



Economic Research Institute  
for ASEAN and East Asia

# **SUMMARY OF ERIA RESEARCH PROJECT**

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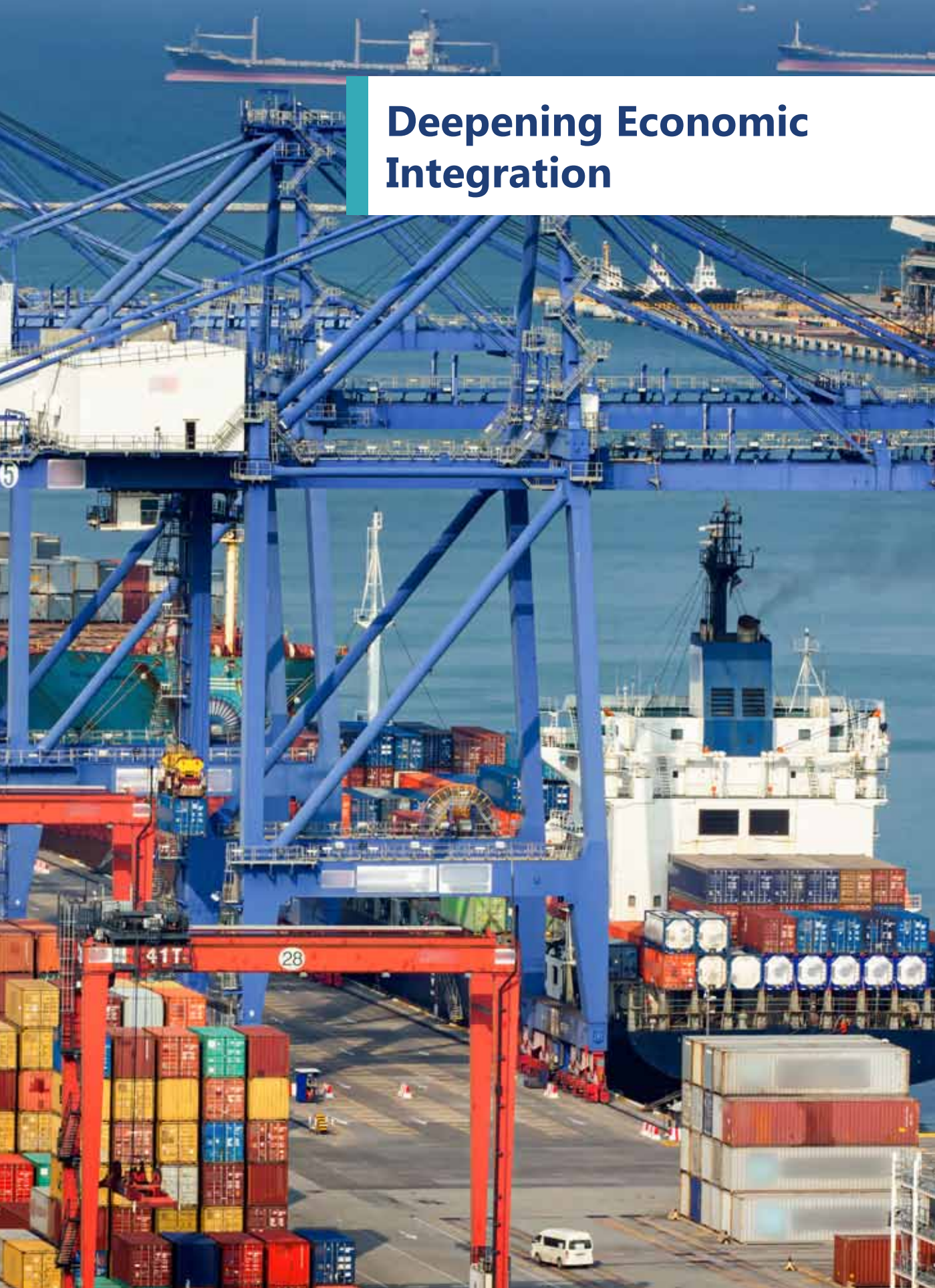
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# Deepening Economic Integration



# 01

## **Creative Industries, Creative Economies, and Creative Activities in Japan and Their Global and Transnational Linkages in ASEAN and East Asia**

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Masahito Ambashi, Shujiro Urata, and Seio Nakajima

### **PARTNERS**

Waseda University

### **SUMMARY**

According to the World Economic Forum's The Future of Jobs Report published in 2016, 'creativity' will become one of the most important skill sets in the Fourth Industrial Revolution, which 'is characterized by the fusion of technologies that is blurring the lines between physical, digital, and biological spheres' (Schwab 2015). In the areas of industries and commerce, the term 'creative industries' appeared in the policy circles of the United Kingdom in the late 1990s, and has since been widely used in other countries including Japan, the United States, Australia, and China.

Because the term originated in the UK, the majority of past studies focused on cases from Europe (e.g., Lazzaretti, ed. 2013)—UK in particular (e.g., De Propriis 2013)—as well as other Anglophone countries such as Australia (Flew 2011) and the United States (Caves 2000). Research on creative industries in Asia is few and far between (but see Yusuf and Nabeshima 2005 for an exception). A few pioneering studies have appeared, but they tend to remain one-country, national case studies (e.g., Keane 2013; Nakajima 2016). Nevertheless, since creative industries—in all the three sectors of production, distribution, and consumption—have become global and transnational, a broader and comparative-regional perspective is essential in grasping the increasing flows of goods, services, and industry personnel.

In this project, we attempt to take a pioneering role in filling this gap, by providing comparative case studies from ASEAN and East Asia, as well as zeroing in on the cooperation and competition among the countries in the regions. We will focus on the creative industries in Japan, with a particular emphasis on increasingly global and transnational flows of goods, services, and industrial personnel within the ASEAN and East Asian regions. Although the focus of FY2018 is still on Japan's creative industries, we foreground transnational approaches to the phenomena by taking into account the global networks of production, distribution, and consumption in ASEAN, East Asia, and beyond.

As a guiding framework, we put to work the 'six facets model' of the 'production of culture perspective' (Peterson, ed. 1976; Peterson 2001; Peterson and Anand 2004). The six facets—or institutional components—are: 1) technology, 2) law and regulation, 3) industry structure, 4) organizational structure, 5) occupational career, and 6) market.

## **OBJECTIVES**

The key objectives of this research are to provide answers to the above questions by putting to task the insights from economic and cultural sociology, management and organisation studies, economics—in particular new institutional economics and its transaction cost approach and contract theory variants (Caves 2000, 2003), as well as political science and international relations—including the notions of cultural diplomacy, public diplomacy, and soft power (Nye 2004).

## **POLICY IMPLICATIONS**

We plan to propose policy recommendations roughly following the six facets identified by the production of culture perspective. What are the nurturing conditions for creative industries in Asia in terms of the six areas of 1) technology, 2) law and regulation, 3) industry structure, 4) organizational structure, 5) occupational career, and 6) market? In particular, we plan to provide policy recommendations for the positive creative industrial policy by the government—both local and central—nurturing the ideal combination of the six facets of creative industries in Asia.

## **GEOGRAPHIC SCOPE**

ASEAN and Japan

# 02

## Export Competitiveness of Manufacturing Industries in East Asia

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Masahito Ambashi and Kaoru Nabeshima

### PARTNERS

Waseda University

### SUMMARY

In the past decades, international trade registered double-digit growth; today, it seems that one cannot expect international trade to grow at a similar pace. According to the World Trade Organization (WTO), international trade in 2016 grew 1.7%. In addition to the slowing down of international trade growth because of the weak global economy, there has been a rising concern about the proliferation of trade measures. As tariff rates are coming down, the other non-tariff measures (NTMs) and behind the border measures are gaining more significance. In fact, for many sectors, the impact of NTMs is larger than that of tariffs.

As the growth rate of international trade declines, so is the growth rate of East Asian countries (ASEAN countries, China, Japan, and Korea), especially the growth rate of advanced ASEAN countries. Some of them are facing middle income trap. Given the small economic size of these countries, reliance on external markets (including within ASEAN trade) will be a key economic consideration for these countries to achieve high growth rates in future. It will be important for these countries to improve their export competitiveness in a much harsher international trading environment to sustain their growth.

In this study, we will examine the factors that could influence the export competitiveness of East Asian countries from various perspectives. One of the perspectives is the impact of regulations and standards on international trade. The traditional approach has focused on the existence of regulations. However, from the exporters' point of view, the main concern is not so much about the existence of regulations, it is more about the differences in regulations relative to those imposed domestically. In addition, the differences in regulations could induce innovations in exporting countries in order to comply with the regulations imposed in the importing countries. In addition to these studies, we will also look at the upgrading of the supply chains in East Asian countries.

## **OBJECTIVES**

1. To measure the impact of non-tariff measures on export performance;
2. To understand how the differences in regulations could induce innovations in selected countries;  
and
3. To look at the upgrading of supply chain in East Asia.

## **POLICY IMPLICATIONS**

We plan to provide policy recommendations in three areas, mirroring the two themes of the study:

1. Improving capacity that is necessary for regulatory and standard compliance;
2. Strengthening domestic innovation capabilities to achieve regulatory compliance; and
3. Upgrading of supply chains.

## **GEOGRAPHIC SCOPE**

East Asia

# 03

## Non-Tariff Measures in East Asia

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Rizqy Anandhika, Shujiro Urata, and Santiago Fernandez de Cordoba

### AUTHOR(S)

Ana Strutt, Kaoru Nabeshima, Kim Jong Duk, Ernawati Munadi, Ming Cong, Seul Lee, Shymala

### PARTNERS

National think tanks and Universities in East Asia, UNCTAD, WTO, East Asian SEOM, ASEAN SEOM, ASEAN HLTF, National Team 1.5 track

### SUMMARY

Non-tariff measures (NTMs) are defined as policy measures, other than ordinary customs tariffs, that could affect the economy in international trade. Thus, NTMs include wide and diverse policies affecting international trade in goods, changing the quantities traded, or prices, or both (UNCTAD, 2013).

Integration of developing countries into the international market was made possible by appropriate policies, such as tariff liberalisation and initiatives related to trade facilitation and aid for trade. Today, deeper integration into the global economy depends not only on liberal tariffs and supportive policies, but also on increased policies in various forms of complex trade-related regional economic integration. The rise of specialisation and fragmentation of production has led to the increase of trade in intermediate goods and, in particular, to regional production networks.

The inclusion of six East Asian countries in the NTM database, to complement the 10-ASEAN countries NTM data collected the year before, will be a significant milestone for economic integration research in the region.

The value of this project is to provide analytical exercises of impact assessment on trade-related reforms by providing reliable and up-to-date information and conducting analyses on NTMs. The completion of the NTM database collection of six East Asian countries will be useful for policymakers for further integration.

## **POLICY IMPLICATIONS**

The database contains comprehensive trade-related regulation in East Asian countries that can be utilised for private and public use. Combined with NTM database in ASEAN, this database will be very useful for RCEP negotiation.

## **GEOGRAPHIC SCOPE**

East Asia (+6 countries)

## **RELATED PUBLICATIONS**

Ing, L. Y., S. de Cordoba, and O. Cadot (eds.) (2016). *Non-Tariff Measures in ASEAN*. ERIA Research Project Report 2015-1. Jakarta: ERIA.

Downloadable from: <http://www.eria.org/publications/non-tariff-measures-in-asean/>



# 04

## Regulating Intellectual Property Rights Protection for Development

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Lurong Chen

### SUMMARY

Trade in the 21st century is intricately linked to global value chains (GVCs). The trade-investment-services-IP stays at the heart of GVCs. The protection of intellectual property rights (IPR) has become a critical issue for advanced economies and emerging markets alike. For the former, innovation has been playing a vital role in the economic and social welfare. For the latter, it will provide incentives for knowledge generation and diffusion, and induce technology transfer, innovation, and development. Within GVCs, the competitive edge and therefore the division of value-added mainly depends on the capacity to innovate rather than on having an advantage with regards to the cost of labour, access to raw materials, or the ease of obtaining capital. This is true especially in the high margin, knowledge-intensive businesses. As the economy is making progress from the relatively lower value-added to higher value-added stages, an efficient IPR protection system should meanwhile be able to provide necessary compensation to the social cost associated with the trade-off between the short-term loss in competition and the long-term gains in innovation.

Countries' IPR regulations may generate effects on foreign trade similar to that of non-tariff measures (NTM). The harmonisation of IPR regimes will further eliminate the transaction costs of business operating across countries. This is expected to stimulate the country's innovative activities and support its technological advancements in the long run. For that reason, many developed countries are pushing for stronger protection of IPR through multilateral, bilateral, and plurilateral actions. On the other hand, enforced IPR protection may have profound implications for developing countries via its impacts on price, elasticity of demand, market efficiency, and long-term innovation potential.

This important issue was highlighted in both AEC 2025 and ASCC 2025; furthermore, it is related to many aspects of development, such as trade, investment, innovation, and human capital. Therefore, this study may have deep implications in sustaining regional development.

This is an interdisciplinary study involving trade economists, development economists, economic lawyers, and country experts. It consists of empirical economic papers, legal text analysis, and country-specific reports.

### GEOGRAPHIC SCOPE

RCEP countries

# 05

## Services Supply Chains – Implications and Opportunities for RCEP

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Christopher Findlay, Fukunari Kimura, Shandre Thangavelu, and Lurong Chen

### SUMMARY

This project intends to study value-chain activities in service supply chains in the region. In particular, the research is expected to contribute to the understanding of supply chain activities and implications for the Regional Cooperative Economic Partnership (RCEP) that is currently under negotiation.

This project examines services from a supply chain perspective and provides a deeper assessment of the implications for policy coverage and design of commitments in RCEP related to services.

### OBJECTIVES

1. Develop a new methodology for identifying and mapping the international supply chain in services activities, in all the modes of supply;
2. Apply this methodology to a series of services, chosen to provide relevant sectoral and economy coverage in RCEP countries, through interviews with participants in the supply chains;
3. Consolidate commentary on the key policy issues that impede international transactions or distort the shape of the supply chains;
4. Identify implications for the specification of services commitments in RCEP to enable countries to respond to those policy issues;
5. Specify complementary capacity building to support the implementation of policy reform; and
6. Identify the key factors that contribute to the competitiveness of ASEAN members as participants in these supply chains and the drivers of 'upgrading,' productivity gains, and labour markets.

### GEOGRAPHIC SCOPE

Japan, China, Republic of Korea, Australia, Indonesia, Thailand, Malaysia, the Philippines, Cambodia, and Viet Nam.

# 06

## Microdata Analysis on the Impact of Globalisation on Firms

---

Doan Thi Thanh Ha and Dionisius Narjoko

### SUMMARY

The broad theme of this research is globalisation and its impacts on East Asian countries, with a particular focus on microdata analysis. As discussed in Weinstein (2005), we understand ‘globalisation’ as referring to a process or an evolution of closer economic integration by way of increased trade, foreign investment, and immigration. Under the broad theme, country authors choose specific topics that might be of interest in the context of their own countries.

There have been numerous studies of the causes and consequences of globalisation, but we feel that the potential value added of this project comes from the microdata analysis on East Asian countries. It is true that various aspects of globalisation have been previously analysed, but analyses based on microdata are relatively scarce. There might be many microdata analyses on other regions—primarily North and South America and Europe—but not many such analyses exist for East Asian countries. This research project tries to fill this gap.

### POLICY IMPLICATIONS

The project is expected to contribute to a better understanding of whether and how globalisation has affected the performance of the firms using the case studies from East Asian countries. All of these are also expected to provide insights on policymaking in the area related to the objective of the research.

### GEOGRAPHIC SCOPE

East Asia

# 07

## Non-Tariff Measures in ASEAN (Phase III: Renewal of Database and Country Report Design Phase)

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Gracia Hadiwidjaja, Doan Thi Thanh Ha, and Samuel Rosenow

### PARTNERS

National Team 1.5 track, ASEAN SEOM; ASEAN HLTF-EI; ASEAN Business Advisory Council; ASEAN countries; ERIA-RIN Members; UNCTAD; WTO; Representatives of ASEAN countries at the WTO; OECD (GP)

### SUMMARY

With tariffs constrained by the WTO, we expect an increasing number of non-tariff measures (NTMs) designed to protect domestic firms and industries. This trend is quite possible in ASEAN, one of the fastest growing regions in the world in terms of growth in economy and trade.

Between 2008 and 2011, the number of NTMs rose substantially across the globe. However, this increase is not necessarily a bad sign for the economy. As consumer wealth rises around the world, the demands on governments for health, safety and environmental protection rise as well.

Many developing countries have greatly benefited from integration into the global economy through international trade in goods and services. In the past, developing countries' integration into international markets was made possible by appropriate conducive policies such as tariff liberalisation, as well as initiatives related to trade facilitation and aid for trade. Today, deeper integration in the global economy depends not only on liberal tariffs and supportive policies but increasingly requires policy responses to various forms of complex trade-related regional economic integration.

In the case of ASEAN, however, the latest official data on NTMs is only available for 2009, as released by the ASEAN Secretariat. A number of surveys have been conducted to fill the gap, but more work is needed. In this context, the project seeks a strong multi-agency collaboration between ERIA and UNCTAD supported by experts on NTMs to: (i) collect, validate and classify NTMs data from official sources issued by governments; (ii) improve general understanding of these measures and their impact on world trade; and (iii) provide insights on policy recommendations for streamlining NTMs and trade regulation reforms.

As the NTM data for ASEAN are collected according to the MAST NTM classification and UNCTAD's NTM data collection approach, analyses can be prepared and policy options can be devised to make appropriate assessment of the trade and development impacts of such barriers to trade.

Beside keeping the database up-to-date with current national regulations, the value added of this project is to provide analytical exercises of impact assessment of trade-related reforms by providing reliable and up-to-date information on NTMs, conducting rigorous analyses on NTMs and how these will affect trade policy and overall trade performances, comparing NTMs in ASEAN region to the other regions, and providing inputs in streamlining NTMs in this region.

## **OBJECTIVES**

1. To update the existing ASEAN NTMs database, by collecting and validating the most up-to-date NTM information from official sources;
2. To further develop export capacities by improving NTM transparency and providing trading partners with access to NTMs related information;
3. To conduct rigorous analyses on NTMs and how these will affect trade policy and overall trade performance; and
4. To provide insights for NTMs streamlining in ASEAN.

## **GEOGRAPHIC SCOPE**

Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam

## **RELATED PUBLICATIONS**

Cadot, O., E. Munadi, and L. Y. Ing. 'Streamlining Non-Tariff Measures in ASEAN: The Way Forward', *Asian Economic Papers*, 14(1) (2015), 35-70.

Ing, L.Y. and O. Cadot (2016), 'Facilitating ASEAN Trade in Goods.' *ERIA Discussion Paper No 20*. Jakarta: ERIA

Downloadable from: <http://www.eria.org/research/facilitating-asean-trade-in-goods/>

Ing, L. Y., O. Cadot, M. R. Anandhika, and S. Urata, 'Non-Tariff Measures in ASEAN: A Simple Proposal' in Ing, L. Y., S. de Cordoba, and O. Cadot (eds.), *Non-Tariff Measures in ASEAN*. Jakarta: ERIA, pp. 13-36.

Downloadable from: <http://www.eria.org/publications/non-tariff-measures-in-asean/>

# 08

## The Comprehensive Asia Development Plan Book Project

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Fukunari Kimura, Yasushi Ueki, and Takafumi Fujisawa

### SUMMARY

The Comprehensive Asia Development Plan (CADP) and the CADP 2.0 illustrate development strategies based on fragmentation theory, which focuses mainly on infrastructure development. The CADP aims to promote industrial development and narrow development gaps in East Asia.

The framework of the CADP has been adopted by the Master Plan on ASEAN Connectivity (MPAC) and the ASEAN Economic Community Blueprint 2025 as a foundation for promoting regional cooperation for ASEAN regional integration. It is also well-received by the ASEAN Member States as a framework applicable to national development strategies.

This book project will introduce the framework of CADP to the public, academic, and private sectors. Moreover, it will provide updated information on the current status and issues for infrastructure development and intra-regional cooperation for economic development in East Asia.

### POLICY IMPLICATIONS

The book will disseminate ERIA's research activities and policy suggestions to public, academic and private sectors in Japan. CADP will encourage Japan to promote the enhancement of connectivity with East Asia.

### GEOGRAPHIC SCOPE

ASEAN and East Asia

### RELATED PUBLICATIONS

Mori, N., Y. Nishida, and T. Fujisawa (2017), *2016 Progress Survey Report of Infrastructure Projects in CADP 2.0*. ERIA Research Project Report 2016-01. Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/2016-progress-survey-report-of-infrastructure-projects-in-cadp-20/>

ERIA CADP Research Team (2015), *The Comprehensive Asian Development Plan 2.0 (CADP 2.0): Infrastructure for Connectivity and Innovation*. ERIA Research Project Report 2014-04. Jakarta: ERIA.  
Downloadable from: <http://www.eria.org/publications/the-comprehensive-asian-development-plan-20-cadp-20-infrastructure-for-connectivity-and-innovation/>

# 09

## ASEAN Seamless Trade Facilitation Index and Trade Transaction Cost

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Ponciano Intal, Jr., Dionisius Narjoko, Maura Ada Décosterd, Salvador Buban, Rashesh Shrestha, and Doan Thi Thanh Ha,

### PARTNERS

ASEAN Trade Facilitation Joint Consultative Committee (ATF JCC), ASEAN Secretariat, Department of Trade and Industry, Philippines, and Indonesia Customs Agency (*Bea Cukai*).

### SUMMARY

This project is conducted in response to the initial request of the Philippine Department of Trade and Industry to develop ASEAN trade facilitation indicators in light of the decision of the ASEAN economic ministers to reduce trade transaction costs in ASEAN by 10% by 2020.

This project reviewed the current internationally known trade facilitation indicators (e.g., Ease of Doing Business Trade Across Borders; Logistics Performance Index), and after consultation with ASEAN Trade Facilitation Joint Consultative Committee (ATF JCC), decided to develop an ASEAN-specific set of trade facilitation indicators, called 'ASEAN Seamless Trade Facilitation Indicators' (ASTFI). The ASTFI was approved by the ASEAN Economic Ministers in August 2017 upon recommendation by the ATF JCC.

The project is conducting a baseline study, the results of which are expected to be presented to the ATF JCC in July 2018.

Upon request of the Coordinating Committee on Customs (CCC), the project also examined indicators of trade transactions costs in the current literature. The project has decided to use the dwell and release times as major indicators of trade transaction costs (TTC) for use as the basis for examining the 10% reduction in the trade transactions costs and how such reduction is related to the ASTFI.

The project is using questionnaires for the implementation of the data gathering phase on the trade transactions costs in ASEAN.

### POLICY IMPLICATIONS

The ASTFI and TTC will be used by ASEAN in regular monitoring of the trade facilitation environment during 2018-2020 in ASEAN and determine how improvement in ASTFI impact on the reduction of TTC towards the targeted 10% reduction in 2020.

### GEOGRAPHIC SCOPE

ASEAN

# 10

## ASEAN Vision 2040

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Ponciano S. Intal, Jr., Mari Elka Pangestu, Simon Tay, and Shiro Armstrong

### AUTHOR(S)

Overall Leads: Ponciano S. Intal, Jr., Hidetoshi Nishimura, Hank Lim, Venkatachalam Anbumozhi, Mari Elka Pangestu, Fukunari Kimura, Simon Tay, Shiro Armstrong, Izuru Kobayashi, Rebecca Sta Maria, Kavi Chongkittavorn, Jusuf Wanandi

### SUMMARY

This project aims to present a vision for ASEAN by 2040 marked by regional integration along social and economic lines. Each chapter will present an issue or policy area of relevance to ASEAN and recommend key strategies for transition and implementation of each relevant issue.

The report will be divided into the following parts, each with sub-sections:

1. ASEAN Present and Future Global and Regional Developments;
2. ASEAN Single Market;
3. Transformative ASEAN Community;
4. ASEAN, East Asia and Indo-Asia Pacific; and
5. Whither ASEAN Institutions, including ASEAN Secretariat.

### POLICY IMPLICATIONS

The ASEAN Vision 2040 Report will offer key policy recommendations for strengthening ASEAN in the future. Policy implications include:

1. strengthening the social and economic ties between ASEAN countries;
2. exploring the future relationship between ASEAN and neighbouring regions;
3. establishing a stronger sense of an ASEAN community among ASEAN people; and
4. promoting regional and sustainable economic growth, trade, transformation, good regulatory practice, cooperation, innovation, and free flow of information.

### GEOGRAPHIC SCOPE

ASEAN, Australia, China, India, Japan, New Zealand, South Korea, and the United States



# 11

## Reducing Unnecessary Regulatory Burdens on Business and Engendering Informed Regulatory Conversations in Priority Integration Sectors in ASEAN

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Ponciano Intal, Jr., Jeremy Gross, and Melanie Milo

### PARTNERS

Research Institutes Network (RIN) and Malaysia Productivity Corporation (MPC)

### SUMMARY

Two critical challenges facing ASEAN Member States (AMSs) in an increasingly open and integrated ASEAN are (1) to promote a conducive business and investment environment; and (2) to improve economic performance and productivity. To meet these challenges, AMSs need to focus on reducing the burden of government regulations on business, together with the minimisation of border barriers and greater investment in infrastructure and people. An important means of enhancing investment attractiveness as well as productivity and competitiveness of industries is Reducing the Unnecessary Regulatory Burdens (RURB) on business, particularly in sectors with significant export potential.

RURB is also an important element of ASEAN's drive towards institutionalising good regulatory practice (GRP) in the AEC Blueprint 2025. RURB addresses unnecessary costs arising from poorly designed or excessive regulation, as well as from poor administration and enforcement of regulations. RURB supports national regulatory reform initiatives to improve overall regulatory regimes such that policies and regulations complement one another in support of greater efficiency, enhanced competitiveness and increased trade.

This research focuses on RURB, particularly in trade-related activities of firms in selected sectors that have significant export potential or are of significant policy interest in each of the nine AMSs (excluding Singapore) covered in the study. The sectors chosen include automotive industry for Indonesia, fishing sector (e.g. tuna for the Philippines, fish production for Myanmar, fish production and trade for Viet Nam), warehousing for Malaysia, halal manufacturing for Brunei Darussalam, coffee and corn for Lao PDR, passenger land transport service for Thailand, and pepper for Cambodia.

The project indicates that the RURB approach is indeed a useful approach to improve the regulatory regime; hence, its institutionalisation in each AMS is in support of the good regulatory practice (GRP) agenda in the AEC Blueprint 2025 is highly recommended. In addition, the project suggests that the RURB approach is best done by an institutions that have analytic skills and strong and continuing links with the government and the private sector. This is because conversations about RURB appear to raise expectations of the private sector that there will be solutions to their regulatory concerns; however, the 'solutioning' phase can take a long time and involves pilot testing, review and eventual roll-out if found effective.

## **POLICY IMPLICATIONS**

To institutionalise the RURB approach in AMSs. This project is best undertaken by an institution that is acceptable to both the government (regulators) and business sectors and which has analytic capability; e.g., Malaysian Productivity Corporation.

## **GEOGRAPHIC SCOPE**

ASEAN except Singapore

# 12

## Study on International Regulatory Cooperation for ASEAN (Phase I)

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Ponciano Intal, Jr. and Derek Gill

### PARTNERS

New Zealand Institute of Economic Research and possibly the OECD

### SUMMARY

In a world of cross-border value chains, international regulatory cooperation (IRC) is an important potential initiative for two reasons: (1) to reduce costs to international trade arising from differing national regulations and (2) to ensure that the objectives of the regulations are effectively addressed. IRC can help address these twin concerns by improving regulatory coherence among countries through improved design and execution of regulations on goods and services as they cross national borders. Although not explicitly indicated in the AEC Blueprint 2025, IRC as a means of engendering regulatory coherence in the region is largely within the ambit of Section B.7 on effective, efficient, coherent and responsive regulations and Good Regulatory Practice.

The project is a seminal work on IRC for ERIA, although it is a follow-on project of the earlier ERIA-NZIER on regulatory management systems in East Asia. The first phase of the project aims to: (1) develop a framework for international regulatory cooperation, (2) undertake a survey on the incidence of various forms of international regulatory cooperation in ASEAN, and (3) work in parallel with the NZIER's case studies on international regulatory cooperation in the region.

### POLICY IMPLICATIONS

The project aims to provide insights on the factors and challenges to the development and success of international regulatory cooperation. Such insights can be expected to indicate the appropriate policy recommendations to enhance regulatory cooperation in ASEAN and even the rest of East Asia.

### GEOGRAPHIC SCOPE

ASEAN

# 13

## Human Resources for Health and Elderly Care in Asia

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Yuko Tsujita

### PARTNERS

IDE-JETRO

### SUMMARY

The movement of people is a key component to deepen economic integration in the region. The aim of facilitating the seamless movement of skilled labour in ASEAN started with mutual recognition arrangements (MRAs) on several professional services that would allow professionals to work in other ASEAN countries through mutual recognition of their qualification. However, the ASEAN MRA on nursing services, which was signed and came into force in December 2012, has facilitated the nurses' mobility only in a few countries (Fukunaga 2012). At the same time, some countries actively recruit foreign nurses and care workers, while some others regulate institutional approach to foreign workers (Peng, 2017).

In this research project, foreign nurses and care workers including Filipinos, Indonesians, and Indians are taken as examples of nursing and elderly care. Some countries in Asia have experienced rapid ageing of the population, and the elderly are traditionally expected to be cared by their family. However, the current demographic, economic, and social transformation hinders some families' availability and ability to take care of their dependents. The countries that receive nurses such as Japan, Singapore, Malaysia, and so on will be compared by analysing those who are engaged in nursing and elderly care. In addition, Thailand is examined in terms of elderly care, as the country is rapidly ageing.

### OBJECTIVES

1. To explore a wide range of aspects of human resource development and employment in nursing and elderly care with focus on foreign nurses and care workers; and
2. To show the problems, obstacles, and challenges that limit the movement of nurses and care workers in the region.

### POLICY IMPLICATIONS

Asia is one of the fastest ageing regions in the world. Findings in this research project deepen our understanding of nursing and elderly care and give important implications on both nurses and care workers' sending and receiving countries. In the broader context, this research project also indicates implication for policies on labour and employment, and human resource development in the health sector. This research also suggests some implication for technology innovation in the elderly care, including nursing-care robots.

### GEOGRAPHIC SCOPE

ASEAN

# 14

## Cities, Urban Amenities and the Global Production Value Chain: New Developments in Trade and Services Liberalisation in East Asia and ASEAN

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Dionisius Narjoko

### SUMMARY

The regional and global supply chain activities in Asia and ASEAN are growing and deepening as more mature economies are moving to the second stage of production fragmentation and newly emerging ASEAN countries are already building up the industrial base for the first stage of production fragmentation. However, we are also observing certain challenges emerging in the Asian region. The level of liberalisation and in particular services and investment liberalisation is losing its momentum. Asian cities are plagued with high population densities, which decreased the returns to urbanisation (pollution and congestions) and limited their productive contribution to the regional growth. The level of trade and investment liberalisation in the multilateral agreements, such as the Regional Comprehensive Economic Partnership (RCEP), is becoming weaker and tends to be of a very low denomination for further regional integration.

There are several policy issues that have to be addressed as East Asian and ASEAN economies are in different stages of growth in the global production value chain. Most of the developed ASEAN countries of Indonesia, Philippines, Thailand and Viet Nam are in the middle stage of second unbundling; Malaysia is in the later stage of second unbundling and ASEAN LDCs of Cambodia and Lao PDR are now in the beginning stage of second unbundling. Singapore is already in the beginning stage of third unbundling.

### OBJECTIVES

The current study focuses on the role of cities in creating urban networks and urban amenities, attracting and developing skills and human capital, as well as driving creativity. This in turn supports the development and liberalisation of the services sectors and the operation of the global production value chain in the Asian region.

In particular, the study focuses on:

1. The regional competitiveness and productivity of cities and what drives creativity in urban areas, leading to innovation and more extensive entrepreneurial activities;
2. Industrial policy in balancing 'agglomerative' effects with 'dispersion' effects will be critical for next stage. In fact, industrial and social policies to create sustainable as well as inclusive growth will be critical for the next stage of growth for the East Asian and ASEAN countries;

3. Human capital development will be critical and labour market implications of task-based activities will have direct impact on education and human capital development (training) policies in East Asia;
4. The skills development and the preparation for workers to move from skill-based activities to task-based activities will be critical and the relevance of their human capital for future skills will be critical. The study will focus on the labour market implications of task-based activities;
5. There is a need to understand services liberalisation and policies needed to manage the services liberalisation in the third stage unbundling;
6. There is a need to understand the transition (linear or nonlinear effects) and market structure from second stage unbundling to third stage unbundling as there might be significant structural adjustments in the domestic economy. There will likely be economic as well as social cost in the structural adjustments in the domestic economy; and
7. The third stage unbundling will highlight the importance of digital economy and services sector development in the region. 'New Age' free trade agreements will have to be developed to manage information flow ('oil' for new economy) and issues that will be important are localisation versus globalisation, e-commerce, virtual-migration, virtual-SMEs, artificial intelligence (AI) and robotics, and many more.

## POLICY IMPLICATIONS

The project is expected to contribute to key policy discussions on the development of services liberalisation and development of services supply chain in the region.

1. The research is expected to contribute to the understanding of the relationship of urbanisation to creativity and innovation, including entrepreneurial activity and various dimensions of city performance;
2. It will draw out the implications for supply-chain activities and the implications of their development, with these drivers, for regional multilateral trade agreements such as RCEP that is currently under negotiation in Asia;
3. The services liberalisation will be crucial for regional integration and for a well-developed supply-chain (in goods and in services) which will allow countries in the region with various development stages to participate effectively;
4. The study intends to map the fundamental factors such as contribution of cities in Asia, urban amenities, institutional reforms, soft and hard infrastructure for various stages of the services supply-chain activities in the region; and
5. Because of the nature of international business in services, it is expected that the project will include treatment of investment and the movement of people, in the cases where these factor flows are linked to transactions in other modes.

## GEOGRAPHIC SCOPE

ASEAN and East Asia

# 15

## Economic Impact of ASEAN Economic Integration

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Dionisius Narjoko

### SUMMARY

This project will assess the impact of the ASEAN Economic Community (AEC) on the economy of the ASEAN Member States (AMS). Since its inception in early 2000s, AMS have, jointly and concertedly, embarked on a region-wide economic integration using the AEC as the framework. The Community is now in the second round of its implementation with the next milestone set in 2025. The year 2020 arrives as the midpoint of the AEC 2025.

It is important to mention that the report of this project is intended to serve as a companion document for the official AEC 2025 Midterm Review process. This is in line with the enhanced monitoring and implementation mechanism in the AEC 2025 for a more effective implementation.

In assessing the impact of AEC, this project will focus on answering the question of whether the AEC since its inception has been improving economic performance and welfare of the AMS, individually or together as a region. Answering the question alone, without putting it in the context, will not likely produce a rich story on the whole issue. Therefore, the project will firstly evaluate the extent of liberalisation in each of the AMS, which should provide us with some idea on how far AMS have been integrated over the time since the beginning of the 2000s. This evaluation should reflect various measures implemented through the AEC, although it is important to note that each member state's unilateral actions should also be reflected in it.

### OBJECTIVES

The main objective of this project is to present evidence on how far the AEC has helped AMS to grow, to develop, and to integrate with each other and with the ASEAN Dialogue Partners (the Plus Six).

It is useful to mention that – should time and resources permit – the project could extend its objective to clarify the underlying mechanism(s) of the integration measures in affecting the performance variables. Effort on this is important to better understand the process and subsequently to better design integration measures in the future.

### POLICY IMPLICATIONS

The project for this fiscal year (FY2018) is expected to produce a set of methods to conduct the empirical part of the study, which will be conducted in the next fiscal year (FY2019).

### GEOGRAPHIC SCOPE

ASEAN

# 16

## Handbook of Asian Economic Integration

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Fukunari Kimura, Mari Pangestu, Shandre Thangavelu, Christopher Findlay, Dionisius Narjoko

### SUMMARY

ERIA has been working together with Edward Elgar Publishing to produce a handbook on regional economic integration in Asia. The volume will provide an opportunity for the wide range of ERIA's publications relevant to this topic to be compiled and placed in the context of related research in this field. This highlights ERIA's significant contribution to the field and assists in identifying priorities for future work.

Elgar Handbooks are works designed to provide a broad overview of research in a given field at the same time as creating a forum for more challenging, critical examination of complex and often under-explored issues within that field. Often widely cited, individual chapters present expert scholarly analysis and offer a vital reference point for advanced research. Taken as a whole they achieve a wide-ranging picture of the state-of-the-art. The Handbook would comprise original, specially commissioned chapters.

In addition, the publisher would establish a companion website for the book, which would include all data in all chapters (tables and charts) and material recorded by authors to assist with using the Handbook for teaching and lecturing purposes.

### GEOGRAPHIC SCOPE

Asia



# 17

## Asia Africa Growth Corridor: Partnership for Sustainable and Innovative Development (Track 1.5 Study)

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Anita Prakash, Sachin Chaturvedi and IDE-Jetro

### PARTNERS

Research and Information System for Developing Countries (RIS) and Institute of Developing Economies (IDE), selected think tanks from Africa, Asia and Oceania

### SUMMARY

The 'Asia Africa Growth Corridor: Partnership for Sustainable and Innovative Development- a Vision Document' was presented to the Africa Development Bank Annual Meeting in Gandhi Nagar, Gujarat, in May 2017. The Vision Document envisaged establishing new channels of connectivity between Asia and Africa. The idea of Asia Africa Growth Corridor (AAGC) emerged in the joint declaration issued by Prime Minister Narendra Modi and Prime Minister Shinzo Abe in their Annual Prime Ministerial Summit in November 2016.

A fully developed Study on Asia Africa Growth Corridor is now being developed at Track 1.5 level. The AAGC Vision Document envisages people-centric sustainable growth strategy, details of which would be evolved through a process of detailed consultations across Asia and Africa, engaging various stakeholders. The detailed study for AAGC is being jointly developed by the Economic Research Institute for ASEAN and East Asia (ERIA), Jakarta, Research and Information System for Developing Countries (RIS), India and Institute for Developing Economies (IDE-JETRO), Japan.

The AAGC study foresees Africa's integration with India, South Asia, Southeast Asia, East Asia and Oceania. Advancing ERIA's previous works on connectivity and production networks, such as the Asia-Europe Connectivity Vision Document 2025, and the Comprehensive Asia Development Plan (CADP II), and CADP 2.0, the AAGC proposes four major pillars to bring peoples, goods, services, capital and institutions closer together, and in realising the objective of Asia-Africa partnership for sustainable and innovative development.

The four aspects of AAGC are:

- Development and Cooperation Projects
- Quality Infrastructure and Institutional Connectivity
- Enhancing Capacities and Skills
- People-to-people Partnership

These will facilitate and enhance economic growth by linking economies in Asia and Africa through development of institutional and human capacity, connecting institutions and people, capacities for planning and execution of projects, trade facilitation, human resource development and technology improvement, and infrastructure (ports, airports, industrial parks, telecommunications, and information technology) of the two continents.

The emphasis of the AAGC is on capacity building and expanding the manufacturing base and trade between Africa and Asia. The idea is to transform the region into a Growth Corridor, which would embed the development processes and value chains in Africa and Asia. It will enable these economies to further integrate and collectively emerge as a globally competitive economic bloc. The AAGC remains specially aligned with Agenda 2030, where green projects would get priority funding and implementation.

The AAGC study will give suitable policy recommendations to governments, businesses and civil society on the respective attention areas of Asia Africa connectivity. The completed study is expected to be brought out in the G 20 Summit in 2019, and later to the India-Japan Prime Ministerial Summit in 2019.

## **POLICY IMPLICATIONS**

Policy alignment among countries and regions of Oceania, Asia, Africa and Europe for greater connectivity among mega regions of Asia, Africa and Europe

## **GEOGRAPHIC SCOPE**

Asia, Africa, Oceania and Europe

## **RELATED PUBLICATIONS**

Prakash, Anita, ed. Asia-Europe Connectivity Vision 2025: Challenges and Opportunities. Jakarta: ERIA-Government of Mongolia, 2016.

Downloadable from: [http://www.eria.org/publications/key\\_reports/asia-europe-connectivity-vision-2025.html](http://www.eria.org/publications/key_reports/asia-europe-connectivity-vision-2025.html)

# 18

## Labour in East Asia

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Rashesh Shreshta

### SUMMARY

Due to the fragmentation of production process across borders, it has become necessary to use the trade-in-value-added (TiVA) concept to analyse trade. The main advantage of a TiVA perspective is that it clarifies a country's forward and backward linkages to the global production process. A country's exports may include inputs sourced from other countries, or those may be used in producing a partner country's exports. As such, the OECD–WTO definition of participation in global value chain (GVC) is the sum of foreign value added in gross final exports and share of domestic value added in exports of intermediaries. TiVA analysis also reveals the degree to which employment in various industries of one country is related to final consumption in other countries.

This edited volume will shed light on these labour market issues by learning from the East Asia experience, a region with highly developed inter-country production networks that serves as a production base for developed countries. The goal is to contribute to an understanding of trade and employment using GVC analysis, an emerging literature that still needs in-depth study. In the process, the book will bring together papers conducting macroeconomic analysis of GVC and employment in East Asia with micro-economic and case studies to uncover the nuances of country-specific context.

### OBJECTIVES

1. To clarify the hitherto inconclusive relationship between trade openness and employment;
2. To assess the distribution of benefits from GVC integration across the economy; and
3. To provide policy recommendations to maximise the benefits of GVC integration, focusing on labour market policies.

### POLICY IMPLICATIONS

Successful GVC integration requires complementary domestic conditions, including industrial policies that make it easy for new firms to establish and integrate to GVC, education policies that provide the workforce with technical and entrepreneurial skills, and infrastructure for e-commerce to facilitate interaction with international partners. Similarly, to move up the value chain, policies that facilitate learning-by-doing, enhance the skills of the workforce, and build on relationships that are created by integration become crucial. This book will highlight success stories that other developing countries can emulate.

### GEOGRAPHIC SCOPE

East Asia

# 19

## ASEAN Regional Production and Supplier Networks of Automotive and Electronic Industries

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Shujiro Urata and Hideo Kobayashi

### PARTNERS

Waseda University

### SUMMARY

It has been well-documented that the automotive and electronic industries in the ASEAN region are characterised by highly sophisticated cross-border production networks. In other words, manufacturing activities are highly fragmented across a large number of countries to take advantage of specific production factors.

Fragmentation theory has been further developed to explain that firms not only disaggregate production into fragmented blocks by locating manufacturing in subsidiaries in various countries but also via outsourcing production to unrelated firms (Kimura/Ando 2005). Based on this logic, a commonly advised development strategy for less developed countries in the ASEAN region is to host production blocks from more advanced economies (Banomyong/Ishida 2010; Kuroiwa 2012; Suzuki 2009). The most prominent example is referred to as the Thailand+1 model, i.e. the relocation of labour-intensive production blocks to neighbouring countries, especially special economic zones in regions bordering Thailand.

It is argued that this form of outsourcing is the first step towards the development of industrial agglomerations and that it strengthens the industrial development in host countries. By and large, ASEAN members have incorporated this logic into official policy. The prime example is the ASEAN Economic Community (AEC) that is supposed to deepen economic integration between member states. Moreover, one aim of this integration is to further the economic and industrial development via participation in global production networks (ASEAN 2009: 37f.).

While the participation in global production networks has already been achieved in labour-intensive light industries, most notably garments, other industries such as the automotive industry have only recently started to locate certain production blocks in less developed ASEAN countries (Nishimura/Kobayashi 2016). This proposed research seeks to gain a better understanding of this process by investigating how intra-firm fragmentation and outsourcing can contribute to the economic development of ASEAN nations.

The proposed study will focus on the automotive and electronics sectors due to the fact that these industries have strong forward and backward linkages to other industrial activities and contribute high shares of exports, employment and GDP (e.g. roughly 50 % of GDP in South Korea, and 30 % in both Japan and Thailand).

## **OBJECTIVES**

1. To identify strategies which allow local suppliers to participate in TNEs production networks and thereby enable these large companies to utilise the ASEAN region for strengthening their competitive power and simultaneously contribute to the economic development of the region (win-win scenario).
2. While Japanese, Korean, and Taiwanese automotive and electronic companies already widely use ASEAN as a lower cost production base, the study will seek to identify strategies that go beyond merely relocating or outsourcing production to lower cost locations. Hence, the study will ask in which way production blocks requiring higher skill levels could be located in ASEAN to strengthen the economic development of the region and TNE investors.

## **POLICY IMPLICATIONS**

1. Due to the nature of investigated objectives, recommendations for automotive and electronic firms' corporate strategy towards ASEAN could be formulated. In this form, the proposed research may help ASEAN small and medium enterprises (SMEs) and foreign TNEs to identify strategies that they could adopt to further their business.
2. Regarding the gaps between local capabilities and TNE demands, the research could also formulate policy recommendations towards ASEAN (or rather Cambodia, Lao PDR, Myanmar, and Viet Nam) countries. However, it may be found that especially in Cambodia, Lao PDR, and Myanmar there is no significant skill gap, as TNEs mainly utilise these countries' abundant cheap unskilled labour. Thus, recommendations would rather formulate a development strategy for these particular countries.

## **GEOGRAPHIC SCOPE**

ASEAN

# 20

## ASEAN Open Skies Policy

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Fauziah Zen

### SUMMARY

It was confirmed by April 2016 that Indonesia and Lao PDR had ratified the ASEAN Open Skies agreement (the Agreement). This means that the Agreement has now achieved full ratification by all ten ASEAN Member States (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam).

Open skies policy refers to the general policy concept of liberalising international aviation markets and, strictly speaking, means that a carrier of one State will have unrestricted access into the sovereign territory of another State without any written agreement specifying capacity, points of destination/ departure or schedule of services. Some implications:

1. The right to fly from a carrier's home country to a foreign country, and vice versa, without government approval;
2. The right to fly between two foreign countries during flights originating or ending in a carrier's home country; and
3. The right to fly between two foreign countries without any continuing service to one's own country.

The agreement so far accommodates first and second points, but fails to deal with the third point. It is believed that improved connectivity through aviation deregulation will help to develop the growth of the aviation, logistics and tourism sectors, and will contribute to greater ASEAN integration.

### OBJECTIVES

1. To measure the (potential) impacts of ASEAN Open Skies market;
2. To evaluate the level of playing field of each ASEAN countries;
3. To measure the infrastructure needs, both hard and soft infrastructure, to ensure the market works for all ASEAN countries;
4. To evaluate possibility of further aviation market deregulation in ASEAN; and
5. To identify challenges and obstacles of wider ASEAN market deregulation (e.g. ASEAN+3).

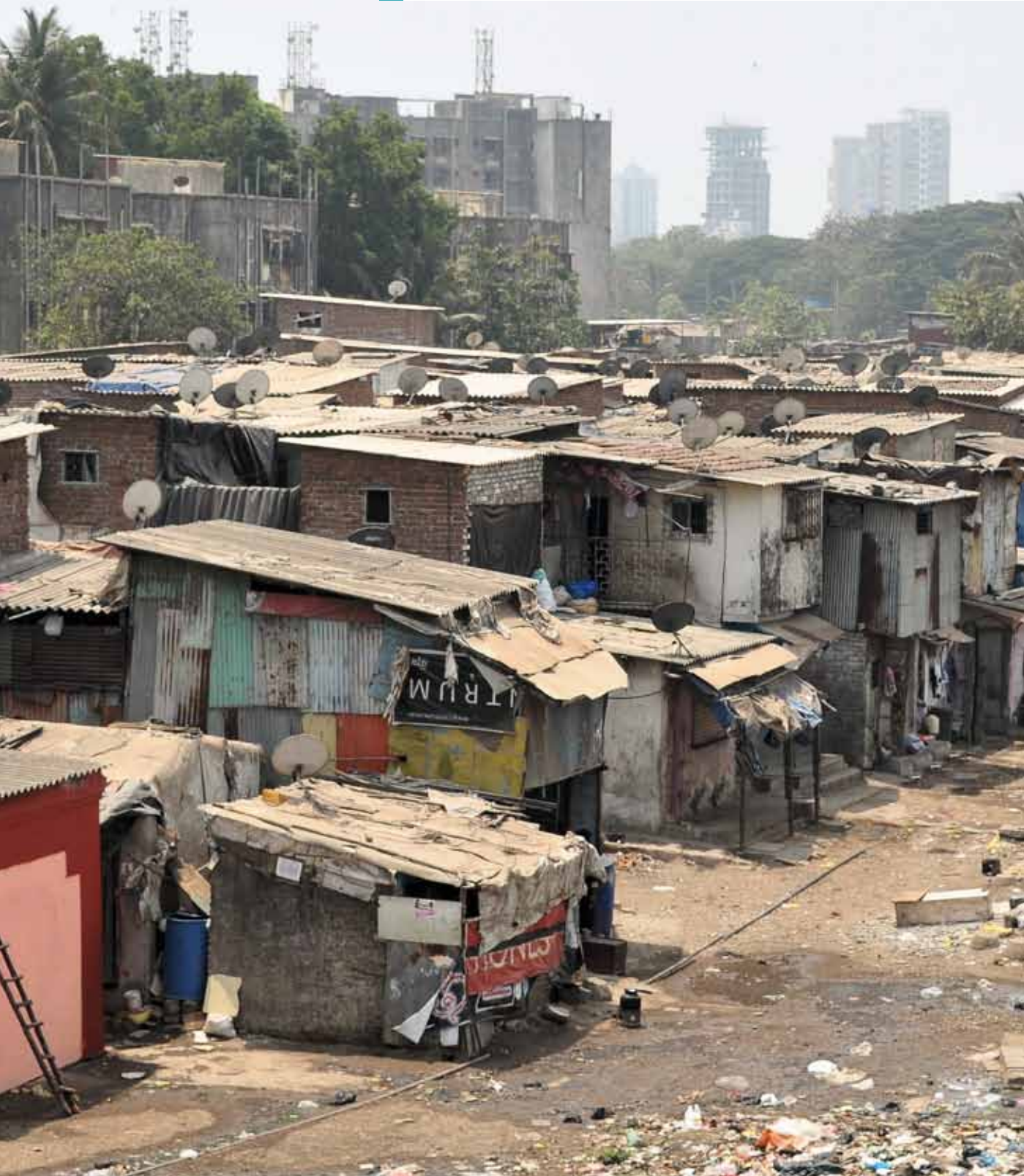
## **POLICY IMPLICATIONS**

1. To provide analysis for selected ASEAN governments on the impact of Open Skies policy in the region;
2. To provide scenarios for further aviation market deregulation; and
3. To measure the infrastructure need to ensure the market works.

## **GEOGRAPHIC SCOPE**

ASEAN

# Narrowing Development Gaps





# 21

## Innovation Policy in/for ASEAN

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Masahito Ambashi

### AUTHOR(S)

Masahito Ambashi, Nobuya Fukugawa, Yanfei Li, Dayong Zhang, Yose Rizal Damuri, Haryo AswicaHyono, David Christian, Suresh Narayanan, Lai Yew-Wah, Francis Mark A. Quimba, Jose Ramon G. Albert, Gilberto M. Llanto, Hank Lim, Saowaruj Rattanakhmfu, Somkiat Tangkitvanich, Vo Tri Thanh, Nguyen Anh Duong, Dinh Thu Hang, and Rajah Rasiah

### SUMMARY

This study examines what is required for innovation in ASEAN Member Economies (AME) by reviewing their existing innovation policies and learning from the successful cases of other developed countries in East Asia. It also intends to explore common ASEAN-wide policies that further innovation as a whole while simultaneously provide an input to the implementation of the ASEAN Economic Community (AEC) Blueprint 2025.

### OBJECTIVES

1. To conduct stocktaking of existing technology/innovation policies in developed AMEs such as Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, and to present possible directions for future policies for these countries;
2. To examine successful national innovation systems of China and Singapore through case studies and derive useful implications for AMEs;
3. To investigate ASEAN-wide innovation policies that are necessary for promoting regional innovation in ASEAN; and
4. To conduct empirical analyses of measuring innovation issues by using data such as R&D, patents, and human resources in order to reinforce the proposed arguments (if possible).

### POLICY IMPLICATIONS

The key message for AMEs is not only to increase investment in R&D and innovative activities, but also to enhance innovation capability and improve the environment in which innovation occurs.

### GEOGRAPHIC SCOPE

China, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam.

# 22

## Digital Economy, Innovation and East Asia's Competitiveness in GVCs, Phase II: Improving E-Commerce Enabling/Supporting Connectivity in Asia

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Lurong Chen and Fukunari Kimura

### SUMMARY

Digital technology has been a defining transformational force of human society, and digital innovations are engines of great prosperity. Supported by new tools and media, information becomes a new and highly valued production factor. This is going to be a key feature of the future knowledge-based economy and society. Moreover, disruptive innovation, which distinguishes from traditional innovation patterns, provides new opportunities for developing countries to realise increased development.

Connectivity is vital for countries' participation in global value chains. It consists of not only physical connectivity that facilitates the movement of raw materials, intermediate goods, and finished goods, but also virtual connectivity that allows free flow of data, information, and services.

Both AEC Blueprint 2025 and ASCC Blueprint 2025 highlighted the importance of incorporating economic digitalisation with development in ASEAN. The development of digital economy has been an integral component of the United Nations' Sustainable Development Goals as well.

The project will emphasise (but is not limited to) the following four aspects of connectivity:

1. Connectivity for free information flow;
2. Logistics connectivity;
3. Connectivity for free cash flow; and
4. Seamless links between the virtual and physical networks.

### GEOGRAPHIC SCOPE

Japan, Republic of Korea, China, India, Singapore, Indonesia, Malaysia, Thailand, Philippines, Lao PDR, Cambodia, Myanmar, Viet Nam

# 23

## Digital economy, Innovation, and East Asia's Competitiveness in GVCs, Phase III – E-Commerce Enabling Services in Asia

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Lurong Chen

### SUMMARY

Global cross-border e-commerce has introduced new dynamics to the international economy. To grasp the opportunity of economic digitalisation, ASEAN and East Asia will need a region-wide e-commerce enabling environment to impose efforts from rules and regulations, connectivity, services, and many more.

Both AEC Blueprint 2025 and ASCC Blueprint 2025 highlighted the importance of incorporating economic digitalisation with development in ASEAN. The development of the digital economy has been an integral component of the United Nations' Sustainable Development Goals (SDGs) as well.

In particular, improving services will be as important as connectivity for the region to unleash its full potentials in digital economy. For instance, from the aspect of logistics, service is key to the efficiency of distribution networks. Online consumers could be more demanding, particularly on information. A logistics network will not be optimised until it contains high standard services especially in some critical facilities in supply chains, such as mega e-fulfilment centres, parcel sorting centres (hubs), local parcel distribution centres for last-mile supply chains, local city logistics depots, and returns centres. From the aspect of trade finance, the existence of a reliable credit guarantee system can effectively stimulate cross-border B2B e-commerce. Online e-commerce platforms can collect and integrate information from various sources and provide users' service packages. E-commerce platforms like eBay have started to launch cross-border insurance products to facilitate the transaction process.

Regulations that support e-commerce and connectivity have been under investigation by phases I and phase II of ERIA research on Digital economy. The current study will focus on e-commerce enabling services. The significance of this study is twofold. First, it explores how digitalisation and service development could mutually re-enforce each other and fuel ASEAN and East Asia's growth in the long run. Second, it contributes to the literature on the upcoming third unbundling of globalisation. It plans to adopt a twin-tracked approach. Track A mainly focuses on how to develop the service sector to improve ASEAN and East Asia's competitiveness in digital economy; track B emphasises how digitalisation can enable new service products/models to unlock the region's potential of development.

## **POLICY IMPLICATIONS**

The study will address questions such as:

1. What are the main concerns of e-commerce enabling services from the regional/country perspective?
2. What is the current situation of e-commerce connectivity – what are the advantages and the limits?
3. What are the challenges in ASEAN and East Asia’s e-commerce services? Why? To what extent they limit the development of digital economy?
4. What should be the proper approach to solve these problems? How can the regional/sub-regional framework be effective to support the approach?
5. How to maximise benefit from new service products/models and make them serve for development?

## **GEOGRAPHIC SCOPE**

ASEAN and East Asia

# 24

## State of ASEAN 2017

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Lurong Chen

### SUMMARY

This project aims to collect the insights, perspectives, and reflections of experts outside the region on their views of the status of the ASEAN 'project', including a comparison with the regional integration processes in other continents. This is pre-preparation for establishing a monitoring and assessment system for ASEAN community building.

The topics to be discussed will include:

1. What does/will the ASEAN identity mean to Asia Pacific and the world?
2. How to evaluate the status of the ASEAN 'project' – what it has achieved and what it has not (but should have)?
3. What are ASEAN's impacts on regional architecture and the implications for development, dispute settlement, rule-setting, resilience, and many more?
4. How have international agreements been incorporated at the ASEAN level?
5. How to combine regional integration with domestic reform?
6. Issues on ASEAN moving forward, i.e. sustainability, inclusiveness, and innovation.

### GEOGRAPHIC SCOPE

ASEAN, RCEP Countries

### RELATED PUBLICATIONS

Special issue in *Asia Pacific Business Review*

# 25

## Cost Benefit Analysis of Regulations and Options Toward Reducing Unnecessary Regulatory Burden of Regulations

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Ponciano Intal, Jr. and Jeremy Gross

### PARTNERS

Malaysia Productivity Corporation (MPC) and research institutions in Brunei Darussalam, Cambodia, Lao PDR and Myanmar

### SUMMARY

This research follows on the Reducing Unnecessary Regulatory Burden (RURB) project in FY 2016 which used the RURB methodology of determining industry profiles, mapping out regulations of interest, identifying and validating issues through engagement with stakeholders, undertaking consultation, and developing recommendations as a basis for joint discussion with regulators and affected business.

This project focuses on the training of staff and the analysis of regulations and options, including the use of standard cost analysis, to reduce unnecessary regulatory burden. The focus is on the CLM countries (Cambodia, Lao PDR, and Myanmar), which are the most in need of cost benefit analyses of regulations and options. The capacity building component is central to the project and involves training a large number of government staff (about 20) in each country on analysis of options, although the research team will consist of a few individuals only. Brunei Darussalam is also included in the project, but not in the capacity building programme, in order to strengthen the research capacity of the Brunei Darussalam team.

This research provides an analysis of the options and the determination of the appropriate solutions based on the results of the different cost savings from the chosen options. Note that the standard cost model includes determination of the reference costs and prices of interest to the case at hand.

### GEOGRAPHIC SCOPE

Cambodia, Lao PDR, Myanmar, and Brunei Darussalam

# 26

## Technological Catching-Up and Innovation Policies in China: What is Behind the Largely Successful Story

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Yanfei Li, Dayong Zhang

### PARTNERS

The Southwestern University of Finance and Economics (SWUFE)

### SUMMARY

The study aims to discuss a generalised framework or model to understand the innovation and technological catching-up policies of China. First, this study comprehensively reviews the theories on this topic in the literature. Second, the policy framework and phenomenon of rapid progress of technological catching-up and innovation in China is summarised. This is followed by the proposal of a new theoretical framework to explain the accelerated catching-up process. Empirical methods are subsequently applied to provide evidence and support the proposed theoretical framework. Both data analyses and case studies are applied. An empirical model is developed to analyse the main driving forces of such technological progresses in China. At the micro-level, case studies on a leading state-owned nuclear energy company, CGN, and Huawei, a prominent Chinese private company in telecommunication industry, are conducted to provide further insights on what firm-level strategies—in combination with or leveraging on state-level policies—enable a successful story in reality.

### OBJECTIVES

1. This article will give a detailed and in-depth review of the characteristics of several selected industrial sectors in China and examine what factors have been driving successful cases and what factors may have worked as China's disadvantages.
2. A quantitative method will also be applied to test if these factors' influences are statistically significant and to what extent they determine success or failure.
3. This article contributes two case studies to shed some light on how these factors are working at the firm level and what additional findings could be identified at the firm level.

## POLICY IMPLICATIONS

The theory that has been proposed and illustrated so far has ample policy implications. Three important observations are highlighted here:

1. Protective measures against competition from advanced foreign technology developers could better ensure that latecomers in the host country generate sufficient revenue from the domestic market, and thus compensate for the high cost of catching-up. The theory also explains why some developing countries have to provide subsidies or tax incentives for exporting certain industrial products and services, especially in their catching-up stage.
2. If protection in the domestic market and subsidies for exports are against the spirit of competition and fair global trade, then our theory suggests using public finance or public sector research to reduce the exceptional cost of catching-up for the latecomer country.
3. Establishing a complete and capable domestic supply chain could greatly help the catching-up in the system integration type of technology. In the case of a small economy, which is unlikely to be capable of hosting a complete supply chain, the government should act to ensure sound partnership and cooperation with the global supply chain.



# 27

## ASEAN SME Policy Index (Phase II)

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Dionisius Narjoko

### PARTNERS

OECD

### SUMMARY

The 26th ASEAN Summit in April 2015 highlighted the importance of ASEAN in strengthening micro enterprises and improving the competitiveness of small and medium enterprises (SMEs) in its member countries. The ASEAN Strategic Action Plan for the SME Development 2016–2025 (SAP) manifests this idea to support the vision of the ASEAN Economic Community.

In this context, ERIA and the OECD proposed a study to renew the previous ASEAN SME Policy Index. The policy index should serve as a tool to assess the strength of SME policies, instruments, and institutions for ASEAN Member States (AMS) in accordance with the SAP and the level of policy convergence in the priority areas as defined by the AMS.

The motivation for the renewal of the policy index is twofold. First, the framework of the new policy index will be different from that of the earlier exercise conducted in 2013/2014. The new policy index will use the SAP whereas the earlier policy index used the ASEAN Strategic Action Plan for SME Development (2010–2015). The SAP explicitly defines competitive and inclusive ways through which actions will be implemented, while this was not the case with the 2010–2015 action plan. The different framework results in different policy dimensions that the new policy index will cover. The overall mandate for this work is under Strategic Goal D of the SAP, aiming at improving overall policies and moving towards policy convergence across ASEAN.

Second, the new policy index intends to improve the focus and method of data gathering. It aims to combine a quantitative assessment of the range and intensity of policy inputs with quantitative information concerning the outputs of different policy measures with qualitative information on the SME policy framework, institutions, and the key features of the different policy measures introduced by the AMS. Those data and information will be complemented by data on the structure and the performance of SMEs and the evolution of the business and economic environment, to obtain a full picture of the various factors that concur to shape SMEs in each ASEAN country. Thus, the new policy index will be based more on factual information or data instead of on the more qualitative information of the earlier one.

### GEOGRAPHIC SCOPE

ASEAN Member States

# 28

## Report for ASEM 12 on Strengthening Asia Europe Connectivity: Drawing Synergy from Global Cooperation and Governance Programmes

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Anita Prakash

### PARTNERS

ERIA, EEAS (EU), Victoria University, Wellington

### SUMMARY

The Asia-Europe Meeting (ASEM) completed 20 years of existence in Ulaanbaatar in July 2016. The ASEM leaders evaluated the outcomes of this institution and committed to setting forth a vision plan for ASEM, which is responsive to changing regional and global needs.

In preparing for the third decade of ASEM, the ERIA-Government of Mongolia study on 'ASEM Connectivity Vision 2025: Challenges and Opportunities' was presented to ASEM Leaders in Ulaanbaatar in June 2016. The study emphasised the linkages between physical, institutional and people-to-people connectivity and the structural linkages between ongoing regional plans for connectivity between Asia and Europe. In the Ulaanbaatar Declaration, ASEM Leaders have emphasised a multidimensional approach to inclusive growth and development and have integrated sustainability into the framework of connectivity. These would contribute to narrowing the varying levels of development and capacities in Asia and Europe and across the globe.

In the Brussels Summit of 2018, the ASEM leaders will further assess the drivers for deepening this connectivity. Their task will be supported through an ERIA-European External Action Service of the EU (EEAS) study that will align ASEM connectivity goals and objectives with the objectives and results of global and regional programmes, which are designed to balance growth with inclusive and sustainable development.

In this background, ERIA and EEAS will prepare a report on strengthening Asia-Europe connectivity by drawing synergies with global and regional cooperation programmes for development and growth. The report will also underline important areas of cooperation that will contribute to ASEM's role as a catalyst for effective multilateralism and a rules-based international order that support connectivity and economic prosperity, and inclusive global governance systems.

The completed report will be presented to the ASEM 12 in Brussels in October 2018.

## **POLICY IMPLICATIONS**

Policy support to ASEM Leaders for strengthening Asia Europe Connectivity policy and mechanisms, which have sustainable and inclusive outcomes for the region and for global governance systems.

## **GEOGRAPHIC SCOPE**

Asia, Europe, Oceania and Africa

## **RELATED PUBLICATIONS**

Prakash, Anita, ed. Asia-Europe Connectivity Vision 2025: Challenges and Opportunities. Jakarta: ERIA-Government of Mongolia, 2016.

Downloadable from: [http://www.eria.org/publications/key\\_reports/asia-europe-connectivity-vision-2025.html](http://www.eria.org/publications/key_reports/asia-europe-connectivity-vision-2025.html)

# 29

## Strengthening Economic Connectivity for Sustainable and Inclusive Growth: An Assessment of Global Value Chains in ASEM Region

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Anita Prakash

### PARTNERS

ERIA, International Trade Center (ITC), Graduate Institute

### SUMMARY

The 7th ASEM Economic Ministers' Meeting (EMM7) was held in Seoul, Korea on 21-22 September 2017, under the chairmanship of H.E. Paik Ungyu, Minister of Trade, Industry and Energy of the Republic of Korea. It was attended by economic and trade Ministers from 21 Asian countries and 30 European countries. Representatives from World Trade Organisation (WTO), Organisation for Economic Cooperation and Development (OECD), United Nations Industrial Development Organisation (UNIDO), Asian Development Bank (ADB) also participated in this meeting. The theme of the meeting was 'Reconnecting Asia Europe: Innovative Partnership for Inclusive Prosperity.' The three discussion themes were i) facilitating and promoting trade and investment, ii) strengthening economic connectivity, and iii) sustainable and inclusive growth.

Ministers recognised the Asia-Europe Meeting (ASEM) region's pivotal role in Free Trade Agreement (FTA) networks and requested research on the global value chain (GVC) structure within the ASEM region as it would be useful to deepen the economic analysis of Asia-Europe connectivity. ERIA's initiative to conduct a study on the GVCs in the region was welcomed by the Ministers.

ERIA, the International Trade Center, and other selected contributors will jointly prepare the ASEM GVC study. The author(s) will mainly concentrate on trade, infrastructure and trade facilitation aspects of GVCs, investment and services as drivers of GVCs in Asia and Europe, capacity building, small and medium sized enterprises (SMEs) participation in GVC, green and resilient value chains. The study report will have a special focus on role of Free Trade Agreements in deepening GVCs.

Additional dimensions of GVC connectivity will cover the geographical spread of GVCs, physical infrastructure, e-commerce and digital trade, governance standards, etc.

Since ASEM has flexible processes and informal mechanisms, the study report will bring forth policy consensus in its evaluation and recommendations. The GVC study will use existing research findings and data to recommend the 'best case' scenario for GVCs in ASEM region.

The outcome of this study will be reported to ASEM Senior Officers Meeting for Trade and Industry (SOMTI).

## **POLICY IMPLICATIONS**

Deepening and expanding value chains in the ASEM region, for sustainable and inclusive economic growth

## **GEOGRAPHIC SCOPE**

Asia, Africa, Oceania and Europe

## **RELATED PUBLICATIONS**

Prakash, A. (ed.) (2016). 'Asia-Europe Connectivity Vision 2025: Challenges and Opportunities.' Jakarta: ERIA-Government of Mongolia..

Downloadable from: <http://www.eria.org/publications/asia-europe-connectivity-vision-2025-challenges-and-opportunities/>

# 30

## Estimating Skills Gap in ASEAN and Freer Movement of Skilled Workers as Possible Mitigation to Skills Gap

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Rashesh Shreshta

### SUMMARY

Rapidly progressing technological advancements and opportunities provided by current patterns of specialisation and trade have made it necessary for economies to accelerate the development of human capital. While greater investment is needed in domestic production of human capital, this takes time to translate into stocks of skilled workforce. The pace of technological change will soon lead countries rich in low-skilled labour to experience skill shortages. Therefore, countries that want to attract foreign businesses and high value-added production processes in the near future need to look closely into relaxing restrictions on employment of foreign workers and making themselves more attractive to foreign talent as important policy levers.

Skilled foreign workers can benefit the economy by raising the stock of its human capital, which in turn raises the productivity of domestic physical capital and semi-skilled labour. The admirable performance of the United States in innovation is often attributed to its ability to attract foreign talents to its economy. Furthermore, the ease of hiring foreign workers can make a country more attractive to multinationals. At the same time, relaxing work migration policy is fraught with political difficulties. Electorates in richer countries are concerned about increased competition, whereas poorer countries are concerned about the loss of talent or 'brain drain'. Therefore, it is important to estimate the potential net economic benefits of relaxing restrictions on foreign skilled workers.

This project touches upon one important element of the ASEAN Economic Community (AEC) Blueprint related to free flow of skilled labour. Despite recognising that skilled labour mobility is an important part of the ASEAN single market and production base, movement of labour has not been achieved in any meaningful level despite considerable progress being made in goods trade liberalisation. In many ASEAN countries, the number of foreigners (not necessarily workers) is proportionally very small. Except for Singapore, Brunei, Malaysia, and Thailand, foreign workers constitute less than 0.5% of total population.

Regulatory hurdles imposed by individual Asian Member States (AMSs) on employment of foreign workers is a crucial barrier. One observer noted that 'lack of a cohesive regional framework, nationalist and protectionist policies, and middling political will impede ASEAN's skilled labour mobility.' Mutual recognition agreements (MRAs) on skills have been achieved in only a handful of occupations, with tourism sector professionals being most widely recognised. Given the progress being made in other aspects of economic integration, taking a closer look at freer movement of natural persons would be an appropriate priority area in the current global context.

## **OBJECTIVES**

The objective of this project is to understand current barriers to skilled migration in ASEAN and estimate the potential benefits from reducing these barriers.

## **POLICY IMPLICATIONS**

We expect to provide estimates of economic costs and benefits of relaxing restrictions on Information and Communication Technology (ICT)-skilled migration in AMSs. In addition, we will also provide an analytical review of current rules and regulations governing labour migration and an institutional mapping of various agencies involved in the permit process. Both of these aspects of the project will inform policymakers in respective AMSs (and collectively) to make informed policy choices.

## **GEOGRAPHIC SCOPE**

ASEAN

# 31

## Reaping the Benefits of Digital Economy

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Fauziah Zen

### SUMMARY

The growth of digital technology has been starting to shape the economy of Southeast Asia. In ASEAN-6 countries, internet users are more than 50% of each country's population, and their numbers are still growing. With rapid innovation milestones, the price of technology utilisation is becoming cheaper and the pool of users is growing faster than population growth.

Digital economy goes beyond e-commerce or social media; even though these types of utilisation are the most widely recognised and applied, especially by growing consumer class. Utilisation of information and the application of Big Data or Internet of Things have been very useful for many sectors. Information is more accessible now that people are connected to the internet.

Governments are fully aware of these phenomena and have recognised the economic potential of the digital economy. Indonesia recently announced its plan to become the largest digital economy in Southeast Asia by 2020. In its e-Commerce Roadmap, Indonesia aims to produce an additional 1,000 technopreneurs with \$10 billion of business valuation and to achieve \$130 billion online business value with 50% annual growth.

Fast growing digital users in ASEAN provide two features of digital development: (i) as a potential market, and (ii) as a driver for regulatory adjustment. While the first feature is understood and tapped by businesses, the latter is much more complex and has been the source of several problems. For instance, Indonesia has not clearly defined if application-based taxi services fall under the transportation sector or the Information and Communication Technology (ICT) sector. Thus, confusing regulations come from both sector ministries. There have also been several strikes and demonstrations on the disputes between conventional and online-based businesses. On the other hand, online-based trading in general still relies on logistics systems for delivery. It means physical infrastructure should be developed accordingly. Ride-sharing ideas in developing economies have been shifting into new semi-public transportation business models that cramp the cities with additional vehicles.

Moreover, Singapore, Thailand, and Malaysia, and perhaps Indonesia, are now considering the introduction of taxes on e-commerce sales. However, different tax regimes across Southeast Asia will be a major challenge for e-commerce businesses in aligning their regional and global business streams.



Governments typically respond slowly to the challenges posed by these rapid technological changes. The common areas of disputes are taxation, data protection, cyber security, consumer protection, and conflicts with off-line platform business. These gaps between government response and business dynamics have occurred not only in developing economies but also in developed economies. To gain the most benefits from digital economy, governments need to understand its characteristics and anticipate changes.

## **OBJECTIVES**

1. To analyse the landscape of digital readiness for selected ASEAN Member States in terms of governance/regulatory framework, physical infrastructure, and human resources;
2. To explore the utilisation of digital economy for the benefits of rural development as well as social welfare programmes; and
3. To explore the potentials of selected cities in developing Southeast Asia to play the role of digital hub.

## **GEOGRAPHIC SCOPE**

Indonesia, Malaysia, Philippines, Thailand, Viet Nam

# 32

## The Role of Public Finance in Infrastructure Finance

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Fauziah Zen, Kensuke Tanaka, and Naoyuki Yoshino

### AUTHOR(S)

Fauziah Zen, Kensuke Tanaka, Prasiwi Ibrahim, Naoyuki Yoshino, Riatu M.Q., Ehtisham Ahmed, Jay Rosengard, and Michael Regan

### PARTNERS

ADB and OECD

### SUMMARY

The demand for infrastructure in Emerging Asia is great due to the fact that the development of new infrastructure, the maintenance of existing infrastructure, and the upgrading of ageing infrastructure will contribute to inclusive and sustainable growth within countries as well as deepen the countries' connections with the global economy. Nevertheless, financing these investments has proven to be a considerable challenge for the region. Broadening the financing methods, including domestic fiscal and financial efforts, will attract more investments for infrastructure and contribute to sustainable growth. Efforts to secure infrastructure financing have typically relied on private resources, public-private partnerships, and international lending. These approaches may be complemented by providing more public incentives for investors, issuing government bonds, and financing using tax revenues.

This project focuses on the domestic fiscal and financial policy options for Emerging Asian countries to fund infrastructure development and maintenance. Areas of study include reducing risks, improving rates of return, improving governance mechanisms, avoiding moral hazards, as well as balancing the strengths and weaknesses of various financing options. This work will be informed by the experiences of advanced economies in these areas, while also considering country specific circumstances. Lessons learned from advanced economies' experiences and their relevance to Emerging Asian countries will include types of taxes (including infrastructure purpose tax/earmarked tax); tax rates and the effects of tax on consumption; fiscal investment, loan, and postal savings programmes; income streams, their stability and determinants; preparation, and strategy of implementation; political intervention; evaluation; as well as institutional setup and institutional capacity (regulatory type, period of validity, collecting mechanism, management body, audit system, authorities, reporting).

The project also provides country case studies that cover exploration of optimum resource mobilisation and its structure, revenue stream estimation, prioritised sectors, institutional frameworks, and implementation strategies.

### GEOGRAPHIC SCOPE

Case: Indonesia, Philippines, Viet Nam

Advanced economies: OECD, Japan, North America

# Sustainable Economic Development



# 33

## Distributional Effects of Disasters on Food Security in ASEAN

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Venkatachalam Anbumozhi, Meinhard Breiling, and Vangimalla R. Reddy

### AUTHOR(S)

Venkatachalam Anbumozhi

### PARTNERS

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### SUMMARY

The ASEAN Socio-Cultural Community (ASCC) Blueprint and East Asia Summit (EAS) statements clearly recognise the need for concerted efforts to address natural disasters and climate change, and their impacts on socio-economic development, health and the environment. ASEAN Member States (AMS) agreed to implement 11 related actions based on the principles of equity, flexibility, effectiveness, common but differentiated responsibilities, and enhanced institutional capabilities. Ensuring adequate access to food for all ASEAN peoples is also identified as a priority for ASCC blueprint implementation. However, both climate change and the increasing number of natural disasters are affecting regional and local food security.

Why are AMS not investing more in disaster resilience, especially given the prevalence and rising cost of disaster events? This may be due to the fact that decision-makers in governments, businesses, and households tend to focus on avoiding losses from disasters, and perceive the return on investment as uncertain – and only realised if a somewhat unlikely disaster event actually happens. Effective policy actions require sector-specific damage and loss data for agriculture and trade ministries. AMS' national strategies on disaster risk-reduction and climate change adaptation which support resilience must address the types of disasters with the greatest impact on the agricultural sector. Governments must design measures specific to the crop, livestock, and fisheries sub-sectors, and be able to adopt more systematic strategies that counteract the impact of disasters on the agricultural sectoral growth and development, and national and regional food security.

Nevertheless, there should be business rationales for climate change adaptation and disaster risk-management based on the multiple dividends of resilience. Actions should look beyond avoiding losses (the first dividend) to wider benefits to be gained independently of whether or not the disaster occurs. These include unleashing entrepreneurial activities and productive investments by lowering the looming threat of losses from climate change and enabling farmers and supply chain actors to take positive risks (the second dividend); and co-benefits of resilience measures (the third dividend), such as flood embankments that double as roads, or drought-tolerant crop varieties that maximise crop yields. The no-regret adaption strategies should also reflect recent efforts to build a stronger business case for resilience in the private sector including the insurance sector.

## **OBJECTIVES**

1. To understand key food security challenges posed by disasters and climate change, and the required actions taken by policy-makers to address these risks;
2. To share experiences on adjustment of key planning instruments relating to agriculture sectors;
3. To exchange experiences on successful adaptation measures across key vulnerable areas; and
4. To undertake a cost-benefit analysis and identify necessary structural and non-structural measures that could contribute to a resilient ASEAN.

## **POLICY IMPLICATIONS**

1. Disasters and Climate Changes are impacting ASEAN Member States in varying degrees. A precise assessment of local food producing vulnerabilities is needed;
2. ASEAN economic integration or free trade efforts should be enhanced along with recognition that food security and climate-induced disasters are interlinked and cross-cutting issues;
3. Buyers from importing countries should build longer-term and more stable relationships with suppliers from food-exporting countries;
4. National-planning efforts should incorporate food security early-warning systems taking into consideration factors such as weather-related events; and
5. Long-term innovative financing plans should be developed to support adaptation that is taken at a national level.

## **GEOGRAPHIC SCOPE**

ASEAN with a particular focus on Cambodia, Lao PDR, Myanmar, and Viet Nam

## **RELATED PUBLICATIONS**

Reddy, V.R., and V. Anbumozhi (2017), *Managing Stranded Assets and Protecting Food Value Chains from Natural Disasters*. Jakarta: ERIA.

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Raghavan, S. V., J. Ze, J. Hur, L. Jiandong, N. Ngoc Son, S. Yabin, and L. Shie-Yui (2017), *Distributional Impacts of Climate Change and Food Security in Southeast Asia*. Jakarta: ERIA.

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Kuwornu, J. K. M. (2017), *Chained to Sustainable Development Goals? The Changing Role of Entities for Enhanced Resilience along Agriculture Food Value Chains in Thailand*. Jakarta: ERIA.

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Yamaji, E. (2017), *Assessing the Competitive Advantage of Public Policy Support for Supply Chain Resilience*. Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/assessing-the-competitive-advantage-of-public-policy-support-for-supply-chain-resilience/>

# 34

## An Efficiency-Based Regional Approach to Realise Sustainable Development Goals

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Venkatachalam Anbumozhi

### SUMMARY

The Sustainable Development Goals (SDGs) are global commitments of inclusive and sustainable development. As one of the most successful regional organisations, ASEAN member countries have played an important role in the UN2030 Agenda for Sustainable Development, which has been greatly influenced by ASEAN community-building processes.

Promoting complementarities between the ASEAN community vision and the SDGs is thus critical. In declaring the ASEAN Vision 2025, ASEAN leaders recognised the importance of creating synergy and complementarities between the three ASEAN community blueprints (ASEAN Economic Community (AEC), ASEAN Socio-Cultural Community (ASCC) and ASEAN Political-Security Community (APSC)) and SDGs, as demonstrated by the following statement of the Vision 2025: ‘...Underline the complementarity of the United Nations 2030 Agenda for Sustainable Development with ASEAN community-building efforts to uplift the standards of living of our peoples.’ Strong political commitment at the highest level of ASEAN created an enabling environment where the ASEAN Community Vision 2025 and SDGs both emphasise and improve each other’s qualities with the goal of improving the lives and well-being of the ASEAN peoples.

However, as of now, ASEAN Member States have avoided actual quantified benchmarks for 2030 for many of the 17 targets, which means the goals and targets are just aspirations. On the positive side, there is something for many different actors (public, private, and international) across multiple constituencies to work towards collectively.

Taking into consideration the elements of complementarity, as well as operational easiness, Thailand - the focal point for sustainable development within ASEAN - has identified five priority areas. Those areas are multiple interlinked, cross-cutting issues, with the assumption that actions undertaken would simultaneously lead to implementation of an important subset of both the ASEAN community blueprint and the UN2030 Agenda. The five areas of complementarity are (i) Poverty Reduction; (ii) Infrastructure and Connectivity; (iii) Natural Resource Management; (iv) Sustainable Consumption and Production; and (v) Resilience Capacity.

The key questions are:

1. How would the UN2030 Agenda support the ASEAN community vision, i.e. with real change on the ground?
2. Can these changes be linked to economic cooperation?
3. Is there synergy in the objectives?
4. Will the ASEAN community progress yield the results and information we need for the five complementary areas?

## **OBJECTIVES**

This study will look into the regional dimension of achieving the UN2030 Agenda as an efficiency-based approach.



# 35

## Innovations and Experiences in Financing Disaster Risk Reduction and Climate Change Adaptation

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Venkatachalam Anbumozhi and Ayumi Kodama

### SUMMARY

The ASEAN Agreement on Disaster Management and Emergency Response (AADMER) set the foundation for regional cooperation, coordination, technical assistance, and resource mobilisation in all aspects of disaster management and emergency response. The Agreement supports ongoing and planned national initiatives of ASEAN Member States (AMS), as well as supports and complements national capacities and existing work programmes. Since its inception and through various initiatives, ASEAN through AADMER has managed to increase both regional and national capacities for responding to disasters in Southeast Asia. National platforms have been set up, legislations have in large part been enacted, and institutions have been developed. In some countries like Indonesia, civil society engagement and integration of information technology have increased, but more than ever the focus is on actions leading to concrete results.

While policy debates within the ASEAN Socio-Cultural Community (ASCC) and considerations of best cooperation practices are occupying attention, disasters continue to make their impact felt regionally, nationally, and locally. Massive sudden-impact disasters destroy communities in an instant and the economic fabric of AMS is eaten away at the onset of disasters like earthquakes, volcanic eruptions, floods, and droughts. Recent ERIA estimates suggest that the number of small- and medium-sized enterprises (SMEs) that were affected reached more than 3 million in 2005-2015, double the previous decade. Climate-induced disasters increase the risks of and have implications on food security and the impoverishment of people along the food chain, which often fail to gain the attention of AADMER.

With so many international policy debates such as the Sendai Framework, climate change, and development financing converging on resilience, this represents a unique opportunity to ensure that disaster risk reduction (DRR) becomes a truly fundamental component of inclusive and sustainable economic growth. The international financing of DRR, representing the global community's support of ASEAN governments in their efforts to prevent development gains from disasters, is coming under increasing scrutiny.

There are positive areas to build upon. ERIA has developed business continuity plans (BCP) for reducing the vulnerability of global value chains against natural disasters and country-specific adaption road maps (ARM) for achieving food security. However, in order to move forward, it is crucial to ensure the relationship of funding needed to implement these plans with other regional cooperation efforts such as AADMER, which is represented by the risks a country faces or the exposure of its assets. The implementation decisions cannot be made without full understanding of how much institutional and financial capacity a national government has to manage and whether the risks associated with disasters are natural-, economic-, or climate-induced.

## **POLICY IMPLICATIONS**

1. Justifiable mix of public, private and international financing of business continuity plans, adaptation road maps, and AAMEDR;
2. The ways and means to improve the capacity of sectoral policies to achieve global value chain resilience and food security from the perspective of DRR; and
3. Innovative financial instruments for DRR in the context of sectoral investments, official development assistance, and climate policies aimed at disaster risk reduction.

## **GEOGRAPHIC SCOPE**

ASEAN

# 36

## Measuring the Readiness of Industry 4.0 for Circular Economy

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Venkatachalam Anbumozhi, Fukunari Kimura, Krishnamurthy Ramanathan

### SUMMARY

Industry plays a central role in the economies of the East Asia Summit (EAS) countries. It serves as a key driver of research, innovation, productivity, job creation and exports. Looking at its effect on services alone, industry can be considered a social and economic engine of Asia. But industry in the EAS countries is fundamentally diverse; while many countries' emerging industrial sectors are gaining productivity and market share, some advanced economies like Japan, Korea, and Singapore have been losing ground in the past two decades.

Most of the traditional industrialised countries in Europe have also been experiencing a decline in manufacturing competitiveness and resource efficiency due to several factors. Imitating the successful industrial models of Europe, Japan, or USA may not be a viable solution for developing countries of Asia. A successful approach to reindustrialisation needs to be much more than simply rebuilding structures of old-fashioned manufacturing.

The concepts of Industry 4.0 and a circular economy have recently gained traction in EAS policymaking as a positive, solution-based perspective for achieving resource-efficient industrial development using the next generation of technologies. Current academic, industrial, and policy debates set out a large number of initiatives to be included under the action plan to maximise the use of resources available within the economy. They also indicate that the transition to Industry 4.0 and a circular economy requires fundamental changes in many different areas of the economic system. Although it is a difficult and complex process, several crucial areas of change can be identified in technology, engineering, economic, and social domains.

This study addresses the interface between Industry 4.0 and a circular economy, and whether the integration of both would unleash new gains in productivity and efficiency. It also looks at whether the experiences gained in other parts of the world could be transferred to the ASEAN region, providing respective recommendations and conclusions. The main objective is to prepare a manual consisting of a fairly robust framework for measuring the readiness of EAS economies for Industry 4.0 and a circular economy.

## **POLICY IMPLICATIONS**

1. The ERIA Assessment Framework for Industry 4.0 Readiness shall be applied at macro (national), meso (sector), and micro (local) levels and utilised to recognise the driving factors and enabling environments;
2. As with all transitions, the benefits of Industry 4.0 are not going to be evenly distributed. Some industries, businesses, regions and worker groups are likely to be disadvantaged, while other sectors will benefit; and
3. Efforts to realise the benefits of Industry 4.0 and a circular economy will also depend on the quality and speed at which adequate education and skills training are developed and rolled out.

## **GEOGRAPHIC SCOPE**

EAS countries – ASEAN +6

# 37

## Understanding the Economic Effects of Financial Inclusion in ASEAN and East Asia

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Jenny Corbett and Tony Cavoli

### SUMMARY

This project examines the causes, consequences and policy implications relating to inequalities in financial inclusion (FI) paying particular attention to the effects of FI on economic prosperity and well-being. While there has been some recent scholarly work examining the determinants of FI (Sarma and Pais, 2011, Fungáčová and Weill, 2015), the focus of this project is firmly on understanding the economic consequences of FI and the key policy challenges of poverty reduction and income growth. The project will also consider the effects of FI on other development indicators such as health and education, gender issues and social capital.

There is considerable variation among ASEAN economies in terms of financial inclusion. While Singapore, Malaysia, Thailand, and Brunei Darussalam have high levels of FI, it is estimated, for instance, that for the other ASEAN nations, the average proportion of the adult population with a bank account is around 25%.

Financial inclusion and its associated policy implications are such important issues for ASEAN that it is explicitly presented as a key element (element A.4) of the Asian Economic Community Blueprint 2025, and is also related to the following strategic measures in the ASCC Blueprint 2025:

- A2 empowering people and strengthening institutions;
- Under measure B (inclusivity), B1 reducing barriers (to financial products), and B2 equitable access (to financial products).

Further underlying the importance of FI in affecting development outcomes, the World Bank considers financial inclusion to be an enabler for seven of the 17 United Nations Sustainable Development Goals:

<http://www.worldbank.org/en/topic/financialinclusion/overview>

<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

This project will bridge the gap between the existing scholarly research on FI and the evaluation of specific policy actions to ensure that the benefits of financial inclusion are maximised by effective policy and governance.

Specific questions that this project addresses will include:

1. What is the link between FI and income growth?
2. Do FI and FI policy initiatives affect development goals such as gender equality, greater access to education and health, and poverty reduction?
3. Are these effects comparable among Asian countries?
4. Are there particular FI policies (emphasising financial access or usage, focusing on the demand for financial products by consumers and firms, or on the supply or provision of financial products) more effective than others in influencing development outcomes and income growth?

## **POLICY IMPLICATIONS**

The insights from this project that can inform policy design would be around:

1. How financial inclusion improves the well-being of individuals by enabling access to better health and education;
2. How FI enables increased current and future output;
3. An assessment of which types of financial inclusion initiatives (demand-based, supply-based, financial access, usage, financial literacy policies, fintech, etc) that have more pervasive effects on development outcomes, poverty and output growth; and
4. The effect of FI on gender equality and social capital.

# 38

## Enhancing Productivity of Domestic Private Firms: Industrial Location and Linkages

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Doan Thi Thanh Ha

### SUMMARY

Since 1986, Viet Nam has transformed itself into one of the world's fastest growing economies. With an average annual GDP growth of 6.8% during the 1990-2016 period, the country has lifted itself out of poverty and reached a lower-middle income status. However, the development road is still a long way ahead until the country can close the income gap with more advanced nations. Gains from productivity, the third momentum for growth, are limited and have diminished over time. There has been concern about the middle-income trap if Viet Nam is unable to maintain its high growth rate for the coming decades. And now the country faces a fundamental challenge: how to generate sustainable productivity growth.

Stagnation of productivity growth is particularly worrisome for the domestic private sector and labour productivity of domestic private firms has been trending downwards since the early 2000s. Most domestic enterprises are small and lack resources to go global. Their market is limited, while manufacturing exports are dominated by foreign direct investment (FDI) firms. The FDI sector accounts for 50% of revenue and about two-thirds of export turnover. However, despite the strong presence of foreign firms and the exponential rise in the number of private local firms, interaction between these two players is weak. Only half of FDI intermediate inputs are purchased domestically. Out of these, most are sourced from other FDI firms.

To design an appropriate development agenda for the private sector, it is necessary that the Vietnamese government considers opportunities and challenges of globalisation's 'third unbundling', triggered by technological advance, especially artificial intelligence. For Vietnamese firms to improve their productivity in this new era, innovation and skills upgrading are of great importance. To assist this goal, Viet Nam should make use of its abundant FDI by facilitating FDI spillovers and linkages. As such, industrial agglomeration - a concept closely related to inter-firm transactions - is an important channel to connect the two sectors.

In Viet Nam, trade and investment liberalisation policies have stimulated the formation of industrial clusters. By 2014, the country had established 292 industrial zones and three export processing zones. However, the efficiency of those clusters in enhancing local firms' productivity as well as human resource development remain questionable. Analytical studies are scarce and do not provide a consistent picture of the benefits local firms and workers have reaped from their foreign counterparts.

## **OBJECTIVES**

1. To document industrial agglomeration and co-agglomeration patterns among firms and industries in Viet Nam;
2. To determine forces of agglomeration and obstacles to the process of agglomeration; and
3. To examine the relationship between agglomeration and local firms' performance with a focus on the interaction between agglomeration and FDI spillover.

## **POLICY IMPLICATIONS**

Based on the findings, the study will draw policy implications regarding the development of soft and hard infrastructure to form efficient agglomerations, in line with the Comprehensive Asia Development Plan 2.0.

## **GEOGRAPHIC SCOPE**

Viet Nam

## **RELATED PUBLICATIONS**

Mori, N., Y. Nishida, and T. Fujisawa (2017), *2016 Progress Survey Report of Infrastructure Projects in CADP 2.0*. Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/2016-progress-survey-report-of-infrastructure-projects-in-cadp-20/>

ERIA CADP Research Team (2015), *The Comprehensive Asian Development Plan 2.0 (CADP 2.0): Infrastructure for Connectivity and Innovation*. Jakarta: ERIA.

Downloadable from: <http://www.eria.org/publications/the-comprehensive-asian-development-plan-20-cadp-20-infrastructure-for-connectivity-and-innovation/>



# 39

## Leveraging Access to Finance for Vietnamese SMEs' Participation in the Global Value Chains

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### PARTNERS

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### SUMMARY

Viet Nam's exports have increased rapidly in recent years. However, there has been an emerging concern that export growth failed to substantially benefit Viet Nam's businesses and people, given the fact that foreign-invested firms account for the lion's share in such exports. As of 2017, exports have amounted to approximately 95% of GDP, but foreign-invested enterprises accounted for almost 70.4% of gross exports. Meanwhile, given the poor supply linkage between domestic and foreign-invested enterprises, the latter has to rely largely on imports of materials and inputs to meet the export needs. To make exports more beneficial and more inclusive, Viet Nam needs a broader strategy to engage domestic enterprises in the foreign direct investment (FDI)-led global value chains.

However, Viet Nam's small- and medium-sized enterprises (SMEs) face enormous challenges to participate in the global value chains. Various studies have documented that the SMEs in Viet Nam lack adequate competitiveness in terms of price, quality, large volume supply, just-in-time delivery, and access to distribution channels. Nevertheless, even if such issues are resolved, Vietnamese SMEs still find themselves lacking access to financial resources in order to participate in the global value chains. As a specific example, various instruments of trade finance (for example, receivables financing) available in other countries are not accepted in Viet Nam.

While this effectively increases the cost of financing for SMEs, foreign-invested enterprises may consider contracting with foreign suppliers and foreign banks for more affordable supply chain financing. Identifying such regulatory gaps over supply chain financing is thus critical to design appropriate policies and capacity-building programmes for Viet Nam with an aim to better facilitate SMEs' participation in the global value chains. Such policies and programmes should also be designed in the context of evolving financial technology (fintech).

## **POLICY IMPLICATIONS**

- Viet Nam should aim to harmonise financial regulations on credit extension and secured transactions involving SMEs;
- Viet Nam should attempt to leverage financial literacy of SMEs; and
- Viet Nam should adopt favourable policies to improve SMEs' access to finance in the context of rapidly evolving fintech.

## **GEOGRAPHIC SCOPE**

Viet Nam

# 40

## Technology and Jobs in East Asia

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Doan Thi Thanh Ha

### SUMMARY

The world today is witnessing an unprecedented pace of technological progress. The fourth industrial revolution, a concept encompassing the application of smart technology to economic activities, is predicted to exert a profound impact on the global economy by enhancing productivity and efficiency, as well as encouraging the exchange of ideas and improving life's conveniences. However, besides the benefits, there has been growing concern about the disappearance of some occupations and jobs. Displacement of workers increases income disparity and threatens social stability, thus posing a challenge for inclusive growth. Then, the question is how to take advantage of this new wave of development and at the same time to prepare workers for unfavourable changes, if any, in the labour market.

Theoretically, technological progress can either complement or substitute workers and skills. In addition, production expansion as a result of technological improvements could lead to rising labour demand. The net effect of technology on employment is thus not clear-cut with the answer remaining an empirical matter.

Against this backdrop, this project aims to deepen the understanding about the relationship between technology and jobs by providing further empirical evidence in the case of East Asian countries.

### POLICY IMPLICATIONS

- Policies to support workers to adjust to the changing landscape, for example through education and training, financial aid, job seek support.
- Policies to encourage the development of labour intensive technology.
- Policies related to the informal sector, which can absorb laid-off workers from formal sectors.
- Policies to accommodate the development of new industries and new jobs.

### GEOGRAPHIC SCOPE

East Asia

# 41

## Future Visions for ASEAN Member States Based on Estimation of Industrial Property Applications (Phase I)

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Shigeki Kamiyama and Yoshitoshi Tanaka

### AUTHOR(S)

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### SUMMARY

The number of industrial property applications in ASEAN Member States (AMS) has increased in recent years due to rapid economic growth in the region. This increase is expected to continue in the future. Accordingly, the workload in terms of the examination process in Intellectual Property Offices (IPOs) is also expected to continue to increase. A quantitative analysis through 'the IPO outlook approach' is being undertaken to assess the potential of workload reduction in each IPO.

This study will propose measures and practices to be taken to improve the delivery of IP services including the backlog situation at each IPOs in the AMS.

### OBJECTIVES

1. To provide the outlook for the AMS by presenting the outlook of economic growth and the number of industrial property applications of the AMS based on current economic data; and
2. To assess how the examination period and the backlog situation may change.

### GEOGRAPHIC SCOPE

ASEAN

# 42

## Impact of Non-Tariff Measures on Recyclable Waste and Used Equipment

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Michikazu Kojima

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### PARTNERS

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### SUMMARY

In 2017, China revised non-tariff measures on several types of recyclable waste, which restricted imports of plastic waste (except plastic waste generated in production process) and unsorted waste paper. Subsequently, plastic waste imports in Southeast Asian countries have increased. This may stimulate investments into the recycling industry in Southeast Asia, which may also result in increased pollution from the recycling industry.

In the Workshop of Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes that was held in Hanoi in November 2017, officers from ASEAN countries stated that ASEAN countries may experience some negative impact of the Chinese import restriction on some types of recyclable waste.

### OBJECTIVES

The objective of the research is to identify the impact of Chinese import restriction on recyclable waste to recycling activities in ASEAN countries.

### POLICY IMPLICATIONS

Chinese import restriction may increase investment in the recycling industry. But if imports of recyclable waste into ASEAN countries cause more pollution, preventive measures such as quality standards of recyclable waste and pre-shipment inspection should be implemented.

ASEAN can think of expanding the scope of economic council with a mandate to review and improve the key relevant regulations for Reduce, Reuse, and Recycle (3R) from the trade point of view – code sharing or colour marking for recyclable products could become policy recommendations.

### GEOGRAPHIC SCOPE

China, India, Indonesia, Malaysia, Thailand, Viet Nam

# 43

## Market Size of Waste Management and Recycling in ASEAN Countries

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Michikazu Kojima

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### SUMMARY

ASEAN countries have been struggling to improve their waste management systems. Malaysia, Philippines, Thailand and others have tried to shift disposal methods from open dumping to sanitary landfills. Malaysia and Thailand have also tried to expand the use of Waste-to-Energy (WtE) technologies, while Indonesia and the Philippines are also preparing to introduce this technology. Waste collection has also been strengthened in various areas. The ASEAN Socio-Cultural Community (ASCC) Blueprint 2025 also contained a direction to improve waste management.

### OBJECTIVES

The objective of this research is to estimate the current spending on municipal solid waste management and the future cost to achieve better management of waste and higher resource efficiency in ASEAN countries.

### POLICY IMPLICATIONS

The problem of marine litter is regarded as an emerging global environmental issue and developing countries have much international support to transition to solid waste management. Estimation of costs to achieve better waste management can be a needs assessment for international financial assistance.

### GEOGRAPHIC SCOPE

Indonesia, Philippines, Malaysia, Thailand, Viet Nam

# 44

## Establishment of Rehabilitation-Providing System Focusing on the Improvement of Activities of Daily Living and Masticatory-Swallowing Function

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Osuke Komazawa

### AUTHOR(S)

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### SUMMARY

With ageing populations increasing, societies must cope with rising numbers of older people who need long-term care. Even in ASEAN Member States, rapid ageing will take place in the near future. Many policymakers are concerned that rapid ageing will come to ASEAN before their national strategies for aged societies are well established. To minimize the burden of long-term care in such aged ASEAN Member States, efforts must be made to prevent older people from becoming dependent upon long-term care, even after the onset of diseases which severely impair the activities of daily living (ADL).

Rehabilitation focused on the improvement of ADL and on the masticatory-swallowing function is key to the prevention of impairment of ADL. This study will reveal the current status of such rehabilitation in ASEAN Member States in order to provide policy recommendations to ASEAN Member States about how to best prepare for aged societies.

Three workshops will be held under this study, attended by researchers, consultants, long-term care service providers and rehabilitation practitioners. Key co-investigators will visit Indonesia, the Philippines and Viet Nam to collect information about rehabilitation focused on ADL and the masticatory-swallowing function through interviews with administrative organizations, care and medical facilities and educational organizations. The interviews will focus on personnel who provide rehabilitation, cost of rehabilitation, government policies, customers of rehabilitation, facilities providing rehabilitation, evaluation of the results of rehabilitation, improvement of nutrition by masticatory-swallowing function, and preceding research on rehabilitation. The result of field visits will be reported at workshops and utilized for policy proposals through the workshop discussions.

## **POLICY IMPLICATIONS**

The final report of this study will include policy proposals and recommended programmes to disseminate the concept of rehabilitation for ADL and masticatory-swallowing function and to prepare for aged societies in ASEAN Member States.

## **GEOGRAPHIC SCOPE**

Indonesia, the Philippines, Viet Nam and Japan



# 45

## Estimates of long-term care personnel demand and supply in ASEAN member states and East Asia

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Osuke Komazawa

### AUTHOR(S)

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### SUMMARY

As the most aged country in the world, the Government of Japan launched the Asia Health and Wellbeing Initiative (AHWIN) in 2016 with the aim of amassing bilateral and regional cooperation to address ageing-related challenges in Asia, with particular focus on the circulation of the long-term care workforce. Under AHWIN, the Government of Japan intends to accept more caregivers as ‘technical internship trainees’ from Southeast Asia for a fixed number of years, and hopes their skills and knowledge of long-term care, which they attained in Japan, will be utilized in their home countries as ageing populations become a growing concern.

This framework is based on the assumptions that Japan lacks the necessary care workforce, the economies of Southeast Asia have redundant workforces, and there will be a sound environment for long-term care systems in their respective home countries when care-workers trained in Japan return home.

No standard reports or statistics have been published about long-term care personnel and care infrastructure in middle- and low-income countries by international organizations, including the World Health Organization or the World Bank. Estimates of demand and supply of long-term care personnel in each economy are indispensable for policymaking regarding the international circulation of care workers and the improvement of elderly care systems.

This study will address the following issues and provide evidence about demand and supply of long-term care workforces for policymakers in the region:

- Current status and future projection of health conditions and care needs of older people in each economy;
- Current status and future projection of household structures where older people are included, focusing on the regional distribution of such households and support of the families to older people who live alone or only with other older people because of domestic and international migration of the younger generation;
- Actual long-term care activities, especially by the families, and differences among economies;
- Current status and future projection of the number of paid caregivers in each economy, and cooperation or overlapping of the care workforce with the healthcare or social welfare workforce; and
- Current status and demand projection of care facilities for older people.

## **POLICY IMPLICATIONS**

The result of this study will provide the evidence for policymakers in charge of the planning and development and appropriate deployment of care workforces both within each economy and internationally.

## **GEOGRAPHIC SCOPE**

ASEAN, China, Japan and Republic of Korea

# 46

## Feasibility of the Introduction of Japanese-style Rehabilitation Centres to Cambodia, Lao PDR, and Viet Nam

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Osuke Komazawa

### AUTHOR(S)

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### PARTNERS

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### SUMMARY

Brain injury has unpredictable consequences and can change everything about us in a matter of seconds. It can impair physical function and the ability of daily living (ADL), which often creates a need for long-term care. Very little research has been conducted in developing economies on brain injury-caused long-term care. Also, rehabilitation facilities for brain injury patients are extremely limited in developing economies, so little is known about the current status and the efficacy of rehabilitation for patients with brain injury.

This study will focus on brain injury rehabilitation in Cambodia, Lao PDR, and Viet Nam, where rapid ageing is expected in the near future. Rapidly ageing societies often experience higher numbers of patients with brain injury than societies with younger populations because of the accumulation of risk factors, mainly hypertension, diabetes mellitus, and hyperlipidaemia. The increase of older people who need long-term care can be a very heavy burden on developing economies like in these three countries, where it is predicted that ageing will take place before the achievement of enough economic development to establish adequate social welfare systems for the elderly. Urgent action is required in these countries to disseminate preventive measures for brain injury and also to prevent the impairment of ADL of the patients with brain injuries.

The investigators of this study believe the introduction of Japanese-style rehabilitation to these countries will contribute to the prevention of impairment of physical function and ADL of the patients with brain injury. This study consists of three components:

- Efficacy of Japanese-style rehabilitation for the patients with brain injury;
- Effect of education and support to the kin who provide long-term care to the patients with brain injury; and
- Establishment of education and training programmes for the rehabilitation therapists in these countries.

## **OBJECTIVES**

The objectives of this study are in accordance with the Asia Health and Wellbeing Initiative (AHWIN), which was launched in 2016 and aims to amass the bilateral and regional cooperation on ageing-related issues and to create a vibrant and healthy society where people can enjoy long and productive lives. This study is expected to create the rehabilitation service industries in the focal three countries. Newly-emerging rehabilitation service industries are supposed to contribute to economic development, as well as the prevention of the impairment of physical function and ADL.

## **POLICY IMPLICATIONS**

The result of this study will have a strong message to the policymakers about the importance of preventive measures, which can reduce the burden of healthcare and long-term care.

## **GEOGRAPHIC SCOPE**

Cambodia, Lao PDR and Viet Nam

# 47

## Longitudinal Survey of the Elderly in Southeast Asia

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Osuke Komazawa

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### SUMMARY

Human longevity is increasing due to demographic and health transitions. Even in the areas where people still suffer from high child mortality rates, it is speculated that mortality will decline and the population as a whole will age as a result of continued efforts by the international community. In fact, the entire globe is undergoing a shift towards older populations. Longevity is considered one of the greatest successes of humanity; however, how can we call longevity a 'success' if it diminishes the vibrancy or vitality of aged communities?

In aged societies, older people's participation in social activities is essential to keeping societies vibrant. Aged societies will also increasingly experience labour shortages, requiring older people to continue working much later in life; nonetheless, without healthy and active ageing, societies will not be able to sustain vibrancy.

The concept of 'healthy life expectancy' is a convenient indicator of healthy and active ageing. It can be computed as the number of years of expected good health. For an extreme example, if healthy life expectancy is equivalent to total life expectancy, all people will live in good health until the exact time of death. This situation is often referred to as 'rectangularisation of the survival curve'.

This longitudinal study of older people is designed to track individuals aged 60 years or more for multiple years to analyse the factors that contribute to longer healthy lives. In ASEAN Member States, few such studies have been implemented, and the factors for healthy older life have not been well investigated. In this study, about 5,000 older people aged 60 or above will be selected randomly as samples from all over the Philippines and Viet Nam. Initial data collection will be conducted in the latter half of 2018, and the second wave of surveys will be in the latter half of 2020.

The questionnaire used in this survey includes questions similar to those in the Health and Retirement Survey (HRS), which is promoted by the National Institute on Aging of USA, so that the results of this survey can be compared with other countries where the HRS questionnaire has been distributed. It includes questions about demographic characteristics, living arrangements, subjective health status, and many more.

## **POLICY IMPLICATIONS**

The results of this study are expected to show the factors which contribute to longer healthy life expectancy, providing a strong message to policymakers of ASEAN to create vibrant ageing societies.

## **GEOGRAPHIC SCOPE**

The Philippines and Viet Nam

# 48

## The Skill Circulation of Oral Care and Swallowing Function Rehabilitation: Developing a Career Path for Returned Health Care Migrants from Japan to Asian Countries

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Osuke Komazawa

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### PARTNERS

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### SUMMARY

Circulation of the long-term care workforce is recognised as one of the most important topics discussed in the framework of the Asia Health and Wellbeing Initiative (AHWIN), which was launched by the Government of Japan with the aim of amassing bilateral and regional cooperation on ageing-related challenges in Asia.

Japan opened its labour market for health care industries under the bilateral Economic Partnership Agreements (EPAs) to promote the acceleration of trade between Japan and the signatory countries: the Philippines, Indonesia, and Viet Nam. Under the EPAs, Japan has accepted more than 4,700 nurses and care workers since 2008. For the last decade, 250 nurses and 542 care workers have become licensees in Japan.

One of the challenges of EPA returnees, who spent a couple of years in Japan, is the limited career paths they find after they return to their home countries. According to the authors' previous study, this is especially true in the case of certified care workers, since there are no such professional occupations in their countries of origin. For this reason, certified care worker returnees, including those who were able to pass the national board examination for certified care workers in Japan, can no longer utilise their work experience gained in Japan. The majority of them have ceased their careers as health professionals, and have instead started careers as Japanese interpreters, despite the fact that many of them would prefer to continue working in healthcare.

In November 2017, the Japanese government announced the addition of care work under the Technical Intern Training Program (TITP). The Japanese government stresses the benefits for TITP trainees to 'advance their careers and contribute to the development of industries and companies through the utilisation of their acquired skills after returning to their home countries'. However, as we have learnt from the experiences of EPA returnees, there is no career path for care workers when they return to their country of origin from Japan. Hence, Japan should provide a universal model for care work, which the countries that send care workers (including Indonesia, the Philippines, and Viet Nam) can apply as they develop the career path for care worker returnees from Japan.

## **OBJECTIVES**

1. To develop a training programme for oral care and swallowing function rehabilitation, which can be used by incoming EPA and TITP trainees as pre-departure training; and
2. To contribute to the education of health care workers in the expatriating countries, which are expected to have longer healthy life expectancies in the near future.

## **POLICY IMPLICATIONS**

The results of this study can provide an example of an effective circulation of care workforce, and also contribute to the standardisation of care skills. It can provide recommendations for policymaking on the labour market of long-term care in the region.

## **GEOGRAPHIC SCOPE**

Indonesia, the Philippines, Viet Nam



# 49

## Research Project for Policy Recommendations to ASEAN Countries on Realisation of Higher Value Add of Agricultural Products

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Eiichi Kusano

### PARTNERS

OECD

### SUMMARY

Despite several positive market indicators, including steady population and economic growth and deeper regional and international economic integration, the agro-food market in Southeast Asia is facing several unresolved issues, such as the low income of small-scale farmers. However, these challenges can be partially addressed by making improvements to food value chains (FVC) including the production, processing, circulation, and trade of agro-food products, from both institutional and technical aspects.

ASEAN has recognised that poverty reduction and food security are critical issues related to the agro-food sector. In fact, the improvement of FVCs is an important measure for both poverty reduction and food security. There is a wide range of potential strategies to improve FVCs even if they are only applied at the domestic level. While the term 'FVC' is widely used, its evaluation scale is ambiguous. A series of studies on global commodity chains (GCC) and global value chains (GVC) since the 1990s has provided analysis of governance or non-market coordination of economic activity. The evaluation method of value chain analysis has obtained various analytical footholds including the distribution of profit, non-economic values, and sustainability, especially in the context of agricultural value chain (AVC) and value chain development (VCD).

This project aims to contribute to economic development and poverty reduction, particular in rural areas, by providing practical information to policymakers based on FVC assessment in ASEAN countries with a focus on FVCs around small producers. The analysis will clarify the current situation of FVCs, and identify specific obstacles to, and appropriate measures for, the development of efficient FVCs in selected ASEAN countries.

This project has been implemented in collaboration with a GVC study by the Organisation for Economic Cooperation and Development (OECD).

## **POLICY IMPLICATIONS**

Although the project is still in progress, the following policy implications can be expected:

- Values generated in FVCs could be improved by further production, processing, distribution, and import/export of higher value-added agro-food products, which is expected to increase demand according to stable economic growth in ASEAN countries;
- The improved values could also effectively push small-scale producers into higher-value markets, and contribute to their income growth and rural development;
- The government could encourage food enterprises and attract foreign investment through interventions such as improvements to the legal system and infrastructure, and further investments;
- The government could also financially, technically, and institutionally support the producers who could face issues on funding, food quality, distribution-channels and so on; and
- Encourage corporate social responsibility which would contribute to stabilising the relationship between larger-scale enterprises and small-scale producers.

## **GEOGRAPHIC SCOPE**

Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, Viet Nam

# 50

## Manufacturing Sector Review for Indonesia

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Dionisius Narjoko

### PARTNERS

Indonesia's National Development Planning Agency (Bappenas)

### SUMMARY

The Manufacturing Sector Review for Indonesia is a background study requested by Indonesia's National Development Planning Agency (Bappenas) whose aim is to provide input for drafting the National Medium-Term Development Plan of Indonesia for the period 2020-2024 (RPJMN 2020-2024) for the manufacturing sector. The review will also be considered for the Bappenas' draft of the Government Work Plan 2020 (RKP 2020) for the manufacturing sector.

The review looks at the challenges and opportunities facing the Indonesian manufacturing sector presently and in the future, and it outlines key strategies to respond to the challenges and expand the growth of the sector at the same time. The study is expected to evaluate current achievements and past and current policy programmes, review changes in strategic environments, identify key issues/problems and discuss possible solutions, identify/benchmark lessons learned from other countries, analyse new/innovative development approaches based on relevant empirical studies, and evaluate the role of stakeholders and institutions. The analysis is also expected to review the current targets and plausible goals for the future.

### POLICY IMPLICATIONS

Medium-term strategies and policy options for the growth and development of Indonesia's manufacturing sector.

ERIA expects adaptation of many, if not all, of the strategies and policy options for the Medium-Term National Development Plan (RPJMN 2020-2024) and RKP 2020.

### GEOGRAPHIC SCOPE

Indonesia

# 51

## The Link Between Formal Education and Business Productivity in ASEAN

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Rashesh Shrestha

### SUMMARY

In a highly-competitive global economy, businesses must continually increase their productivity and add greater value to grow. This is potentially afforded by a greater supply of educated workers. Data from Indonesia shows that some sectors of the economy have increased their concentration of educated workers. In 2008, 34% of workers aged 20-49 in the manufacturing sector had a senior or higher level of education; by 2014, this share had increased to 41%. Likewise, the wholesale/retail trade and service industries also saw a greater concentration of educated workers. This trend is likely to be similar in other ASEAN Member States. However, whether this phenomenon has translated into greater productivity of these sectors is an open question, the answer to which partly depends on the quality of education provided.

Existing measures of educational quality suggest a wide variability in the ASEAN region. One available comparative measure is the Programme for International Student Assessment (PISA), which tests fifteen-year old students on literary and numeracy proficiencies. Another way to approximate education quality would be to look at economic returns to an additional year of education. In this way, we can compare wage differentials among workers with various education levels. The variation could partly, but not completely, be explained by quality differences. In addition, international organisations such as the World Economic Forum (WEF) also produce summary data on human capital, which is based on the supply of educated workers.

While these measures are indicative, they are methodologically and substantially imperfect. From the perspective of productivity and value added, what we care about is the causal impact of education on value-added in the production of goods and services.

The links between education and business productivity are numerous. Educated workers are more likely able to adopt the latest technology and adapt to changing circumstances, process information better, and learn new techniques. Additional schooling may also provide workers with 'soft' skills that enable them to work together with others to improve collective productivity. To what extent the education system is adding these abilities in their workers is an important question, not least because of the increasing role of skills in today's economy. If we find that some countries' education systems are able to produce workers that add greater value, then there might be room for lagging countries to emulate the leaders' pedagogical tools and educational institutions.

## **OBJECTIVES**

The objective of the study is to examine the link between formal education and business performance in ASEAN countries. The key research question is: how much value does a worker with an additional year of school add?

## **POLICY IMPLICATIONS**

The responsibility of producing a productive and resilient workforce lies with the government. The fulfilment of this goal is an important (but not the only) marker of quality education. We expect the study to produce a measure of comparative efficiency of education systems in developing worker skills in ASEAN countries. The analysis will be relevant for policymakers who are considering the effectiveness of their formal education and desire to take necessary steps to improve human capital productivity. This can be done through an in-depth and comparative qualitative analysis of the institutions, most likely by consulting with professional experts.

## **GEOGRAPHIC SCOPE**

ASEAN

# 52

## Indonesia Maritime Policy and Progress: An Analytical Review

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Fauziah Zen

### SUMMARY

Early into his presidency, Joko Widodo declared nine flagship programmes of national development, known as '*Nawa Cita*' or 'Nine Aspirations', including strengthening Indonesia's identity as a maritime nation. In 2015, the Coordinating Ministry for Maritime was established with the main duties to coordinate, synchronise, and control affiliated line ministries regarding four aspects of maritime: (i) maritime infrastructure, (ii) human resources of maritime, (iii) maritime sovereignty, and (iv) marine resources and services.

The administration has been developing and expanding several sea ports (including ongoing ones), subsidising ferry companies, and changing several policies in the fisheries and shipping sectors, including arresting fishing boats that operate illegally in Indonesia's waters.

The Indonesian Ministry of Maritime and Fisheries reported that:

- a. Moratorium on former foreign-owned fishing boats that has resulted in increased fishery products in ten local ports by 76% from 2014 to 2015;
- b. Policy to fight illegal, unreported, and unregulated fishing that has resulted in increased potential fish reserves by 26% from 2015 to 2016;
- c. Increased conservation areas from 16.4 million hectares in 2014 to 18.4 million hectares in 2017;
- d. Fisherman exchange value index has increased from 104.63 (2014) to 108.24 (2016); and
- e. Exports have increased from US\$3.1 billion (2014) to US\$4.17 billion (2016).

As with other policies, there are arguments for and against the above-mentioned policies, caused by favourable and unfavourable impacts on stakeholders, or due to asymmetrical information. Political acceptance is not unanimous particularly due to the lack of baseline numbers to benchmark success. The impact of a policy should be reviewed by using suitable and robust methods within an appropriate period, since certain outcomes cannot be seen immediately.

### OBJECTIVES

1. To do a thorough and analytical review on the maritime policy in Indonesia;
2. To estimate the economic impact of the maritime sector on Indonesia's economy; and
3. To review the improved areas resulting from the policy, and to define the areas of improvement.

### GEOGRAPHIC SCOPE

Indonesia

# 53

## Policy Index for Natural Disasters Resilience

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Fauziah Zen

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### PARTNERS

Disaster Prevention Research Institute (DPRI), Kyoto University

### SUMMARY

ASEAN is one of the most vulnerable regions to natural disaster. This project aims to evaluate which factors most influence the resilience of a region by constructing an index to represent the resiliency of a region and then applying the formula to pilot regions. There are several main challenges for the research: a) there is no universal definition of resilience; b) scholars have constructed some formulas but, so far, accuracy has not been proven; and c) the value of variables is usually relative from one region to another because of different utilisation by locals.

Using the Schipper and Langston (2015) approach, we defined the influential variables to represent the criteria of Learning, Options, and Flexibility. These variables are used as a proxy for resilience. The influential variables can be classified into three groups: financial and economic capital, social capital, and institutional capital. Because there is no solid conclusion on the relationship between variables, we decided against building a composite index. Instead, we defined the relative position of the city for each variable. The results will provide policymakers with the data about which variables need to be maintained or improved.

The indicators are applied to fifty cities in Indonesia as a pilot project.

### GEOGRAPHIC SCOPE

50 pilot cities in Indonesia

# Energy-Related Research





# 54

## Assessment on Necessary Innovations for Sustainable Use of Conventional and New-Type Geothermal Resources and their Benefits

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Venkatachalam Anbumozhi, Hisashi Yoshikawa

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### PARTNERS

The National Institute of Advanced Industrial Science and Technology (AIST)

### SUMMARY

Many Asian countries have been using geothermal resources and attempting to increase their capacity, although the different types of geothermal resources vary from country to country - from conventional steam power generation and direct use, to more advanced Enhanced/Engineered Geothermal System (EGS) and Ground-Source Heat Pump (GSHP).

Several technical aspects, such as reservoir management and base (groundwater) data collection, are found to be extremely important for sustainable utilisation of geothermal resources. This research aims to extract innovations for sustainable use of geothermal resources in Asian countries. Here, innovation includes both social and technical aspects. The benefits of geothermal utilisation, such as power supply, heat supply, saving energy, and reduction of CO<sub>2</sub> emissions are also studied to encourage policymakers and business people to invest more in developing and utilising geothermal energy.

Finding out necessary ways to increase geothermal power and/or heat supply and estimating the possible outcomes by fulfilling these approaches: First, a review on technical and social (and legal) problems which impede the increase of geothermal use and/or sustainable use of geothermal energy. Among the various technical and social problems, major topics were selected and innovations for such problems will be investigated. The technical part may be investigated more intensively. Then, possible outcomes by conducting these innovations in our geographical region, such as the increase of power and/or heat supply, saving energy and reduction of CO<sub>2</sub> emissions are estimated.

## **POLICY IMPLICATIONS**

1. Geothermal energy represents one of the key options for South East and East Asian countries to achieve a comprehensive approach to national development based on clean energy provisions, social development, and efforts to tackle climate change.
2. There are many technological, managerial, and financial issues that are hindering geothermal technologies such as GSHP.
3. To remove the technology barriers and enhance the uptake of geothermal energy at a regional scale, a key strategy could be building a platform of cooperation among geothermal rich countries in East Asia, starting with China, Indonesia, Philippines, Japan and New Zealand, and then expanding to include Korea, Viet Nam, Thailand. Philippines, Japan, and New Zealand are the largest producers of geothermal power with good records in renewable energy policy development and technology development. China and Indonesia are large emerging economies with lofty targets in their GSHP technology policies.
4. Building a cooperation framework between these countries and relevant private sector stakeholders and academics will help shift their government's energy security agenda, drive private sector investment decisions, and ensure that communities play an active role in promoting the sustainability of low-carbon energy supply.

## **GEOGRAPHIC SCOPE**

Indonesia, Philippines, Malaysia, China, Korea, Japan

# 55

## Energy Policy Road Map of Greater Mekong Region

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### PARTNERS

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### SUMMARY

Despite integrating into the global economic system in the late 1990s, the Greater Mekong Region still faces many energy development challenges. Such challenges and opportunities are the focus of this study, which has the functional objectives of (i) quantitative scenario analysis of major factors of rural electrification including future electricity demand forecast, necessary amount of needed power generation capacity in the off-grid areas, costs required for rural electrification, and many more; (ii) qualitative analysis of obstacles in power development particularly in the border areas; and (iii) human resource development in policymaking or implementation for energy policymakers and researchers.

This ongoing project has the following policy recommendations, so far:

1. Assuming the national electrification target of the universal energy access in 2030, the integration of decentralised power systems into planned centralised systems might be one of the crucial aspects to make the target feasible;
2. In order to facilitate the integrated infrastructure development, Public-Private Partnerships (PPP) should be soundly coordinated with proper reforms such as electricity tariffs and an institutional/legal framework to encourage foreign direct investment; and
3. For the relevant plan-do-check-act (PDCA) cycle, a human resource development (HRD) programme for governmental offices is necessary. It is also important to provide a common ground for energy-related ministries and other stakeholders to discuss and work together.

### POLICY IMPLICATIONS

1. A transition towards high shares of renewable energy such as solar, wind, and hydro require rethinking the design, operation, and planning of future power systems from a technical and economic point of view;
2. Due to rapid technological progress and multiple grid integration options available, policymakers could build a framework based on the current characteristics of the system, developing technological opportunities, long-term impacts, and targets; and
3. Governments should also focus more attention on the costs and burdens of major policies to different social groups and not just the benefits.

### GEOGRAPHIC SCOPE

Myanmar, Lao PDR, Cambodia, Viet Nam, Thailand

# 56

## Nuclear Public Acceptance Improvement Project

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### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

The disaster at the Fukushima Daiichi Nuclear Power Plant in 2011 has reminded many why nuclear power is so unpalatable. Some countries like Germany, the Republic of Korea, and Switzerland changed course and moved towards abandoning nuclear power generation. In Asia, China and India are instead steadily boosting the number of nuclear power plants according to their official energy policies. ASEAN member nations are still undecided. Negative voices were raised in Viet Nam and the Philippines, which had already started pre-implementation activities but have since halted under pressure.

Where social consensus cannot be obtained and there is no choice but to put the introduction of nuclear power on hold, many governments have not yet abandoned the future possibility of building nuclear power plants. Some ASEAN nations are concerned about electricity shortages associated with brisk economic growth. ASEAN member nations have expressed concerns about an increase in emissions of greenhouse gases and each member nation has set a greenhouse gas emissions reduction target. Each ASEAN country has also set a target for the introduction of renewable energy, although the situation varies for each country. These targets have raised the introduction of nuclear power as an option for low-carbon energy despite a lack of social consensus. Improving public acceptance (PA), a way of forming social consensus, is effective for nuclear power introduction to ASEAN countries. Even countries that have no intention of launching nuclear power generation must prepare nuclear-accident evacuation plans and drills because neighbouring countries may introduce nuclear power generation. All East Asian and ASEAN countries are involved in the discussion of the social acceptance of nuclear power.

To improve PA, it is important to hold an international symposium that gathers experts from all over the world. More importantly, regional leaders and opinion leaders of municipalities of developed countries where nuclear power facilities are located should hold workshop discussions to improve PA and come up with policy proposals. Policy proposals are urgent because the process of introducing and constructing a nuclear power plant is long. In FY 2017, the workshops were held at Tokyo and Rokkasho in Japan and the policy proposal is being produced. In FY 2018, the Institute of Energy Economics, Japan (IEEJ) will promote further opinion exchange with local opinion leaders to clarify issues related to PA as well as to the common or different points of recognition between explainer and recipient to improve the policy proposal.

## **OBJECTIVES**

Conditions common to and necessary for PA will be put in order and analysed. We will summarise and include the following in the policy proposal: the actions that the operator, central government, local government, and residents of the municipality hosting a nuclear power plant, neighbouring residents, and residents in the region consuming the electricity generated by the plant should do themselves and in cooperation with each other, as well as requirements for improving PA. Good practices from France, Sweden and Canada will be added to the FY2017 proposal.

## **POLICY IMPLICATIONS**

The policy proposal should recommend building nationwide PA and instruct on how PA should ideally be, while reflecting on the background to the introduction of a nuclear power plant in major nations such as European countries and the US, coexistence between nuclear power generation and local economies, the present state of measures to prevent nuclear disasters, and how communication is carried out at each phase of the introduction, construction, and operation.

# 57

## Realising Smart Cities and Energy Revolution

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Venkatachalam Anbumozhi

### SUMMARY

Between now and 2030, the number of city dwellers in East Asia Summit (EAS) countries is projected to rise from about 500 million to 900 million. Urbanisation at this rate will significantly increase energy demand to support greater economic activity, expanded urban infrastructure, and the rising need for municipal services. In order to ensure that such growth is sustainable, the ASEAN Socio-Cultural Community (ASCC) blueprint seeks to enhance coordination with relevant sectors to create environmentally-sustainable cities and strengthen the capacity of local governments in conducting greenhouse gas (GHG) inventory. It also recommends strengthening the efforts by government, private sector, and community in reducing emissions and pollution to improve living standards. In order to become environmentally-sustainable cities, they need to become more resource efficient. Collaboration between city departments, local energy utilities to improve energy and water, and increased efficiency in transportation are some of the simplest and most effective measures to reduce the carbon footprint of a city.

Smart cities represent an enthusiastic drive for efficiency through interconnected technologies by sharing energy resources. The rapid speed of urbanisation has led many city governments to consider different ways to utilise resources more efficiently as their citizens demand more of everything. Hence the appeal of more sustainable approaches to city development, which result in the eventual vision of smart cities.

The emerging concept of smart cities embeds an element of urban design, which uses highly-advanced technologies, where energy services become a large and highly-complex cypher-physical system, in which computer-based algorithms improve the quality of the city's residents and build a sustainable and clean environment. The smart city represents an architecture similar to Industry 4.0, a buzzword representing a next industrial revolution currently taking place or the equivalent of Energy 4.0.

This enthusiasm for creating smart cities indicates a belief that a smart city has the potential to become the panacea for urban problems and provide more efficient services. Such careful consideration requires a common framework of reference to enable the stakeholders in a city to discuss, decide, and then plan to become smart. City officials need to have a better understanding of both the benefits and costs involved.

## **OBJECTIVES**

This study will conduct a need and gap analysis of converting a city into a smart city. It will review what has been done in major cities regarding energy revolution (access and resilience) and in ways to conceptualise smart cities depending on the level of development (the willingness to adopt and reform). Learning from these experiences, a plan of action and a public-private community protocol will be proposed for smart city programmes in EAS countries.

## **POLICY IMPLICATIONS**

1. A consolidated list of policy measures and related activities to regularise/streamline energy use through the Smart City Visions; and
2. Specific strategies and policy interventions that the selected cities will need to take to become a smart and low-carbon city, compared with their current situation.

# 58

## Study of Renewable Energy and its Effective Uses in EAS Countries

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Venkatachalam Anbumozhi and Makoto Toba

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### SUMMARY

The regional fleet of light duty vehicles is set to increase massively, from around 850 million passenger cars in 2015 to over 1.5 billion by 2050. In response to the increase in energy demand in the transport sector, energy resources should be changed from imported fossil fuels to renewable ones produced in East Asian countries. In this study, production, trade, supply, and utilisation of energy in the transport sector from renewable sources will be discussed according to the following topics:

1. Potential study of diversified transport energy mix;
2. Research of next generation bio-fuels; and
3. Bio-methanol as an energy carrier.

### OBJECTIVES

To establish and propose the respective strategies of transport fuel, which currently make up 23% of energy-related emissions. A combination of in-depth scenario analysis and country level feasibility on the next generation fuel will be carried out.

### POLICY IMPLICATIONS

1. Formulate a common strategy of multilateral cooperation about renewable energy and its effective uses in transport sector.
2. Set medium-term targets for the region, which will help to establish supply chains and identify viable options for effective integration of renewable energy carriers at a national level.



3. Individual strategy for establishing realistic renewable energy policy targets include:
  - a. Introducing efficient support mechanisms that effectively minimise the gaps between oil consumption, upscale biofuel introduction, and address GHG emissions mitigation targets in the transport sector;
  - b. Supporting the technology of next generation biofuel and energy carrier production; and
  - c. Increasing research efforts on the development of new technologies and advancing the most promising production methods.

## **GEOGRAPHIC SCOPE**

Thailand, Indonesia, Philippines, Malaysia and Viet Nam

# 59

## Unlocking the Potentials of Private Sector for Accelerated Low-Carbon Energy Transition

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Venkatachalam Anbumozhi, Kaliappa Kalirajan, and Fukunari Kimura

### SUMMARY

While the ASEAN Economic Community (AEC) blueprint aims to progressively liberalise ASEAN Member States' (AMS) investment regimes to achieve free and open investment, it also recognises the importance of making such investments sustainable through, among others, mitigating greenhouse gas emissions by means of effective policies and market-based measures. Recognising the limited global reserves of fossil energy and unstable world prices of hydrocarbon products as well as meeting the COP 21 Paris Agreement targets, it is essential for AMS to accelerate the transition to low-carbon energy, as well as to promote open trade, facilitation, and cooperation related to low-carbon industries with the requisite infrastructure.

Following the Paris Climate Agreement, Asia's attention is now firmly fixed on advancing viable, scalable low-carbon energy solutions at different levels. Most of the estimated investments required to scale up low-carbon energy systems will come from the private sector. However, concerted and coordinated efforts by national and sub-national governments, public financing institutions, and international organisations are essential to move towards unlocking the potentials of the private sector. Governments can accelerate this trend by targeting more of their funds to leveraging private finance.

There are several reasons for leveraging private finance to accelerate the low-carbon energy transition and to achieve the Nationally Determined Contributions (NDC) agreed as part of the Paris Agreement. First, advanced countries have stalled on their promised package of US\$100 billion annually in financing by 2020 to developing countries. Second, as current estimates indicate, more than US\$100 billion per year is needed to meet the low-carbon transition challenges that include not only investments in renewable energy, but also energy efficiency and other strategies like deployment of clean coal, carbon capture and storage technologies. Third, government budgets of both advanced and emerging economies are often constrained by financial debts and other austerity policies, with little clarity on when and how public financial flows will be scaled up to meet the target of reducing emissions by at least 40% by 2030.

## POLICY IMPLICATIONS

In order to increase the flow of private capital for low-carbon investment, the following measures are crucial:

1. Design an enabling policy environment including rule of law, business climate and investment regime;
2. Banks should accelerate their low-carbon finance instruments, notably priority lending requirements and capital adjustments;
3. In order to ensure financial stability, central bank should assess the potential effects of resource scarcity on price; and
4. Country authorities – finance and energy ministries – together with international finance institutions should enlarge capacity-building platforms to discuss the effects of low-carbon transition on credit risks.

## GEOGRAPHIC SCOPE

EAS countries (ASEAN +6)

## RELATED PUBLICATIONS

Anbumozhi, V., K. Kalirajan, and F. Kimura (Eds.) (2018), *Financing for Low-Carbon Energy Transition: Unlocking the Potential of Private Capital*. Singapore: Springer.

Purchase the book here: <https://www.springer.com/gb/book/9789811085819>

# 60

## Cost Effectiveness of Energy Efficiency and Conservation Policy

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### PARTNERS

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### SUMMARY

The importance of energy efficiency and conservation (EE&C) cannot be ignored and is one of the leading principles that constitutes a country's energy policy. As a result, many types of EE&C policies have been developed and adopted, but developing countries are limited to choosing economically-efficient policies because of lean national budgets. Therefore, if we could quantify the cost effectiveness of different types of EE&C policies, it could serve as a good assessment for policymakers to design their own.

### OBJECTIVES

The study will try to analyse cost effectiveness of EE&C policies in selected countries and share the information among policymakers in ASEAN member countries.

### POLICY IMPLICATIONS

1. Policymakers need to familiarise themselves with the different economic efficiencies of various EE&C policies.
2. Some policies are identified to have higher economic efficiency than others. Policymakers are suggested to consider applying these mechanisms in their own countries.
3. However, at the same time, policymakers need to know that when a policy is adopted in their home country, the cost and anticipated effect of the policy can be different from what was identified in the study. Therefore, careful assessment on country-specific conditions should be made when drafting the policy.

### GEOGRAPHIC SCOPE

ASEAN

# 61

## Development of Roadmap for Electric Vehicles Diffusion in Indonesia

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Naoko Doi and Shigeru Kimura

### PARTNERS

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### SUMMARY

Indonesia has become a net oil importer since 2003 with the rise in transport-related oil consumption and dwindling domestic production. To reduce the expected increase in oil imports as well as to nurture domestic automobile manufacturing industries, Indonesia has set a target to abandon the sale of internal combustion engine (ICE) vehicles by 2040.

The expected impact of realising the target might transform the energy industry as a whole, with repercussions greatly felt by electricity generation, transmission, and distribution, as well as refineries, transportation of oil products, and gas stations.

### OBJECTIVES

1. To develop a roadmap for Indonesia to meet the 2040 alternative vehicles target, with a special focus on electric vehicles (EVs); and
2. To identify regulatory hurdles for EVs diffusion and to draw necessary policy recommendations for the relevant stakeholders in Indonesia.

### GEOGRAPHIC SCOPE

Indonesia

# 62

## Potential of Oil Stockpiling at Terminals in Southeast Asia

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### PARTNERS

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### SUMMARY

Oil demand in Southeast Asia has increased by 3% per annum since 2000, which is faster than the world average. Regional oil production, on the other hand, has been experiencing a downward trend for the same period. As a result, import dependency from outside the region reached 52% in 2015 and is expected to continue to rise in the long term, leading to concerns about oil supply security for many countries in Southeast Asia.

Southeast Asian countries have been considering stockpiling strategic oil reserves for years. Based on the 'ASEAN+3 Energy Cooperation' framework that was proposed by Japan in 2002, the ASEAN+3 countries established an 'Oil Stockpile Working Group' to draw an 'Oil Stockpiling Roadmap'. In 2010, energy ministers of the ASEAN+3 countries approved the roadmap, and the respective countries are working to achieve the roadmap targets. In 2013, the ASEAN countries ratified the ASEAN Petroleum Security Agreement (APSA) that set a framework for an oil sharing scheme for supply emergencies. While some ASEAN countries possess significant oil stockpiling, generally the stockpile quantity in ASEAN countries remains lower than the International Energy Agency standard. A joint stockpiling scheme for the region is an even more distant target.

With the above background, this study examines the possibility of joint oil stockpiling at terminals in countries with considerable demand and geographical proximity, namely Indonesia, Malaysia, Thailand, and Singapore. The study also analyses the possibility of international cooperation with non-ASEAN countries for oil stockpiling in ASEAN.

## **POLICY IMPLICATIONS**

1. While existing initiatives on oil stockpiling in ASEAN remain important, establishing joint stockpiling schemes covering all ASEAN countries is a long-term agenda. It is realistic to achieve individual or joint stockpiling in selected countries in this study;
2. Despite the heavy financial burden to develop oil stockpiling at designated site(s), it is realistic to build stockpiling capabilities at oil terminals in the selected countries in this study; and
3. Developing stockpiling in Indonesia is especially important due to its large demand and relatively small amounts of stockpiling. Establishing joint oil sharing schemes between Indonesia and other countries in this study will enhance oil supply security in Southeast Asia.

## **GEOGRAPHIC SCOPE**

ASEAN

## **RELATED PUBLICATIONS**

ERIA Publication

# 63

## Study on Biomass Supply Chain for Power Generation in the Southern Part of Thailand

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Shigeru Kimura and Han Phoumin

### AUTHOR(S)

Poonpat Leesombatpiboon, Weerawat Chantanakome, and Yaowateera Achawangkul

### SUMMARY

The southern part of Thailand faces a lack of electricity supply. Notwithstanding, a construction plan for coal-fired power plants applying clean coal technology (CCT) in the region has been delayed due to a lack of public acceptance.

There are many small power producers (SPP) and very small power producers (VSPP) in Thailand, and some of them use biomass as fuel for power generation. Biomass, a renewable energy source derived from organic matter, is plentiful in the ASEAN region, including Thailand. However, biomass use for power generation is limited in the south compared to the central and northern part of Thailand. Consequently, the use of new and renewable energy in the southern part of Thailand is an urgent issue to be solved in order to increase electricity supply.

### POLICY IMPLICATIONS

This study focuses on how to increase biomass use for power generation in the southern part of Thailand through a study on the type of biomass, appropriate biomass for power generation, biomass supply chain, and cost of biomass power generation. In addition, this study will also assess hybrid power systems such as solar or photovoltaic panels and biomass in terms of technical and economical points of view.

### GEOGRAPHIC SCOPE

Thailand



# 64

## Study on Shifting to Hydrogen Society in Brunei Darussalam

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Shigeru Kimura

### PARTNERS

Brunei National Energy Research Institute (BNERI), Chiyoda Corporation, Brunei Shell, Energy and Industry Department of Brunei Darussalam, and Land Transport Department of Brunei Darussalam.

### SUMMARY

Brunei Darussalam has an ambitious target to reduce energy consumption to about 60% at primary level by 2030. In order to achieve this target, Brunei Darussalam will have to strengthen energy efficiency and conservation, as well as increase the use of renewable energy. That being said, Brunei Darussalam has an approach to utilise hydrogen for the road transport sector and power generation sector. This study draws a blueprint on how Brunei Darussalam shifts to hydrogen society.

### OBJECTIVES

1. To forecast the demand and supply potential of hydrogen in Brunei Darussalam up to 2040; and
2. To analyse energy- and CO<sub>2</sub>-saving potentials as a result of the increase in hydrogen demand.

### GEOGRAPHIC SCOPE

Brunei Darussalam

# 65

## Temburong Eco Town (Phase II)

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Shigeru Kimura

### AUTHOR(S)

Muhd Nabih Fakhri bin Matussin, Leong Siew Meng, Ikeda Yuichi, and Shigeru Kimura

### PARTNERS

Brunei National Energy Research Institute (BNERI)

### SUMMARY

ERIA is working with the Brunei National Energy Research Institute (BNERI) to create a smart and eco-friendly city applying smart energy technologies in Temburong, Brunei Darussalam. The first phase of the study focused on energy efficiency technologies for buildings, vehicles, and the smart grid. These technologies would make Temburong a smart and eco-friendly city.

In the second phase, a simulation study based on daily climate data seeks the optimal capacity of solar photovoltaic cells, wind, and diesel generators.

Based on the results from the second phase and the basic concept of Temburong Smart City prepared by the Government of Brunei Darussalam, ERIA will request an external urban planning company to design a blueprint of the smart and eco-friendly city as the third phase study.

### POLICY IMPLICATIONS

- 1) Newly-constructed buildings such as hotels and shopping malls in Temburong District should apply eco-building (green building) concepts. These concepts will reduce 30% of electricity demand from the new buildings.
- 2) A power supply system combining solar photovoltaic cells and storage can be applied in Temburong Eco Town without diesel-fueled power generation. As the cost will be high, ERIA recommends to start with a power supply system that includes diesel-fueled power generation and later shifts to more solar photovoltaic cells and storage, depending on their price level.

## GEOGRAPHIC SCOPE

Brunei Darussalam

## RELATED PUBLICATIONS

Kimura, S., R. Pacudan, and H. Phoumin (eds.) (2017), *Development of the Eco Town Model in the ASEAN Region through Adoption of Energy-Efficient Building Technologies, Sustainable Transport, and Smart Grids*. ERIA Research Project Report 2015-20, Jakarta: ERIA

Downloadable from: <http://www.eria.org/research/development-of-the-eco-town-model-in-the-asean-region-through-adoption-of-energy-efficient-building-technologies-sustainable-transport-and-smart-grids/>

# 66

## Addressing Energy Efficiency Through Traffic Improvement

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Yanfei Li and Ichiro Kutani

### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

Globally, there are many different traffic systems with distinct and numerous characteristics. One important characteristic is energy, given the increasing vulnerability of energy security and the increasing burden of coping with global warming issues arising from soaring oil consumption.

In FY2015, an ERIA study analysed possible actions and policies which can maximise the effectiveness of the planned Bus Rapid Transit (BRT) system in Da Nang City of Viet Nam. More precisely, the study analysed the effect of a feeder-line bus for BRT utilisation in a quantitative manner by taking into consideration citizens' latent preference for bus use. However, an analysis indicates that the existing plan cannot meet with the modal share target of public transportation in the city (35% in 2035). It means that the city may be required to expand the BRT line, introduce a metro system earlier, or re-design the city to be more mass rapid transit (MRT) friendly.

The current study will use Da Nang City as the case study subject again and it is consistent with the strategic theme of 'Energy Efficiency and Conservation' in the ASEAN Economic Community (AEC) Blueprint 2025 and the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 Phase One. In addition, the study is consistent with the goal to create a sustainable society in the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025 and it corresponds to principles of 'C.2. Environmental Sustainable Cities', 'C.3. Sustainable Climate', and 'C.4. Sustainable Consumption and Production'.

### OBJECTIVES

The study will develop several possible traffic systems for Da Nang City in the future, in order to quantify the effects on efficiency improvement and CO<sub>2</sub> emissions reduction. The study will analyse the transportation system necessary to achieve a targeted modal share, thus quantifying the amount of efficiency improvement. It will benefit not only Da Nang City for their policy development, but also for other cities in the EAS region that experience similar issues to achieve sustainable development.

## POLICY IMPLICATIONS

Policymakers should consider introducing an appropriate MRT system in accordance with the size and structure of their city in the future, since BRT is better than cars and MRT is better than BRT in terms of transport efficiency.

It is difficult to foresee the future and the various risks associated with large investments; however, establishing a traffic system requires more than a few years and the deterioration of traffic will cause economic loss, wasteful use of energy, and increased emissions harmful to the environment. Therefore, policymakers are recommended to start planning and executing traffic systems as early as possible to avoid worsening traffic. The structure of a city affects the MRT system, hence it will also affect the energy consumption. In this light, it is important for a city to shift to a structure where the usage and impact of an MRT system can be maximised.

## GEOGRAPHIC SCOPE

ASEAN

## RELATED PUBLICATIONS

Kutani, I. (ed.) (2017), Addressing Energy Efficiency in the Transport Sector Through Traffic Improvement. *ERIA Research Project Report 2016-04*. Jakarta: ERIA

Downloadable from: <http://www.eria.org/research/addressing-energy-efficiency-in-the-transport-sector-through-traffic-improvement-1/>

# 67

## Create a Better Social Acceptance for Electric Power Infrastructure

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Yanfei Li and Ichiro Kutani

### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

The East Asia Summit (EAS) region needs to develop every kind of power plant to supply electricity for future expanding demand. However, some types of power, including coal, nuclear, and even renewable power sources such as wind are facing protests from surrounding residents and non-governmental organisations (NGOs). Therefore, it is crucial to increase social acceptance for an electric power infrastructure to achieve a stable electricity supply and a well-balanced power supply mix. This study focuses on a case study for Thailand where conflict continues between advocates and opponents of coal-fired power plants (CPP).

The study is consistent with the wide range of strategic themes in the ASEAN Economic Community (AEC) Blue Print 2025 and its subordinate paper ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 Phase One such as 'ASEAN power grid', 'Coal and Clean Coal Technology', 'Energy Efficiency and Conservation', 'Renewable Energy', and 'Civilian Nuclear Energy', and is anticipated to contribute to it. In addition, the study is consistent with the goal to create a resilient society in the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025; it particularly corresponds to principles of 'D.5. ii ensure availability and accessibility of affordable energy services'.

### OBJECTIVES

The study will try to develop a specific process of consensus formation, which reflects its unique background. This is because the discussion in Thailand is seen as a typical case, thus any implication can be disseminated throughout the ASEAN region.

## **POLICY IMPLICATIONS**

The study will provide policy implications to mitigate public protest and to prevent blocking and delaying electric power infrastructure development projects in the region. It will also raise critical and crucial issues on electric power infrastructures with potential risks that require public acceptance. Direct public involvement would be one of the important measures for social acceptance and political decision-making; however, whether it is accepted in Asian countries should be carefully examined.

The CPP case study in Thailand will deliver two policy recommendations. The first one is to provide lessons learned and crucial conditions to proceed smoothly with large and risky infrastructure projects in Asian countries. The second one is to suggest alternative measures to gain public consensus on general issues, which would be useful information for stakeholders in Asian countries.

## **GEOGRAPHIC SCOPE**

ASEAN

# 68

## Economics and Feasibility of Hydrogen Supply Chains as Energy Infrastructure in East Asia Countries

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Yanfei Li

### SUMMARY

Hydrogen is not naturally occurring, but must be synthesised or produced artificially using various physical and chemical processes. The production process typically consumes energy in various forms. When high purity hydrogen is consumed for the purpose of acquiring energy (especially through the application of fuel cell (FC) technologies), it is considered an energy carrier. Since the typical exhaust substance generated from the consumption of hydrogen as an energy carrier is pure water (H<sub>2</sub>O), it is considered a clean energy. This is especially true if hydrogen is produced from renewable energy-based pathways. Therefore, hydrogen has the potential of becoming a fundamental solution to wean us off our dependence on fossil fuels and reduce greenhouse gas (GHG) emissions that result from energy consumption.

However, the application of hydrogen as an energy carrier has barely been commercialised, due to challenges from several aspects.

In the Asian context, can a 'hydrogen economy' be established so that investments at the industrial level of a hydrogen supply chain for applications in the chemical industry, power sector, and land transport sector can be commercially justified, with current technologies? If not, what are the gaps, how large are they, and where are they located in a proposed hydrogen supply chain to meet economic and commercial feasibility?

We will also investigate the potential markets for the supply of hydrogen on a commercial-scale in Asian economies, especially in the East Asian region.

### OBJECTIVES

This study aims to create an accurate model of the lifecycle cost and emissions of a hydrogen supply chain. In addition, at the user-end of hydrogen applications (including the use of hydrogen as an intermediate input for chemical processes, energy storage for power grids, and fuel for the land transport sector), the economics of hydrogen will be analysed against traditional chemical industrial processes, conventional energy storage methods, and conventional use of fossil fuels for land transport, respectively.



Life-cycle cost and emission models, as well as supply chain models covering the upstream and downstream of the hydrogen economy, will be used to build the model. That model is expected to be able to simulate various scenarios and to assume different technologies, industrial processes, environmental parameters, resource endowment, and market setup as well as different energy and industrial policies.

Realistic scenarios built with reasonable assumptions about the abovementioned key factors will be able to precisely indicate the economic and commercial feasibility of establishing hydrogen supply chains, as well as a hydrogen economy.

## **POLICY IMPLICATIONS**

The study could advise what policies would be necessary at an early stage of the adoption of a hydrogen supply chain and fuel cell technologies in East Asia countries. At this stage, policies should aim at narrowing both technological and economic gaps for early adoption in identified scenarios and areas.

Implications for the environment from the development and adoption of a hydrogen supply chain and energy infrastructure can also be derived from this study. Last but not least, new industrial opportunities due to early adoption of the supply chains and technologies could be derived from this study as well.

# 69

## Formulating Policy Options to Promote Natural Gas Utilisation in the EAS

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Yanfei Li and Ichiro Kutani

### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

As stated in the Joint Ministerial Statement from the East Asia Summit (EAS) Energy Ministers Meeting on 22 September 2016, ERIA would conduct a research on natural gas markets in the EAS. Japan and ERIA then started conducting the research to present a report for the next EAS Energy Cooperation Task Force (ECTF) in July 2017.

In a bid to improve EAS collaboration on natural gas, the ministers welcomed Japan's proposal to facilitate collaboration and discussion among EAS countries with the support of the ASEAN Council on Petroleum (ASCOPE), the ASEAN Centre for Energy (ACE) and ERIA. The proposal also looked at ways in which governments could spur the development of natural gas markets that are open, transparent, competitive, and resilient, as well as promote new technologies for the storage and efficient use of this clean energy resource. The ministers noted that Japan would endeavour to formulate pro-market policy options to ensure that gas markets operate efficiently.

### OBJECTIVES

1. Clarify possible areas that can be shifted to natural gas in each field, such as 'power generation', 'industry', 'residential', and 'transportation';
2. Calculate the potential of gas demand in the countries;
3. Clarify challenges and issues in promoting natural gas utilisation; and
4. Propose optional gas distribution network and calculate the amount of funding required for investment, and policy options which are essential to promote natural gas shifting and investment in related infrastructure and equipment in the region.

## **POLICY IMPLICATIONS**

In this survey, future gas demand potential in ASEAN countries and India will be investigated and the necessary investment amounts will be clarified. This will raise awareness of the extent of the market size of natural gas in the EAS countries, clarify the challenges to expanding the natural gas market, and propose policy options necessary to solve them.

## **GEOGRAPHIC SCOPE**

ASEAN and East Asia

## **RELATED PUBLICATIONS**

Kutani, I. and Y. Li (eds.) (2015), 'Sustainable Development of Natural Gas Market in East Asia Summit Region,' ERIA Research Project Report 2014-31, Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/sustainable-development-of-natural-gas-market-in-east-asia-summit-region/>

# 70

## Multilateral Joint Study for the Liquefied Natural Gas Market

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Yanfei Li, Ken Koyama, Ichiro Kutani

### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

Recent price trends seem to indicate that the practice of an 'Asia Premium' to the price of liquefied natural gas (LNG) could be coming to an end. LNG prices had for decades been higher in Asia than in Western countries due to this premium, a practice adopted by gas producers and major energy companies of charging different prices for shipments to different regions.

However, the practice could return if the historical reasons for the premium are not resolved and it is no longer a buyer's market. Therefore, policymakers should try to create an open market where LNG is priced by its own fundamentals of demand and supply.

The importance of enhancing the security of LNG supply becomes even greater with increasing demand for LNG. From this point, we need to consider both short-term emergency responses and long-term investment issues. Moreover, the LNG market can benefit from the improvement of supply security through transparent LNG transactions and price signals.

This study is consistent with the strategic theme of the 'Trans ASEAN Gas Pipeline' in the ASEAN Economic Community (AEC) Blueprint 2025 and its subordinate paper the ASEAN Plan of Action on Energy (APAEC) 2016-2025 Phase One, and contributes to enhance gas security of the ASEAN region through creating a global LNG market. In addition, the study is consistent with the goal to create a resilient society in the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025, particularly corresponding to principles of 'D.5. ii ensure availability and accessibility of affordable energy services'.

### OBJECTIVES

The study aims to figure out ways to create a more equal LNG market in which private and public sectors can both play a role.

# 71

## Review on Institutional Framework, Principles, and Key Elements for Integrated Electricity Market in ASEAN

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Tsani Fauziah Rakhmah, Junichi Wada, Youngho Chang, and Yanfei Li

### SUMMARY

ASEAN countries still face many challenges to building an integrated market for electricity in the region. First, ASEAN will need a target model as the top-level design of the electricity market for an ASEAN power grid interconnection. Second, the region needs to develop a common vision regarding the future needs of a power infrastructure that translates into an integrated plan, which serves as an important basis for interconnecting cross border energy infrastructures. Third, ASEAN needs to formulate common principles, rules, standards, and network codes that govern the grid operation and electricity trade. Fourth, the region has to ensure that new investors are allowed to enter the market. And lastly, a market-oriented pricing mechanism has to be adopted for an integrated electricity market to succeed.

### OBJECTIVES

This study first aims to review and introduce the basic components or elements of an integrated electricity market, referring to references and literature on European electricity markets, the U.S. electricity markets, and African electricity markets.

Subsequently, a Delphi method will be adopted for conducting surveys among the ASEAN member countries. The survey will cover individual experts from utility companies, policymaking agencies, and regulating agencies of the member countries. The purpose is to identify what components or elements of the design of a working market model are needed and feasible in ASEAN.

Eventually, the identified components or elements will be used and analysed in a model and assessed theoretically if they are consistent and can serve as a functioning market in the region.

### POLICY IMPLICATIONS

Currently, the electricity market in ASEAN is mostly characterised by a single buyer model, except for Singapore and the Philippines. Transmission and distribution system operators, and generators are also often bundled. Cross-border electricity trade in ASEAN is still limited to bilateral trading based on power purchase agreements. The possibility of multilateral trading of electricity in ASEAN is still under discussion and negotiation. In order to eventually move to an integrated electricity market in the region, it is recommended to take a step-by-step approach. For phase one of market integration, the following milestones should be reached:

1. Sharing data and information for coordinated planning and development of a power infrastructure;
2. Developing a compensation mechanism for third party access to the grid; and
3. Coordinating the allocation of available cross-border transmission capacity, perhaps using simple methods as a starting point.

In the second phase, however, advanced levels of integration should be reached and a competitive regional electricity market should start to take shape, especially reflected in the following aspects:

1. Deregulation, unbundling, and domestic market liberalisation;
2. Harmonisation of technicalities, standards and principles regarding the grid operations and allocation of transmission capacities;
3. Mandating a minimum interconnection level for each country;
4. Gradually moving to nodal/zonal pricing; and
5. Developing auxiliary markets such as a balancing service market, capacity market, and financial derivative market.

## GEOGRAPHIC SCOPE

ASEAN

## RELATED PUBLICATIONS

Li, Y., and S. Kimura, eds. (2016), 'Achieving an Integrated Electricity Market in Southeast Asia: Addressing the Economic, Technical, Institutional, and Geo-political Barriers,' *ERIA Research Project Report 2015-16*, Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/achieving-an-integrated-electricity-market-in-southeast-asia--br-addressing-the-economic-technical-institutional-and-geo-political-barriers/>

Rakhmah, T.F. and Y. Li (2016), 'A Review on Institutional Framework, Principles, and Key Elements for Integrated Electricity Market: Implications for ASEAN,' *ERIA Discussion Paper 2016-26*, Jakarta: ERIA.

Downloadable from: <http://www.eria.org/research/a-review-on-institutional-framework-principles-and-key-elements-for-integrated-electricity-market-implications-for-asean/>

# 72

## Study on the Formation of the ASEAN Power Grid Generation and Transmission System Planning Institution

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Yanfei Li and Junichi Wada

### PARTNERS

Tokyo Electric Power Company (TEPCO)

### SUMMARY

This project aims to provide technical and advisory services to the heads of the ASEAN Power Utilities and Authorities (HAPUA), specifically HAPUA's Working Group No. 2 (HWG2) on the criteria, structures, roles and requirements towards the formation of two institutions necessary to advance the ASEAN Power Grid (APG). The APG institutions that require assistance towards their formation are the APG Generation and Transmission System Planning (AGTP) and the APG Transmission System Operator (ATSO). HAPUA will report the key findings of this study to the ASEAN Ministers of Energy Meeting in 2017/2018 as an implementation measure of the ASEAN Plan of Action on Energy (APAEC) Phase 1 2016-2020, as well as to the ASEAN Secretariat as it monitors and facilitates the implementation of measures under the ASEAN Economic Community (AEC) Blueprint 2025.

### OBJECTIVES

1. The project shall deliver the technical guidelines for a AGTP study by taking into consideration the different processes and institutional structures between the existing national grid planning agencies of each ASEAN member state.
2. The project shall deliver an implementation plan for the AGTP institution, professional advice and recommendation by taking into consideration the different processes and institutional structures between the existing national grid planning agencies of each AMS.

### POLICY IMPLICATIONS

As the result of this project, the final deliverables include:

1. A report, which reviews the past studies on the APG, updates on the progress of the APG, summarizes the key barriers and challenges faced by the APG, and provides a theoretical market design for power grid interconnection and trading of electricity in ASEAN;
2. An implementation plan containing the principles, framework, and other technical arrangements for the establishment of the AGTP institution;
3. A roadmap of actions and milestones in establishing the AGTP institution; and
4. Presentation slides that are to be presented to the HWG2 and APG Consultative Committee (APGCC) for endorsement, before submission to the HAPUA Working Committee.

The ten ASEAN countries' electricity market regulators, policymakers, transmission and distribution system operators, power generators will thus benefit from the findings of this study by using it as a reference to develop specific guidelines or common protocols/codes for the AGTP.

## GEOGRAPHIC SCOPE

ASEAN

## RELATED PUBLICATIONS

Rakhmah, T.F. and Y. Li (2016), 'A Review on Institutional Framework, Principles, and Key Elements for Integrated Electricity Market: Implications for ASEAN,' ERIA Discussion Paper 2016-26, Jakarta: ERIA. Downloadable from: <http://www.eria.org/research/a-review-on-institutional-framework-principles-and-key-elements-for-integrated-electricity-market-implications-for-asean/>

Li, Y. and S. Kimura (eds.) (2016), 'Achieving an Integrated Electricity Market in Southeast Asia: Addressing the Economic, Technical, Institutional, and Geo-political Barriers,' ERIA Research Project Report 2015-16, Jakarta: ERIA. Downloadable from: <http://www.eria.org/research/achieving-an-integrated-electricity-market-in-southeast-asia--br-addressing-the-economic-technical-institutional-and-geo-political-barriers/>

Kutani, I. and Y. Li (eds.) (2014), 'Investing in Power Grid Interconnection in East Asia,' ERIA Research Project Report 2013-23, Jakarta: ERIA. Downloadable from: <http://www.eria.org/research/investing-in-power-grid-interconnection-in-east-asia/>



# 73

## Study on the Formation of the ASEAN Power Grid Transmission System Operator Institution

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Yanfei Li and Junichi Wada

### PARTNERS

Nord Pool Consulting AS

### SUMMARY

ERIA is currently working with the Heads of ASEAN Power Utilities and Authorities (HAPUA) on two research projects concerning the criteria, structures, roles and requirements for the formation of a ASEAN Power Grid (APG) Generation and Transmission System Planning (AGTP) institution and the formation of a ASEAN Power Grid System Operator (ATSO). These two projects are closely linked and will have a significant influence on each other and the deliverables need to be harmonised to gain the full potential out of these two new institutions.

The ATSO will be a key institution to enable multilateral trading of electricity among ASEAN countries while maintaining the balance, stability, and reliability of the interconnected power grids across borders and/or harmonising operational standards across ASEAN.

This project aims to produce the criteria, structures, roles, and requirements for the formation of the ATSO. In the long run, this work will support the establishment of greater ASEAN Connectivity.

ERIA will implement the projects and be responsible for coordinating the stakeholders of this study, in addition to identifying and contracting two international consultant teams to carry out the two projects. ERIA will also hold workshops with relevant experts and officials from ASEAN Member States.

### POLICY IMPLICATIONS

The output and deliverables of the above activities will be four different documents that will be developed by the project team assigned to this task. One of the important outputs here – also in connection with the fourth output – is to create a gap analysis for each of the countries.

1. Questionnaire and dataset collected for ATSO;
2. Guideline for ATSO;
3. Report (interim, final) for ATSO;
4. Implementation plan for ATSO;
5. Roadmap for ATSO; and
6. Presentation slides will be developed for presenting the ATSO deliverables to a wider audience.

## GEOGRAPHIC SCOPE

ASEAN

## RELATED PUBLICATIONS

Rakhmah, T.F. and Y. Li (2016). *A Review on Institutional Framework, Principles, and Key Elements for Integrated Electricity Market: Implications for ASEAN*. ERIA Discussion Paper 2016-26. Jakarta: ERIA  
Downloadable from: <http://www.eria.org/research/a-review-on-institutional-framework-principles-and-key-elements-for-integrated-electricity-market-implications-for-asean/>

Li, Y. and S. Kimura (eds.) (2016). *Achieving an Integrated Electricity Market in Southeast Asia: Addressing the Economic, Technical, Institutional, and Geo-political Barriers*. ERIA Research Project Report 2015-16. Jakarta: ERIA.  
Downloadable from: <http://www.eria.org/research/achieving-an-integrated-electricity-market-in-southeast-asia--br-addressing-the-economic-technical-institutional-and-geo-political-barriers/>

Kutani, I. and Y. Li (eds.) (2014). *Investing in Power Grid Interconnection in East Asia*. ERIA Research Project Report 2013-23. Jakarta: ERIA.  
Downloadable from: <http://www.eria.org/research/investing-in-power-grid-interconnection-in-east-asia/>

# 74

## Energy, Economic, Social, and Environmental Nexus: A New Approach in Support of Sustainable Energy and Development in ASEAN and East Asia

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Han Phoumin

### SUMMARY

The rapid and sustained economic growth of the past two decades has led to marked increases in energy demand in the region, and developing Asia will continue to lead in the growth of energy demand. The energy outlook and energy saving potential (Kimura and Han, 2016) for ASEAN and the East Asia countries show that primary energy demand in these countries is projected to grow at an average annual rate of 2.3% between 2013 and 2040, reflecting an assumed 4.0% annual gross domestic product (GDP) growth and 0.6% population growth. In absolute terms, the final energy consumption is projected to increase from 3,347 million tonnes of oil equivalent (Mtoe) in 2013 to 6,129 Mtoe in 2040. Looking at the proportion of final energy consumption by sector, the transport sector is projected to grow from 17.2% in 2013 to 22.6% in 2040.

The increase in energy demand threatens energy security and efforts to curb carbon dioxide (CO<sub>2</sub>) emissions, affecting health and social well-being. These common energy challenges will need to be addressed through concerted efforts, including collective measures and actions to rapidly develop and deploy highly efficient and low-emission technologies, and to double the share of renewable energy in the overall energy mix for inclusive and sustainable development.

### OBJECTIVES

This research proposal was initiated to address the multifaceted problems that resulted from advancing one priority issue without taking into consideration the trade-off with other issues and sectors. Many studies have focused on two-dimensional relationships by investigating the energy and environmental nexus, the positive relationship between energy and economic growth, and the positive relationship between energy and social development. Two-dimensional relationships between energy and other sectors are easy to construct and investigate. However, the proposed study is based on the belief that a multi-dimensional analysis of the relationship between energy and other sectors is needed. We hope the results will provide the most constructive policy recommendations concerning the relationship between energy, economic development, social development, and environmental development. To achieve this, it is very important to select the appropriate indicators and construct the appropriate variables to represent each sector.

### GEOGRAPHIC SCOPE

ASEAN and East Asia

# 75

## Reducing Emissions from Coal-Fired Power Plants

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Ichiro Kutani and Han Phoumin

### PARTNERS

The Institute of Energy Economics, Japan (IEEJ)

### SUMMARY

Coal is still a usable energy source for many countries in the East Asia Summit region because of its abundance and economic competitiveness. However, there has been increasing pressure from the general public and/or international financiers against coal usage due to its high environmental impact.

Coal pollutants can be reduced technically to very low levels, first by increasing the efficiency of coal burning, and second by employing appropriate pollutant removal equipment. Likewise, hazardous pollution from coal-fired plants can be reduced throughout their operational lifetimes by applying sufficient pollution management systems. Therefore, it can be said that coal pollution is a problem of plant design and operation rather than the usage of coal itself.

This study surveys opportunities to further improve emission controls of coal-fired power plants to make them more useable for the coming decades.

ERIA's 2016 study summarised the existing air emission (SO<sub>x</sub>, NO<sub>x</sub>, PM) standards and operational systems for coal plants in ASEAN countries. The current study will deepen the analysis to propose minimum air emission standards for coal-fired power plants for the ASEAN region.

The study is consistent with the strategic themes in the ASEAN Economic Community (AEC) Blueprint 2025 and its subordinate paper the ASEAN Plan of Action on Energy (APAEC) 2016–2025 Phase One, and contributes to APAEC's 'Coal and Clean Coal Technology' in particular as it addresses emissions from power plants. In addition, the study is consistent with the goal to create a more sustainable society in the ASEAN Socio-Cultural Community (ASCC) Blueprint 2025, particularly as related to principles of 'C.1. Conservation and Sustainable Management of Biodiversity and Natural Resources', 'C.2. Environmental Sustainable Cities', 'C.3. Sustainable Climate', and 'C.4. Sustainable Consumption and Production'.

## POLICY IMPLICATIONS

1. It is a rational choice for ASEAN member countries to continue to utilise coal-fired power plants in view of energy security. However, needless to say, environmental sustainability is also a crucial issue, and hence, it is important to have stricter environmental regulations;
2. Differences between development stages of ASEAN member countries need to be taken into account. Therefore, a survey of the regional baseline through international cooperation is important;
3. When considering different financial capacities between countries, it is not realistic to apply the unified highest standard to every country. It is desirable to improve emission standards in a step by step manner with consideration given to each nation's changing capabilities to accept higher-cost technology; and
4. It is important to address air emissions from existing coal-fired power plants as well as newly-constructed plants.

The study is expected to present possible minimum standards to be applied in the region.

1. A country needs to have accurate and up-to-date understanding of the technological options for air emission reductions in light of their capabilities and costs. In this regard, policymakers are encouraged to exchange information with countries/companies that have such technologies.
2. Countries need to understand affordability of their nation's industries and people. In this regard, policymakers are encouraged to develop a periodical analysis of statistics and surveys to assess income levels of people and industrial sales levels.

## GEOGRAPHIC SCOPE

EAS countries (ASEAN + 6)

## RELATED PUBLICATIONS

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## Social Benefit of the Clean Coal Technology

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### SUMMARY

The number of coal-fired power plants is expected to increase in ASEAN member countries due to their security and economic benefits, namely abundant resources in the region and relatively cheap cost. However, application of clean coal technology (CCT) to reduce its environmental load is essential to make its growth sustainable.

Although the technology to control air quality known as air quality control system (AQCS) is commercially available, not all power plants are equipped with it. Sometimes, the AQCS causes pollution problems that could decrease the attractiveness of investment as well as decrease the level of acceptance from locals and the general public. Even though the AQCS requires additional investment, it will create multiple benefits, such as the social benefits of good air quality and continuous development of lower-cost power-generation fleets.

### OBJECTIVES

The study will try to estimate the benefits, namely social, of good air quality and compare them with the typical investment cost of an AQCS. The aim of this analysis is to provide a good reference for policymakers and investors that the cost of additional investment for an AQCS could easily be outweighed by the benefits.

### POLICY IMPLICATIONS

Installation of an AQCS can benefit human health and agricultural production. Such economic benefits can offset the additional investment cost of an AQCS. Therefore, ASEAN member countries are suggested to encourage the installation of AQCSs in their countries. To this purpose, the study recommends ASEAN member countries to adopt more stringent air emission standards for power plants.

### GEOGRAPHIC SCOPE

ASEAN

## Theoretical and Empirical Studies on Energy Poverty in ASEAN

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### SUMMARY

ASEAN is one of the world's fastest growing regions in terms of economic development; however, the gross domestic product (GDP) per capita of several ASEAN countries such as Myanmar, Lao PDR, and Cambodia is less than US\$1,000. While some countries in ASEAN have done very well in terms of providing energy access, about 130 million people lack access to power and energy. Inadequate access to energy threatens the region's economic growth and economic transition (ACE, 2013). Research suggests that energy poverty has important consequences if not addressed, such as impacting health, further entrenching poverty, and making other objectives (such as addressing climate change) less attainable.

'Energy poverty' is a concept used to define a situation where individuals or households are not able to adequately heat or provide other required energy services in their homes at an affordable cost. Grevisse and Brynart (2011) investigated how energy poverty is understood in Europe by looking at various indicators and aggravators of energy poverty. For the purposes of their study, they defined energy poverty as 'the impossibility (or the difficulty) for a household to gain access to the energy it needs to ensure dignified living conditions at an affordable price from the point of view of its income.' In the European context, energy poverty is believed to be caused by rising energy prices, recessionary impacts on national and regional economies, and poor energy-efficient homes. However, in developing Asia, especially some remote areas in ASEAN countries, energy poverty is also due to inadequate energy infrastructure.

This study explores the following issues in the Asian context:

1. The causal relationship between energy poverty and other socio-economic characteristics such as poverty, health, education, and others;
2. The lack of understanding and limited recognition of the issue of energy poverty by relevant national and regional authorities could further affect the well-being of people where energy poverty is prevailing; and
3. Construct concrete example of how energy poverty could be eradicated through concerted policies and policy implementation.

## **POLICY IMPLICATIONS**

1. Countries can design an appropriate energy policy to help the poor access energy; and
2. Understand the various dimensions of energy poverty, so countries can target directly at energy poverty groups, regions or sub-regions.

## **GEOGRAPHIC SCOPE**

ASEAN



