sources will increase, with the result that air quality of Hanoi in 2010 will be more or less the same as in 2002. Scenario (iii) suggests that at least 75% reduction of sources is necessary to make visible improvements. Efficient ways to reduce TSP concentration include removal of old enterprises from inner city as well as introduction of new technology and high efficiency treatment systems for emission control.

When such data and analyses are available, Vietnam should establish a concrete and realistic roadmap for air pollution control based on the current EURO standard. Vietnam is already on the EURO roadmap but details are yet to be decided. To implement the EURO roadmap, the fuel quality monitoring and control system and the vehicle inspection and maintenance system are the two key pre-conditions. The former is absent at present and the latter needs to be greatly improved.

7-5. The roadmap

As a member of APEC, Vietnam is required to adopt the EURO standard in air pollution control. Decision 249/2005/QĐ-TTg on Setting the Roadmap for Application of Emission Standards to Road Motor Vehicle stipulates that EURO-II equivalent (Tab.7-3) will be applied for second-hand automobiles imported into Vietnam from July 2006, and for all domestically produced or imported automobiles from July 2007. By the year 2025 all vehicles in Vietnam are required to satisfy EURO-V, a very strict standard that only advanced countries are now beginning to adopt. However, details of how EURO-II as well as higher levels of EURO standards will be introduced remain to be decided. The problem that Vietnam faces in emission regulation is not what must be attained in the long run, but how and at what speed the proposed roadmap should be realized.

Tab. 7-3 Maximum Emission Limits of Road Motor Vehicles

<i>Pollutants in exhaust gas</i>	<i>Vehicles fitted with spark ignition engines</i>					<i>Vehicles fitted with compression ignition engines</i>		
	<i>Automobiles</i>			<i>Mopeds motorcycles</i>				
	<i>Limit 1</i>	<i>Limit 2</i>	<i>Limit 3</i>	<i>Limit 1</i>	<i>Limit 2</i>	<i>Limit 1</i>	<i>Limit 2</i>	<i>Limit 3</i>
CO (% volume)	4.5	3.5	3.0	4.5	-	-	-	-
HCC (ppm volume)								
Four-stroke engines	1,200	800	600	1,500	1,200	-	-	-
Two-stroke engines	7,800	7,800	7,800	10,000	7,800	-	-	-
Special engines	3,300	3,300	3,300			-	-	-
Smoke opacity (% HSU)	-	-	-	-	-	72	60	50

Source: Appendix to the Prime Minister's Decision No. 249/2005/QĐ-TTg dated Oct. 10, 2005.

Notes: This table shows Vietnamese emission standards in steps to adopt EURO-II. Timing of implementation has not been specified so far. Special engines include Wankel engines and a number of other engines with structures different from those of piston engines which are widely used.

The EURO emission standards are primarily for automobiles. The upper-level EURO standards (EURO-IV and V) for motorcycles are not yet determined even in the EU. However, in Vietnam where motorcycles are the dominant source of urban air pollution, regulating emissions for automobiles while ignoring motorcycles greatly reduces the environmental policy impact. Vietnam should have a long-term emission control strategy for both automobiles and motorcycles. For automobiles, the EURO roadmap should be followed. For designing motorcycle emission control, the experiences and standards of neighboring countries such as Thailand and Taiwan should be studied, and expert opinions should be heard.

One important question is how to fully implement EURO-II, especially for motorcycles. At present, details or timing of implementation of EURO-II for motorcycles are not determined in Vietnam, although the issue is currently under consideration by the Vietnam Register. It is clear that urban air quality will not improve much if motorcycles are excluded from Vietnam's EURO roadmap. While new motorcycles must also comply with the standard, it is of utmost importance to regulate (and ban if necessary) ill-maintained old vehicles which are the worst polluters on

the road³³. To be effective, the EURO roadmap must encompass all motorcycles, both old and new, and have an inspection and maintenance system that is practical and comprehensive.

Another issue is whether EURO-III should be skipped. EURO-II and III can be satisfied mainly by mechanical improvements while EURO-IV and V must be achieved by the use of electronic technology. There is a significant jump from EURO-III to EURO-IV in both technology and anticipated environmental results. Under these circumstances, one option is to adopt EURO-II, III, IV and V sequentially, while another option is to skip EURO-III and move directly from EURO-II to EURO-IV and V³⁴. The gradual approach may look less burdensome for a developing country like Vietnam, but it is expected to generate a number of problems that increase transition and adjustment costs, such as frequent changes in anti-pollution equipment and the need to re-invest in refinery technology to upgrade fuel quality. In addition, needless to say, an earlier adoption of EURO-IV will provide cleaner air for urban citizens sooner.

Other Asian countries are also adopting stricter air pollution standards. Most of them are currently at the stage of EURO-I or II equivalent, except China, India and Thailand which are moving faster. However, targets are not always implemented as scheduled because of the lack of pre-conditions such as required fuel quality or an effective vehicle inspection system.

Based on the current commitment on EURO standards, Vietnam should draft a concrete and transparent roadmap with sufficient details and reasonable timing. To do so, consideration should be given to (i) environmental achievement which is as frontloaded as possible for the

³³ Currently, 40% of motorcycles in Vietnam are more than 8 years old, and 70% of cars are more than 10 years old. Meanwhile, leading motorcycle assemblers have begun to produce models that are already in compliance with EURO-II although this standard has not been adopted for motorcycles yet.

³⁴ One view, called the normal track, is to adopt EURO-II in 2007, EURO-III in 2012, EURO-IV in 2017, and EURO-V in 2022. The other view, called the fast track, calls for adopting EURO-II in 2007, EURO-IV in 2014, and EURO-V in 2020.

benefit of urban residents; (ii) coverage of all motorized vehicles including automobiles and motorcycles, whether used or new, domestic or imported; (iii) installation of required pre-conditions for effective implementation, namely fuel quality and inspection and maintenance (see sections below); and (iv) pre-announcement of a clear long-term roadmap to motorcycle producers and oil refinery operators in order to minimize transition and adjustment costs.

Fig. 7-2 Automobile Emission Standards for New Vehicles (Light Duty)

Country		95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09	10
EU	Euro 1	Euro 2					Euro 3					Euro 4			Euro 5		
Bangladesh ^a												Euro 2					
Bangladesh ^b												Euro 1					
Hong Kong		Euro 1	Euro 2					Euro 3					Euro 4 ^g				
India ^c								Euro 1				Euro 2	Euro 3	Euro 4			
India ^d						E1	Euro 2					Euro 3					
Indonesia												Euro 2					
Malaysia				Euro 1			Euro 2								Euro 4		
Nepal							Euro 1										
Philippines										Euro 1					Euro 2		E 4
China ^a								Euro 1			Euro 2			Euro 3		E 4	
China ^c								Euro 1	Euro 2	Euro 3	Euro 4 Beijing only						
Singapore ^a	Euro 1							Euro 2									
Singapore ^b	Euro 1													Euro 2			
Sri Lanka																Euro 1	
Taiwan						US Tier 1										US Tier 2 for diesel ^f	
Thailand	Euro 1						Euro 2				Euro 3						E 4
Vietnam														Euro 2			E 4

Source: CAI-Asia. May 2006.

Notes: *Italics* - under discussion; a - gasoline; b - diesel; c - entire country; d - Delhi and other cities: Euro 2 introduced in Mumbai, Kolkata and Chennai in 2001; Euro 2 in Bangalore, Hyderabad, Khampur, Pune and Ahmedabad in 2003, Euro 3 introduced in 10 mega cities since 2005; e - Beijing has adopted Euro 3; Shanghai and Guangzhou has requested approval of the State Council for implementation of Euro 3; f - Euro 4 for gasoline vehicles and California ULEV standards for diesel vehicles; g - gasoline vehicles under consideration.

7-6. Fuel quality

Fuel has direct influence on vehicle emission. Changing some components of gasoline or diesel changes vehicle emission. When a stricter emission standard is adopted, fuel becomes the key factor in making motorcycles cleaner, assuming that vehicle emission control technology remains unchanged. Since the same fuel is used for automobiles and motorcycles, it must satisfy the environmental needs of both vehicles.

The American Automobile Manufacturers Association (AAMA), Association des Constructeurs Européens d'Automobiles (ACEA), and the Japan Automobile Manufacturers Association (JAMA) jointly proposed the Worldwide Fuel Charter in January 1999, which classified gasoline and diesel into four categories:

The first category comprises fuels for markets with minimal requirements for emission control, in which fuels are considered only in terms of vehicle and engine performance.

The second category comprises fuels for markets with stringent requirements for emission control and other market demands (EURO-I and II).

The third category comprises fuels for markets with advanced requirements for emission control and other market demands (EURO-III and IV).

The fourth category comprises fuels for markets with further advanced requirements for emission control that enable sophisticated NOx technology.

Since Vietnam adopted EURO-I in 1998 for gasoline vehicles and in 2005 for diesel vehicles, its fuel falls into the second category. In addition, Vietnam switched from leaded to unleaded gasoline in 2001. The current fuel quality in Vietnam cannot meet EURO-II or higher standards because: (i) the sulfur content of gasoline and diesel is high; (ii)

the benzene content of gasoline is high; (iii) unleaded gasoline is not really lead-free; and (iv) engine oil contains phosphorus and sulfur.

In general, conforming to a higher emission regulation requires both vehicle emission control technology and corresponding fuel. To implement EURO-II or higher standards, Vietnam must have new standards and mechanisms to ensure suitable fuel quality for both domestic and imported oil products. New emission regulations must be synchronized with the improvement of fuel quality.

Tab. 7-4 Fuel Quality in Asian Countries

		<i>Lead</i>	<i>Sulfur (ppm)</i>	<i>Benzene (% v/v, max)</i>	<i>Aromatics (%)</i>	<i>Olefins (%)</i>	<i>Oxygen (% m/m, max)</i>	<i>RVP (kPa, max)</i>
China	Nationwide	Lead free	500	2.5	40	35	-	74
	Hong Kong	Lead free	50	1	42	18	2.7	60
India	Nationwide	Lead free	500	5	-	-	2.7	35-60
	Major cities	Lead free	150	1 and 3				
Bangladesh		Lead free	1000	-	-	-	-	68
Cambodia		Lead free	-	3.5	-	-	-	-
Indonesia		0.30g/l	2000	-	-	-	2.0 (premix)	62
Malaysia		Lead free	1500	5	40	18	-	70
Pakistan		Lead free	10000	5	40	-	-	62-69
Philippines		Lead free	1000	2	35	-	2.7	35-60
Thailand		Lead free	500	3	35	-	1-2	-
Vietnam		Lead free	5000 -10000	5	-	-	-	-

Source: CAI-Asia, 2005.

Note: In India, benzene content is 3% in metro areas and 1% in national capital region.

7-7. The vehicle inspection and maintenance system

Apart from fuel quality, the vehicle inspection and maintenance system is another key instrument for controlling vehicle emission. How this system actually operates greatly affects the vehicle's performance, including environmental impact.

Vehicle inspection can be classified into annual inspection, roadside inspection, random tests in parking lots, and inspection for road vehicles entering the city. Among these, annual inspection and roadside inspection are the most important. In Vietnam at present, vehicle inspection covers only automobiles. Inspection of motorcycle is considered by some to be infeasible due to limited equipment and human resources relative to the large number of motorcycles. However, since motorcycles are the largest source of vehicle emission in Vietnam, they must definitely be included if cleaner urban air is to be achieved and the EURO roadmap is to be realized in the future. Inclusion of old motorcycles is particularly important for this purpose.

Relevant authorities should begin to study appropriate method of motorcycle inspection. Ways should be devised to maximize environmental impact while minimizing administrative costs. A reasonable timetable should be set up for achieving this goal.

As with automobiles, motorcycles that fail to meet standards must be upgraded before they may be driven on the road. Such vehicles may be repaired in maintenance stations organized by motorcycle manufacturers or maintenance enterprises registered at the Department of Maintenance Management of the Vietnam Register. This means that manufacturers that sell motorcycles in the domestic market are required to build a system of maintenance stations capable of providing required maintenance services. Furthermore, all maintenance enterprises responsible for vehicular emission treatment must be equipped with a tailpipe exhaust analyzer and other necessary equipment.

Chapter 8

Intellectual Property Rights

8-1. Importance of protecting IPRs in the motorcycle industry

Infringement on intellectual property rights (IPRs) seriously harms the Vietnamese society in its development process in the age of integration. Protection of IPRs is the international requirement in global business. Moreover, IPRs concerning motorcycles and motorcycle parts are central to the IPR question in Vietnam because motorcycles are highly popular and visible in every corner of the country³⁵. In this sense, IPRs cannot be established in Vietnam unless IPRs in the motorcycle industry are properly protected.

The protection of IPRs in the motorcycle industry benefits consumers, producers and society in general.

Consumers are protected from being cheated into purchasing products which are unsafe, defective or low quality. Because the proper functioning of the motorcycle has a direct bearing on road safety, unaware consumers face the risk of death or injury in addition to having to put up with low performance and the trouble of frequent repairs and replacements.

Producers benefit from the healthy growth and competitive business environment of the motorcycle industry in general, and from the elimination of illegal copies of their models and the increased value and prestige of genuine products in particular.

Vietnamese society as a whole will also benefit. Successful protection of IPRs in the motorcycle industry will prepare a favorable background for and have spillover effects on the development of other industries.

³⁵ Intellectual property rights consists of industrial property rights and copyrights. In the case of motorcycles, only the former is relevant.

Protection of IPRs in an industry as important as the motorcycle industry will encourage creativity instead of unauthorized copying as the main engine of industrial growth, establish an early track record of WTO consistency in IPRs (especially in comparison with China), and build a good image of Vietnam as a latecomer country which plays by international rules.

Some argue that cheap copies should be allowed in developing countries to make industrial products available to the poor at affordable prices. This view is wrong because the existence of fake products not only harms consumers, but also prevents the dynamic growth of honest and competitive producers. The country which adopts such a strategy cannot have long-term growth based on skills and knowledge, or improve the living standard of the general population. It is also highly questionable whether the poor is really better off and can save money by purchasing fake products, if low performance, short product life, and high repair cost are taken into account. The poor are forced to buy cheap copies mainly because they do not have cash at hand and cannot borrow from anyone. This is a cash constraint problem which should be solved through the provision of consumer loans instead of permitting illegal copies.

8-2. IPR infringements in the motorcycle industry

IPR infringements in motorcycles is rampant in Vietnam. It occurs in manufacturing of parts, assembly, transporting and sales. However, accurate data is difficult to obtain because of the nature of the problem. Reported arrests are just the tip of the iceberg, as violators are far more numerous than official raids. The entire scope of IPR violation can only be estimated.

Honda and Yamaha motorcycles are the most popular targets of fakes and counterfeits. According to NOIP data, there were about 300 infringement cases related to motorcycles in Vietnam in the first six months of 2006³⁶.

³⁶ This is the latest data available from NOIP. On July 1, 2006, NOIP was discharged of the responsibility to make decisions on infringement cases.

According to another source, it is estimated that about 560,000 fake Honda motorcycles were sold in the first ten months of 2006 but only 5,986 were seized by the authorities.

Industrial IPRs have three principal categories: (i) invention (patent); (ii) trademark; and (iii) industrial design³⁷.

Invention—anyone other than the invention patent holder or the licensee is prohibited from using a technical solution similar to the patent, even if details of concrete structure may be different from the product of the patent holder.

Trademark—anyone other than the trademark holder or the licensee is prohibited from using any mark that is sufficiently similar and therefore may be mistaken as the registered trademark.

Industrial design—anyone other than the design patent holder or the licensee is prohibited from using outer shape that is not significantly different from the patented design.

By far, the most common infringements in Vietnam's motorcycle industry are industrial design, especially regarding external plastic cover, in which manufacturers or traders of low quality motorcycles use fake decors similar to originals. It is very difficult for law enforcement authorities to find production lines of fake products since manufacturers and traders usually assemble copies in secret places instead of registered factories. Only naked motorcycles, without exterior plastics, are in their factories to avoid persecution. Another common way of violating companies is to produce visibly different models from the ones they register. Illegal copies can be sold with impunity since photo verification is not required at the point of sales. In addition, dishonest producers even blame enforcement authorities and complain to the public that their arrest was unlawful and caused only by inconsistent policies among concerned authorities such as Vietnam Register, MMDs, and police.

³⁷ The right to fight against unfair competition, in which the creator takes an action to stop other people from abusing the creator's achievement to compete unfairly, such as unauthorized use of unpatented design, is an IPR component which is also recognized internationally. However, this right is not stipulated in the current intellectual property law in Vietnam, and therefore it is not included in this master plan.

Patent infringements in Vietnam mainly occur in the unauthorized use of clutch release mechanism and frame structure.

Trademark infringements are common in sales rather than in manufacturing. Violating shops display signboards or decoration indicating that they are authorized dealers of Honda, for example, when they are not.

IPR infringements are spread all over the country although degrees may vary across provinces. Informal survey conducted by motorcycle companies in 2006 classified the frequency of spotting IPR infringements at retail outlets into three levels--widespread, average and few. A large number of motorcycle dealers that sell fake Honda products were found all over Vietnam except some Northwest Mountain provinces, such as Lai Chau, Lao Cai, Tuyen Quang and Cao Bang, where motorcycle sales are relatively low.

In 2005, the Prime Minister assigned the Ministry of Industry (MOI) to conduct a national survey on the situation of IPR infringements in the motorcycle industry. Since this was conducted through pre-announced visits to factories, discovered infringements greatly understated what really went on. Nonetheless, the survey's general conclusion was that violation was related to Chinese technology and it was mainly in the form of design infringement. One FDI company appeared to be the principal source of illegal parts manufactured in Vietnam. However, since the survey was conducted by MOI alone, which did not have the authority to inspect joint venture companies (only MPI has such authority), the survey team could not visit this company for investigation.

8-3. Actions by government and producers

The government is taking actions to prevent and punish IPR infringements. Producers are also implementing measures to prevent others from violating their IPRs. However, the protection level of IPRs in Vietnam still remains low. This is partly because Vietnam is a latecomer in global business interaction with little experience in dealing with IPRs and

partly because there is no agency which has sufficient power to cope with the issue in a comprehensive manner.

Legal framework

The law and decree stipulating IPR related issues in Vietnam are the Law on Intellectual Property dated November 29, 2005 and Decree No. 105/2006/NĐ-CP and 103/2006/NĐ-CP on State Management of Intellectual Property. The new law on intellectual property came into effect on July 1, 2006, partly to address the problems under the old law and partly to fulfill requirements of WTO accession. Previously, violations were rampant and punishment was light. Although the implementation decision for the new law has not been issued as of May 2007 and its application is thus pending, the new law, when it is fully implemented, is expected to strengthen law enforcement.

Overall, Vietnam's legal framework for protecting IPRs is sufficiently developed and at international levels. However, there are some shortcomings in actual implementation: authority is decentralized, some clauses are considered too advanced for Vietnam, and there are other issues that merit discussion.

Decentralized authority

One salient feature of Vietnam's IPR organizations is decentralization. The power to oversee IPR related issues is diversified across many official bodies as follows (see Tab.8-1 for details):

- National Office for Intellectual Property (NOIP) and Inspection Department under the Ministry of Science and Technology
- Market Management Department (MMD) under the Ministry of Trade
- Economic Police (EP) under the Ministry of Police
- Ministry of Industry
- Vietnam Register under the Ministry of Transport
- Provincial People's Committees
- Steering Committee 127

No single organization takes the leading responsibility in coordinating IPR protection in the motorcycle industry, which causes problems and inconsistencies in coping with infringement. Moreover, under the new law, decentralization has accelerated further. The authority to examine violation was moved from NOIP to a number of enforcement bodies such as Market Management Department (MMD), Economic Police (EP), Customs, etc. This may be justified from the viewpoint of division of labor among related bodies and building capacity at each enforcement organization. On the other hand, however, this increases the risk of inaction or inconsistent action against IPR infringements, because individual enforcement bodies at present lack skills and experience to take over the role of examining violation, and therefore they may decide punishments which are mutually inconsistent.

For example, under MOST which handles industrial design issues, NOIP is supposed to function as a central organization to make final judgments on difficult cases only, while individual violations are regularly to be dealt with by 64 Departments of Science and Technology (DOST) offices at the provincial level. In practice, however, DOSTs are mostly preoccupied with establishing IPRs rather than protecting them. Therefore, all violation cases are referred to and handled by NOIP in Hanoi, which overburdens it.

MMD in each province is under the direction of its People's Committee. MMD's budget is also allocated by the People's Committee. In some cases, local leaders who are interested in promoting local industries are not very keen on solving IPR infringements in the motorcycle industry. This leads to weak implementation of the intellectual property law at the provincial level.

Tab. 8-1 Authority of IPR-related Organizations

	<i>Judge violation</i>	<i>Inspect</i>	<i>Decide punishment</i>	<i>Strength</i>	<i>Weakness</i>	<i>Issues</i>
National Office for Intellectual Property (under MOST)	No more	No	No	Expertise	No more enforcement functions	
Inspectors (under MOST)	Yes but executed only infrequently	Yes	Penalty up to VND 5 million; Chief Inspector can give penalty up to VND 20 million	Authority to inspect anytime, anywhere	Small personnel in ministerial level; weak power in local level	Few inspections conducted
Minister of MOST	Yes but executed only infrequently	Yes	Penalty up to VND 20-100 million	Authority to penalize serious cases	Too busy with other issues	
Market Management Department (under MOT)	Yes but executed only infrequently	Yes	Financial penalty	Authority to inspect anytime, anywhere	Investigation	Budget and human resource constraints; response only to requests by IPR holders
Economic Police (under MOP)	Yes but executed only infrequently	Yes	Financial penalty	Investigation	Complicated procedure (by law)	Budget and human resource constraints; response only to requests by IPR holders
Ministry of Industry	No	Yes	Order to stop production	Authority to prevent violation at every stage of project	Inspection only in response to order or request	Checking prior to granting production permit only; inability to examine FDI suppliers which are under MPI's authority
Vietnam Register (under M of Trans)	No	Yes	Suspend model approval	Authority to prevent violation at initial stage	Inspection only in response to order or request	
Provincial PCs	No	No	Penalty up to VND 10 million	Local power and guidance to local MMDs	Inspection only in response to order or request	Tendency to avoid heavy penalty to violators
Steering Committee 127 (inter-ministerial under M of Trade chairmanship)	No	Yes	Penalty up to VND 10 million	Coordination	Too many industries	Weak coordination with local authorities; Issuance of document that limits MMD's power to examine infringements in transit.

Steering Committee 127, an inter-ministerial body, is responsible for coordinating activities of all related authorities. However, its coordinating function has not fully developed. On the other hand, the Committee issued Document 4880 dated October 2005, stipulating that MMD can stop and inspect a vehicle transporting illegal motorcycles only if there is clear evidence in advance that it is doing so. This severely limits the authority of MMD to stop suspicious vehicles.

Another requirement that reduces MMD's capability under the new law is the stipulation that all receipts of penalties be transferred to the state budget. Previously, MMD could retain 7% of penalties for conducting investigation of IPR infringements.

Light penalties

Police and other authorities destroy plastic parts, front covers, mud shield and other exteriors of fake motorcycles when they are seized. However, the average fine is small (about 160,000VND per vehicle) compared with the sales price of the vehicle and thus does not significantly deter violators from repeating the offense. Moreover, seized motorcycles can later be refitted with new plastic and other exterior parts for sale. This is quite different from and much lighter than international practice. In Malaysia, for example, the authorities destroy fake motorcycles completely.

On the other hand, in 2005, NOIP switched to the "double protection" of both overall design and part design in conformity with international practice. Previously, NOIP only allowed overall design to be protected, which prevented the punishment of producers of illegally copied parts³⁸.

The role of civil court

The current law stipulates that the civil court should settle IPR related cases. Only those violations that are "significantly harmful to society," namely those in food and medicine, are to be dealt with by administrative raids and penalties (Article 23.1.d). All other violations are to be solved

³⁸ At present, thanks to reverse engineering, almost all fake motorcycle parts for assembly in Vietnam are made in Vietnam, unlike previously when Chinese parts were imported. Because of this, illegal parts must be eliminated through domestic raids and penalties rather than seizure at customs inspection points.

through the civil court because administrative raids and penalties require too many evidences to be collected (Article 23.1.b, c, e; also see Decree 105-2006/ND-CP dated Sept 22, 2006). As a result, illegal motorcycles are no longer a priority target of NOIP.

The role of the civil court in settling IPR-related disputes is well established in advanced countries where IPR infringements are relatively rare, the civil court has long experience in judging such cases, and enforcement is very effective. Under such circumstances, IPR infringements can be regarded as a civil matter between related parties with no substantial damage in social order or the nation's competitiveness. Even in such cases, the law does not specify which particular fields or industries damage society more than others.

In Vietnam, by contrast, IPR infringements are widespread, the civil court has not yet started hearing IPR cases, and enforcement needs to be guaranteed in the future. It is also fairly clear that IPR infringements are a central problem in Vietnam harming consumers' rights and the healthy development of industries. While activation of the civil court is a reasonable goal in the long run, Vietnam also needs a more practical strategy to reduce IPR infringements in the transition period. The traditional method of administrative raids and penalties should not be ruled out as an important component of such strategy.

The official statement that IPR infringements in only food and medicine are significantly harmful to the society, but not those in cosmetics, gas cookers, motorcycles, etc. is not rational. This may even give the wrong signal that infringements in other industries are less serious and can be tolerated.

Another problem in Vietnam is the absence of cumulative concrete cases on which new cases can be judged. In IPR-related disputes, there are no globally common quantifiable criteria to decide which products are original and which are imitations. Criteria for similarity must be built up in each country by the accumulation of experts' evaluation on similar cases over the years. In Vietnam, it will take time to develop such judgment capability.

In the future, when the judiciary system is strengthened to judge IPR-related cases, different courts should be available depending on the type of violation, including a special court for IPR-related cases, civil courts, criminal courts, and administrative courts. Trademark infringements can be brought to the criminal court since the offense combines both IPR infringement and infringement of consumers' rights. By contrast, unauthorized copying of industrial design constitutes IPR infringement only. Whether the case should be dealt with administratively or brought to the criminal court depends on the degree of "seriousness," whose criteria must also be established in each country by responding to actual situations³⁹.

Producers' actions

To protect themselves from IPR infringements, leading FDI assemblers in Vietnam are taking the following measures: (i) market investigation and taking photos of illegal copies; (ii) training courses for law enforcement officers to improve their ability to spot violating vehicles; (iii) producing evidence and bringing violators to law authorities; and (iv) PR campaigns through TV and magazines as well as exhibitions comparing originals and copies to raise popular awareness.

These self-protection measures incur costs for producers. They are forced to act on their own since the current IPR enforcement is ineffective. Ideally, public agencies should take the lead in effectively enforcing IPRs, while producers should cooperate with the government as partners.

8-4. Establishment of an industry association

It is common international practice to establish an industry association with the participation of manufacturers of a certain industry in that country. Such an association performs various functions which are

³⁹ In China, previously a company was brought to the criminal court after violating IPR laws three times. Recently, the rule was changed to bring a company to the criminal court if it made an illegal profit greater than 50,000 RMB.

beneficial to member companies, such as data collection, symposiums and trade fairs, programs to improve productivity and competitiveness, interface with policy makers, public relation activities, international cooperation, and so on.

At present, Vietnam does not have an industry association that exclusively and comprehensively represents the interest of all motorcycle producers. As a result, above-mentioned functions are largely absent for the motorcycle industry. To receive technical assistance or strengthen international cooperation, such an association is a must. For instance, Vietnam currently cannot join the Federation of Asian Motorcycle Industry (FAMI), a regional organization consisting of seven countries and areas, because an eligible association does not exist in Vietnam. Cooperation with the Japanese government or the Japan Automobile Manufacturers Association (JAMA) will also be made easier if there is such an association on the Vietnamese side.

The existing two associations, namely the Vietnam Bicycle and Motorcycle Association (VBMA) and the Vietnam Automobile Manufacturers Association (VAMA), only partly cover the interest of the motorcycle industry. VBMA has no participation by FDI companies and VAMA mainly promotes the interest of the automobile industry.

With an increasing size of Vietnam's motorcycle industry, such an industry association should be set up in Vietnam as a matter of priority. This can be done either by creating an entirely new association or restructuring one of the existing associations. In either case, FDI assemblers should take a lead in light of their dominance in Vietnam's motorcycle market.

8-5. Targets and policy directions

Two policy targets are advanced as follows.

First, domestic suppliers which produce illegal motorcycle parts should be eliminated completely, regardless of nationality or ownership type of the supplier, by 2010.

Second, there shall be no IPR infringements of any kind in the motorcycle industry in Vietnam's territory by 2015.

In order to attain these targets, the following policy directions are proposed.

- Coordination among public authorities must be strengthened encompassing NOIP, MMD, Economic Police, Vietnam Register, courts, MOI, MPI, Provincial People's Committees, and Steering Committee 127.
- Strong public-private partnership should be established, in which producers cooperate closely with public authorities and support policy targets set forth above. Top leaders of concerned businesses should be involved deeply.
- Punishment for IPR infringements should be made more severe to a level which effectively deters IPR-related crimes.
- Protection of IPRs in the motorcycle industry should be one of the top priorities of MMD and Economic Police. Protection must cover not only sales and distribution but also manufacturing, which includes assembly and part production.
- The intellectual property law should continue to be reviewed and revised as necessary and as experience is accumulated⁴⁰. The law should be implemented effectively and without exceptions.
- The Vietnam Motorcycle Manufacturers Association (tentative name) should be established with the participation of both FDI and Vietnamese producers in both assembly and part supply. This association should become the main channel through which international cooperation for the motorcycle industry is received.

More specifically, the following concrete measures should be considered.

⁴⁰ Based on the Chinese experience after the accession to WTO, a JAMA expert stated in February 2007 that the intellectual property law needed to be revised every five or ten years to catch up with changing situations and improve implementation.

Inter-ministerial actions

- Steering Committee 127 should request Provincial 127 Committees to eliminate illegal motorcycles in all cities and provinces.
- Steering Committee 127 should abolish Document 4048, which requires MMD to secure sufficient evidence of IPR infringement before stopping motorcycle-transport vehicles for inspection.
- The government should set up an inter-ministerial taskforce to regularly examine the situation of IPR protection in all motorcycle companies in Vietnam, including domestic and FDI companies, as well as assemblers and part suppliers. All related government ministries and agencies should participate in the delegation.

IPR-related bodies

- MMD and Economic Police should be given the leading role in dealing with IPR infringement cases. To support them, the following programs should be conducted for MMD and Economic Police: (i) training courses with instructors from NOIP, producers and international experts; and (ii) follow-up activities to assist them to make actual IPR punishment decisions.
- Budget should be allocated directly to MMDs. In addition, 7-10% of fines collected for IPR infringements should be retained by MMDs for their activities.
- The Vietnam Register Office should stop registering fake motorcycles.
- Traffic Police should have the authority to stop and confiscate any fake motorcycles on the road or in the market.

Law and its implementation

- The policy of separate treatment of IPR infringements of food and medicines on the one hand and all other products on the other in the current intellectual property law (Article 211 Point 1 Item a) should be revised . Each relevant ministry or agency should

decide which IPR infringements are serious based on actual situation.

- Fines for IPR infringements in the motorcycle industry should be revised and implemented effectively. In principle, the fine should be 1-5 times the value of the original motorcycle with genuine parts, not 1-5 times the value of the motorcycle which uses fake parts.

Industry association

- FDI companies should take the lead in establishing an industry association which includes both FDI companies and Vietnamese companies.
- The industry association, in cooperation with FAMI, should launch an IPR Communication Program for motorcycles in Vietnam to raise the public awareness on the matter and improve the effectiveness of law enforcement.
- The industry association should organize the following activities for its member companies: (i) encouragement of licensing between Japanese and Vietnamese producers; (ii) dispatch of Vietnamese members to Japan to deepen the understanding of IPR-related issues; (iii) assistance for its members to establish an intellectual property department and implementation of the intellectual property law; and (iv) organize regular meetings between its members and government authorities.

IPR court

- Steering Committee 127 should propose to the Parliament the establishment of a court specializing in IPRs to take over this responsibility from local civil courts which are not familiar with the issue.

Chapter 9

Policy Measures

9-1. Introduction

Some of the policy directions proposed in chapters 4-8 are presented with concrete targets and action plans below. While all proposed policy directions in previous chapters are desirable, only 12 of them are included here. This selectivity comes from the need to execute and follow up each proposed policy measure adequately under the currently limited human resources, budget and institutional preparation for policy implementation.

A number of action plans may require external assistance including foreign expertise and financial support. Vietnam should explore the possibility of such assistance whenever necessary. Active cooperation of motorcycle manufacturers in Vietnam is particularly important. Official assistance from bilateral and multilateral donors should also be sought. Some action plans may be outsourced from the private or non-government sector for efficiency and effectiveness.

9-2. Measures, targets and action plans

Measure 1. Incentives for investment and training in supporting industries (chapter 4)

<Overall objective>

Introduce incentive measures for promoting supporting industries in assembly-type manufacturing industries, in which the motorcycle industry is expected to take a leading role.

<Target and action plans>

Target 1-1. Introduce incentive measures which are sufficiently competitive vis-à-vis other East Asian countries from the viewpoint of potential foreign investors in supporting industries. Incentive measures are initially targeted at pressing, casting, forging, welding and production of dies and molds.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	For targeted activities, introduce corporate tax exemption for 6 years after the first year of profit	MOF
2008	For targeted activities, introduce 100% import tariff exemption for machinery import	MOF
2008	For targeted activities, introduce 50% subsidies for training of Vietnamese managers, engineers and workers	MOF

Measure 2. Create a new mechanism to receive and utilize foreign experts more effectively (chapter 4)

<Overall objective>

At present, knowledge of visiting foreign experts in the manufacturing sector are sometimes not fully utilized due to the lack of sufficient preparation, needs-matching, timely dispatch, and review and followup. Effectiveness of foreign expert dispatches in the manufacturing sector should be enhanced by creating a receiving mechanism which minimize these problems and maximize learning from foreign experts. At the same time, there should be an effort to link retired or retiring Japanese experts with Vietnamese companies that want to receive them.

<Targets and action plans>

Target 2-1. A new mechanism should be set up in Vietnam to coordinate demand and supply of foreign expert dispatch services.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	A report on the assessment of the current situation and proposal for improvement	MOI, MPI
2009	Establish a new foreign expert receiving mechanism, preferably in the form of public-private cooperation	MOI, MPI, donors

Target 2-2. Establish a mechanism to receive retired Japanese managers and engineers with high skills in manufacturing to level up Vietnamese factories (this may coincide with the mechanism mentioned in Target 2-1 above).

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	A report proposing concrete targets and actions	MOI, MPI
2009	Establish a new mechanism for this purpose, preferably in the form of public-private cooperation	MOI, MPI, donors

Measure 3. Strategic FDI marketing for strengthening supporting industries (chapter 4)

<Overall objective>

Vietnam should become a favored destination for foreign SMEs with high-tech capability in supporting industries.

<Target and action plans>

Target 3-1. Draw up and effectively implement a strategy to absorb narrowly targeted foreign enterprises to strengthen Vietnam's supporting industry base. The strategy should include improvements in procedure, focused vision and targets, better FDI marketing and production-related infrastructure and services.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draw up a strategy for receiving FDI part suppliers in specific sectors or from specific foreign regions	MPI, MOI
2009	Prepare industrial parks or rental factories specifically designed to receive targeted FDI part suppliers (Hoa Lac High-tech Park may be considered as one candidate)	Designated locality
2009	Activate FDI marketing based on prepared strategy and receiving locations	Designated locality

Measure 4. Building a supporting industry database in conjunction with business matching service between FDI assemblers and local suppliers (chapter 4)

<Overall objective>

To narrow the information and perception gap between FDI assemblers and Vietnamese suppliers, a supporting industry database should be created, and FDI-local business matching service should be initiated. Moreover, these two activities should be synchronized and integrated as one.

<Targets and action plans>

Target 4-1. Create and maintain a supporting industry database. It should be designed and operated to attract both buyers and sellers in a sustainable way.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	A report on the effective design and implementation of a supporting industry database combined with business matching service	MPI, MOI, VCCI
2008	Establish a supporting industry database on a pilot basis	Designated organization
2009	Review initial operation, make revisions as necessary, and expand the database to include more companies	MPI, MOI, VCCI

Target 4-2. Establish business matching service between FDI firms and local suppliers in close coordination with the supporting industry database.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Establish business matching service on a pilot basis	Designated organization
2009	Review initial operation, make revisions as necessary, and expand the service to include more companies	MPI, MOI, VCCI

Measure 5. Creating pilot institutions for practical technical and vocational education and training (chapter 4)

<Overall objective>

Upgrade a small number (2 or 3) of technical colleges and vocational schools to become pilot institutions which can deliver adequate education and training in response to the actual requirements of the industrial labor market, especially the labor market for supporting

industries. Targeted fields include, but are not limited to, pressing, casting, forging, welding, and production of dies and molds. For this purpose, a close and continuous cooperative mechanism between training institutions and manufacturers that may hire students upon graduation should be established.

<Targets and action plans>

Target 5-1. Formulate and implement the National Policy Framework for Development of a Profession-Oriented Education System at technical colleges and vocational schools.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	A National Policy Framework for Development of a Profession-Oriented Education System is drawn up and approved	MOET
2009	Establish a coordinating unit for overseeing and assisting a consortium of pilot institutions to achieve the project aim	MOET
2009	Review the requirements of targeted manufacturing labor market and reflect the results in policy	MOET

Target 5-2. Implement profession-oriented education and training at selected colleges and schools, including collaborative training programs between training and businesses, learning "best practices," mobilizing foreign experts and targeted firms' managers and engineers, and improving facilities and equipment. Disseminate their methodology and materials to other education and training institutions.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Select a small number of pilot institutions	MOET, MOI
2008	Set up a committee consisting of educational experts and targeted businesses to advise on improvements	Pilot institutions
2009	A report on current assessment on teaching staff, curriculum and materials based on graduates' competency in targeted businesses, with proposals for improvements and revisions	Pilot institutions
2009	Begin to introduce proposed programs in steps	Pilot institutions
2011	Review initial results and begin to disseminate project results to other technical institutions	MOET & pilot institutions

Measure 6. Testing centers for assembly-type manufacturing industries (chapter 4)

<Overall objective>

Vietnam should have testing centers that serve the needs of the motorcycle industry.

<Target and action plans>

Target 6-1.

Existing testing centers should be strengthened and, if necessary, new testing centers should be established to conduct testing of products, parts and materials related to the motorcycle industry through provision of necessary equipment and technical assistance.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2009	Establish a sufficient number of testing centers that conduct testing services for the motorcycle industry	MOI, MOST, STAMEQ?

Measure 7. Introduction of time-based parking fees on roads and sidewalks in urban centers (chapter 5)

<Overall objective>

Traffic order should be restored and traffic congestion should be ameliorated in urban centers while at the same time revenue is collected for further traffic management.

<Target and action plans>

Target 7-1.

Time-based fee collection on street parking of motorcycles and automobiles should be introduced in Hanoi and HCMC.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draft a plan for a time-based parking system and pre-announce to people and businesses	MOP, Hanoi, HCMC
2008	Introduce this system on a pilot basis in Hanoi and HCMC	MOP, Hanoi, HCMC
2009	Review initial results, make revisions as necessary, and expand the system to larger areas	MOP, Hanoi, HCMC

Measure 8. Vehicle entry regulation in Hanoi's Ancient Quarter (chapter 5)

<Overall objective>

Reduce traffic hazard and congestion and restore safe and tranquil atmosphere in the Ancient Quarter of Hanoi for the purposes of cultural preservation, tourist attraction and better living condition.

<Target and action plans>

Target 8-1.

In steps, the Ancient Quarter of Hanoi should become an area mainly of pedestrians and non-motorized vehicles, except minimum residential and commercial traffic. The policy should cover vehicle entry, speed limit, parking, and resident and business exemptions.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draft a study on traffic management in Hanoi's Ancient Quarter	Hanoi PC
2009	Begin to enforce new traffic management in Hanoi's Ancient Quarter in steps	Hanoi PC

Measure 9. Revising regulation on motorcycle drivers' licensing and motorcycle riding (chapter 6)

<Overall objective>

Improve motorcycle riding to restore order and reduce traffic conflicts and accidents, with an aim to become a model country of orderly use of motorcycles.

<Target and action plans>

Target 9-1.

New traffic management should be introduced and strictly enforced for motorcycle riding in Vietnam.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draft a study on regulating motorcycle riding covering licensing, helmet use, riding manner, road use, and so on (see chapter 6)	MOTransp, MOP
2009	Enforce new regulation in steps	MOTransp, MOP
2009	Initiate stepped-up public education on safety driving through joint effort of relevant authorities and businesses	MOTransp, MOP, businesses

Measure 10. Prepare necessary conditions for implementing the EURO roadmap (chapter 7)

<Overall objective>

Improve fuel quality, the vehicle inspection and maintenance system, and the ambient air quality monitoring system as pre-conditions for effectively implementing the EURO roadmap on air pollution regulation for both automobiles and motorcycles, starting with EUROII and moving up to higher levels.

<Targets and action plans>

Target 10-1.

Establish and enforce fuel quality control in a way consistent with the proposed EURO roadmap.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	A survey on the fuel quality of imported oil products and retail market	MOTransp, STAMEQ, GdoCs
2009	Design and begin to implement higher standards of fuel quality in line with future EURO roadmap	MOTransp, MOST, STAMEQ

Target 10-2.

Strengthen the vehicle inspection and maintenance system in a synchronized way with the EURO roadmap.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Initiate on-road site emission testing	VR, MOP
2008	Draft a plan for periodic inspection of motorcycle emissions and compulsory maintenance (initially for Hanoi and HCMC)	VR, MOP, MOTransp
2009	Implement periodic emission inspection and maintenance of motorcycle, with effective administrative measures for noncompliance	VR, MOP, MOTransp

Target 10-3.

Strengthen the urban air quality monitoring system.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Establish an air quality monitoring system in Hanoi and HCMC for continuous monitoring	MONRE

Measure 11. Establishment of an industry association comprising all motorcycle manufacturers in Vietnam (chapter 8)

<Overall objective>

Establish an industry association that serves the interests of motorcycle assemblers and suppliers in Vietnam.

<Target and action plans>

Target 11-1.

Create an industry association that provides information service, surveys, technology transfer, coping with social issues, dialogue with policy makers, international cooperation, and so on, for motorcycle assemblers and suppliers in Vietnam. MOI should support its creation.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draft a plan to establish an industry association through close consultation among producers in the motorcycle industry in Vietnam, with MOI assistance	MOI, related businesses
2009	An industry association should be established	Related businesses
2009	Proposed activities, including monitoring of this master plan (see section 9-3 below) and international cooperation, should be started	Industry association

Measure 12. Eradication of illegal motorcycles and illegal parts in Vietnam (chapter 8)

<Overall objective>

Vietnam should fully protect industrial property rights related to motorcycles.

<Target and action plans>

Target 12-1.

Vietnam should become a country free of illegal motorcycles by 2015. This shall be achieved by joint effort of authorities and producers in strategy formulation, institutional improvement, public education, and strict policing and persecution.

<i>By</i>	<i>Action</i>	<i>Actor(s)</i>
2008	Draft a strategy to eradicate illegal motorcycles and parts	VR, MOP, MOI, businesses
2009	Initiate joint effort of authorities and producers in public education, policing, and persecution	VR, MOP, MOI, businesses
2010	Domestic production of illegal motorcycle parts should be eliminated	VR, MOP, MOI, MPI
2015	Any production, import, sale or use of illegal motorcycles, both old and new, should be eliminated	VR, MOP, MOI

9-3. Monitoring

Overall progress in implementing these measures should be monitored and reviewed jointly by the government and the industry. On the government side, the Ministry of Industry (Department of Mechanics, Chemicals and Metallurgy) shall take the responsibility for this task. On the industry side, the proposed industry association of motorcycle manufacturers will take the responsibility. Until the time such an association is established, MOI shall take the responsibility of monitoring and review, in cooperation with manufacturers, industrial experts and academic institutions as necessary.

The first progress review shall be conducted one year after the approval of this master plan. The second progress review shall be conducted three years after the approval of this master plan. Each review should produce a report which contains the current status of implementation of each action plan, overall progress assessment, and proposals for policy revision if any.