Chapter 5

Modal Preference of Da Nang Citizens

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Chapter 5

Conclusion

1. Energy and Traffic

In many countries, the transport sector is a mainstay of oil demand. To manage this demand, it is essential to improve energy efficiency in the transport sector. Various studies have been conducted for the purposes of improving automobile fuel economy and promoting the diffusion of alternative fuel vehicles. However, these measures are only part of solution for improving energy efficiency in the transport sector. The driving speed of automobiles has a bigger effect on fuel economy than is commonly realised, hence facilitating the smooth flow of car traffic is also a significant energy efficiency measure. Nevertheless, traffic congestion as an energy problem has received insufficient recognition and attention. This study contributes to the field through its focus on improving energy efficiency in the transport sector through reducing traffic congestion.

2. The Importance of Pre-emptive Measures

The study consists of a policy study and a quantitative case study targeting a specific city. The quantitative case study of Jakarta, Indonesia, during 2012 and 2013, showed that it is extremely difficult to solve severe traffic congestion. Larger investments are required and traffic infrastructure construction work itself worsens congestion.

Major findings from the Jakarta study are as follows:

- Oil consumption can be reduced by several percentage points by slightly reviewing the road shapes such as intersections and right- and left-turns.
- However, the effects of these improvements will cancelled out in several years by the sharply rise in automobile traffic.
- Accordingly, traffic infrastructure must be improved more drastically. Above all, it is imperative to install the MRT to encourage a modal shift.
- Making such large-scale infrastructure investments is challenging when traffic congestion is already severe.
- Accordingly, pre-emptive measures and actions from a long-term viewpoint are crucial for avoiding traffic congestion.

3. Case Study of Da Nang City

To explore this further, a case study was conducted on a mid-size city where a traffic congestion problem has not yet become obvious, but is expected to deteriorate in the future, resulting in a big energy loss unless proper measures are taken. Da Nang City, Viet Nam was chosen as a target, given the availability of data required for the analysis.

Da Nang City has decided to introduce a BRT system in order to respond to increasing traffic demand. The current mainstream traffic mode in Da Nang City is motorcycles, but as income levels rise, automobile ownership will increase and traffic congestion will become a serious problem with socioeconomic and energy efficiency implications. It is appropriate to develop the BRT to avoid this, but it will be meaningless unless citizens choose to take public transport instead of motorcycles and private cars. The administration must therefore focus on making public transport infrastructure, including the BRT, attractive to citizens. There are various ways to this. This study modelled the effects of developing feeder-line buses as a means of access to the BRT. Since the BRT operates on specific routes, it is only available to those living near the stations or when the stations are located near destinations such as workplaces and schools. Feeder-line buses enhance access between the residences, workplaces or schools, and stations. Their introduction is projected to increase utilisation of the BRT, thus reducing oil consumption.

The study revealed the following points:

- Development of the feeder bus system is effective in increasing the utilisation rate of the BRT.
- An interview survey conducted to learn about citizens' awareness of the BRT, there may be more BRT users than the planned transport capacity can accommodate.
- If the capacity of the public transport, including the BRT, is increased more than planned, more citizens will utilise it, further reducing economic and energy losses caused by traffic congestion.
- Conversely, if proper measures are not taken to improve the transport capacity of the BRT, convenience of the stations, access and egress, and other aspects, user convenience may be lost as public transport becomes congested, resulting in the failure of the public transport business.

The BRT project in Da Nang City is being implemented at a stage when traffic congestion is not yet a serious problem. It is therefore a good test case for the precautions recommended by this study. The model suggests that the convenience of Da Nang City's proposed BRT may be reduced by the higher-than-planned number of users. It is therefore desirable to steadily expand the capacity of public transport, adopting a long-term view. The project includes a railroad project, which is scheduled to start service in 2030 according to the city's current traffic plan. In light of the larger projected number of public transport users, one option would be to bring forward the development of the railroad.

Since demographics, industrial structure, and urban morphology change quickly in developing cities, the plan needs to be reviewed and revised in line with the changes. Da Nang City is not a special case. Now is the time to review its traffic plan in line with current circumstances.

4. Policy Guidance for Developing Cities

In the 2012 policy study[70], diversified traffic improvement policies were analysed and classified according to the keyword ASIF (Avoid, Shift, Improve, and Finance) (Table 5.1).

Table 5.1: Policy Options under the Avoid, Shift, Improve, Finance Framework

Key Word	Description	Measures
Avoid	Reduce travel demand by integrating land use planning and transport planning to create city clusters that require less mobility or reduce travel demand.	・Vehicle registration fees/tax ・Licence plate fee ・Mandatory vehicle insurance ・Road pricing ・Parking fee
Shift	Use the alternative mode of transport, such as mass rapid transit systems, to move away from passenger vehicles. Mass transit systems would include buses, railways, and subways, which would theoretically have lower energy–carbon dioxide intensities per passenger kilometre than passenger vehicles.	・Mass rapid transit systems ・Bus rapid transit systems ・Improving feeder bus services ・Improving multi-modal transfer through comprehensive tariff structure
Improve	Upgrade the overall efficiency of urban transport on vehicle efficiency through technological innovations, or policy measures to manage road traffic or use of information technology.	・Fuel economy improvement ・Alternative vehicles (electric, compressed natural gas, and fuel cell vehicles) ・Intelligent transport systems ・Incentives or regulation
Finance	Offer a monetary basis for developing and improving transport systems. Various taxes are available as the options, and the revenues could be reallocated to road improvement or public transport enhancement.	・Fuel tax ・Congestion pricing ・Environmental tax ・Vehicle registration tax ・Licence plate bidding ・Parking fees

Source: Study team.

From 2014 to 2015, the traffic policies including city planning were organised to improve energy efficiency in the transport sector (Table 5.2). Also discussed was how the public transport imperative for improving energy efficiency could be turned into a sustainable

[70] ERIA, Study on Energy Efficiency Improvement in the Transport Sector through Transport Improvement and Smart Community Development in the Urban Area, June 2013.

business. The basic points of contention in traffic planning for emerging Asian cities, such as Da Nang, were distilled to provide a guide so that policy planner could make traffic plans by themselves in future. The plan should take account of the circumstances peculiar to each city, but the factors related to energy efficiency can be generalised to some extent. Management of the public transport business is often a financial challenge for the municipality; therefore, it will be significant to present tips for improving management.

Table 5.2: A Recap of Considerations for Traffic Policy in Relation to Energy Efficiency

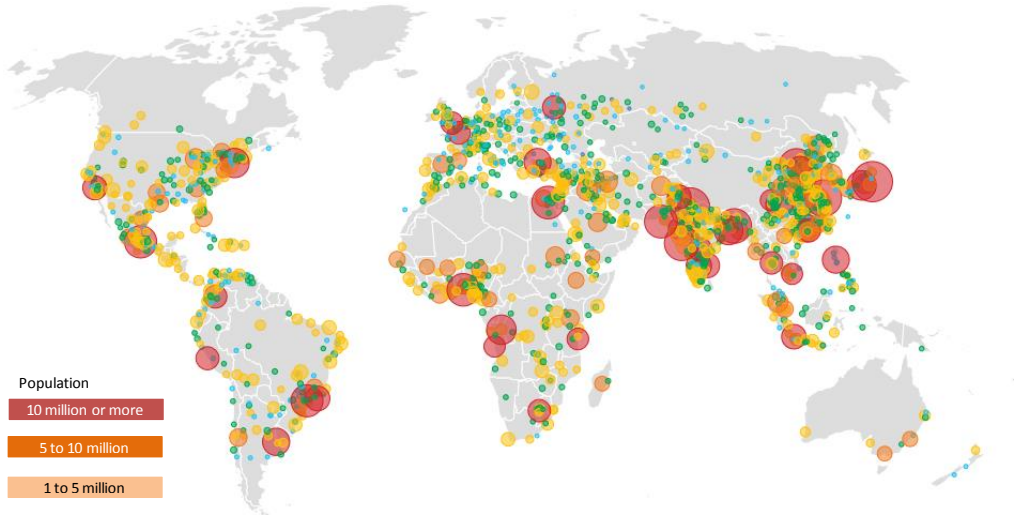
Item	Specific Improvement Points
Public transport design	
Rapidity	Equipment (trains, tracks, management systems); dedicated lanes; access; operation frequency; operation punctuality; transfers; ease of transit through stations
Safety	Vehicle (specifications, interior structure, impact resistance); maintenance; safety devices; dedicated lanes; driver skill; labour environment
Comfort	Interior temperature and humidity; drive safety; elimination of unpleasant factors (noise, odours, air contamination, crime)
Infrastructure investment	Recovery of the external economy (taxation and subsidies, real estate development)
Price and competition	Full cost pricing, franchising, yardstick, price cap, congestion charges, peak load pricing
Public private cooperation	Public–private partnership, private finance initiative, concession, management commission, build–operate–transfer, etc.
City policy	
Design	Urban planning (land zoning, height limits, floor area ratio, building to land ratio); high-rise buildings; preparing spacious and comfortable walking and bicycling routes; ample space between buildings; construction of parks and libraries; securing population fluidity
Tax policy	Handling of commuting costs and housing subsidies, residency tax, property tax
Infrastructure	Pricing that reflects population density, withdrawal from inefficient areas
Transport policy	
Taxation	Types: Gasoline tax, automobile acquisition tax, automobile tariffs, licensing fees Points: Taxation effects, speed of taxation effects, application of tax revenue, taxation timing
Regulations	Clarify purpose and method, side effects, the problem of effectiveness and cost
Subsidies	Effectiveness of subsidies, the problem of dependency on subsidies
Combination	The three patterns of policy effects, the principle of problem simplification
Other	Fairness, altering roads, inertia, technological innovations, citizen's viewpoint

Source: Study team.

5. Policy Recommendation

As repeatedly mentioned, it is most important to steadily take the necessary pre-emptive measures to avoid serious car traffic congestion in the developing Asian countries where urbanisation is expanding quickly. In some big cities, including the capitals of the ASEAN member countries, chronic traffic congestion is already leading to wasteful consumption of oil products. Many more huge cities will emerge in these countries in the future, as shown in Figure 5.1, and it is vital that the same failures are not duplicated.

Figure 5.1: Outlook for Urbanisation in 2030



Source: Economist, Bright lights, big cities - Urbanisation and the rise of the megacity, 4 Feb 4 2015.

The key points for policy making and the specific examples of policies are as described in Chapter 2 and the past study reports. A more fundamental issue is how to handle an energy policy and a traffic policy in an integrated manner. In many countries, energy administration and traffic administration belong to different ministries, and there is not always close communication and coordination between the parties. Accordingly, the first step is for an energy policy maker to recognise the traffic policy as part of the energy policy and vice versa. It is preferable to jointly make a policy package that manages the energy and traffic aspects of the transport sector in a consistent manner.

In reality, the core of the policy package is related to the usage of land, the urban structure, and the means of transport, such as roads and public transport. This may lead to a greater role for the policy maker in the traffic field. What is important is to include as part of policy-making procedures a strict scrutiny and review of the energy aspects of various draft traffic policies, and to make the energy policy maker a partner in this process. Currently, such a process is missing or insufficient.