



Energy



Addressing Energy Efficiency in the Transport Sector through Traffic Improvement

ERIA Research Project Report 2016-04

Edited by Ichiro Kutani

The study summarises Viet Nam's existing policies on improving the energy efficiency of its transport sector. The results show that Viet Nam has basically implemented the same type of policies as that of Japan and Thailand. However, since the mechanism for implementation is key, stakeholders take their own initiative autonomously rather than simply follow what government policies impose.

This quantitative case study for Da Nang City evaluates the effects of implementation of long-term traffic plans. It shows that a planned bypass highway will reduce oil consumption by 30% by 2030. Assuming an increasing modal shift from motorbikes to automobiles, a 10-year delay in the development of the public transport system will increase oil consumption by 5% by 2030. It appears that the existing blueprint of the future traffic system is effective in reducing oil consumption and, hence, should be implemented immediately. The study reveals many remaining challenges of Viet Nam's transport sector. To address these challenges, it recommends that the country makes active use of information and communications technology and encourages the development of technologies and creation of new services as an innovative approach to make the transport sector more energy efficient. A list of detailed policy actions, based on intensive consultation with Viet Nam and international experts, was developed to address these challenges.

Creating Better Social Acceptance for Electric Power Infrastructure

ERIA Research Project Report 2016-05

Edited by Tomoko Murakami

This study comprehensively evaluates issues related to public acceptance of coal-fired power plants in Thailand and thus derives policy implications on how to mitigate public protests and prevent movements that oppose coal power plants. In general, its implications can be extended to achieving better public acceptance of any electric power infrastructure. For this purpose, the researchers conducted an intensive survey of the energy system and case studies of coal-fired power plants in Thailand. The research revealed five major factors behind the strong opposition to the construction of coal power plants in the country, especially in the southern part. It also thoroughly reviewed the accumulated experience and knowledge of advanced European countries and of international organisations regarding social acceptance and public involvement issues. This study highlights several policy recommendations.

Formulating Policy Options for Promoting Natural Gas Utilization in the East Asia Summit Region, Volume I: Demand-Side Analysis

ERIA Research Project Report 2016-07a

Edited by The Institute of Energy Economics, Japan

There is an increasing interest in understanding the demand potential of natural gas and its implication in the East Asia Summit region. This ERIA study was proposed by Japan at the 10th East Asia Summit Energy Ministers Meeting in 2016. Comprising two volumes, this report focuses on ASEAN and India markets. It aims at understanding future natural gas demand and estimating the size of the market on the demand side, and correspondingly deriving the necessary infrastructure investment on the supply side. The study then presents the challenges and policy options from both sides.

This volume, dedicated to demand-side analysis, asserts that various policies are needed to maximise demand potential. These include clear policy indications for promoting use of natural gas, enhancing economic competitiveness of natural gas, providing support to developing supply infrastructure, and institutional and capacity building.

Formulating Policy Options for Promoting Natural Gas Utilisation in the East Asia Summit Region, Volume II: Supply-Side Analysis

ERIA Research Project Report 2016-07b

Edited by Tetsuji Uemura and Keitaro Ishigami

There is an increasing interest in understanding the demand potential of natural gas and its implication in the East Asia Summit region. This ERIA study was proposed by Japan at the 10th East Asia Summit Energy Ministers Meeting in 2016. Comprising two volumes, the report focuses on the ASEAN and Indian markets. It aims at understanding the future demand of natural gas, estimating the size of the market on the demand side, and correspondingly deriving the necessary investment in infrastructure on the supply side. From both sides, the challenges and policy options are presented.

This volume, dedicated to supply-side analysis, tries to identify the most suitable and feasible supply chain solutions based on demand size, main users of natural gas, technical constraints, geographical constraints, and available existing transport infrastructure. The estimated investment for additional natural gas supply chain by 2030 is US\$81 billion altogether.

Improving Emission Regulation for Coal-Fired Power Plants in ASEAN

ERIA Research Project Report 2016-02

Edited by Mitsuru Motokura, Jongkyun Lee, Ichiro Kutani, and Han Phoumin

Coal, the most abundant and reliable energy resource, will continue to be the dominant energy source for the East Asia Summit region. The coal use patterns in the region reflect a robust increase of electricity consumption and power to steer economic growth. With such a fast-growing electricity demand, emerging Asia, particularly ASEAN, will likely build coal-fired power plants (CPPs) with less capital cost. These low-efficiency CPPs will harm the environment because of air pollution, and carbon dioxide (CO₂) and greenhouse gas emissions. In response, world leaders have seriously taken actions to mitigate climate change. Each country pledged to implement Nationally Determined Contributions to track the abatement of climate change.

Stringent environmental regulations that are effectively enforced will help investors select better technologies. Ultra-supercritical technology for CPPs, considered clean coal technology, uses coal more efficiently and cleanly compared to traditional coal power plants that use sub-critical technology. This study, therefore, compares emissions regulations and systems of CPPs in ASEAN and advanced countries. It suggests that minimising the emission of air pollutants in ASEAN countries is a precondition for the future use of CPPs. Thus, the level of public acceptance to use coal cleanly is expected to rise. ASEAN then should raise the current emission standards of air pollutants from CPPs to the level equivalent to that of OECD countries. In this case, clean coal technology will be selected automatically, enabling ASEAN to head towards the common environmental standard for coal-fired power generation.

Institutional Policy and Economic Impacts of Energy Subsidies Removal in East Asia

ERIA Research Project Report 2015-23

Edited by Han Phoumin and Shigeru Kimura

This study explores the impact of energy subsidies and presents policy recommendations to gradually phase out energy subsidies in the East Asia Summit (EAS) region. According to ERIA and the International Energy Agency (2013), fossil fuel subsidies amounted to about US\$51 billion in Southeast Asia for 2012 alone. These subsidies encourage wasteful use of energy, burden government budgets, defer investment in energy infrastructure and efficient technology, and further undermine renewable energy uptake. While some ASEAN countries have taken action to remove energy subsidies, such action, often politically sensitive, must be accompanied by careful strategy and steps.

However, most energy subsidies are often blanket subsidies that benefit the rich rather than the poor. Blanket energy subsidies stimulate consumption and can result in increased energy demand. Thus, inefficient subsidies can lead to fiscal pressure, harmful emissions, and potentially undermine sustainable green growth in EAS countries.

Reduced energy subsidies will encourage more energy-efficient consumption, leading to a positive impact on international energy prices and energy security, and will make renewable energy and technologies more competitive. It further benefits the environment and society due to reduced local pollution and lesser greenhouse gas emissions.

Multilateral Joint Study on the Liquefied Natural Gas Market

ERIA Research Project Report 2016-06

Edited by Ken Koyama, Yoshikazu Kobayashi, Ichiro Kutani, and Yanfei Li

The increased use of liquefied natural gas (LNG) is expected to solve many energy and environmental problems of the East Asia Summit region by ensuring a stable energy supply at an affordable price. This is especially true considering its abundant and geographically diversified resource base, as well as reducing carbon emissions by replacing more of the carbon-intensive energy. The LNG market in the region, however, has not expanded as much as expected in the early 2010s. This report thus proposes recommendations to policymakers and LNG producers and consumers on how they can use natural gas more in Asia.

The expanded use of LNG in Asia will depend on two conditions: its competitiveness against other energy sources and sufficient investment in every part of the value chain. The report summarises 'who does what' to fulfil these two conditions.

Technical Improvement Report on Energy Outlook and Energy Saving Potential in East Asia

ERIA Research Project Report 2016-08

Edited by Shigeru Kimura and Han Phoumin

This technical report on the Energy Outlook and Saving Potential of East Asia Summit (EAS) countries aims to seriously look into how to improve data used in modelling energy demand in ASEAN countries. In the past, the outlook greatly relied on the energy data of the International Energy Agency. However, years of capacity building

on energy outlook modelling in ASEAN, supported by ERIA, encouraged the working group to assess the quality of the national energy data, combined with the energy database of the Asia-Pacific Economic Cooperation, to be used for energy demand modelling in selected ASEAN countries. To support COP 21, the working group also set a scenario of keeping carbon dioxide (CO₂) emissions frozen at the 2013 level until 2040. In this case, some EAS countries may find it challenging to determine the best energy mix while keeping CO₂ levels unchanged during this period. Upscaling renewable energy, together with implementation of energy efficiency programmes, remain the key energy policy objectives towards creating a low-carbon economy in EAS countries.

The expanded use of LNG in Asia will depend on two conditions: its competitiveness against other energy sources and sufficient investment in every part of the value chain. The report summarises 'who does what' to fulfil these two conditions.

Remaking Energy Policies for Global Sustainability: The Case of Flying Geese Model and Path Dependencies in East Asia

ERIA Discussion Paper 2017-08

By Venkatachalam Anbumozhi and Xianbin Yao

East Asia's path of economic integration started at the end of World War II through catch-up industrialisation. It started in Japan, and supported by diffusion of technologies through learning and easier relocation of industries within the region, energy-intensive industrialisation expanded into countries with fewer development operations. Aided by official development assistance and foreign direct investment, the emergence of production networks across Southeast and East Asia permitted second- and third-tier economies to catch up with advanced economies in technology, technical skill development, and narrowing of development gaps. The pattern of East Asia's catch-up has been extensively studied, with the 'Flying Geese' model being the well-known paradigm. This process of catch-up also leads to increased emissions and air, water, and soil pollution, and to movement of emission intensity and pollution to second- and third-tier economies. From the perspective of the energy-development nexus, does it mean that East Asia's growth pattern remains unable to break away from the historical path dependency in energy-intensive industrialisation observed elsewhere?

This and the following questions are pursued in the paper: What factors lead to the emergent and subsequent dispersal of the 'flying geese'? What were the main characteristics of integrated environmental and energy policy formulation during the dispersal, and what lessons could be learned from those experiences for a sustainable future? To the authors' knowledge, this paper is the first such direct attempt to understand the link between the Flying Geese model and energy policies in East Asian economic development. Using historical data on trade and energy consumption, the authors demonstrate that East Asian governments have proactively addressed energy intensity concerns and have further intensified the policy. They also draw lessons learned from the model for its potential application in solving global sustainability challenges.