Chapter 1

Introduction

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Energy demand of East Asia Summit (EAS) countries has been growing substantially, led mostly by the power and the transport sectors. Energy for the transport sector in EAS countries is dominated by oil, of which imports have been increasing rapidly as domestic production slows, causing energy supply security concerns. Meanwhile, some EAS countries subsidize oil products to ensure affordable price levels for social considerations, but this exacerbates fiscal balances. In addition, motorisation in the urban areas of some EAS countries has worsened the air quality because of increased combustion of low quality oil products. As these incidents prove, increases in transport oil demand have great socioeconomic impacts, and the improvement in efficiency for transport sector oil demand would be an important policy agenda across EAS countries.

The increase in transport sector oil demand has been led by motorisation in some EAS countries whose income level is growing rapidly. Particularly, the urban areas of rapidly growing Asia represent a higher income level than the country average, and their soaring passenger vehicle ownership has been causing a number of socioeconomic issues, including chronic traffic congestion. In fact, the average travel speed in some urban areas of Asia is slow—Jakarta at 15 kilometre per hour (km/hour), and Bangkok at 12 km/hour. This, in turn, means energy waste, time losses in economic activities, and worsening air quality.

A number of studies have been implemented to consider the energy saving potential in Asia's transport sector through the shift towards fuel-efficient vehicle units. Meanwhile, this study is unique in its approach in that it focuses on the interrelation between energy demand and traffic flow. It utilises a simulation model that would be able to analyse the impact of infrastructure development on traffic flow and the subsequent impact of the improvement of transport sector energy efficiency. The outcomes from the study would

provide new insights that would contribute to the sustainable development for the cities of EAS countries with the urban transport improvement.

Rationale

The rationale of this study is derived from the 17th ECTF[1] meeting held in Phnom Penh, Cambodia on July 5, 2012. In this meeting, ERIA explained and proposed new ideas and initiatives for EAS energy cooperation as follows:

- strategic usage of coal,
- optimum electric power infrastructure,
- nuclear power safety management, and
- smart urban traffic.

The participants of the ECTF meeting exchanged views and agreed to commence the proposed new studies. As a result, the Economic Research Institute for ASEAN and East Asia (ERIA) has formulated the Working Group for the study on energy efficiency improvement in the transport sector through transport improvement and smart community development in urban areas. Members from Indonesia, Japan, Philippines, and Viet Nam are represented in the Working Group, with Mr. Ichiro Kutani of the Institute of Energy Economics, Japan (IEEJ) as the leader of the group.

Objective

This study aims to draw out policy recommendations for improving energy efficiency in the transport sector of EAS countries. Special focus is on improving the traffic flow in urban areas, particularly where population—hence, transport demand—is large, and its subsequent effect. The study consists of two different approaches—policy study and simulation analysis. Combining these two approaches is believed to bring more comprehensive results.

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[1] Energy Cooperation Task Force under the Energy Minister Meeting of EAS countries.

Work Stream

(A) Selection of Model Cities

Several factors were considered in selecting Jakarta as the model city. These included city size, traffic congestion level, and data availability.

(B) Policy analysis 1

Various policies and experiences were examined and summarized into four categories, constituting the so-called ASIF (Avoid–Shift–Improve–Finance) framework.

(C) Simulation analysis 1

The model that can describe car traffic in specific area was developed. Some options to improve traffic were considered, and this cost (investment cost for road) – benefit (reduction of congestion, and thus oil consumption) was estimated.

Second Year

(D) Policy analysis 2

A policy that could enhance modal shift from private cars to public transport was executed.

(E) Simulation analysis 2

A preference survey for the general public was conducted in Jakarta to explore the driving factor in modal shift. Some options for improving the utility of public transport such as the BRT were considered, and subsequent effects (increase in BRT ridership, and thus reduction in oil consumption) estimated.

(F) Policy implications

Based on these analyses, policy implications were derived.

Work Stream