

The way forward

Achieving sustainable development is a complex process and requires sustained, comprehensive actions over the long term. Dealing with mobile source air pollution requires an integrated approach as discussed in the section on “Transport and air pollution” of this book. Good transport planning, including TDM and TSM, is fundamental to this approach. Significant political will and technical capacity are required for its implementation.

An integrated approach requires combining elements of land use and transport planning, TDM, TSM and regulation; supported by appropriate policies on resource mobilization, taxation, pricing, subsidies, institutional and legal aspects, promotion and awareness raising. Care must be taken to ensure that the poor and low-income groups are not displaced or unfairly disadvantaged, but rather that they benefit from actions to improve air quality.

Central to the development of an integrated transport strategy are identifying and quantifying the nature and incidence of the local air pollution problem. Potential remedies should be evaluated in terms of their impact in the “real world” and take into account local constraints and characteristics.

Land use and transport planning

Planning, management and investment

A consumer’s demand for transportation is a function of both the distribution of land uses and the intensity of land use activities; transportation is rarely undertaken for its own sake.

Asia’s urban areas underwent rapid growth and transformation in recent years. Comprehensive planning and management of land use and transport in the urbanized, urbanizing, and po-

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tential growth areas within metropolitan areas, are most important in managing the demand for travel. Comprehensive planning is not yet widely practiced in Asian cities, however, there are exceptions, such as Singapore and Hong Kong, China; and the emerging interest from several cities in the region is promising. Planning for urban areas needs to be completed in the context of a realistic national settlement policy.

To date, many Asian governments remain weak at integrating social considerations into urban planning. Planning tends to be top-down with little weight given to more grassroots community-based planning. Effective land use planning is composed of both long-term comprehensive planning that addresses metropolitan scale issues, and site- or locality-specific plans. Comprehensive plans can significantly influence demand over the long-term, while site-specific measures can be used to promote public transport use and achieve relatively quick, but limited outcomes. Appropriate spatial allocation of land uses, with effective site and housing design, can minimize human exposure to transport emissions and noise.

Effective urban development management is required to implement land use and transport plans and policies. Responsive urban management depends on the availability of significant technical capacity, preferably at the local level. At present, there are few cities in the region that have the required level of technical resources.

Basic urban infrastructure remains inadequate in many Asian cities. The timely provision of infrastructure, particularly for water and transport, is a useful instrument for structuring land uses within an appropriate planning framework. Road investment may be very worthwhile, where it assists an efficient hierarchical road network structure that separates through and local traffic, and supports efficient and accessible public transport, even though new roads may also encourage new traffic.

Major roads, mass transit and other urban infrastructure can have a profound impact on the shape and structure of a city and the resulting travel patterns. As governments control the location of much of this infrastructure, a thorough understanding of the impacts of these major decisions is required. Governments

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should also prepare long-term strategies for the development of major transport infrastructure, such as mass rapid transit, that contribute to the overall planning framework.

While governments control the location of much infrastructure and, in theory, regulate transport, in practice, they may have little influence on transport demand patterns and impacts. The risk of regulatory failure is very real and should be recognized. It is important that governments aim to create an appropriate investment and regulatory environment rather than assume that a central planning approach will work as intended.

Financial and other resources are scarce, thus, transport investments must be economically efficient and effective. Rigorous procedures for identifying and assessing proposed investments and all other feasible alternatives are required. This should be followed by a thorough economic evaluation using social cost-benefit analysis that examines the benefits of proposed investments from the community's point of view. Financial analysis to check the affordability of proposed investments is also required.

National governments and their agencies are usually better skilled and equipped than local agencies, however, at the city level, actions initiated by the national government cannot be expected to be as timely or appropriate as those initiated by local agencies. Urban and transport planning should be devolved to the lowest competent and effective level possible. An agency with metropolitan-wide powers would be the most appropriate body in a large urban area where there may be many local governments.

In summary, the following policy guidelines in planning, management, and investment are recommended:

- Effective and responsive urban management within government requires the development of an appropriate organizational structure, technical capacity and a planning framework at the metropolitan level.
- Social aspects should be taken into account when preparing urban plans with greater weight given to "bottom-up" planning that includes community consultation. Plans should fully consider the social, cultural and environmen-

tal factors in their preparation through an appropriate consultation process.

- The impacts of major transport and other urban infrastructure decisions on urban development and the resulting travel patterns should be carefully considered when preparing transport plans.
- The planning framework should be realistic in terms of what government can achieve; it should aim to create an appropriate investment and regulatory environment within which the travel, housing and industry markets can respond.

Planning models

Integrated planning models that are capable of addressing air pollution, transport and health issues⁶ can provide important support for a comprehensive planning process. There is a need for good data and models that are not overly data-hungry; however, models should not be developed for their own sake.

Appropriate models should serve as aids to intelligent decision making. They should be capable of addressing the important policy issues, being quickly implemented, and facilitating rapid analysis. Some cities in the region have implemented such integrated modeling capabilities. Several others are experimenting with these approaches. Most models that have been considered for use in Asia were developed in the west, but there is no guarantee that they are suitable for local use.

Locally-collected data is a key input to planning models. In some cases, imported models have to be calibrated to suit local conditions. There may be instances where new approaches relevant to the needs of the region will be required. At present, the pressing gaps in data include the size, composition and age of vehicle fleets, and associated emission factors. Modeling the actual traffic flow behavior in Asia's urban areas and highways requires the use of locally-developed "Capacity Manuals," as were developed in Indonesia to replace the use of the US "Highway Capacity Manual."

In summary, the following policy guidelines on the use of planning models should be considered:

- Imported or locally-developed models that are responsive to relevant policy issues and which enable rapid analysis are required as decision-support tools to assist comprehensive planning.
- Further research should identify, prioritize, and fill key data gaps, and help develop and calibrate models to answer important policy questions.

Travel demand management

Continued increases in motorization can be expected as incomes rise. Each country in the region can influence its own motorization path to some extent, as illustrated in Figure 2, which shows that Hong Kong, China and Singapore have significantly moderated their demand for car ownership. Even so, Hong Kong, China and Singapore found that car ownership restraints alone are insufficient to manage private vehicle use, thus, appropriate pricing, TDM and land use policies are also essential. The most effective policies are those that successfully address the time and location aspects of congestion.

In many Asian cities today there is a bias in favor of private rather than public modes of transport. The result is that public transport's share of the transport task is declining.

TDM involves a multitude of agencies within and outside the transport sector. It consists of many measures covering "hardware," such as physical investments, and "software," such as policies and pricing. TDM is complex and requires multi-agency activity; this frequently causes problems in implementation.

TDM typically consists of low-cost improvement measures which, when combined, can have far-reaching effects. Therefore, TDM investments potentially make good use of limited financial resources. In practice, experience indicates that the implementation of effective TDM is problematic and may have adverse results. The challenge is to find acceptable and appropriate TDM measures for the circumstances.

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