

AN APPROACH TO PRESCRIBE FOR URBAN PROBLEMS IN BANGKOK BY INTEGRATING TRANSPORT, LAND USE AND ENVIRONMENTAL POLICIES

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abstract : The rapid urbanization of Bangkok over the past decades have created urban problems of enormous proportion. Severe traffic congestion, urban sprawls and environmental degradation are the more obvious manifestation of these problems. There are not a few plans or studies that have been proposed for tackling land use and transport problems in Bangkok, but only limited parts of them have been implemented. The interaction of present planning and implementation process therefore need to be examined. The objectives of this paper are threefold. First, to investigate the present situations on urban development in Bangkok metropolis with regard to land use, transport and the environment. Second, to identify issues related to planning and implementation. Third, to discuss possible strategies for sustainable urban transport development as well as efficient implementation programs.

1. INTRODUCTION

The rapid urbanization and high demand of mobility have treated the developing metropolises in Southeast Asia with high level of congestion and environmental pollution. Bangkok has not escaped from these problems. Traffic congestion in Bangkok is among the worst in the world. Other major urban problems include excessive agglomeration of economic activities, disordered development of land use, environmental pollution and safety problems. The present problems indicate unsustainability in urban development of Bangkok metropolis.

Land use and transport have been seen as the causes as well as the effects of urban problems. Although it has been recognized that land use and transport should be well coordinated in the planning stage of a metropolis, they have been dealt separately in most cases. Each of institutions involved in land use and transport has confined itself in a particular area which belongs to it. Integration in the true sense of the word between land use and transport planning is rarely exercised in actual planning stages, not only in Bangkok but even in metropolises of developed countries. Due to changes in awareness to the environment such as air quality, noise, energy consumption and community structures, environmental considerations are very important to bring into land use and transport planning as well as decision making process.

In the present paper, intensive investigations on present situations regarding landuse, transport and environment in Bangkok, as well as their planning and implementation with

institutions, are conducted. Following the investigation, the paper examines the recent actions on planning and implementation of land use and transport policies particularly from the viewpoint of their integration and impacts on the development of the metropolis. Finally, issues on the strategies for sustainability in urban transport development as well as alternative approach for assisting the implementation of plans are proposed. The discussion focus on strategies in planning approach, policies emphasized and approach to the formulation of integrated policy measures for implementation.

2. UNSUSTAINABILITY OF PRESENT TRENDS

Bangkok with its metropolitan region is one of the most well known examples of urban primacy. More than 70 percent of the country's urban population lives in Bangkok. The concentration of economic and political activities has exacerbated the urban problems of the metropolis. Traffic congestion, disordered development of land use, environmental degradation, inadequate water supply and treatment as well as increased urban poverty are the more obvious manifestation of these problems. For a number of reasons, a continuation of present trend indicates unsustainability in urban development of Bangkok over the long term.

2.1 Urban Transport Problems

Bangkok metropolis is an urbanized area cover Bangkok and its three vicinity provinces called Greater Bangkok Area (GBA). The population growth in GBA is projected to increase from 8.8 million in 1990 to 9.7 million in year 2001.

Table 1 Greater Bangkok Profile

	1972 (BTS,1975)	1993(OCMRT,1995)	2001 (OCMRT,1995)
Population (million)	4.1	8.8	9.7
Total Person Trips (million)	4.7	15.8	19.5
GBA area (sq.km)		3716	
- BMA		1565	
- Nonthaburi		622	
- Prathum Thani		1525	
- Samut Prakan		1004	

Unsustainability of urban travel in Bangkok, and how serious situation it is, can be illustrated by the following present transport conditions:

2.1.1 severe Congestion

Level of congestion can be described in term of traffic speed on road network. Recent measurement of traffic speed (JICA,1990) on major roads during peak period was about 10 km/hr in city center and 15 km/hr in outer areas of ring roads. Present estimated (JICA,1990) on average travel speed indicate more serious condition is expanding to wider area as low as 6-10 km/hr.

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2.1.2 Increase of Private Car Use

Motorization in Bangkok gradually started since the mid-1970's, and was drastically accelerated in the 1980's. The average increase of passenger cars in 1980's was about 11 percent per annum. This figure slightly increase to 12-13 percent per annum since 1990's. There are more than 2.1 million vehicles registered in Bangkok in 1991. The share of cars is 43.5 % of total vehicles whereas motorcycles's share is 42.0 %. Car ownership in GBA has increased from 43 per 1000 population in 1972 to 72 per 1000 population in 1989. It was estimated to increase to 126 per 1000 population in 1997 as stated in SPURT study.

2.1.3 Decrease of Public Transport Use

An increase of private car use with the decline in public transport use is a warning sign indicating the development of unsustainability in urban travel. Public transport use mainly by buses and minibus in Bangkok has substantial declined. As figure from BTS study in 1972, there was about 67 percent of total daily trips use public transport including 52 percent using bus. In 1990 from SIMR study indicated that the share of bus was lower to 39 percent while total public transport accounted about 49 percent of total daily trips.

2.1.4 Inadequate Public Transport Service

Bangkok is one of the few cities of its size in the world without a segregated mass transit system. Bus, minibuses and taxi are main public transport modes on major arterial service while motorcycle play a major for arterial to local resident. About 7,200 buses are normally available for services. As estimated figure in 1990, the buses and mini-buses have to accommodate about 6 millions trips or 76 % of total public transport modes. Not surprising, severely overcrowded, low level of services and cheap fare are characterized major transport mode of Bangkok.

2.1.5 Safety Problems

Transport is an inherently dangerous activity. Some indication of the order in magnitude of the risk involved in transport is the fact in relation to number of road accident. The 1992 statistics showed that 92 % of 50,400 accident cases in Thailand took place in Bangkok metropolis. The prospects for improvement do not appear to be promising due to lack of effort on national scale to effectively deal with the problem.

2.2 Disordered Development of Land use

The urban land development of Bangkok metropolitan area is determined by building control regulations, transport accessibility, land prices, the commercial potential of location and the availability of vacant land. Unsustainability in land development is manifest by the following factors:

2.2.1 Uncontrolled Development

Since land use plan could not implemented to control land development, therefore, the growth of the metropolitan area over the past decades shows clearly that construction of transport infrastructures, bridges and new roads, have been major determinants of urban land

use patterns. Present trend in disordered land use development continues as following phenomena :

- development of traffic generator/attraction in congested area
- mix industrial and residential area
- disperse land development along transport corridors

2.2.2 Drastic Increase of Land Price

Exorbitant land prices are a direct result of very limited supply of available land particularly in city center. Land price in metropolitan area has been substantially increased at average rate of about 20 percent per year during 1988-1992. High land price causes difficulty for government to acquire land for infrastructure development as well as housing development.

2.2.3 Loss of green area

The portion of land in outer region has been designated as a preservation green-belt zone for proposed agricultural use. However, the preservation policy is not strictly enforced. A large number amount of rural green land was converted to urban uses. For example, a total of 295 square kilometers of rural land was converted to urban use between 1984 and 1988. This amount was almost equivalent to the amount of land converting during the previous ten years.

2.2.4 Uneconomical Use of Land

The uneven development of land has been exacerbated by property tax and state enterprise land policies. Low property tax removes potentially valuable incentive for land development which is allowing land owners to sit idle on land and thus imposing additional burdens on their neighbors while paying little of the cost. As for land use survey in 1986 showed that about 40 percent of land in Bangkok Metropolitan Area was vacant. Property taxes in Thailand represent only 0.18 percent of GDP compared to 0.40 in Indonesia and Philippines, and about 2 percent in Japan and Australia.

2.2.5 Urban Sprawls

According to National Housing Authority surveys, slum and squatter housing made up 13.6 percent of all housing stock in Bangkok and its five vicinity provinces (called BMR) in 1988. The trend continues to decline in area within 5 kilometers from city center and expand into suburban areas beyond 11 kilometers from the city center. The population of slum and squatter accounted for 12.5 percent of population in BMR in 1990 and grew at an estimated annual rate of 3.95 percent during 1990-1994.

2.3 Environment Degradation

In the absence of environmental infrastructure and effective pollution control, urban and industrial growth have combined in Bangkok to create increasingly serious problems. The major environmental problems include air pollution, noise, water pollution and solid waste disposal that diminish the quality of urban and suburban life.

2.3.1 Pollution caused by transport

Monitoring data along main streets in inner areas indicate high level of air pollution. The level of carbonmon oxide at curbsides in monitoring stations exceed the country's ambient air quality standard. Reported blood lead levels are at least three times of those found in United States and Western Europe. Suspended particulate matter figures shows similar tendency and also constitutes health problems in the city. In addition, noise level at roadside are above the standard in all monitoring stations. Recent measurement (1995) reported that about 95 % of traffic police has health problems caused by traffic noise and air pollution.

2.3.2 Pollution caused by uncontrolled land development

Solid waste collection and disposal is another pressing issue within Bangkok. It was estimated that only 80 % of solid waste in 1990 were collected. Bangkok relies primary on open air dumping and open air burning for solid waste disposal. These cause serious environmental consequences for adjacent communities. In additional to these problems, land subsidence due to over pumping of ground water, water pollution and flooding are also major environmental consequences due to uncontrolled rapid expansion of land development.

3. PLANNING AND IMPLEMENTATION

3.1 Policies and Planning

The development of infrastructure in Bangkok has been following the policies and guidelines that have been set up in the five-year National Economic and Social Development Plan which is now in the Seventh Plan (1992-1996).

3.1.1 Transport Planning

A number of transport studies have been commissioned to tackle transport problems in Bangkok. A first comprehensive transport planning of Bangkok has been proposed by the Bangkok Transportation Study (BTS) in 1975. Other plans has followed and proposed broadly the same as the former plan, which are clearly stated in STTR in 1985 and SPURT in 1991. Therefore, the transport strategy for the Seventh Plan also follows the same line as the earlier study which can be summarized as follows: (1) to use existing road capacity more effectively, (2) to reduce demand for road space, (3) to extend road network capacity, (4) to improve quality of public transport, (5) to priority of road to buses, (6) to build segregated public transport system, and (7) to set program of improvement environment.

Many kind of transport policy options have been proposed as strategies to solve transport problems in Bangkok. The policy measures discussed in transport planning proposals for Bangkok are summarized in Table 2. Most of them have been implemented but with different scale of effort and achievement. However, only limited number of the plans can put forward with designed schedule. They always encountered long delay particularly intensive investment projects such as mass rapid transit.

Table 2 Major transport policy measures proposed in the recent transport planning proposals

Policy Measures	Level of Implementation
1. Improving Road Network Capacity	
- Expressways	E
- Highways and Arterial	E
- Bridge / Overpass	M
- Missing link	L
2. Public Transport Improvement	
- Build Mass Rapid Transit	L
- Increase bus fleet	L
- Improve bus service and operation	L
3. Traffic management	
- Area Traffic Control and Signal Improvement	M
- One-way system	E
- Bus priority lane	E
- Curbside parking control	E
- Junction Improvement	M
- Pedestrian facilities : foot-bridge, signal	M
- School bus operation	L
4. Demand Management	
- Stagger working hour	L
- Area pricing	P
- High Occupancy Vehicle (HOV)	P

Note : Level of implementation is evaluated based on effort compare to original proposal.

The evaluation scale is subjective to authors monitoring and experience.

E = extensive , M = moderate , L = Low, P = proposed

3.1.2 Land use Planning and Control

The first master plan for Bangkok, the Greater Bangkok Plan 1990, have been made since 1960 and has passed through several revisions. However, this plan could not directly be implemented since there was no legal power to enforce such a plan. The present land use master plan, Bangkok Metropolitan General Plan 2001, has been authorized since mid-1992 after passing through the long process of approval. However, it still has problems in implementation because the land uses designated in the plan are not up to date with the present development. Therefore, the local government is now working on the revision of the plan.

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Before land use master plan has been legalized, the local government has to adopt the Building Control Act of 1979 as a direct measure to control the development of land use. These measures are limited mainly in zoning control in terms of height, type and use control of buildings. Not surprising, uncontrolled development is expected in many areas that beyond the scope of effective control measures.

The uncontrolled expansion of land use resulted inadequacies in the provision of infrastructure. Recently, a land readjustment scheme was introduced aiming not only to recapture infrastructure investment costs but also to facilitate housing for lower income group. However, it is still in early stage that only three sites are conducted as case studies. In long term plan, the Ministry of Interior has drafted a plan to relocate Bangkok-based government offices to a new city, the site for which has been decided to 120 kilometers east of Bangkok.

3.1.3 Environmental Policies and Concern

The environmental policies has been taken into account in transport and land use planning since the Sixth Plan and put more emphasized in the Seventh Plan. The policy proposals addressed in those plans include :

- accelerate the introduction of unlead gasoline
- improve vehicle emission inspection program
- introduce environmental impact fee for private land developer
- implement a domestic waste collection and treatment progress

Substantial progress has been made with the policies relating to reducing vehicle emission and improving fuel quality. Since the introduction of unleaded gasoline in 1991 and the reduction of lead in normal benzene in 1992, the concentration of toxic lead has been reported of reduction. However, the situation may not be improved much if high-rise buildings, which are known to obstruct the flow of the emission from the vehicles, continue to sprout up throughout the city. The lead concentration can increase again if traffic congestion worsens and it results in higher fuel consumption. In 1994, vehicle emission control has been strictly enforced by implementing annual testing of exhaust emissions program for all new vehicles.

3.2 Implementation Performance

The performance of plan implementation can be evaluated from the achievement of investment programs committed in national development plan. Table 3 shows transport investment programs in BMR which have been implemented during the Sixth Plan (1987-1991) and scheduled to materialize in the Seventh Plan (1992-1996).

The evaluation of the Sixth Plan clearly indicates the failure of implementation of transport plans on scheduled, particularly of public transport investment and policy instruments. However, the achievement of highway investment program have been better than that of the policy proposal. There appears to be four main reasons that were attributed to non-implementation of transport plans in Bangkok; (1) lack of technical capacity, (2) physical difficulties in acquiring land, (3) lack of finance and (4) institutional deficiencies.

Table 3 Transport investment programs in the Sixth and Seventh Plan (JICA, 1990)
Unit : million Bath (1993 price)

Investment Programs	1987-1991		1992-1996	
	Budget	%	Budget	%
1. Road network	40,652	95	173,141	52
1.1 Expressways	27,964	65	94,675	28
1.2 Highways	7,687	18	43,210	13
1.3 Bridges	1,417	3	8,124	2
1.4 Arterial Roads	3,584	8	27,132	8
2. Public transport	455	1	141,623	42
3. Local road and bottleneck	804	2	1,688	1
4. Traffic management	808	2	936	0
5. Others	291	1	17,794	5
Total	43,010	100	335,182	100

The Seventh Plan has been started with serious attempts to get off rail mass transit projects on the ground. The projects have encountered serious delay due to lack of finance since one of them was firstly recommended in 1975 (BTS, 1975). At present, at least four mass transit systems, mostly under BOT, have been proposed for implementation in Bangkok. Two mass transit projects are under construction and is expected to be completed within year 1997. In addition, there have been some improvements on bus system with increasing bus fleets and introducing new bus services. Suggestions for road pricing and other demand management schemes are being considered as a serious proposition.

3.3 Lesson Learned

The review of planning and implementation of transport, land use and environment policies in Bangkok has pointed out some major problems issues as follows:

3.3.1 Unsustainability in urban transport development

Severe traffic congestion, poor level of transport service and deterioration of environment indicate unsustainability in urban travel in Bangkok over long term. As shown in **Figure 1** the past trends in travel demand for Bangkok are encouraged by number of factors which has contributed to unsustainability in overall travel. A key challenge for the future will be to attempt to reverse the processes which has led to sustainability in urban transport development.

3.3.2 Lack of coordination

Environmental degradation in Bangkok is attributed to lack of proper land use and transport planning. Air pollution problems in Bangkok are a "traffic technical problem", whereas land subsidence, water pollution and solid waste disposal problems are the outcomes of ineffective land use control. The failure to achieve adequate coordination between private

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development and investment in environmental-related infrastructure is also one of the main causes of environmental problems in Bangkok.

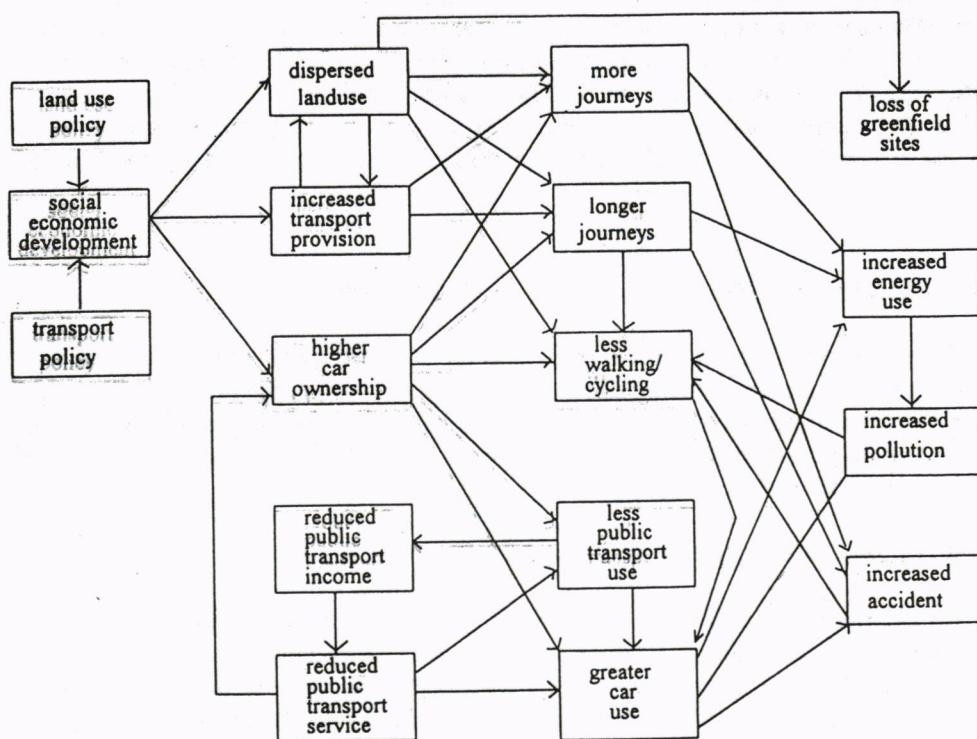


Figure 1 Interactions Contributing to Unsustainability in Urban Travel modified from May(1993)

3.3.3 Lack of implementation

The transport crisis in Bangkok today is attributed to the slow progress in implementing projects rather than the lack of identification of appropriate solutions. The investigations mention above indicate that the coordination and control of policies and programs is one of the key issues to be solved.

3.3.4 Conflicting of Planning and Implementation Programs

There was conflict between policies addressed in planning stage and actions that took by concerned agencies in implementation stage. For example, it quite clear in planning stage that transport strategies for Bangkok would give priority to public transport improvement and investment for building mass rapid transit system. However, a few public transport investment program has been implemented during the Sixth Plan as shown in Table 3 The Seventh Plan seems to be better but still lower than expectation. Prioritized investment program in implementation is a vital role in controlling the plan implementation.

3.3.5 Institutional Problems

The failure of implementing transport and land use policies in Bangkok are as much due to institutional deficiencies as to the lack of material resources. The three most recent major transport studies of Bangkok each refer to the institutional structure of the sector as major barrier to implementation of transport improvements. Some problems issues caused by institutional deficiencies are: (1) conflicting policies and plans, (2) prolonged decision making, (3) complex and inflexible procedures, (4) gap between project and financial planning, (5) land acquisition difficulties, and (6) lack of suitably trained and experienced staff.

4. SUSTAINABLE URBAN TRANSPORT STRATEGIES

The concept of sustainable urban transport calls for an approach to policy and investment planning to achieve a diverse and balance mix of transport modes and arrangement of land use that enables conservative use of energy and capital to fulfill mobility needs. Sustainable transport strategies are those that can meet the basic transport needs of all and be sustained into future without destruction of our environmental.

4.1 Alternative Policies and Planning Approaches

A planning approach which takes into account the interaction of land use, transport and environment element is the most effective strategy for a continuation for sustainable urban development. The integration of land use and transport planning is the main component of strategies to create sustainable urban transport system for Bangkok. In addition, transport investment policies need to be reprioritized to place more emphasis on improving public transport, managing private car use, enhancing the safety of non-motorized modes, implementing better traffic and environmental management.

4.1.1 Integrated Transport and Land use Planning

One of the major causes of traffic congestion in Bangkok has been lack of substantial land use control to pay nothing of lack of transport infrastructures. On the other hand, the disordered land use development of the city can be attributed to the scanty transport system to a great extent. In this sense, the countermeasures for transport should be include policy related to land use or vice versa. Since changes in Bangkok metropolis are so rapid and dramatic, the integrated planning of land use and transport including environment is much more important and effective than in developed countries (Miyamoto, 1992).

In the developed world, the response to congestion due to car-induced traffic has been to control land development staging, to institute better traffic management, and to provide infrastructure and transit services. Urban land use planning for Bangkok should encourage heterogeneous land use patterns and mix of housing types. Mixed of land use pattern with greater decentralization of employment can reduce the need of motorized commuting and foster community integration. Spatial separation of economic activities and residential locations should be minimized.

4.1.2 Public Transport Priority

A policy for moving *people*, as opposed to current proposal for moving *vehicle*, should be implemented more seriously. The key component of urban transport system for moving people is public transport. The priority policies toward public transport improvement in Bangkok include :

- allocate urban space for public transport facilities
- priority invest in rail mass transit system, a segregated public transport
- priority improve existing public transport facilities and management operation
- give road space priority for public transport service

4.1.3 Transport Demand Management

Traffic demand for private transport in Bangkok has far beyond supply of road capacity. The experience show that it is not feasible to increase supply of road space to keep pace with high demand. For Bangkok there can be no solution to eradicate congestion without restraint of private transport demand.

There is a wide range of demand management techniques and many of them has been implemented in solving traffic congestion in Bangkok as elaborated in Tanaboriboon (1992). Transport demand management strategies need to be continued in a great extend. In addition, land use control and transport demand management measures can help for managing rapidly growing of private transport.

4.1.4 Traffic and Environmental Management

Traffic management is primarily concerned with improving traffic conditions, to make use of existing highway network, and improve highway safety, without impairing the environmental quality. Relatively inexpensive techniques available for developing comprehensive traffic management proposals. Several techniques can employ and adopt along with the changes in operation of highway network and current traffic condition.

4.2 Integrated Strategies for Policy Implementation

The review of planning and implementation of transport, land use and environmental policies in Bangkok clearly indicates that problems exist in the implementation stage rather than the planning stage. The strategy in encouraging the implementation of plans is a key to success in tackling land use, transport and environment problems in Bangkok. It well understands that only appropriate set of policy measures can translate the plans into implementation program. Integrated policy measures is one of the most important part in plan implementation process. The alternative approach for implementing integrated strategies in Bangkok should place more emphasis on the following subjects; (1) formulation of integrated policy measures, (2) provision of analysis tool for assisting decision-making and (3) institutional set-up.

4.2.1 Integrated Policy Measures Formulation

There is a wide range of implementation measures that can be considered for application in transport and land use policies. These measures should be grouped in such a way that the interaction between land use and transport of different types of measure can be described.

Experience (May, 1993) has shown that success is more likely to be achieved by employing a range of policy options which help complement each other in their effects. A wide range of policy options can be examined by taking a series of strategies that represent particular approach to policy instruments. The integrated policy can be developed by combining complementary policy instruments. Such a guidance can help to group together measures that appear likely to contribute to the resolution of the problems.

The preliminary evaluation of integrated policy measures is possible to start with the formulation of comprehensive checklist of possible implementation measures. This would serve as a directory of prescriptive instruments to address the various land use, transport and environmental problems faced within the metropolis. For example, the measures can be grouped according to the following criteria: (1) nature of measures, (2) requirements for implementation and (3) scope of its influence. The first criteria regards the measures within five policy instruments: regulation/ management, operation, pricing/taxation, investment and education. The second refers to location (site), length of time, project cost and administrative power required to be implemented. The third criteria involves possible direct and indirect impact of measure on land use, transport and environmental systems. The past performance of individual measure can be used to develop a number of indices to reflect the likely impacts of their implementation. Finally, the preliminary set of implementation measures which appear likely appropriate to a particular strategy can be formulated by using a qualitative assessment based on above method.

The next step involves the quantitative evaluation that the impacts of changes in policy instruments on elements of vehicular modes and types of land use as well as environmental condition need to be assessed. The evaluation procedure should design to reflect land use, transport and environmental objectives as much as possible. The analytical models of integrated land use and transport including environment is required to provide quantitative information necessary for decision-making. The models should capable of representing complex interaction between demand and supply of land use and transport as well as environmental situation as externality of the markets, and provide information for evaluation.

It is worth noting that Bangkok is lack of analysis models suitable for evaluation such integrated policy measures. The conventional land use and transport models currently applied are insufficient to examine a wide range of policy measures especially their interactions. Therefore, new analysis planning tools need to be developed for this purpose.

4.2.2 Analysis Tool for Assisting Decision Making

The main purpose to prepare an analysis tool for planning, which is a computer aided analysis system for planning, is to provide broad comparison of possible policy options with planners. The model is going to play an important role in understanding urban phenomena and producing quantitative predictions of future situations. The analysis model can be viewed as a form of integration of different planning levels and as a mean of achieving consistency within a plan. In this sense it should be comprehensive and structured in aggregate manner.

A basic requirement of model building for Bangkok is that the model should be small and fast to operate with considerations of data availability, technical capacity and limited budget in

data acquisition. However, it must give the results that are reliable enough for the purpose. Provision of an analysis model with graphic presentation tools using a personal computer will make the model more attractive and understandable. This will assist governmental agencies in discussing policy measure options with each other. Hence it is expected to bring about a better implementation.

4.2.3 Institutional Set-up

A large number of agencies involve in the planning and implementation of land use and transport in Bangkok. The complex interrelationships among agencies result in overlapping responsibilities as well as in little interaction between them. The analyses of existing institution problems in the management of urban development in Bangkok from various studies have revealed a shortcoming in the current planning and implementation institutions with the same conclusion. Major problems include the lack of coordination among the various agencies involved in planning and implementation urban infrastructure, the absence of agencies with the power to implement effective land use and pollution controls, the limited involvement of local authorities in implementation plans and projects, and insufficient financial resources.

For successful implementation of the integrated land use and transport strategy, there is a need for institutional arrangement to strengthen inter-sector coordination and the efficiency of public finance and to enhance local government authorities. The model examples of institution set-up for management urban development in Bangkok which might suit to the above strategy are discussed elsewhere.

5. CONCLUDING REMARKS

Bangkok metropolis is still undergoing rapid changes. These changes will create a more dispersed pattern of land uses and trips. The lack of land use control in the past has caused uneven and inefficient development in all direction. The ribbon development will continue along major transport networks. The lack of efficient mass transport and road network system ensure further that transport condition will continue to deteriorate at least in the near term before proposed rail mass transit implemented. No single, immediate action is capable of bringing substantial reductions in air pollutants. A wide range of short, medium and long term improvement is called for. The high level of infrastructure investment projects such as rail mass transit, expressways and satellite town scheduled on the Bangkok development plan will not be achieved if the existing problems is not be solved.

The successful implementation of plans requires adequate financing, effective implementation measures and efficient institutional arrangement. It is important to formulate appropriate sets of implementation measures regarding land use, transport and environment. This can be an instrument in encouraging the implementation of plan. For this purpose, it is necessary to develop quantitative analysis tool for evaluating a wide range of policy measures that might provide a forum regarding integrated planning and implementation for agencies concerned.

This paper has attempted to raise issues, for discussion and debate, in both stages of planning and implementation of land use and transport. Hopefully, the article will provide some improvement viewpoints for the urban management in Bangkok.

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