Chapter 4

Policy Recommendation

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Chapter 4

Policy Recommendation

The policy study in Chapter 2 indicates that Viet Nam has gradually been developing its policy to address energy efficiency in the transport sector. Although there may remain some room for improvement, Viet Nam seems doing well in terms of policy development. What then is the challenge and recommended action for Viet Nam?

The second working group meeting held on 17 May 2017 in Hanoi was concluded to identify several challenges which the policy should address to enhance energy efficiency in the transport sector in Viet Nam. The identified challenges (Table 4.1) can be divided into two groups, primary challenges and secondary challenges. The primary challenges represent fundamental problems that will affect another challenge listed in the secondary challenge. The secondary challenges are more specific issues directly relative to energy efficiency in the transport sector.

Table 4.1: Challenges for Viet Nam in Transport Energy Efficiency Improvement

Primary	1. Coordination among stakeholders or government agencies 1.1 Consistency or harmonization between economic planning and transport system planning 2. Analysis of big data about the traffic 3. Education for enhancing human resources 4. Enhancement of financial resources 4.1 Use of public–private partnership (PPP) to support investment in transport infrastructure
Secondary	1. Increase of public transportation 1.1 Issues of business model, government incentive mechanism, and supportive policy framework for public transportation 1.2 Compact city 1.3 Transport demand management, including electric road pricing (ERP) 2. Improvement of fuel economy of vehicle 2.1 Implementation of fuel economy standards 2.2 Fuel quality 2.3 Education for eco-driving 3. Fuel switch or alternative fuel: compressed natural gas (CNG) or biofuel

Source: Study team.

4.1. Primary challenges

The fundamental challenges indicated include: (i) coordination among stakeholders or government agencies, (ii) analysis of big data about the traffic, (iii) education for enhancing human resources, and (iv) enhancement of financial resources. All of these are important challenges for Viet Nam to pursue its energy-saving policy in the transportation sector. The following is the explanation on these points:

1) Coordination among stakeholders or government agencies

Needless to say, coordination among stakeholders is critical. If we are to reduce energy use in the transportation sector, we will be required to take measures in a wide range of fields, including the desirable vision of cities, selection among transportation modes, improvement of energy efficiency in each transportation mode, and individual lifestyle, etc. To achieve this purpose, a variety of stakeholders – those from government offices; operators of public transportation; manufacturers of transportation equipment and systems, including automobiles; energy suppliers, and citizens – should be involved. An optimal transportation system for each city will be established if these various entities work together to address the transportation issues of cities. Unless sufficient coordination is in place in a partially optimal situation[10], although, for example, a transportation means sufficient to meet transportation demand is provided, side effects, such as waste of energy or deterioration of the living environment, could take place. The importance of deeper coordination can be easily understood but actually doing it is different. Even in a developed country like Japan, sectionalism of bureaucrats is always criticized, hampering the delivery of integrated solution.

Economic planning and transport system planning were indicated as examples of fields especially requiring enhanced coordination. Economic planning may be regarded as a higher-level plan specifying the guidelines for national economic development and national land development. The transportation plan of each city is naturally required to be consistent with the higher-level plans. The process of formulating an economic plan will be important for enhanced coordination. If, in the process of formulating an economic plan, sufficient exchange of ideas and coordination with experts and government officials in charge of transport system plan are made, subsequent formulation of a transport system plan will naturally be in line with the economic plan, and a facilitated implementation of the plan by diverse stakeholders can be expected. It can be surmised from the fact that coordination between economic planning and transport system planning was indicated as a challenge that this process is currently inadequate, and there is a large gap between them. To reduce this gap, we recommend that exchange of ideas and coordination with subordinate plans be enhanced in the process of formulating an economic plan. Enhancement of these will include, for example, addition of persons in charge of a transport system plan as members of the team formulating the economic plan.

2) Analysis of big data about the traffic

It is the premise of a good measure for transportation to have the correct perception of the current situation. In addition, correct data are indispensable for the correct perception of the current situation. Information and communication technology (ICT) has developed remarkably, and at

[10] For instance, construction of wide load can satisfy increasing traffic demand which is a partially optimized state as it increases oil consumption and air emission along the load. Coordinated approach to this issue could include development of train system and re-design of residential or office location.

present a huge amount of transportation data can be collected and analyzed in a comparatively easy manner. Development of ICT will bring a latecomer advantage to Viet Nam. In Japan, for instance, while transportation demand significantly increased until the 1970s after World War II, ICT technology could not be used at the time, and collection of data as the basis for formulating plans was not easy. On the other hand, it is possible that Viet Nam will be able to collect various data utilizing advanced ICT. For example, the smartphones that many people possess now can be a tool to explore individual location and route to a destination. In addition, with the cooperation of companies operating many vehicles, such as taxis, it will be possible to grasp the characteristics of the service routes using ICT. It will also be possible to clarify the transportation characteristics, such as moving paths of automobile and pedestrians, by analyzing the big data obtained, and to take more appropriate measures. With respect to analysis of collected big data, various precedents exist in the world, and Viet Nam will be able to obtain the cooperation of companies having related technologies and know-how. In a sense, this may be the very field where inter-governmental cooperation is suitable, and cooperative projects, technology transfer, and human capacity building, for example, will be realized by utilizing existing frameworks such as the East Asia Summit.

3) Education for enhancing human resources

Human resources are sources of all sorts of activities. With respect to policies, various human abilities are required, including the ability to analyze information and grasp the current situation, to formulate appropriate policies, and to carry out defined policies, etc. As mentioned in Chapter 2, Viet Nam has achieved a certain degree of success in the formulation of policies. The country is expected to continue to make efforts in this field and enhance human abilities in a variety of fields, such as information gathering and analysis mentioned in Section 4.1 (2), as well as ensuring the execution of policies, etc.

In addition, public acceptance for the policy and particular development project is another critical part. We can learn its importance from the fact that public protest sometimes stops project proceeding. So what should be done to gain acceptance from the public? Although there is no single immediate answer to this question, continuous education of the public and their 'involvement' are the keys. Education through open conference and various forms of media, such as TV program and free papers, are examples. Involvement of the public, dense communication between the policy maker and the project owner and mechanism of reflecting public voices to policy or project, is the more difficult part. From this point of view, it is suggested that government should set up public comment or hearing process when formulating new policy or plan. The transparent process will give the public a sense of involvement in developing the new policy or plan, hence government can anticipate to gain better acceptance from them.

International cooperation is an effective means to shorten capacity building period. By inviting experts from other countries and providing educational courses to promising human resources in foreign educational institutions, a high-level education can be given in a comparatively short time. In addition, if a clear challenge exists, it is possible to cultivate human resources that will address such challenge in a selective manner. While some specific issues will be listed in Section 4.1 (4), where the scheme and fund raising for establishing any kind of transport infrastructure, e.g. roads, ICT for traffic data, are pressing issues, it is worth considering to promptly convey the practical know-how required to build the PPP.

Related efforts are already being made in Viet Nam, but we recommend that these continue for the next decade or so.

4) Enhancement of financial resources

Fund raising is always a critical issue for a developing country where investment requirement expands to too broad a field. Several measures can be taken in such a situation. As a precondition, a country is required to identify priority areas and to distribute limited funds efficiently. Before haphazardly procuring funds, it should aim for the efficient use of these resources. From such viewpoint, government can use, for example, proceeds from 'special-purpose tax' and private funds to finance its projects.

A special-purpose tax is a tax collected for special use. Example includes taxation on automobile gasoline and gas oil for the purpose of using the revenue for constructing roads. In this case, as the users of roads are automobiles, the relationship between the beneficiary and the tax burden is clarified. However, government should exercise discipline in using collected tax revenues. Since this method makes it possible to secure financial resources in a stable manner for a long time, it functions effectively at times when there is a high demand for investment in infrastructure. But then, if financial discipline is loose, like if funds are used for a purpose different from the initially intended one, or if it is a wasteful investment, it could cause a problem. Therefore, it is required to consider in advance the requirement to strictly manage the funds and the method for abolishing the system or exit strategy, when the intended purpose has been achieved.

Utilization of private funds has various facades. In all of those facades, the point is whether each project is attractive to a private company. Since the subject is public infrastructure, it would be difficult to provide high profitability supported by a high-usage fee. For this reason, low-risk nature of business is a benefit of the public infrastructure project that may possibly attract private investor, but private companies should be able to derive a stable profit therefrom. Therefore, in the case of infrastructure project which is important from the viewpoint of policy but cannot be economically feasible, utilization of private funds is difficult. Therefore, such infrastructure will need constant compensation from tax revenues[11]. In this sense, public transportation infrastructure of cities with a concentrated population and industries will likely attract private finance initiative[12].

4.2. Secondary challenges

1) Increasing public transportation

In general, public transportation is superior to automobiles as regards energy efficiency. If the proportion of public transportation in modal split is increased, the efficiency of the entire transport sector will improve. What we should be careful of, in the case of Viet Nam, is the current overwhelming proportion of motorbike users. Motorcycles have comparatively high energy efficiency, and the energy consumption reducing effect is limited if only motorbike users are converted to bus users, for example. However, many precedent cases indicate that increased

[11] It is possible to pursue efficiency in projects by utilizing private operational know-how and innovations.
[12] Private finance initiative is one of the cases among the public–private partnership where the private sector contributes its funds.

income leads to an increase in automobile owners, and Viet Nam is not likely to be an exception. Additionally, if a conversion is made not to buses but to railways, a certain level of efficiency improvement effect will be expected. Therefore, while we need to pay attention to a change in bike use in middle- or larger-scale cities with a population sufficient to support public transportation, we recommend a generally wider use of public transportation.

Issues of business model, government incentive mechanism, and supportive policy framework for public transportation

First, the capacity of private companies should be actively utilized in this field. Under certain conditions, public transportation will be a profitable business. Moreover, it will also be possible to reduce the operational cost by utilizing the know-how of the private sector. However, prudent determination on the use of the private sector is recommended. For example, when a route with a low profitability needs to be maintained, measures for maintaining transportation service, including cross-subsidization, can be more easily carried out if such route is operated by the public sector together with profitable routes.

A frequently indicated issue in relation to public transportation is its operation. Public transportation assumes a certain number of users for its operation. Since transportation fees sometimes are set at low by considering affordability of the public, there are cases where collection of initial investment and operation cost is difficult. For this reason, in operating public transportation, it is important to increase the number of users by enhancing its appeal. Specifically, it is recommended to employ strategy to improve image targeted for users through the enhancement of convenience, such as by increasing the operation frequency and the travel speed, while maintaining a favourable environment inside the vehicles (temperature, security, and appearance).

In terms of funds, on the assumption that public transportation itself is generally a low-profitability project, it is recommended to balance the entire financial state by nurturing other pillars of profit. Examples include development and sale of residential areas featuring the convenience of railway lines, and operation of commercial facilities united with railway stations, etc. Many successful cases of public transportation can be found where public transportation is sustained through a synergy effect realized by such ‘side business’.

Compact city

From another point of view, it will be possible to build a city itself in a manner where public transportation can easily be used. It is the so-called ‘compact city’, where dwelling houses, workplaces, and other facilities required for life are geographically concentrated in a narrow area, and movements are planned mainly thru walking, bicycle, and public transportation. As density of population and transport demand naturally become high in such a city, users of public transportation will also increase, making public transportation more likely to be sustained as a business.

In the process of economic growth, the city area usually widens. Unless properly managed, the city will expand in a disorderly fashion, and the demand for constructing various infrastructures, such

as electricity, waterworks, and telecommunication, to say nothing of roads, will soar in an unregulated manner. The concept of 'compact city' is based on the intention to apply an order to the expansion of the city, and to make investments in urban infrastructures, including transportation, more efficient. This may be the very concept required for Viet Nam, which is in the middle of rapid economic growth.

Transport demand management, including electric road pricing

Another conceivable measure is to urge the use of public transportation by dispersing and controlling the demand for automobile traffic. Specific examples include shifting and making working hours flexible, park and ride, and electric road pricing (ERP), etc. Shifting and making working hours flexible reduces traffic concentration at certain times by changing the work start and end time. Park and ride restricts automobiles being driven into the central area of business districts, and urges commuters to transfer from automobiles to buses, etc. at the perimeter of controlled areas.

A representative example of introducing ERP can be found in Singapore. This is a system of charging automobiles entering the central area, and has an effect of limiting the non-essential and non-urgent inflow of automobiles. In addition, it is also possible to allocate the fees collected through ERP to the preparation of public transportation means in controlled areas. What we need to be careful of is the order of development in introducing ERP. If ERP is introduced while public transportation is still lacking, the cost burden is simply brought to automobile users, and neither the reduction in automobile inflow nor the improvement of energy efficiency will take place. It is the usual policy to first build a public transportation system with sufficient capacity in the controlled area and thereafter introduce ERP.

Further, another means to control automobile traffic is through 'sharing', which has been seen recently. It is also called 'ride share' or 'car share', etc., and is basically meant to urge two or more persons to use one automobile in a shared manner. Shared use of automobiles leads to reduction of the number of automobiles running and of energy consumption. Proposals for various services combining 'sharing' with ICT have been devised and are being disseminated. By incorporating these schemes in a pioneering manner, a transportation system with high energy efficiency is likely to be established through an unprecedented approach.

2) Improvement of fuel economy of vehicle

Implementation of fuel economy standards

Considering the extreme convenience provided by automobiles of traveling freely and comfortably to any destination, it does not make sense to completely eliminate the use of automobiles. For this reason, improving the fuel efficiency of automobiles is important. Viet Nam indicates the degree of fuel efficiency of automobiles using a labelling system, thus allowing consumers to refer to it when making choices. Coupled with the effect of school education and public relations pursued simultaneously with the labelling system, the energy-saving consciousness of the nation will gradually improve, and these efforts will result in further effects.

Another conceivable measure, which is rather complicated, is to impose tax on the possession of

automobiles, etc., and then change the rate according to the respective fuel efficiency. This measure aims to persuade people to choose more fuel-efficient vehicles. However, it is desirable to introduce an induction scheme through labelling or a new tax system in stages in consideration of the current situation of Viet Nam, such as per capita national income. Since high fuel-efficiency automobiles are not necessarily low-cost, just haphazardly pursuing a highly set goal will only make it difficult for the nation in general to purchase automobiles. There may be other various affairs specific to Viet Nam, thus prudent consideration is required.

Fuel quality

Fuel quality influences the fuel efficiency of automobiles. Automobiles are designed and manufactured to use fuels of a certain quality. When non-standard fuel is used, automobiles cannot deliver their specified performance. Therefore, it is a basic principle to produce and import fuels of a specified quality. However, quality of gasoline and gas oil is strictly regulated, and, except in cases of intentional violation of laws, non-standard fuels are unlikely to be generally distributed.

In contrast, it will be an issue whether refining and supplying low-sulphur fuels as a prerequisite to meet automobile exhaust gas regulations under Euro 4, etc. is allowed. In Viet Nam, operation of the Euro 4 standard began in January 2017, and automobiles registered after 1 January need to meet this standard. The use of cleaner fuels is essential for reducing GHG emission of automobile, to say nothing of the improvement on the vehicle side, such as introduction of higher-efficiency engines and more sophisticated exhaust gas treatment methods, etc. Since exhaust gas regulations are expected to be stricter in the future, gasoline and gas oil that are domestically refined or imported will need to be cleaner in line with the tightening of regulations. Specifically, Viet Nam will need more investment to make the treatment equipment of refineries more upgraded to produce cleaner fuel, and we will have to pursue this strategy in a systematic manner.

Education for eco-driving

Automobiles consume a lot of fuel at the time of start-up and rapid acceleration. Additionally, stepping on the brake causes energy loss[13]. Moreover, fuel consumption efficiency changes according to driving speed. Driving manner influences the efficiency of energy utilization in this way, but there may be many drivers who do not know this fact. For this reason, a certain degree of efficiency improvement can be expected by providing education on driving manner.

Two methods are conceivable as means to convey such information to drivers. One of them is to directly deliver public notification to drivers. This method includes the use of mass media, such as television and newspapers, or through a campaign for a certain period. The other is to provide educational information and materials to businesses dealing with loans and insurance for car drivers, as well as to car dealers and auto-repair shops, and get them to convey information to drivers as agents. Either of the two methods has no immediate effect as in the case of human capacity building; thus, continuous efforts are required.

[13] This is because the kinetic energy obtained by combustion of oil is converted by the brake into thermal energy and emitted into the atmosphere.

3) Fuel switch or alternative fuel: compressed natural gas (CNG) or biofuel

From the viewpoint of oil saving, wider use of automobiles driven by alternative fuels, such as CNG and biofuels, is also effective. In urging the wider use of automobiles using alternative fuels, several measures are required. Firstly, strengthen the price competitiveness of automobiles using alternative fuels. Automobiles using alternative fuels are manufactured by partially remodelling ordinary diesel vehicles and so on, but the number of vehicles produced inevitably tends to be small, thus the price will generally be higher. If CNG and biofuels used for such vehicles were sufficiently cheaper than gas oil, an economic advantage could be acquired in the life cycle especially in the case of freight cars and commercial vehicles with longer distance covered. Since economic advantage is an important factor in choosing each vehicle in the case of freight cars and commercial vehicles, subsidy for the purchase cost of vehicles, for example, will be an effective incentive.

Secondly, it will be a challenge to establish infrastructure for supplying alternative fuels. Since expansion of the town gas pipeline network is limited to larger cities in the case of CNG, use of CNG vehicles will generally be limited to larger cities and surrounding areas. In addition, while CNG feeding stations will need to be newly constructed, there will be a high risk of not being able to recover the construction or operational costs because the number of users will be limited, particularly during initial introduction. In this respect, the initiative of the government will be critical. On the other hand, biofuels have fewer challenges in terms of back-end supply infrastructure because biofuels can be used by mixing them in gas oil and gasoline. However, there still remains a challenge to build a system for producing biofuels in a stable manner. Suppose plant material is used for biofuels, their growth, i.e. their yield and production period, is significantly influenced by weather conditions. It will not be easy to prepare a system for producing sufficient quantity of biofuels for automobile fuels in a stable manner.

Thirdly, wider use of alternative fuels for passenger cars will face difficulty because most passenger cars travel only a short distance, and prospects are poor for recovering the increased vehicle cost from reduced fuel expense. In addition, shortage in the number of fuelling stations will limit the travel range expected. Thus, prospects will inevitably be poor especially for a wider use of CNG in passenger vehicles. Moreover, consumers will not choose this fuel unless the automobiles themselves have appeal, meaning the car has ‘cool’ outward appearance and interior, as well as good traveling performance, etc. which will stir up customer’s desire to own one. Further, provision of diverse choices (models and grades) is also important. In the case of automobiles using alternative fuels that are not expected to be very commercially successful, there is a risk of falling into a vicious cycle where car manufacturers cannot focus on development, and the resulting unattractive vehicles do not sell well. On the basis of these issues facing the sales of passenger cars, it will be realistic to focus on freight cars and commercial vehicles if we aim for a wider use of automobiles using alternative fuels.

4.3. Conclusion

In our study of this fiscal year, it was confirmed that Viet Nam was beginning to produce results in terms of policy development (Chapter 2), and we showed that, referring to the example of Da Nang City, timely introduction of public transportation and road construction plans would be indispensable for energy saving (Chapter 3). In addition, we made proposals to address various

remaining issues (Chapter 4).

Finally, the study would like to present another proposal made from a geographically larger viewpoint beyond the boundary of cities. Demand for transportation is not limited to cities but spreads widely across the country. In the case of Viet Nam, since its land area is long from north to south, the traveling distance of passengers and freight inevitably gets longer in the north–south direction. As the traveling distance becomes longer, just a slight improvement will result in reduction of a large amount of energy consumption.

The following are some choices to improve efficiency of freight transportation using trucks:

1) Use more-efficient trucks for transportation (including the use of new technologies, such as platooning vehicles).

2) Change the transportation means to railroads.

3) Change the transportation means to domestic vessels.

In terms of efficiency, changing the transportation means to domestic vessels is probably the most effective, followed by railroad transportation. Since Viet Nam is narrow in the east–west direction and major cities are located at a comparatively short distance from the coastal line, it will function well to connect major bases with domestic vessels and use railroads or trucks for local distribution. Enhancement of the transportation capacity of railroads running in the north–south direction will also be effective. As for travel from Hanoi City or Ho Chi Minh City to cities in the central region, in particular, a high-speed rail will be more advantageous than airplanes in terms of traveling time. In the case of freight transportation, although disadvantageous in terms of efficiency when compared with domestic vessels, railroads can transport freight in a shorter time.

Activation of the local economy may result as a secondary effect of developing a traffic network across the entire area. Shortening the travel time is expected to activate the movement of objects and people, and give rise to new centre of development in local areas. However, since there are cases where districts without railroad stations are left behind from development when we look at the situation of Japan as an example, prudent planning is required when a national traffic network is to be developed.

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