

## **BANGKOK TRANSPORT SYSTEM DEVELOPMENT: WHAT WENT WRONG?**

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**Abstract:** This paper traces the history of Bangkok's transport system development. Its primary objective is to draw conclusions that might serve as lessons for future transport planning. It presents what Bangkok has experienced, and how the administration has dealt with problems. The study reveals that due to past policies, the motorcar has had an extreme influence on the Thais and has gradually transformed Thai society and redefined Thai ways of life. The analysis shows that Bangkok has always focused on attempting to maintain private car travel speeds with virtually no consideration for public transport and environment. Sustainable development and active land-use control have never been an issue until recently. The paper observes that Thai society has accepted too easily western concepts without thorough considerations of the appropriateness to the Thai culture. And, due to constant coordination problems, the paper suggests that Thailand's planning standards and working/implementation processes require major overhaul.

**Key Words:** Bangkok transport history, transport system development, transport plan

### **1. INTRODUCTION**

For generations, the uncontrolled development of Bangkok has taken place without parallel development of a strong social infrastructure, rendering many serious problems to Thai society. One of the most important and widely known is traffic congestion. Many experts from various local and international agencies have been applying their expertise in trying to solve Bangkok traffic problems; nevertheless the problems stubbornly remain, becoming ever stronger, complex and difficult to manage. At present, the problems are responsible for a deterioration of all aspects of our society and ways of life: social and culture, politics, economics and environment, and are degrading our quality of life.

What actually went wrong in Bangkok? Why can't Bangkok traffic problems be alleviated like many other developed countries? To answer these questions we need to scrutinize our past record. This is to answer ourselves what really happened and to spell out what should be the next moves for future development. It is expected that such scrutiny could provide relevant information for the authorities to realize the waste of resources input into Bangkok's transportation sector. The results should also serve as useful lessons for other countries in the region suffering from similar problems.

### **2. OBJECTIVE AND SCOPE**

This study intends to investigate the cause (s) of Bangkok traffic problems. It tries to cover as many aspects of transport system development as possible: social and culture, politics, economics, and environment. The study presents a chronology of transport system

development along with the implementation decisions and constraints at the time. It explains the development situation through each major Bangkok era. The study discusses the past Bangkok plans and comments on the development problems. Though the study tries to analyze various aspects of transport system development, there are some limitations due to the unavailability of the data. Certain issues will have to rely on recent information. The study also provides some evaluation results, for example, from the recently-passed development plan “The 8<sup>th</sup> Transport Plan (1997-2001)”, which in typical Bangkok style aims to follow up transport studies with an implementation plan, and to demonstrate ways and ideas behind how the existing planning authorities work.

### 3. BANGKOK METROPOLITAN REGION

The Bangkok Metropolitan Region (BMR) area comprises Bangkok Metropolitan Area (BMA, sectors 1-6) and its adjacent provinces, namely Samut Prakarn (sectors 7-8), Nonthaburi (sectors 9-10), Pathumthani (sectors 11-12), Nakhon Pathom (sector 13) and Samut Sakhon (sector 14), covering 7,758 sq km (Figure 1). The 200 sq km central area of Bangkok covers the old CBD (sector 1) and the high-density business areas (sectors 2 and 3). All are located within the middle ring road (MRR). Bangkok’s transport network and the proposed sub-centers (shown in dark circles) along the outer ring road (ORR) are presented in Figure 2.

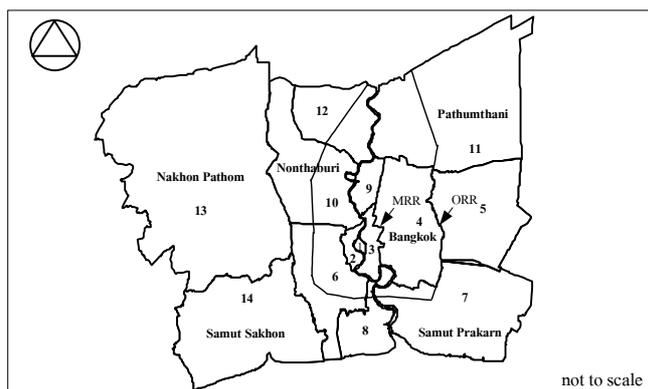


Figure 1. BMR Area

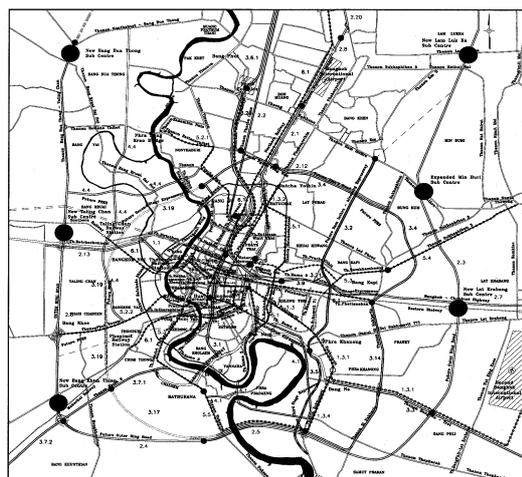


Figure 2. Bangkok Transport Network

### 4. BANGKOK DEVELOPMENT AND PROBLEMS

#### 4.1 Prior to 1900: A Change to Road-Based Transport

Long prior to year 1900, everyday life in Bangkok centered around rivers and canals. People preferred to install their homes on stilts along the riverbanks and in boathouses (Korff, 1986). This lifestyle can still be seen throughout Bangkok’s waterway network. The built-up area was densest along the riverbanks and sparser elsewhere. Life was simple. Thai culture and all the living standards and needs were naturally based on the provisions from the river. People developed their ways of life and built up their skills, knowledge, culture and even their wisdom by learning from the river. It was felt that the river had significant influences on people’s everyday life. Moreover, for security reason, the rivers and canals served as the main barrier protecting the city capital (Beek, 1995). The Chao Phraya River that runs through the heart of Bangkok also served this purpose for some time.

As regards transportation, similar to many countries in the region, water transportation was initially the principal means of travel in Bangkok. With a rather comprehensive waterways network in this water transportation era, Bangkok gained a reputation as “Venice of the East” (Ross and Pongsomlee, 1995). The traditional and peaceful life has often been referred to with nostalgia coupled with a sense of loss in many city development debates. Water-based transport had fulfilled a primary role in promoting and guiding town development for almost a century since the establishment of Bangkok in 1782, not to mention its importance dating back in the Ayuttaya period between 1350-1767.

Until the mid 1800s there were two facets to Thailand’s relations with the rest of the world. On the one hand, Thailand was intent on avoiding colonization while engaging in trade; on the other hand, Thailand was willing to modernize the country and to accept the western concepts and technologies that facilitated this. From that day, western influences have never ceased affecting Thai society.

During this period, in response to foreigners’ complaints on travel conditions around the city, Bangkok made an important decision. The authorities started constructing roads and bridges in the city (Bhamorabutr, 1987; Montgomery and Warren, 1994). Bangkok expanded into rural areas, and people, began to install their houses along roads instead of along the riverbanks (Suthiranart, 2001). Reliance on water transport gradually gave way to reliance on a road-based transport system.

Although there was more canal excavation in Bangkok, the lead role of waterways for Bangkok’s transport needs was decreasing. The glory of water-based transport faded out in this period. Boats were quickly replaced by the more speedy road-based transport system, such as the rickshaw which started running in 1871, then the horse-drawn tram in 1888.

Bangkok gained its first railway and electric tramway in 1891 and 1894 respectively, approximately ten years prior to the introduction of the first “motorcar”. Transport by rail was always less attractive because of its inadequate service coverage and poor quality. Unlike many European cities where rail transit performs a vital role in town development and as a people mover, the Bangkok tram services seemed to be rather irrelevant.

If this period is regarded as an opportunity for the country to take advantage of foreign technologies and ideas to develop a working/learning process and solid foundation for the future, then it must be admitted that the authorities failed to grasp it. This failure continues to have many negative consequences for Thai society, including the ways of life and thoughts.

#### **4.2 During 1900 – 1960: The Roads**

After the invasion of the motorcars in 1902, the authorities constructed more roads to accommodate increasingly road-based travel needs. The city limit expanded linearly along the new roads. Urbanization without proper planning regulation unceasingly accompanied road construction, resulting in ribbon development. This phenomenon continues to the present day and causes tremendous problems to the city.

In this period, it was noticed that the golden age of the water-based transport had really passed. From 1915, there were no new canals excavated in Bangkok (Beek, 1995). Road transport became more and more popular. Bangkok was developing towards an automobile-dependent city without realizing it.

Also during this period, the world faced a huge conflict: the World War II. After the war, many Asian and other developing countries including Thailand were faced with massive reconstruction. The world economy, including Thailand, had stagnated for almost a decade (Suthiranart, 2001). Any foreign aids or support provided were eagerly accepted without hesitation. These included state of the art western technologies, including the modernization of the country under an industry-oriented policy. As a result, Bangkok became the center of all activities, and gearing towards to a national disparity (Suthiranart, 2001).

No one could tell at the time whether this technological development was really beneficial to Bangkok. One important thing that was noticed was that the simple, generous and peaceful life started to disappear. This development period is characterized by the Thai habit of borrowing others' direct ideas, a habit that has lasted until present. Bangkok has always easily accepted new western technologies without thorough consideration and/or without knowing the causes and effects of their introduction. These foreign ideas and technologies were apparently never analyzed for their appropriateness to the Thai society. The transport arena was not an exception. The rise of a more speedy road-based transport system, especially motorcar, in-lieu of the water-based and the electric tram was one example.

Transportation sector development closely followed the western pattern. And, with weak development standards, regulations and social infrastructure coupled with perpetual change and an unstable political system since 1932, Bangkok had no real city development plan to guide its direction properly. The major preoccupation of the authorities was politics and anything else was secondary.

To modernize in the authorities' perspective, the government in this period had even influenced the population to follow the western patterns and styles (Wyatt, 1984), but discouraged the people to think like westerners (Right, 2003). This might have had a major effect on the ways of thinking and reasoning of the Thais, since every planning decision or implementation needs reasons.

Here again, the authorities missed the important point in the working/learning process and have never really created a working/learning environment for the development of a Thai-oriented knowledge base and standards. Rather, the authorities have always taken the easy path following the western models. However, there are doubts that, even with a "homegrown" development plan, the same problems might persist and be even more difficult to control. This is because the Thai ways of thinking and working are more individual in character and thus less adaptable to the more coordinated "team" approach that is essential in multi-disciplinary planning.

### **4.3 During 1960 – 1990: And the Roads**

In this 30-year period, there was an important change in the planning philosophy of the country, but road transport maintained its primary role. At the beginning of this period, Thailand introduced, for the first time, international planning concepts to the kingdom through the implementation of the 1<sup>st</sup> National Economic and Social Development plan (1962-1966), the "big plan" period according to ADB (1989). And, like many developing countries in the region, the 1<sup>st</sup> – 3<sup>rd</sup> (1962-1976) Plans emphasized the acceleration of economic growth and basic road infrastructure development without much consideration of land-use, converting Bangkok into an automobile city (Bongsadadt, 1987).

Hence, road transportation has become indispensable while major canals and tracks in Bangkok have been transformed into roads in order that the benefits of high-speed travel by automobile could be enjoyed. The remaining rivers and canals were mainly converted into sewer system. In 1960 a group of American consultants first developed a Bangkok land-use plan called the Litchfield Plan (Litchfield *et al.* 1960). It was never formally approved, however, only serving as informal working guidance.

During the 3<sup>rd</sup> Plan in 1971, the German Agency for Technical Cooperation conducted the first comprehensive Bangkok Transportation Study, BTS (Kocks, 1975). Major recommendations were the construction of mass transit and expressways under a public transport oriented policy that included the restriction of car ownership/use, and polycentric developments around the city. Unfortunately, there were major alterations from the plan favoring schemes with high economic and financial viability, and only the expressway through the heart of Bangkok has been implemented. With no real city master plan, no land-use plan and no proper road hierarchy, the built-up area has undergone an uncontrolled linear expansion, causing severe traffic problems.

The Litchfield and the BTS studies should have influenced the preparation of the 4<sup>th</sup> Plan (1977-1981), which, after the first town planning act passed in 1975, introduced the concept of channeling economic and urban growth away from Bangkok to regional cities. However, the plan failed to meet its objectives. During this 4<sup>th</sup> Plan, 10 billion baht (Dunford, 1980; HFA, 1985) was invested almost solely in major roads development within Bangkok's inner areas to satisfy pressures within the existing built up areas.

The 5<sup>th</sup> Plan (1982-1986) continued to balance urban development by promoting orderly urban growth, but it was recognized that the land-use proposals developed for this plan had again failed to decentralize growth from the BMA. During this plan, the government allocated almost 20 billion baht for only road and expressway projects within BMR (Rujopakarn, 1999).

The 6<sup>th</sup> Plan (1987-1991) recommended a new urban management policy covering the whole BMR to promote more systematic and efficient growth (Kaeokungwal, (1990). It suggested a better integration of physical planning and infrastructure investment in order to influence land-use and bring about more orderly growth of the area. The 6<sup>th</sup> Plan also intended to provide better and more extensive bus services, to build more primary and secondary roads in the outer area, to expand the expressway network, to complete missing road links, to provide bus-ways, mass transit lines and some traffic management measures in the city center (HFA, 1985). Although the government spent 37 billion baht on the 6<sup>th</sup> Plan, almost twice as much as the 5<sup>th</sup> Plan investment (Rujopakarn, 1995 and 1999), failure and delay in implementing many programs were noticed (HFA *et al.*, 1991).

The government has adopted the international planning concepts since 1960, but the traffic situations have become more severe. The traffic congestion has unceasingly expanded to the outer areas of Bangkok and passed the controllable limit. The problems were mainly associated with the absence of the land-use plan and uncoordinated transport projects and plans. The urban growth control policy and several others land-use and transport measures obviously failed. Bangkok maintained its primary role. One could constantly observe mal-coordination amongst over 10 traffic agencies and the insufficient allocated transport budget. The latter massively exploded in the following 7<sup>th</sup> Plan.

#### 4.4 From 1990 – Present: Another Change or Idem?

In this period, the government realized that the transportation sector was becoming more and more important as the national economic generator. The government made several major changes at the beginning of the 1990. It tried to establish central transport database and model through a project called the Bangkok Transport Planning Unit I, BTPU I (WSA *et al.*, 1991). The BTPU I aimed to standardize the planning data and analysis method for applying to all the transport planning projects in Bangkok. Although the project had good intentions, the authorities rarely deployed these instruments, but the exercise served as the foundation for another identical project later in 1995 (MVA Asia *et al.*, 1998).

In its 7<sup>th</sup> Plan (1992-1996), the government proposed a substantial reliance on the private sector to share the costs of infrastructure development, the “private sector phase” as per ADB (1989). A huge investment of 210 billion baht, a figure 10 times higher than the 5<sup>th</sup> Plan investment, was allocated (Rujopakarn, 1995 and 1999). This plan marked the start of the mass transit era and the public transport investment share was higher than ever. But the former roads-oriented transport investment policy proved that it still possessed a lot of inertia, and by the end of this Plan in 1996, there were several new road and expressway projects. However, a road hierarchy was still missing and the first mass transit line had suffered considerable delay.

Land-use planning had become crucial for Bangkok. At the beginning of the 7<sup>th</sup> Plan, some 20 years after the 1975 land-use planning act, the state also issued the first 1992 Bangkok statutory Land-Use Plan (DTCP, 1992). This is approximately two centuries after the foundation of Bangkok. However, the plan, which was based on concepts from 1975 and subsequent changes in demographic patterns, served only to provide guidelines and had a negligible effect on control of development. Employment and accessibility considerations were not reflected in the plan (Dorsch Consult *et al.*, 1998).

A similar fate befell the second Bangkok land-use plan. BMA’s 1999 Bangkok Land-Use Plan (BMA, 1999) listed as its major objectives: improving mobility and accessibility with a moratorium on new road construction, and development of transit zones and centers; concentration of urban development with an expanded central business district; balancing jobs and housing, and creation of new metropolitan sub-centers along the ORR; improving the quality of urban environment through development controls; institutional improvements, and co-ordination of private and public efforts. Once again, no attempt at real enforcement had been exercised. Also, the plan apparently had major conflicts with the 8<sup>th</sup> Transport Plan (1997-2001), especially concerning the promotion of new sub-centers along the ORR (Rujopakarn, 2000).

Continuing from the previous plan, the 8<sup>th</sup> Transport Plan proposed to invest more than 650 billion baht in over 150 projects (OCMLT, 1997). This investment was about 30 times greater than the 5<sup>th</sup> Plan investment. Considering the public investment share of 60% of the total budget required (Rujopakarn, 1999) and the allowable annual transport budget, it was unlikely that all the projects could be implemented. Indeed, the total budget required was found to surpass the government’s financial capacity. By the end of the 8<sup>th</sup> Plan, only 15% of all the proposed public investment had been implemented (TDRI, 2001). This was mainly due to the economic crisis that started in mid 1997. The transport share of the budget decreased to 0.9% of the GDP (49 billion baht) in 2002 compared to 1.8% of the GDP (82

billion baht) in 1996 (Bureau of the Budget, 1996-2002), with 25-30% of this total allocated to BMR (Rujopakarn, 1999). As a consequence, many projects were delayed.

As well as the lack of coordination between the transport and land-use plans; there was an environmental issue. Although there was a growing awareness of environmental problems, and many actions had been taken to reduce Bangkok's air pollution, no real evaluation of the environmental effects, especially the air quality aspect resulting from the overall proposed transport projects, had been considered at the preparation stage of the transport plans in this period. Comprehensive environment standards related to transport planning were still in their infancy.

Apart from many aforementioned factors contributing to traffic congestion in Bangkok, it was also observed that since the 1<sup>st</sup> Transport Plan until present day, the transport planning authorities in Bangkok heavily relied on various foreign transport planning and design standards/guidelines. Also, in many occasions, the planning authorities deployed different analysis method and database. The results were, thus, difficult to compare and judge their suitability in the overall proposed transport plan. In fact, it is not difficult to produce decent Thai-oriented transport planning standards/guidelines, but such development, which has always been overlooked, is an unending process and requires a firm commitment and promise of support from the government.

Presently, Bangkok has various modern transport modes including the recently introduced Skytrain and a subway to be inaugurated in 2004, however, the road transport remains important. The city looks modern and seems superficially like many developed cities in the western world. However, the logistics behind this appearance is rather hollow. The existing transport system still cannot adequately satisfy daily travel demand and in many occasions, because of mal-coordination, transport services conflict with one another. .

## **5. A LOOK INTO THE 8<sup>th</sup> TRANSPORT PLAN**

In 2001, BMR, the area that generated over 56% of Thailand's GDP, had almost 14.0 million population (approximately 20% of the country's population) of whom 8.3 million were in employment. It was observed that both population and employment were concentrated in the Bangkok Metropolitan Area, BMA (sectors 1-6), especially, the Bangkok center (sectors 1-3) or areas within the MRR. This concentration clearly dominated the pattern of travel. The area had extremely high private and public transport accessibility to total employment compared to the area outside (Rujopakarn, 2000). The BMA is renowned for its traffic congestion, a very poor public transport network and also very limited road space, representing only 11% of the urbanized land area (Tanaboriboon, 1993).

The BMR area generated about 22 million person trips per day (excluding 4 million truck trips per day), of which 57% were private trips, even though there had already been a mass rapid transit line in operation. This was due to the poor public transport services, the rising personal incomes and car ownership, but a major contributing factor was undoubtedly the high private transport accessibility. The ease of travel by private transport was four times higher than by public transport (Rujopakarn, 2000).

This high private modal share is expected to be dominant through to at least the end of the 9<sup>th</sup> Plan in year 2006, due to an investment program for 1,000 km of road and expressway projects. By comparison, a mass transit network of only 260 km is to be developed (Rujopakarn, 1999). This roads-oriented investment program will greatly affect the mode-split behavior. Furthermore, since the economic crisis, the private sector has proven unwilling to finance such huge mass transit project, and delay in implementing mass transit as per the Mass Transit Master Plan (WSA *et al.*, 1995) is unavoidable. Another factor is the high regard Thai people has for cars as a wealth symbol.

Overall travel conditions in 2001 were slightly worse than at the starting year of the 8<sup>th</sup> Plan in 1997. The overall area volume/capacity ratio reached almost 0.70 with an overall average travel speed of 17 kph. The inner area of Bangkok had an average travel speed of approximately 10 kph (Rujopakarn, 2000). This was almost the same as 25 years previously (Kocks, 1975).

By means of the 8<sup>th</sup> Transport Plan the authorities tried to maintain and improve the average travel speed of the inner area of Bangkok, and also provide high accessibility in the city center and the areas along major transport corridors where high-density ribbon development had taken place (Rujopakarn, 1999 and 2000). Under this policy, there was apparently no effective public transport improvement in the area outside Bangkok which explains the inferiority of transport services in the suburbs. Rujopakarn (2000) also estimated public transport accessibility in the Bangkok city center varied between 20-50 times higher than the area outside central Bangkok according to different evaluation scenarios.

In fact the 8<sup>th</sup> Transport Plan ignored local transport network projects in the area outside central Bangkok that would be needed to support the self-contained sub-centers. The 8<sup>th</sup> Transport Plan responded to the present development trends and its concentric “star” expansion and the urgent traffic needs of the inner area. The 8<sup>th</sup> Transport Plan alone therefore did not promote the sub-centers along the ORR as required by the 1999 Bangkok Land-Use Plan. The proposed sub-centers will require more land-use development measures and a public willingness to relocate both home and work places in more readily designated areas.

## **6. WHAT WENT WRONG**

### **6.1 No Real Coordination**

The failure of transport system development in Bangkok can be explained by the mal-coordination of a dozen different government agencies working under several ministries (Pike and Rujopakarn, 1996), and the problem of inconsistency in methodology: the transport planning model and database.

There have always been difficulties in coordinating between responsible agencies, both at the planning and implementing stages. The conflict of the 8<sup>th</sup> Transport Plan proposals with those of the Bangkok Land-Use Plan clearly demonstrates the situation and provides valuable lessons. Rujopakarn (2000) has shown that the 1999 Bangkok Land-Use Plan and policy were not compatible with the 8<sup>th</sup> Transport Plan prepared 2-3 years earlier by another agency, especially when focusing on the accessibility indices of each planning area.

The 8<sup>th</sup> Transport Plan accepted the present demand-led “status quo” in terms of uncontrolled development, while the 1999 Bangkok Land-Use Plan assumed that a new urban form based on polycentric development would take place. For the 1999 Bangkok Land-Use Plan to become a reality, an implementation framework was needed which would require comprehensive new planning laws and a massive improvement of capability on the part of the town planning authorities. The 1999 Bangkok Land-Use Plan did not address its implementation aspects, and no action has yet been taken to address this shortcoming.

It is unlikely that the visions expressed in the 1999 Bangkok Land-Use Plan will be realized, given the present “laissez-faire” attitude to land-use planning. Unfortunately, this is the most critical issue in the city development.

As well as the above incompatibility, mal-coordination has also been observed through air quality indicators: CO, NO<sub>x</sub> and HC. In Rujopakarn’s (2001) analysis of the 8<sup>th</sup> Transport Plan, it was found that the plan could alleviate traffic congestion in some areas and maintain travel speed in the inner area of Bangkok, but at the cost of 55-60% more toxic gas emissions in the whole area compared to the beginning of the plan in 1997.

Coordination at the implementation stage is another serious problem. Recently, there was a big issue concerning conflict between agencies constructing expressways and major highways in Bangkok. The matter concerned delay in delivering the construction area to the contractor. The area belonged to one agency but the construction project was with another agency. Due to this delay, the contractor successfully won a claim against the government for the huge amount of over six billion baht. As stated above, the separation of responsibilities for traffic among many agencies has always given rise to problems of coordination and delay in project implementation.

With regard to transport planning methodology, a step forward was taken in 1995 when the government developed a transport model and database for the Bangkok Metropolitan Region (MVA Asia *et al.*, 1998) for use by all the transport agencies. This has helped project planning to follow a more consistent line, but since the database and model require constant adjustment and coordination amongst agencies that use them, there has recently been a huge gap in maintaining the resources. Once again, the same problems have arisen.

Problems with the Bangkok database has always led many transport plans to produce unsatisfactorily results. Many areas that did not need special attention received huge investment while other areas remained on the waiting list. Low priority ranking projects were often implemented, helped in some cases by political influence. If the database and the analysis tools were reliable, then it would be difficult to subvert the results.

Poor coordination amongst government agencies is the main contributor to this state of affairs. The analysis results from the 8<sup>th</sup> Transport Plan clearly reflect how the planning authorities in Bangkok function. The urban crisis, especially in relation to transportation, is mainly explained by the lack of integration of planning authorities and planning programs. This lack of integration needs urgent attention.

One recent piece of good news is that, although, Thailand is facing hard and difficult economic times, the country has just made a huge transport administration/organization reform. The actual government has recently merged the scattered transport related agencies into a quasi-single unit under the Ministry of Transport and Communications. However,

several agencies still remain under the Ministry of Interior. This administration reform is considered to be an important change in the Thai history and will certainly have a significant effect on society. This reform is expected to assist improved coordination of planning issues. But, it should be born in mind that the official or the logistics behind the organization should also be reformed along with it. If not, the lack of integration will unavoidably persist.

## **6.2 No Real Master Plan**

It is widely agreed that Bangkok transport master plans in the past were not really “master plans”. They merely gathered the wish lists of agencies and politicians. It was true that a lot of projects had correctly been through the official planning process, but in many cases the finally approved transport projects were based on personal judgment rather than scientific results.

Many projects were justified on a narrow definition of economic and financial viability that neglected the broader picture and environmental considerations. There were often conflicts amongst projects that shared the same master plan. It is obvious that a genuine master plan should be conceptualized and draught with careful academic analysis and evaluation. The master plan should be able to reflect and respond to the overall needs of the study area. It should include a proper prioritization of transport measures and projects. The projects need not always be colossal or expensive; they merely need to be effective and to alleviate the traffic congestion sustainably. In the past, many projects have been too expensive and well beyond the country’s financial capability. Furthermore, once a master plan has been established, there should be no new megaproject intervening during the plan implementation, without proper evaluation, which has not been the case in the past.

Major intervention is often blamed on “politics”. The Skytrain project, initiated by the Bangkok Transportation Study (Kocks, 1975) and proposed in 1978, is a very good example. The project contract was awarded in early 1992 and quickly terminated in mid 1992. Another example was the Hopewell megaproject, which came from nowhere, was never tested for feasibility, and caused a lot of difficulties before it was suspended. It was to run along side another megaproject, the Don Muang Tollway, which was awarded a little while earlier, and was only a few kilometers from the second stage expressway system serving the same corridor as the previous two megaprojects. One could imagine how huge the investment of all the projects was.

## **6.3 No Real Planning Standards**

Bangkok always focuses on megaprojects of huge financial scale, often turning out to be in conflict with one another. The authorities pay scant attention to developing appropriate traffic guidelines or standards. Until now there has been no Traffic Impact Assessment Guidelines for Bangkok. Landowners are virtually unconstrained in how they develop their sites, paying little consideration to traffic impact to the surroundings. Such a “laissez-faire” approach generated a lot more problems to the society, not least social, land-use, economics and environment.

Bangkok’s multiple planning and design standards also create tremendous problems. Bangkok still borrows standards from various countries, including United States of America, Great Britain, Australia and Japan. In some occasions, the designs are based on Asian

regulations or norms but there is no guarantee that all the applied standards correspond to Thai behavior.

It is also the case that planning and design standards have sometimes been amended without basic research confirmations to fit local constraints and local travel behavior. As a result, road users become victims of sub-standard design, which encourages them to violate the road or the design codes as they struggle to their destinations. Social conflicts among road users often occur. Travelers habitually violate traffic regulations as a matter of course, leading to a poor level of driver behavior throughout the city.

It is true that an undisciplined urban population also causes traffic and urban problems and this cannot be easily solved in a short period of time. It is very difficult to change entrenched behaviors and promote good habits. Informing the citizens on the basic causes of urban problems is a time consuming procedure, especially when the habits have already been embedded into the next generation.

However, there are several pieces of good news: it is common now, after over 10 years, that many authorities view transport planning and traffic analysis as a multi-disciplinary domain that needs specialists or academics, and that not everyone can perform the evaluation. Bangkok now has quite a number of local experts capable of applying standard scientific method to transport planning and traffic analysis.

## 7. CONCLUSION

Traffic problems in Bangkok stem from a virtual absence of a master plan, no real Thai planning and design standards, no land-use control, no road hierarchy and an inefficient public transport system. The problems are aggravated by disorderly traffic behavior and an insufficient annual transport budget. They are typical of developing countries that try to adopt western lifestyles without thorough analyses, not to mention the management and organization problems. Bangkok traffic problems are legendary and provide a fine example of how misplanning can harm society.

The 8<sup>th</sup> Transport Plan is the most recent and modern transport plan to date that highlights the typical “incompatibilities” in the planning procedures of Bangkok. One can imagine how inappropriate past transport plans have been. No real transport master plan has ever been thoroughly evaluated. Thailand has become an automobile-dependent country due to past transport plans and policies that have always been oriented in this direction. Road-based transport has been given top priority, receiving almost all of the allocated annual transport budget in past national plans. Bangkok has always come up with road/expressway projects and has sacrificed the environment in doing so. An effective and low cost traffic demand management policy was never really an option.

Despite all the attempted remedies made year after year, Bangkok traffic conditions continue to make it one of the worst metropolitan areas in the world. The problem of lack of coordination among agencies needs special attention. To solve or alleviate Bangkok traffic problems, one cannot totally rely on enforcements, measures, projects or even a good transport master plan. Traffic problems, in fact, are “people”. The concerned authorities need to understand their people’s behavior first in order to channel them into appropriate traffic codes and regulations. And to achieve this, Bangkok needs a good transport research and

development process to build up the base of knowledge and its appropriate standards. It is essential that Bangkok supports more basic traffic research in order to lay the foundation for a more competent planning and implementation process, with of course, strong transport policy and planning agencies, a strong land-use plan, and a real transport master plan.

The time to take action to relieve problems has actually passed, however it is better to have a late start than not at all. As a first step, a rethinking of the Thai Life Style for urban planning would be worth studying; the road-users/travelers' behavior, the local variables that affect traffic: flow rate-density-speed relationship, car ownership and use, relative location of homes, jobs and schools. This aims to develop the appropriate Thai Transport/Traffic Standards (Planning and Design Standards and Traffic Impact Assessment Guidelines). In parallel, the responsible authorities should, with wholehearted efforts, focus more on the "team" approach planning and implementing process; and later on progressing to fully singularize the transport planning and executing agencies. These might be the beginning of a new era for land-use/transport planning in Thailand.

For immediate actions under present economic situation, innovative means to alleviate the current traffic problems, such as implementing existing planning laws and regulations as a package of Transport Demand Management measures seems most appropriate to assist in reducing vehicular travel demand and providing priority to public transport. Unfortunately, in Bangkok, there has been no effort to introduce such laws/regulations, and the half-hearted attempts at demand management have failed to produce effective results. Stronger political will in these areas is needed if a long term solution to the problems is to be found.

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