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## “Ideal” decision-making processes for transport planning: A comparison between Europe and South East Asia

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### ABSTRACT

In a recently completed research project on the decision-making process of sustainable urban transport planning issues for the European Union (EU) – entitled PROSPECTS (*Procedures for Recommending Optimal Sustainable Planning of European City Transport Systems*) – an “ideal” decision-making process for sustainable transport planning decisions in the European context was identified. A further EU-funded networking project (SPARKLE (*Sustainability Planning for Asian Cities making use of Research, Know-How and Lessons from Europe*)) considered the relevance of the PROSPECTS process to South East Asia, through seminars and workshops in Thailand, Vietnam, Cambodia and Laos. This paper summarises various conclusions reached in these events. Whilst it was generally found that the basic element of the PROSPECTS approach transferred reasonably well to South East Asia, various key factors require revisions to be made to the approach. The most important of these factors are: differing traditions in planning; different weights in the transport-related objectives, use of only a limited set of potential policy instruments, fast growth rates (in both economic and travel terms); differences in types of vehicle used; and lack of data for use in assessment and modelling. These factors could be addressed in more detail in future research projects.

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### 1. Background

The worldwide ongoing trend of urbanisation supports the economic growth associated with the current phase of globalisation. However, the resulting densification in population and increase in (urban) economic activity can lead to significant negative “quality of life” effects if combined with an inadequate transport system, in particular a transport system, which is biased towards private vehicles.

In this area of conflict, the planning of transport systems (in the context of the overall development of urban regions) takes an increased significance. Furthermore, it is important to understand the functioning of decision-making processes with respect to transport planning, and to design guidelines for helping such processes.

The recently finished EU-funded project PROSPECTS – *Procedures for Recommending Optimal Sustainable Planning of European City Transport Systems (PROSPECTS 2000–2003)* – investigated the decision-making processes for urban transport planning, and

identified an “ideal” decision-making process for sustainable transport planning in the European context. This process, which incorporated results from a number of previous EU research projects, was described in detail in a “Decision Makers Guidebook” (DMG) ((May et al., 2003, 2005). The DMG was designed to help all those involved in decisions on land use and transport, in cities throughout Europe, whether as politicians, professional advisers, stakeholders or individual citizens.

The DMG is supported by two other guidebooks: a Methodological Guidebook (Minken et al., 2003), which explains how a particular option can be implemented; and a Policy Guidebook (ITS, 2002), which explains how particular policy instruments operate based on real-life experience. All the three Guidebooks are available for free on the internet or as a hard copy (the web addresses are provided in the Reference list below).

In a further EU-funded project, SPARKLE – *Sustainability Planning for Asian Cities making use of Research, Know-How and Lessons from Europe (SPARKLE, 2004)* – the transferability of this “ideal” process to South East Asia was put under scrutiny, through two seminars (in Bangkok and Hanoi) and eight intensive participatory workshops in Thailand, Vietnam, Cambodia and Laos. Each seminar was attended by more than 200 decision makers and their advisers, and each workshop was between 20 and 30 participants, who were mainly local transport and land use

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planners in government organisations. The workshops provided an in-depth knowledge on the approach to formulate and analyse a sustainable transport and land use policy. They also involved group discussions on the following topics: whether the logical structure make sense to their cities; definition of sustainability; objectives; policy instruments; barriers; strategy; and public participation. Results from the discussions are summarised in Section 4.2.

The DMG was introduced in both seminars and workshops, with the latter focusing upon how the DMG might be applied “locally”. The feedback gained from these activities was positive and encouraging, although it was recognised that there were some significant differences as to how the DMG approach might be applied in a South East Asian context.

For the workshops in Thailand and Vietnam, participants had the opportunity to work interactively with a state-of-the art land use and transport interaction (LUTI) model MARS (Pfaffenbichler, 2003), and were able to see the predicted outcomes, with respect to goal fulfilment, of both single-policy instruments and combinations of instruments. The opportunity to combine individual instruments to form strategies allowed them to explore synergetic effects of such combinations, and helped their understanding of the complex dynamic interactions between land use and transport systems.

This paper provides some insights gained from these activities, and is structured as follows. In Section 2, we introduce a classification of different decision-making processes identified in Europe, and describe in more detail the so-called “ideal process” developed for use in Europe. In Section 3, we discuss general issues of transferability of such a process to South East Asia. In Section 4 we highlight necessary adaptations of the process to fit the South East Asian context (focussing particularly upon the four South East Asian countries involved in SPARKLE). The conclusions of the paper are given in Section 5.

## 2. Decision-making processes, as identified in Europe

### 2.1. Overview

The DMG (May et al., 2003, 2005) identified three broad approaches to decision making in Europe: vision-led; plan-led; and consensus-led.

*Vision-led* approaches usually involve an individual political leader (such as a mayor) having a clear view of the future form of city, and pushing through the policy instruments needed to achieve that vision.

*Plan-led* approaches involve specifying objectives and problems (with problems being defined as failures of current or predicted future conditions to meet the objectives); adopting an ordered procedure that identifies possible solutions to those problems; and selecting those which perform best. This procedure will typically involve the use of formal appraisal methods (such as cost–benefit analysis or multicriteria analysis), which receive input from computer models that predict the future impacts of alternative policies. An “ideal process” summarising the key aspects of the plan-led approach is given below in Section 2.2.

*Consensus-led* approaches involve discussions between the stakeholders to try to reach agreement on each of the stages in formulating a strategy. Ideal agreement is needed on: the objectives to be pursued and their relative importance; the problems to be tackled and their seriousness; the policy instruments to be considered and their appropriateness; the selection of policy instruments, which best meet the objective; and the way in which they should be combined into an overall strategy and

implemented. In practice much consensus-building focuses on the choice of policy instruments but it can be considerably enhanced by considering objectives and problems as well. Clearly, public participation is central to the consensus-led approach. The PROSPECTS DMG identified five different levels of public participation as follows:

- *Information provision*: A one way process to keep those with an interest in the strategy informed.
- *Consultation*: The views of stakeholders and the general public are sought at particular stages of the study and the results are input back into the study process.
- *Deciding together*: Where the stakeholders become decision makers.
- *Acting together*: Where the stakeholders also become involved in the implementation of the strategy.
- *Supporting independent stakeholder groups*: Where the city enables community interest groups to develop their own strategies.

There are some obvious pitfalls to each approach.

A *vision-led approach* is critically dependent on the individual political leader with the vision. If he or she leaves office, the vision can fade (as has been observed to happen on a number of occasions in the past).

A *plan-led approach* can become unduly dependent on professional planners, who may lose sight of the needs of ordinary citizens, in particular those who are not associated with powerful groups and thus cannot make their voices heard.

A *consensus-led approach* may, unless agreement can be reached in a reasonable length of time, lead to unacceptable delay and inaction.

In general, the DMG would recommend that a combination of all three approaches should be used, with a precise balance determined by the needs of a given location. This recommendation is clearly aiming to be flexible and underlies the general attitude of “non-prescription” taken within the DMG.

It is worth mentioning that a survey of 60 European cities, carried out within PROSPECTS (May et al., 2003), showed that the majority of cities adopted a mixed approach, as can be seen in Fig. 1.

### 2.2. The “ideal process” in a plan-led approach

It follows from the discussion in the previous section that there are many different ways of conceptualising decision-making

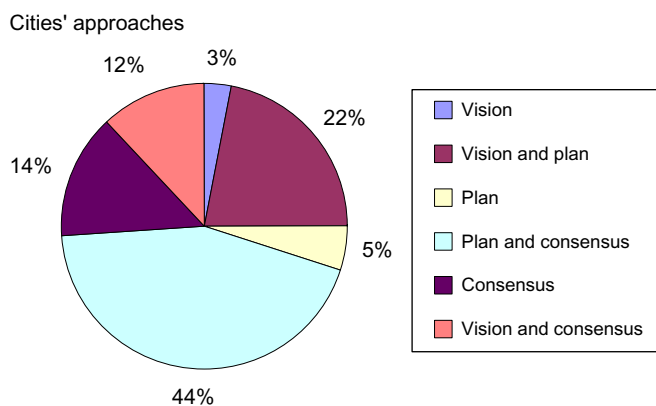


Fig. 1. Approaches adopted in 60 European cities (May et al., 2003, p. 7).

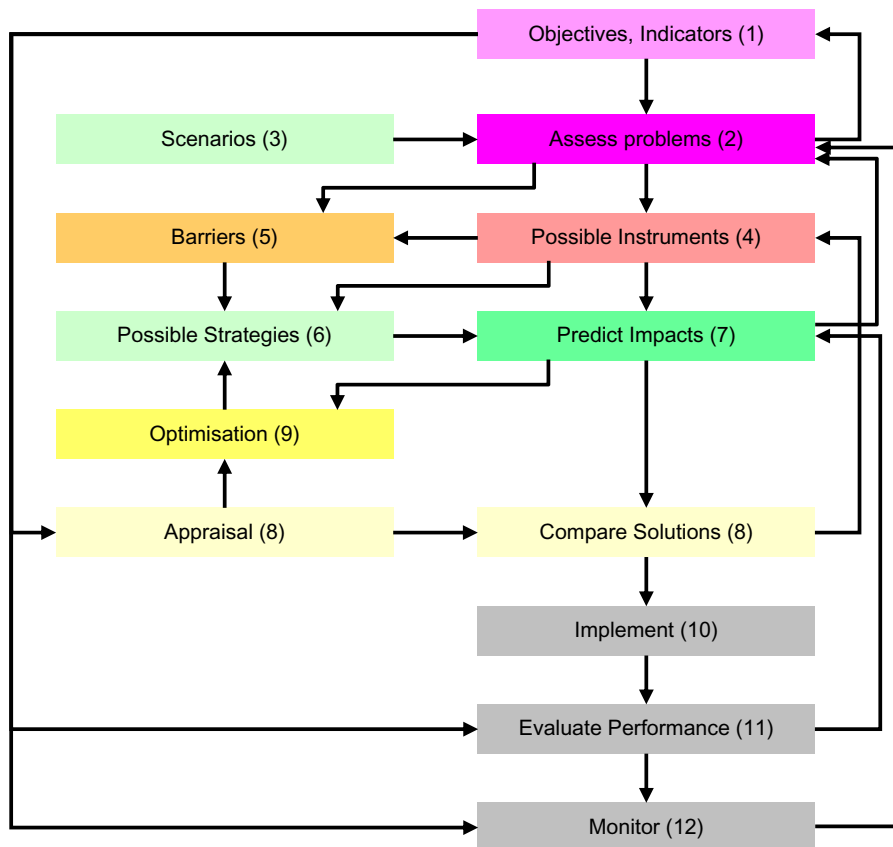


Fig. 2. The “ideal” decision-making process introduced in the Decision Makers’ Guidebook.

processes. Such differences typically depend upon what elements of decision making a particular theorist considers to be the most significant. Whilst this paper takes a neutral stand on this (frequently controversial) issue, it claims that, *if a plan-led approach is to be adopted*, an “ideal” way (in a Platonic sense) of conceptualising this process is as given in Fig. 2, which is taken from the DMG.

The suggested “ideal” process contains the following initial steps: (1) a clear definition of objectives and indicators; (2) the explicit definition of problems, at present and in the future; and (3) a specification of possible future scenarios. Subsequent steps involve: (4) the identification of possible instruments to tackle the problems; (5) the assessment of those barriers to implementation, which will arise for certain policy instruments; and (6) the development of strategies as packages of instruments that can reduce the impact of barriers.

The next steps are concerned with assessment and involve: (7) the use of models to make quantified predictions of the impacts of individual instrument and/or strategies; and (8) a comparison of these predictions using an appraisal method, which is consistent with the previously specified objectives. These steps may well identify ways in which the instruments or strategies can be improved, and it is possible at this stage to (9) use optimisation techniques to identify such improvements.

The final steps in the process occur once a decision has been taken with respect to a particular instrument or strategy: (10) the instrument/strategy is implemented; (11) its performance is assessed against the original objectives (with such assessment potentially helping to improve the predictive process); and (12) the ongoing regular monitoring of the instrument/strategy.

### 3. Transferability to South East Asia: general comments

This section discusses, on a general level, the transferability to South East Asia of the insights contained in the DMG, which, as explained in Section 2, were developed within a European context.

As mentioned earlier, there is a wide diversity in the types of decision making used in Europe, i.e. the balance between plan-led, vision-led and consensus-led approaches varies greatly between the European cities. Thus, there is no standard approach to be considered when analyzing transferability to South East Asia. However, the question still remains as to whether there would be expected to be, in general, a difference in the types of approach to be used in Europe and in South East Asia. When answering such a question, the key factor to take into account is that South East Asian cities are typically growing much faster (economically and population-wise) than the European cities. This leads directly to the following consequences:

- Plan-led approaches are based heavily on the availability of data and the possibility of making predictions. Inevitably, in fast growth situations, data is less available and detailed predictions are harder to make. Thus there is an argument for weakening those aspects of the plan-led approach that rely heavily upon data and accurate model predictions.
- On the other hand, fast growth rates can possibly lead to some extremely negative outcomes in terms of the transport system, i.e. more negative than those that might occur in the relatively more stable cities of Europe. In view of this possibility, plan-led approaches are arguably more important

for preempting such outcomes in South East Asia than in Europe.

- (c) The existence of fast growth has the possibility of creating social rupture, particularly given the likelihood that, unless adequate steps are taken, some social groups will benefit heavily from such growth whilst others will only suffer disbenefits. It follows that consensus-led approaches are extremely important in fast growth situations. Firstly, such approaches are important “in their own right” to ensure a sense of social cohesion. Secondly, they can be used to help devise plans to overcome problems faced by the “losers” from fast growth. Mechanisms for achieving consensus-led approaches will typically be based on some form of public participation. (However, it needs to be stressed that the appropriate form of such participation will be highly dependent on cultural norms and practices, so it is inadvisable to be too prescriptive over such mechanisms in a cross-cultural context.) It follows from such arguments that attempts should be made wherever feasible to include (some form of) public participation in decision making, even if such decision making is primarily plan-led.
- (d) Fast growth and the associated widening of the gap between rich and poor lead to various other consequences, which have a direct impact on the urban planning process. On the one hand, the growth in “illegal” settlements by the poor clearly has an impact on the practicality of participation processes, given that the dwellers in these settlements are typically “legally invisible”. On the other hand, wealthy members of society might consider that they do not need to conform to planning legislation, and might attempt (frequently successfully) to use various forms of informal pressure (sometimes including bribes) to overcome any restrictions put upon them.

At first sight, these considerations would appear to point in different directions with respect to the importance of plan-led approaches in South East Asia. However, when taken together, it can be seen that the importance of such approaches would in general be the same in South East Asia as in Europe; the difference is more concerned with how these approaches should be carried out, and this is the subject of Section 4 below.

#### 4. Transferability of the “ideal” plan-led process to South East Asia

The main purpose of this section is to suggest how the “ideal” plan-led process, described above in Section 2.2, might be transferred to South East Asia. Before doing so, it is necessary to consider, in Section 4.1, certain features of traffic conditions in South East Asia that are different to conditions in Europe.

##### 4.1. Differences between Europe and South East Asia

###### 4.1.1. Trends, growth rates

As mentioned above, different developmental trends are taking place in Europe as compared to Asia. For example, in Europe, the population in total will grow very slowly over the next 20 years with an average growth rate of 0.2% per year. After 2025, it is forecasted that there will occur a decrease of total population with a similar rate. Population growth rates are generally much higher in Asia. For example, in Thailand the growth was 0.4% per year between 2003 and 2005.

With respect to levels of motorisation, in Europe there exists 460 cars per 1000 inhabitants (year 2002), with an average annual growth rate of 2.3% over the period 1995–2002, as shown in Fig. 3.

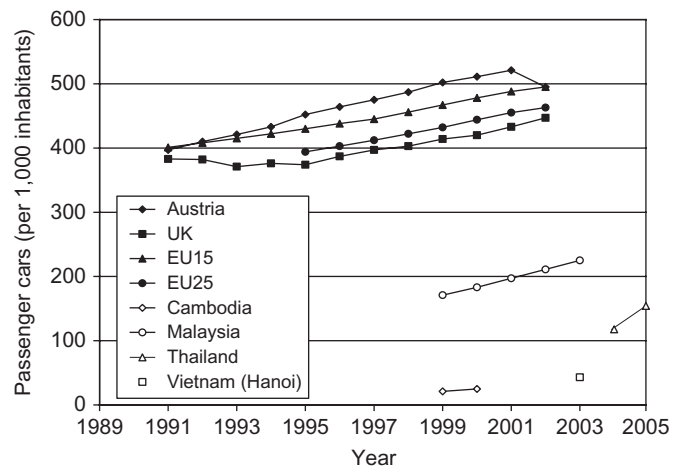


Fig. 3. Comparison of car ownership in Europe and South East Asia. Source: EUROSTAT (<http://epp.eurostat.ec.eu.int/>) (IRF, 2006), Police Department Thailand (2006) (TDSI, 2004).

The total stock of cars in absolute terms increased from 175.6 million cars in the year 1995 to more than 210 million cars in 2002, comprising an average annual increase of 2.7% (total population in Europe is 456.5 million year 2002). The motorisation rate in Asia is increasing more rapidly than in Europe, albeit from a much lower base level (e.g. in Thailand it increased 30% between 2004 and 2005, from 118 cars per 1000 inhabitants in year 2004 to 154 cars in 2005, as shown in Fig. 3). The most important difference between Europe and Asia is the high availability of motorcycles, as shown in Fig. 4. In total, in the year 2004 there existed in Thailand, Cambodia and Malaysia together (total population of 102.3 million) in total 15.6 million cars and about 23.2 million motorcycles.

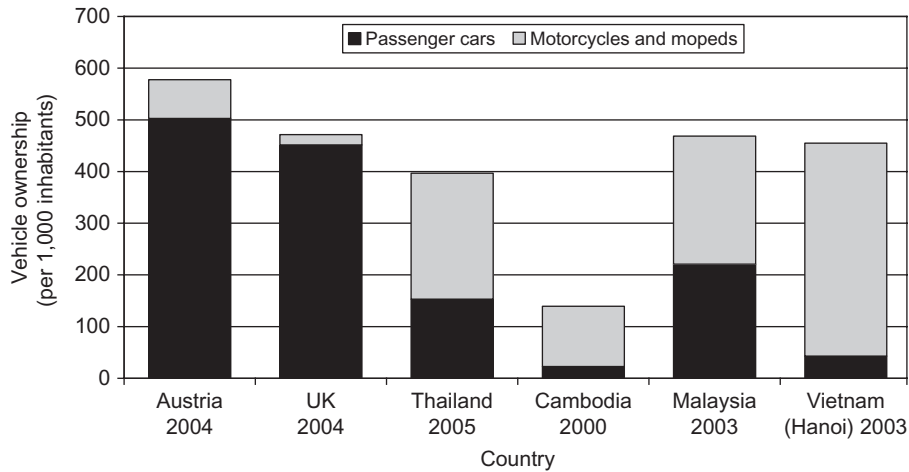
Worthwhile to know is that the GNI (gross national income) per head for the year 2004 in these countries was: 32,280 US&dollar (Austria), 33,360 US&dollar (UK), 2490 US&dollar (Thailand), 350 US&dollar (Cambodia) and 4250 US&dollar (Malaysia). By comparing the motorisation rate per GNI per head between Europe and South East Asian, it can be said that the motorisation rate is between 6.1 (Malaysia) and 22.2 times (Cambodia) higher than for example in Austria. In other words, compared to their GNI the South East Asian countries have significant higher motorisation rates than that of the rich countries in Europe.

##### 4.1.2. Differences in the transport systems of South East Asian and European cities

Differences in means of transport in South East Asia, compared to Europe, can be summarised as follows.

In Europe, public transport mostly consists of high-quality truck-based systems (in the larger cities) and bus-based systems (in all cities), whereas Asia public transport typically consists of low-quality bus/truck services and special forms of para-transit such as Songtaews, Tuk-tuks, Samlors (see Fig. 5) and motorcycle taxis. Because of poor public transport, car users and motorcyclists are highly captive to their respective modes. Such captivity is accentuated in the case of motorcycles since motorcycle use is very convenient and cheap. Furthermore, status considerations are very important for high-income families, though it is difficult to quantify precisely the extent of such importance.

Walking trips in South East Asia are not considered as very important by transport planners and decision makers, and therefore insufficient attention is given to this means of transport, in particular with respect to data collection, modelling, policy



**Fig. 4.** Comparison of private car ownership and motorcycle/moped ownership in Europe and South East Asia. Source: (IRF, 2006), Police Department Thailand 2006 (TDSI, 2004).



**Fig. 5.** Songtaews, Samlors, and Tuk-tuks.

design and the implementation of measures. For example Kep Chuk Tema, governor of the city of Phnom Penh, Cambodia said: “I want that all the pavements in Phnom Penh become smaller. The people here use cars and motorcycles. We do not like to walk” (Hollmann, 2006). It should be noted that, although significant improvements have been made in cities such as Vienna, Zurich and Karlsruhe, walking and cycling are still not given sufficient recognition in many European cities by transport planners and responsible city authorities.

In South East Asia, cycling is rarely used for main purposes of travel, particularly in highly developing countries (e.g. Thailand). Cycling is used mainly by students and low-income people. In Vietnam, cycling is noticeably declining.

Tuk-tuks (used as taxis) may be more important (in the sense of having a higher mode) share than walking and cycling.

There is frequently a high proportion of motorcycle (with a very high mode share in Vietnam, particularly in the largest cities, i.e. Hanoi (81% share of motorcycle trips of all motorised trips (Schipper et al., 2005) and Ho Chi Minh City (90% share of motorcycle trips of all motorised trips (JICA et al., 2004)).

In addition, the utilisation of road infrastructure differs significantly between Europe and South East Asia. There is a conflict between different modes, particularly between private cars and motorcycles, and between private cars and non-motorised transport modes, as is shown in Fig. 6.

However, careful definition is required as to exactly what constitutes a “conflict”. Whilst such a definition should clearly include the behaviour that leads to accidents, it should not necessarily be extended to the concept of different modes sharing road space.



Fig. 6. Conflict among different modes.

From a system point of view, South East Asian urban transport systems are very efficient: the relatively low-speed level (below 25 km/h) allows a high throughput; the system is very space efficient and is working with few rules (highly self-organising); and the transport system fits very well with the urban densities existing in South East Asian cities. During the SPARKLE seminar in Ho Chi Minh City in March 2006, we performed a short peak period traffic count at a typical two-lane road section. The traffic volumes extrapolated to 1 h are nearly 18,000 vehicles per hour (150 cars, 1800 bicycles and 16,000 motorcycles) or about 23,000 persons per hour. The counted vehicle occupancy rates were about 4 persons per car, 1.2 person per bicycle and 1.3 persons per motorcycle.

Derstroff and Rossmark (2005) have counted similar traffic volumes at a two-lane, radial road in Hanoi. Their counts result in about 13,000 motorcycles and 1000 cars or 25,000 people per hour. The US Highway Capacity Manual (HCM, 2000) cites a capacity of about 2200 cars per hour and lane. In combination with a car occupancy rate of about 1.2 persons per car typical for Europe this results for a two-lane road in a capacity of about 5300 persons per hour; i.e. the densities are much higher in South East Asian cities than in European cities and therefore from the point of view of land consumption the transport system in South East Asia is much more efficient than in Europe.

#### 4.2. Elements of the “ideal” plan-led process

This section considers some of the elements in the ideal plan-led process (represented by the boxes in Fig. 2), with thoughts about their transferability to South East Asian cities.

The elements considered are: objectives, policy instruments, barriers and strategies. The reasons for selecting these elements are:

- from the discussions during the two seminars and eight workshops in Thailand, Vietnam, Cambodia and Laos, four issues were found to be the weakest in the planning processes in these countries; and
- the other elements in the planning process (such as monitoring, evaluation, assessment and optimisation) are more concerned with technical methodology, and therefore raise different questions with respect to transferability.

##### 4.2.1. Objectives

In developing a land use and transport strategy, it is essential to be clear what the strategy is designed to achieve. Objectives are broad statements of the improvements, which a city is seeking in

Table 1

Current priority of objectives in South East Asian cities in comparison with Europe.

Objectives	Priority		
	High	Medium	Low
Economic efficiency	√ x X		
Protection of the environment		x X	√
Liveable streets and neighbourhoods		√ x X	
Safety	x	√ X	
Equity and social inclusion		X	√ x
Contribution to economic growth	√ x X		
Intergenerational equity			√ x X

√ – South East Asian cities (results of SPARKLE seminars and workshops).

X – European cities from the PROSPECTS survey (The survey cities are representative of all city sizes in Europe, and include approximately 25% small cities (<100,000 residents) and also many medium size cities (<250,000). On the other hand, the core cities in the PROSPECTS project all had more than 450,000 inhabitants) (Matthews and May, 2001).

X – PROSPECTS core cities (Edinburgh, Helsinki, Madrid, Oslo, Stockholm, Vienna) (Matthews and May, 2001).

its land use and transport system. It is important that decision makers and other stakeholders determine (preferably through public participation process) the objectives which they wish to pursue.

Relating to sustainability, seven objectives are suggested in the DMG, including protection of the environment, liveable streets and neighbourhoods, safety, equity and social inclusion, economic efficiency, contribution to economic growth, and intergenerational equity. Usually it is not possible to satisfy all of the objectives which may be desirable, as some of them will conflict; for example it is often difficult to improve economic growth without intruding into the environment. Therefore, priorities between objectives are important.

Many South East Asian cities currently focus only on economic efficiency and growth, with much less concern for environment and equity (Table 1). This leads to strategies, which prioritise policy instruments relating to road infrastructure provision. It follows that if objectives are set inappropriately (they are unbalanced), a designed strategy cannot achieve sustainability. For example, some urban transport master plans in Thailand set objectives to increase traffic speed and reduce V/C ratio (traffic volume per road capacity). This leads to instruments to ease traffic by expanding road capacity.

Objectives relating to intragenerational equity, social inclusion and intergenerational equity are arguably given the lowest priority in both Europe and South East Asia. Protection of the environment is also of less concern in South East Asia. It follows that non-motorised transport (which is particularly associated

with the poor, and which creates no pollution and has no need of fuel energy) is considered unimportant by transport planners and decision makers, as well as by those members of the public who are in a position to influence policy-making. As a result, adequate facilities are not developed to support non-motorised transport.

In addition, some cities in South East Asia add a new objective concerning the protection of local culture. This is implicitly included in the DMG as a part of protection of the environment but does not receive a high profile.

#### 4.2.2. Policy instruments

Policy instruments are the tools, which can be used to overcome problems and achieve objectives. There are a number of instruments, which can be categorised by type of intervention: land use measures; infrastructure provision; management of the infrastructure; information provision; attitudinal and behavioural measures; and pricing.

Table 2 shows the policy instruments (based on the classification used in the DMG (May et al., 2003), own investigations by analysing local transport plans) currently in use in South East Asian cities. It is often very difficult to determine how a city has chosen policy instruments, which it chooses to use. Frequently, proposals for policy instruments such as road schemes (mainly for car use) have a long history (i.e. they have been included in many plans in the past even though they have not been implemented). Thus, whenever a “new” strategy is developed, it is likely to include these old schemes. As a result, alternative instruments are very less utilised.

Infrastructure provision and management are often used in Europe and South East Asia but in different ways. In particular, in Europe, as compared with South East Asia, such measures typically put a greater emphasis upon supporting travel by public transport, while in South East Asia the emphasis is more upon enhancing travel by private vehicles.

Policy instruments that attempt to change travel behaviour (e.g. pricing, TDM (travel demand management) and attitudinal and behavioural measures) are rarely used in South East Asia (except Singapore). Various explanations can be given for this. In general, though car users form a politically-important social group and, given that they do not want to pay more in road charges and do not want to give up their cars, they can exert a strong influence on the political process to ensure that such measures are not seriously considered. Frequently, also, there is general distrust of how government uses revenue from taxation, so that it is difficult to get support for such measures from the public.

**Table 2**  
Policy instruments currently used in South East Asian cities in comparison with Europe.

Policy	Level of use		
	High	Medium	Low
Land use measures	x	√ X	
Infrastructure provision	√ (Car) X (Rail)		x (Rail)
Management of the infrastructure	√ (Car) x (PT)	X (PT)	
Information provision		x	√ X
Attitudinal and behavioural measures		√ (Safety) x	X
Pricing		x	√ X

√ – South East Asian cities (results of SPARKLE seminars and workshops).

x – European cities from the PROSPECTS survey (The survey cities are representative of all city sizes in Europe, and include approximately 25% small cities (<100,000 residents) and also many medium size cities (<250,000). On the other hand, the core cities in the PROSPECTS project all had more than 450,000 inhabitants) (Matthews and May, 2001).

X – PROSPECTS core cities (Edinburgh, Helsinki, Madrid, Oslo, Stockholm, Vienna) (Matthews and May, 2001).

As an alternative approach, the DMG suggests that it is much more valuable to start with a clean sheet, considering the full range of policy instruments available, and deciding which are likely to contribute most. In short, it is far better to start with the question “Which of this list of policy instruments should I consider?” rather than “How best can I make use of earlier proposals?”.

The policy instruments listed in Table 2 are taken from KonSULT. For each of the infrastructure, management and information there is a separate sub-category for walking and cycling. Since slow modes are not explicitly addressed in the objective list (Table 1) and also not mentioned in the first level of the policy list (Table 2), these very important means of transport, especially in the context of urban settlements are very often cancelled out in the perception of transport planners and political stakeholders in Europe as well as in South East Asia.

#### 4.2.3. Barriers

A barrier is an obstacle that prevents the coming-into-force of a particular instrument, or causes delays in its implementation. Barriers may lead to certain policy instruments being overlooked, and the resulting strategies being much less effective. For example, cities may be tempted to reject demand management measures simply because they are unpopular, although they are very likely to be an important part of strategy.

Barriers can be rigid or flexible. The former are more difficult to overcome than the latter. In South East Asia, rigid barriers include:

- *Barriers from political system and decision makers (politicians):* Such barriers relate to the political and public acceptance of instruments, and are clearly tied closely to the political system in operation in a particular context. Since political systems vary between Europe and South East Asia, there will inevitably be differences in the types of political barriers found in the two regions.
- *Barriers from private vehicle-oriented cities:* During the last few decades, Asian cities have increasingly been building infrastructure for car use. For example in Bangkok, there are over 200 km of expressways, and the main roads usually have at least four lanes in each direction. This provides a major obstacle for public transport improvement, and for the encouragement of non-motorised transport. These barriers are a result of a ‘wrong’ approach to decision making (leading to unsustainability).
- *Barriers from people’s behaviours and habits:* When road infrastructure is provided, travellers get accustomed to using it, either enjoying driving their cars or being forced to use their cars because of poor public transport provided. This barrier results as a direct consequence of the barriers mentioned above.

Some flexible barriers which are similar to barriers in European (stated in May et al., 2005) include:

- *Legislation and institutional barriers:* These include lack of legal powers to implement a particular instrument, and legal responsibilities which are split between agencies, limiting the ability of the city authority to implement the affected instrument.
- *Financial barriers:* These include budget restrictions limiting the overall expenditure on the strategy, financial restrictions on specific instruments, and limitations on the flexibility with which revenues can be used to finance the full range of instruments.

- **Political and cultural barriers:** These include lack of political or public acceptance of an instrument, restrictions imposed by pressure groups, and cultural attributes, such as attitudes to enforcement, which influence the effectiveness of instruments.
- **Practical and technological barriers:** For land use and infrastructure these may well include land acquisition. For management and pricing, enforcement and administration are key issues. For infrastructure, management and information systems, engineering design and availability of technology may limit progress. Generally, lack of key skills and expertise can be a significant barrier to progress.

In South East Asia, these flexible barriers are highly inter-related with the political systems in place. In principle, these barriers would not be difficult to overcome, if these systems emphasised “good governance” and transparency, thus increasing government stability and credibility, and gaining the trust and support of the public. However, in the near future, quite a lot of progress needs to be made in meeting these aims.

#### 4.2.4. Strategies

There is no single solution to urban transport problems. Thus, there is a need to develop a transport and land use strategy that consists of a combination of policy instruments as listed in Section 4.2.2. Such a strategy is very likely to be more effective than applying only a single instrument. In this way synergy can be achieved between the instruments (that is the overall benefits are greater than the sum of the parts), and this will help to overcome the barriers mentioned in Section 4.2.3.

According to the DMG, there are four key elements, which belong to any strategy to achieve sustainability in a transport system: reducing the need to travel; reducing car use; improving public transport; and improving efficiency of the road network. Any successful strategy has to contain instruments to address all four of these elements. A key issue of such an integrated strategy is how these elements should be integrated and balanced. In the latest version of KonSULT there are two additional key elements listed – namely improving walking and cycling and improving freight.

Moreover, it is important to commit to the whole strategy (May, et al., 2003), or else the strategy will not be effective. In South East Asia, it is often the case that some less attractive instruments are not implemented. From the point of view of politicians, less attractive instruments might be small projects for improving access and egress to/from public transportation. From the point of view of the politically-important social group of car users, pricing policy might be unacceptable. For example in Thailand, the Urban Rail Transportation Master plan (OCMLT, 2001) proposed a rail transit network in Bangkok, and also recommended that road pricing and a new taxation scheme should be combined to support this rail development. However, currently the government is only considering approval of the rail network as an independent measure, i.e. decoupling it from the pricing scheme.

Table 3 summarises the type of strategies currently used in South East Asia and Europe. It can be seen that improving the road network for car use has been taken as the first priority for few decades (as was shown in Table 2). Currently, though there is an increasing interest in improving public transport, however, there is less consideration of reducing car use and the need to travel due to political barriers (as mentioned above).

Some success can usually be achieved by improving the public transport and the road network. However, in those contexts with a high level of private vehicle (car and motorcycle) use, if such use is

**Table 3**

Key elements of strategy currently used in South East Asian cities in comparison with Europe.

Key elements	Level of consideration		
	High	Medium	Low
Reducing need to travel			√ X
Reducing car use		X	√
Improving public transport	X	√	
Improving road network	√ X		

√ – South East Asian cities (results of SPARKLE seminars and workshops).

X – Expert guess carried out by the authors of this paper for European cities.

not reduced, the opportunities for improving the road network will be severely limited, as will be the ability to improve bus-based public transport. Moreover, if the growth in the need to travel is not curtailed, improvements achieved in the short term will soon be lost (May et al., 2003).

## 5. Conclusion

The overall structure of the “ideal decision-making process” seems to be suitable within a South East Asian context (at least for the four countries involved in SPARKLE). Notwithstanding, it must be emphasised that such an “ideal process” is, in most cases, not fully implemented in European cities too. Compromises and adaptations have to be made to meet local circumstances in both regions.

Four elements within the “ideal process” have been highlighted in this paper with respect to their transferability between Europe and South East Asia: objectives, policy instruments, barriers and strategies.

It was recognised that the setting of the *objectives* in South East Asian cities needs adaptations to fit to local circumstances. The concept of sustainability, and the related necessity of taking environmental issues into consideration, needs more weight in political decision making in Europe and especially in South East Asia. Public participation is an important instrument to define public acceptable objectives, in particular within a process of open and honest discussion between all stakeholder groups (local population, environmentalists, transport planners, politicians). In general, all participants in decision-making processes should be encouraged to understand better sustainability concepts, in order to be able to incorporate them into setting objectives and formulating strategies. At present the instrument of public participation is in Europe, at least at the project level, reasonably well established (although there are great differences between different localities in Europe in this respect). In South East Asia public participation on the level of objective definition and on the project level is still very poor.

The present set of *policy instruments* used in South East Asian cities should be extended and should not to be too narrowly focussed upon infrastructure provision for car users. Mass transport and the promotion of non-motorised modes need to be given more weight to solve present and future transport challenges especially in the light of the vanishing fossil fuel supply (Peak Oil, 2008) and global climate change (Wackernagel et al., 1996). In particular, the promotion of non-motorised modes would be greatly enhanced through the provision of information concerning the advantages of “slow” modes in the context of the highly populated urban areas in South East Asia.

Most of the *barriers* of implementation are inter-related with the existing political systems and have a long tradition. However,



if the concept of sustainability becomes socially well-entrenched, such (rigid) barriers can be overcome. As described in detail in the DMG, combinations of policy individual instruments can be used to overcome certain barriers by compensating losers (with respect to any new scheme). These strategies need to be formed in a way so that objectives can be met by minimising the unavoidable negative impacts for some stakeholder groups. For example if the improvement of public transport involves financial difficulties (barriers), a road pricing scheme may help to support the implementation of the public transport scheme.

The main constraints of the application of the DMG in South East Asia include limitation of knowledge in society on the impacts of car use, and a conflicting interest between own convenience (using private vehicles) and a better environment. Therefore, it is recommended that there should be an increase in programmes of education about the concept of sustainable development, and the impacts (both enabling and hindering) on such development of alternative policy instruments. Furthermore, such an educational programme should include information on mechanisms, which enable all the levels of social groups to participate in setting objectives and formulating strategies to meet such objectives. To support this aim, more research is needed for developing “participation toolsets”, which can facilitate public participation in urban transport planning. Such toolsets would help the provision of information that would not normally be easily available to the public, such as “good practice” stories about transport measures from elsewhere in the world. Such promotion of effective public participation processes would help a great deal in overcoming political barriers to sustainability.

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## References

- Derstroff, T., Rossmark, K., 2005. Individual-Mobilität und Massenmotorisierung in Hanoi-Vorbild für Entwicklungsländer? *PLANERIN-Fachzeitschrift für Stadt-, Regional- und Landesplanung* (4), 46–47.
- HCM, 2000. Highway Capacity Manual. Transportation Research Board, Washington.
- Hollmann, N., 2006. Der Kambodschaner läuft nicht gern-Stadtentwicklung und Verkehrsplanung in Phnom Penh. *Internationales Verkehrswesen* 58 (10), 490–491.
- IRF, 2006. World Road Statistics 2006—Data 1999–2004. International Road Federation, Geneva.
- ITS, 2002. KonsULT—Knowledgebase on Sustainable Urban Land use and Transport. Institute for Transport Studies—University of Leeds <<http://www.konsult.leeds.ac.uk/>>.
- JICA, MOT and HCMC-PC, 2004. The study on urban transport master plan and feasibility study in Ho Chi Minh metropolitan area—HOUTRANS. Japan International Cooperation Agency (JICA), Ministry of Transport, Socialist Republic of Vietnam (MOT) and Ho Chi Minh City People's Committee (HCMC-PC), Hanoi <[www.houtrans.org](http://www.houtrans.org)>.
- Matthews, B., May, A.D., 2001. PROSPECTS Report on Task 16: A Report on the City Survey. ITS Leeds.
- May, A.D., Karlstrom, A., Marler, N., Matthews, B., Minken, H., Monzon, A., Page, M., Pfaffenbichler, P.C., Shepherd, S., 2003. Decision Maker's Guidebook, <[http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/pr\\_del15dmggen.pdf](http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/pr_del15dmggen.pdf)>.
- May, A.D., Karlstrom, A., Marler, N., Matthews, B., Minken, H., Monzon, A., Page, M., Pfaffenbichler, P.C., Shepherd, S., 2005. Decision Maker's Guidebook, <[http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/DMG\\_English\\_Version\\_2005.pdf](http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/DMG_English_Version_2005.pdf)>.
- Minken, H., Jonsson, D., Shepherd, S.P., Jarvi, T., May, A. D., Page, M., Pearman, A., Pfaffenbichler, P.C., Timms, P., Vold, A., 2003. A Methodological Guidebook. Institute of Transport Economics, P.O. Box 6110, Etterstad, 0602 Oslo, Norway <[http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/pr\\_del14mg.pdf](http://www.ivv.tuwien.ac.at/fileadmin/mediapool-verkehrsplanung/Diverse/Forschung/International/PROSPECTS/pr_del14mg.pdf)>.
- OCMLT, 2001. Mass Transit: Urban Rail Transportation Master Plan. Office of the Commission for the Management of Land Traffic (OCMLT), Bangkok, Thailand.
- Peak Oil, 2008 <<http://www.peakoil.com/>>.
- Pfaffenbichler, P.C., 2003. The strategic, dynamic and integrated urban land use and transport model MARS (Metropolitan Activity Relocation Simulator). Technische Universität Wien, Vienna <[http://www.ivv.tuwien.ac.at/publications/online/MARS\\_smallest\\_size.pdf](http://www.ivv.tuwien.ac.at/publications/online/MARS_smallest_size.pdf)>.
- PROSPECTS, 2000–2003. “PROSPECTS-Procedures for Recommending Optimal Sustainable Planning of European City Transport Systems. <<http://www.ivv.tuwien.ac.at/projects/prospects.html>>.
- Schipper, L., Huizenga, C., Ng, W., 2005. Indicators: reliable signposts on the road to sustainable transportation—the partnership for sustainable transport in Asia. In: *eccee 2005 Summer Study Proceedings*, Mandelieu, France.
- SPARKLE, 2004 <<http://www.ivv.tuwien.ac.at/projects/sparkle.html>>.
- TDSI, 2004. Partnership for Sustainable Urban Transport in Asia, Hanoi City—Vietnam. Better Air Quality Conference, Agra, India.
- Wackernagel, M., Rees, W.E., Testemale, P., 1996. *Our Ecological Footprint: Reducing Human Impact on the Earth*. New Society Publishers, Gabriola Island, BC.