



## RESEARCH AND RESEARCH-RELATED ACTIVITIES

Research is at the core of ERIA's mandate. From it springs other roles that ERIA was tasked to do, such as research dissemination, capacity building aimed at strengthening policy research capacities in less developed countries, and providing policy recommendations to policy makers of ASEAN and East Asia Summit countries. ERIA research projects focus on four major themes, namely, (i) deepening economic integration, (ii) narrowing development gaps, (iii) achieving sustainable economic development, and (iv) energy-related research. In FY2014, ERIA completed 10 research projects; as of the end of March 2015, there were 32 ongoing research projects

Annex G enumerates the completed and ongoing research projects in FY2014 according to themes. In addition to research projects and studies, ERIA researchers also actively share their expertise and thoughts outside of ERIA as keynote speakers, paper presenters, panellists, or discussants in various events organised by other institutions; they likewise contribute to major journals, magazines, and newspapers.

Annex H lists down some of the outreach activities in which ERIA researchers were actively involved during FY2014.

### *Completed Research Projects*

ERIA completed the following research projects in FY 2014:

#### **1. Framing the ASEAN Socio-Cultural Community Post 2015: Engendering Inclusiveness, Resiliency, Sustainability, and Unity for One ASEAN Community**

This project consists of 'think pieces' by experts on selected key components of the ASEAN Socio-Cultural Community (ASCC). Each think piece considers the ASEAN vision from the ASCC Blueprint and ASEAN regional agreements on the selected area of concern. Where feasible, each piece suggests outcomes of the vision and regional agreement(s), and the possible indicators of such outcomes.

The project does not cover the whole range of areas under the ASCC Blueprint. Instead, it focuses on a number of important areas for ASCC with the end view of providing frameworks and perspectives that would help shape and enrich the ASCC Blueprint Post 2015. The areas and topics address greater resiliency, greater sustainability, greater unity, and greater equity and social welfare.





Many of the topics are framed to highlight the interconnection between ASCC and ASEAN Economic Community (AEC) Blueprint measures. This reflects an underlying presumption that a truly well-performing and successful AEC is underpinned and complemented by a well-performing and successful ASCC, and vice versa.

**2. Towards Responsive Regulations and Regulatory Coherence in ASEAN and East Asia: Deconstructing Effective and Efficient Regulatory Management System**

The project was initiated because of the perceived need to improve connectivity and regulatory coherence in East Asia Summit (EAS) countries. These countries are reviewing the role of regulatory management regimes as a means of reducing the costs of doing business; facilitating international trade and investment; and improving regulatory outcomes in areas such as health, safety, and environmental protection.

The EAS has an important role to play in building cooperation between ASEAN and other EAS participating countries in internal regulatory management and regulatory cooperation across borders. This study also complements the need

for a responsive ASEAN. This involves ASEAN and ASEAN Member States (AMSs) being responsive to business in the region; they need to create and maintain a conducive business and investment environment. A responsive ASEAN further entails regulatory coherence to facilitate an attractive business and investment climate.

Some of the initial recommendations of the study are that ASEAN should undertake a concerted inventory of business regulations and each AMS should review such regulations. They should agree on a target of reducing (if not eliminating) unnecessary or overlapping regulations. The study also recommends instituting a regional cooperation programme on strengthening the capacity of government bureaucracies through sharing of experiences, cross-border or joint training, and even curricular or specialised offering.

The integrative report will be submitted to the East Asia Summit in October 2015.

**3. ASEAN Economic Community Scorecard Phase IV Study**

ERIA, together with the Research Institutes Network member institutions from the 10 ASEAN Member States and the ASEAN

Secretariat, has been undertaking a series of studies to review and assess the implementation of ASEAN Economic Community (AEC) measures. The official AEC scorecard reports are comprehensive compliance scorecards of all four pillars of AEC Blueprint 2009–2015. By design and because of resource constraints, the ERIA scorecard studies focus on selected key AEC measures in pillar 1, and provides a more analytic assessment of selected key AEC measures than the official AEC scorecard.

Phase IV consists of the scoring on the following six key AEC measures which are critical to the establishment of AEC 2015: non-tariff measures, trade facilitation, standards and conformance, service liberalisation, investment liberalisation, and mutual recognition agreements on professional services and movement of natural persons.

**4. Trade Policy Change and Firm Adjustment: A Search for the Underlying Mechanisms**

Recent literature on heterogeneous firms and trade have emphasised new mechanisms through which changes in trade policy increase aggregate productivity and welfare. These are (i) allocative efficiency gains associated with shifting labour and capital out of small, less-

productive firms into large, more productive firms; and (ii) productive efficiency gains associated with trade-induced innovation.

Given this background, ERIA's Microdata Project for FY2014 aims to empirically examine the effect of trade policy changes on aggregate productivity and welfare and, more importantly, to discern the mechanisms in operation through which the effects are realised.

The study particularly focuses on clarifying various mechanisms through which trade policy changes affect welfare gains from trade. Depending on the country context, it is important to focus on a particular mechanism put forward by existing literature and examine whether and why that particular mechanism works.

This project is expected to uncover new mechanisms through which an economy responds to trade policy changes. It utilised micro data (i.e., firm, plant, or product-level datasets), complemented by descriptive analyses, to come up with an empirical study whose results would be published.



#### 5. Economic and Technical Cooperation in Regional Comprehensive Economic Partnership Abstract

This study presents information and options aimed at advising the Economic and Technical Cooperation Working Group (ETCWG) of the Regional Comprehensive Economic Partnership (RCEP) on the structure and financing of economic and technical cooperation activities to support RCEP implementation. The study aims to assist the ETCWG under the RCEP to plan for providing economic and technical cooperation.

The study identifies relevant RCEP-related development gaps and capacity-building needs (especially the capacity needed to help reduce development gaps). It maps existing ETC programs, activities, and implementation mechanisms under the ASEAN+1 Free Trade

Area framework, as well as in other regional cooperation programmes. It also recommends the activities, governance structure, and financial mechanisms for undertaking the economic and technical cooperation plan for successful implementation of RCEP.

The study also addresses institutional issues for RCEP implementation, providing a multi-option matrix of secretarial and financial frameworks. It further provides the members with quantitative and qualitative techniques to monitor and evaluate RCEP implementation.

#### 6. FTAs and Spatial Extension of Production Networks in East Asia: Highlighting the Complementary Relationship between Thailand and Neighbouring Economies

This project consists of three supporting research projects: (i) Prospects for Forming Mekong Business Area: Thai Plus One Corporate Strategy and Its Supporting Policies ('Thai Plus One'); (ii) Labour Migration in Thailand and Neighbouring Countries: Situation and Challenges of the Migrant Workers ('Migration'); and (iii) Comprehensive Analysis on Free Trade Agreements in East Asia ('FTA').

The 'Thai Plus One' project aims to understand why multinational corporations and domestic companies in Thailand invest in Cambodia, Lao PDR, Myanmar (CLM), and Viet Nam. It also focuses on supporting policies for companies, including border area development strategies in Thailand, and feasibilities to apply public-private partnership schemes for cross-border infrastructure development.

The 'Migration' study aims to confirm the current socio-economic status of Cambodian and Myanmar migrant workers in Thailand, workers' recruitment process, socio-economic impact of remittances, and migration policy. This is because Thailand, as the hub of the Mekong Subregion, attracts migrant workers from CLM.

The 'FTA' study (i) compares the magnitude of trade creation effects through tariff reduction with that of trade creation effects through reduction of non-tariff barriers, (ii) examines the benefits accruing to exporters from use of free trade agreements; and (iii) quantifies documentation costs for FTA use.

#### 7. ASEAN Public-Private Partnership (PPP) Guidelines

In FY2013, the ASEAN Coordinating Committee on Connectivity mandated ERIA to conduct a study on financing modality of ASEAN connectivity. The task had been accomplished with subsequent workshops and meetings related to the study results.

The ASEAN PPP Guidelines is designed to meet both international standards and needs of typical emerging countries by providing a common set of policy principles for ASEAN member countries and a broad framework based on best practice standards. The Guidelines provides robust principles to ensure consistency, confidence, and certainty to foreign private investors; conduct and facilitate cross-border PPP projects; and enhance greater connectivity by harmonising the regulatory requirements of member countries. It also provides links to other resources, especially on the technical aspects.

The ASEAN PPP Guidelines book was officially launched at the PPP Forum in Manila on 16 December 2014.



**8. Firm-to-Firm Matching with Technology Transfers in the Local and Global Economy: Findings from Southeast Asia**

This project focuses on conditions for realising inter-firm vertical knowledge transfer, and looks at obstacles to vertical knowledge transfer. It takes two approaches: (i) the case study on South–South foreign direct investments (FDIs) and knowledge transfer within ASEAN, and (ii) the introduction of the cooperative chain concept into the research approach, which investigates a local firm as a knowledge transferee from its buyer and as a knowledge transferor to its supplier. Questionnaire surveys were also conducted to collect quantitative information to augment the results of the case studies.

Findings revealed that the main motivation for firms to enter buyer–supplier knowledge transfer relationships is to assure and enhance product quality. Knowledge transferors need quality inputs to produce quality products; knowledge transferees want to enhance their quality control capacity. To transfer knowledge, firms use face-to-face interactions between trainers and trainees.

Liberalisation policies to promote freer flow of people, goods, services, investments, and knowledge are fundamental to facilitate buyer–supplier knowledge transfer. Capacity building is likewise important to bring knowledge transfer relationships into production networks. Many FDI firms take up practical stopgap measures by providing training in farming at production sites or at training facilities and corporate universities in their home countries.

**9. Industrial Scenario in Myanmar and Enhancement of Mekong–India Economic Corridor Development**

Myanmar is expected to enter the phase of high economic growth along with the ongoing political reform and increased inflow of foreign direct investment (FDI). However, its government should prepare and execute appropriate industrial policies to accomplish high and inclusive growth, leveraging on Myanmar’s intrinsic strength.

The research looked into existing studies such as the Myanmar Comprehensive Development Vision by ERIA and other policy documents and literature written by the government. Field trips to manufacturing plants, agriculture markets, and industrial estates were also done

to understand the strengths and constraints of Myanmar development.

The research recommended that agriculture, plantation, garments, and tourism sectors be the core priority sectors for which specific policy measures should be prepared to accelerate current economic growth and to establish the foundation for sustainable growth. The constraints of small and medium enterprises (SMEs) are resulting in several policy options to revitalise SMEs.

Some critical factors to enhance Myanmar’s industrial sector are developments in infrastructure, capacity building, financial system and financial access, institutional framework, social and environment impacts as well as promotion and enhancement of SMEs with effective use of FDI.

**10. Evaluation of PPP for Infrastructure Development in Myanmar**

The Myanmar government has undertaken various economic reforms. The country has been attracting investments and new economic activities from both domestic and foreign entities. Hence, public–private partnership (PPP) is expected to be used to speed up the delivery

of infrastructure projects. However, challenges to implement PPP in Myanmar include the lack of regulatory and institutional framework, demand risk, land acquisition risk, and foreign exchange risk. Therefore, it is important to support implementing reforms and establishing a new framework that encourages investors to take part in PPP infrastructure projects.

The research covers the evaluation of the environment for PPP infrastructure projects in Myanmar, analysis of key factors for deriving an adequate PPP infrastructure in the context of longer-term region-wide development, analysis of key factors for encouraging financial arrangements, as well as recommendations for activating PPP infrastructure projects. To encourage these projects, it is important to identify the adequate role and risk sharing between public and private entities, and to be able to provide a road map for a region-wide development.



**Ongoing Research Projects**

As of 31 March 2015, ERIA researchers are working on the following 32 research projects.

**1. Comprehensive Asia Development Plan 2.0**

The research aims to create a conceptual framework and assessment of industrialisation and soft and hard infrastructure development in ASEAN and East Asia. It will combine the original research from the Comprehensive Asia Development Plan (CADP) and materials from other ERIA research projects, including the Industrial Cluster Project, to come up with a revised version of the CADP, the CADP 2.0.

The CADP was originally formulated by ERIA in 2010 in response to the request of East Asia Summit leaders in 2009. It provides a grand spatial design of economic infrastructure and industrial placement in East Asia. It covers both deepening economic integration and narrowing development gaps, whilst presenting a comprehensive list of projects for logistics and infrastructure which should be implemented to realise both simultaneously.

The study is expected to be completed in 2016.

**2. Non-Tariff Measures in ASEAN**

With tariffs constrained by the World Trade Organization, the number of non-tariff measures (NTMs)—designed to protect domestic firms and industries—is expected to increase. This trend is quite feasible in ASEAN, being one of the fastest-growing regions in terms of growth in economy and trade.

However, the latest official data on NTMs by HS-4 digit for ASEAN countries are available only from 2009, as released by the ASEAN Secretariat. A number of surveys have been conducted to fill the gap, but more work is needed. This study brings a strong multi-agency collaboration between ERIA and the United Nations Conference on Trade and Development, supported by experts on NTMs. Specifically, it will (i) collect, validate, and classify NTM data from official sources issued by governments; (ii) improve a 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. Once NTM data are collected, analyses can be prepared and policy options can be devised to make an appropriate assessment of the trade and development impacts of such barriers to trade.

The project aims to contribute to developing export capacities by improving NTM transparency and providing trading partners access to NTM-related information.

The project is expected to be completed by September 2016.

**3. Regional Comprehensive Economic Partnership**

The Regional Comprehensive Economic Partnership (RCEP) takes initiatives on regional economic integration in East Asia to a higher level. In contrast to the ASEAN+1 Free Trade Agreements (FTAs) where individual ASEAN Member States (AMS) have bilateral commitments with individual dialogue partners of ASEAN, AMS would likely need to have common commitments vis-à-vis the partners (with perhaps a few exceptions) under RCEP. The commitments of the dialogue partners need to be common commitments congruent with those of the AMS.

The commitments under RCEP should also not be merely a consolidation of the ASEAN+1 FTA commitments because mere consolidation is only feasible at the lowest common denominator that delivers far less than a number



of the ASEAN+1 FTAs. Thus, RCEP would need to be a high quality agreement for it to be credible and worthy of the resources and time expended for the negotiations and related activities to ensure its successful conclusion.

To strengthen the ongoing negotiations, the current study on RCEP will be providing inputs to negotiators on related issues. The study will consist of 10 chapters that will be published as ERIA discussion papers.

**4. ASEAN+1 FTA: The Use of FTAs in ASEAN**

ERIA, the ASEAN Business Advisory Council (ASEAN BAC), and national think tanks conducted surveys across ASEAN countries—and focus group discussions in Brunei Darussalam—on the use of free trade agreements (FTAs) by the private sector.



Findings revealed a moderate use of FTAs in ASEAN. Thus, ERIA, national think tanks, and ASEAN BAC proposed the following to increase FTA use by the private sector: (i) raise the benefit margins of FTAs; and (ii) improve the quality of government websites and help desks, raise the knowledge and skills of officials responsible for implementing FTAs, and increase the use of other communications, apart from government websites, to disseminate information on FTAs.

In conclusion, businesses indicate that they will be better off with FTA preferential tariffs than without. However, it is for the governments, in collaboration with chambers of commerce and business associations, to increase the benefits and use of FTAs for and by the private sector.

The project is expected to be completed in June 2015.

#### 5. Trade in Value Added of Southeast Asia

The economic growth of East Asia Pacific has outperformed world growth for the last two decades, except during the Asian financial crisis. The drivers of global economic growth are shifting towards East Asia, and the emerging East Asian economies are well positioned to

benefit from this growing power. They have also experienced strong growth during this period and are estimated to be on a par with China.

China's growth pattern is changing as it moves up the income stages, and is likely to rely more on consumption and less on investment and exports, and more on services and less on industry. In this scenario, opportunities emerge for Southeast Asian countries to expand their economies through trade and investment.

This study aims to provide a framework on globalisation's second unbundling related to trade and industrialisation in Southeast Asia. It will cover two issues: (i) how the slowdown in China's trade affects the trade in Southeast Asia, and (ii) how Southeast Asia manages to level up its product value added and improve trade competitiveness.

The project is expected to be completed in December 2015.

#### 6. Developing the Automobile and Auto-parts Manufacturing Industry in ASEAN: Using AEC 2015

An ERIA research project in FY2013 on the 'Contribution of Automobile and Auto-parts

Manufacturing Industries in ASEAN and India to Regional Integration' found that the ASEAN Economic Community 2015 (AEC 2015) is leading in two distinct methods of automobile production within ASEAN—fully integrated and completely knocked-down kind.

This project investigates how AEC 2015 causes or induces the emergence of these two distinct types of automobile production. Moreover, there is the question on whether the completely knocked-down type of production is only temporary or will continue due to market liberalisation under AEC 2015.

The research team will interview and categorise companies as either (i) fully integrated type, such as Toyota and Honda; or (ii) completely knocked-down type, such as Tan Chong and Truong Hai, in order to understand their utilisation of provisions under AEC 2015.

The research team is a mix of sectoral experts from Waseda University and governmental research institutes. Such will enable a better understanding and future perspective of the industry, and derive policy implications from the perspective of ASEAN Member States.

#### 7. Mekong–India Economic Corridor (MIEC) as a Land Bridge

Transport facilitation is an essential measure for ASEAN to deepen economic integration, strengthen the region's competitiveness, and enhance people-to-people connectivity. The ASEAN Member States have signed three framework agreements on transport facilitation toward full operationalisation by 2015. The mid-term review of the ASEAN Economic Community (AEC) Blueprint has also examined the implementation status and difficulties of the measures.

Whilst AEC measures have not been fully implemented, production networks are expanding and becoming more sophisticated, using various trade and transport facilitation measures. The Mekong region is a forerunner of transport facilitation in ASEAN, with its countries having bilateral memoranda of understanding (MoUs) and are signatories to the Asian Development Bank's cross-border transport agreement.

The research looks into the (i) real bottlenecks in the missing link of current ASEAN connectivity; (ii) difference and gaps between the bilateral MoUs and the CBTA; (iii) transit transport



measures that should be implemented for the Dawei–Kanchanaburi route for full-fledged utilisation of MIEC; (iv) differences between the East–West Economic Corridor (EWEC) and MIEC, and how to maximise EWEC’s potential benefit; (v) coming AEC transport measures to help us solve the issues; and (vi) areas that should be addressed after the AEC measures.

**8. SME Participation in ASEAN and East Asian Regional Economic Integration**

The economies of ASEAN and East Asia have become increasingly integrated, driven by mutually reinforcing market forces and regional and preferential trade agreements. The extent by which small and medium enterprises (SMEs) are participating and benefiting from regional economic integration has been a major area of concern amongst policymakers.

This study aims to undertake a systematic, comprehensive, and comparative analysis of SME participation in ASEAN and East Asian regional economic integration. It seeks to find out:

- the state of SMEs’ participation in regional trade, production networks, and investment activities;

- the enabling factors and obstacles to SME participation in regional trade, production networks, and investment activities;
- how regional and preferential trade agreements have affected SME activities and performance;
- the nature of multinational enterprises’ engagement with host country SMEs and how such interactions are affected by regional and preferential trade agreements; and
- the policy imperatives at the national and regional levels to promote active participation of SMEs in regional trade, production networks, and investment.



**9. Industrial Cluster in East Asia**

This project builds upon the study on a region-wide industrial cluster development policy, which was tasked out by the East Asia Summit (EAS) Economic Ministers in 2013, and is expected to contribute to the formation of the Mekong Industry Development Vision.

It will (i) simulate industrial cluster formation using the geographical simulation model (GSM); (ii) analyse knowledge transfer within and between industrial districts by using questionnaire survey; and (iii) if data is available, conduct patent analysis using data for an ASEAN Member State.

This project attempts to make a substantial contribution to EAS using GSM and other materials from ERIA research projects. It will also serve as a foundation for future policy-oriented researches in industrial development, innovation, and connectivity issues.

Expected completion is in 2016.

**10. Intellectual Property Policies for Investment Promotion - Phase II**

This study was conducted upon the request of the ASEAN–Japan Heads of Intellectual Property Offices to examine intellectual property (IP) policies for investment promotion.

It investigates the current status of IP regime and IP policy in ASEAN Member States (AMS) and how the AMS should develop their IP-related policies to promote investment from multinational corporations.

In phase II, the working group will survey more target companies, analyse specific behaviour of several industrial sectors, and compare them. It will also clarify the acceptable levels of cost for obtaining IP rights, the examination timeline, and other factors identified as barriers to FDI in phase I.

Expected outcomes of phase II are (i) factors which were given importance in determining direct investment in ASEAN countries for specific sectors, including the pharmaceutical and automobile industries; (ii) acceptable levels of factors which were given importance to determine direct investment in ASEAN countries, including the cost of obtaining



IP rights and the examination timeline; and (iii) expectations for robust and satisfactory IP systems and policies in ASEAN countries beyond 2015.

### 11. Formulating Policy Index for Natural Disaster Resilience

In a previous study on disaster management, ERIA recommended the establishment of a regional centre to collect and study disaster risk data, modelling and potential insurance schemes. This research is aimed at formulating a policy index for disaster resilience.

For the past decade, Asia has experienced annually more than 150 incidence of natural disasters (40 percent of the world total), affecting more than 200 million people (about 90 percent), and causing more than USD41.6 billion in damages (39 percent). For ASEAN, the number of disaster events in 2001–2009 accounts for 14 percent of global disaster events. Although some disasters have been recurring and are predictable to some extent, ASEAN policymakers still tend to view disasters purely as a matter of humanitarian response and relief instead of a development concern—disaster risk management still being a relatively young concept.

The results of the study will provide government with information and a chance to conduct a self-assessment on disaster resilience, further opening doors to explore critical areas that require improvement.

### 12. Social Protection Floor: A Perspective from the Developing East Asia

This study reviews existing social protection programmes in the countries of study, which are grouped into: (i) middle-income countries with large population—China, India, Indonesia; (ii) middle-income countries in Southeast Asia—Philippines, Thailand, Viet Nam; and (iii) emerging middle-income countries in Southeast Asia—Cambodia, Lao PDR. It will analytically link these programmes to fiscal implications under several scenarios of expanded social protection floor to meet selected sustainable development goals.

The analysis and findings of the study will equip East Asia Summit leaders with knowledge on the countries' stage of social protection implementation, and inform them of the fiscal implications of future commitments of the social protection floor/sustainable development goals against the criteria of sustainability, fairness, efficiency, and effectiveness.

Expected deliverable of the project is an analytical report on existing social protection programmes, transfer mechanisms, and the relevance of the social protection floor, which report will later be published as a book.

The final report is expected to be submitted in July 2015, and the manuscript for publication, in September.

### 13. Applying Space-based Technology for Building Resilience in ASEAN Region

To create a strong social infrastructure on disaster management, there is a need to develop a space infrastructure system that integrates various geospatial information using space technology, such as remote sensing and communication and navigation/positioning systems.

This study will show several scenarios of the longer-term vision or road map that introduces space and geospatial information technology, which is consistent with the phase of economic and technological development of each ASEAN country. It will also propose several types of disaster management systems using space and geospatial information technology for each country and offer policy recommendations for

developing an infrastructure system based on space and geospatial information technology for the region, in which each country will have a role.

Expected specific policy proposals will be on (i) integrating current information and information and communication technology infrastructure of the AHA Center for disaster management, future space-based/geographic information infrastructure, and in-situ sensor data; (ii) creating more valuable information and solution and services leading to connectivity and resilience in ASEAN countries; and (iii) contributing to sustainable development of the region.

### 14. Mitigating Supply Chain Risks Due to Natural Disasters

Climate-induced natural disasters are increasingly becoming a challenge to global economic development. Left unchecked, increase in frequency and magnitude of such disasters could cause worldwide disruptions in the supply chain. The East Asia Summit (EAS) region is more vulnerable to disaster risks than any other region due to its dependence on trade integration.



This study examines the framework conditions for integrating climate change adaptation and disaster risk management measures on the service sectors of EAS countries. Furthermore, it will (i) identify the major factors that amplify the impact of global supply chain disruptions due to climate change and related natural disasters; (ii) determine how communities and companies can prepare for emergency situations caused by natural disasters; (iii) evaluate insurance tools, emergency plans, and adaptation measures that communities and governments can employ to prepare for supply chain disruptions; and (iv) model how ASEAN disaster relief mechanisms could be made compliant to business continuity plans of major supply chains.

This study also addresses the vulnerability of supply chains in emerging economies, introducing concepts and methods for analysis and illustrating the potential of regional cooperation to reduce the risks.

### **15. Greening the Industrial Economies: Corporate Management and Change Pathways**

The concept of circular economy has emerged as a central idea for innovation and competitiveness of industries. This project aims

to analyse response of business to the emerging concept of circular economy, where the linear approach to industrialisation is replaced by a new economic model that considers resource constraints and finds ways to reuse and recycle products.

In an effort to have control over valuable natural resources, wisely use critical inputs like energy, and reduce carbon emissions, some companies are finding novel ways of doing business. This study will (i) examine the critical driving forces of the private sector to get engaged in a circular economy, (ii) investigate the successful policy factors that facilitate private sector engagement in a circular economy, and (iii) formulate framework conditions of public-private partnership that will accelerate regional efforts towards a circular economy.

### **16. Feasibility Study on the Best Mix of Renewable and Conventional Energy Sources Sustainable for Various Asian Communities**

The first phase of this study analysed the current situation of, and policies on, renewable energy uptake in East Asia Summit countries. It also reviewed some community-based renewable energy initiatives implemented in the region

to determine the merits and demerits of such initiatives in terms of the environmental, economic, and social pillars of sustainability.

This study is expected to come up with a guideline to establish energy systems using renewable energy which are sustainable for communities in various Asian countries and will contribute to the attainment of the best mix of renewable and conventional energy sources. Said guideline should contribute to strategies to establish workable energy systems and regional energy policies for governments to promote the sustainable use of renewable energy in Asian communities.

### **17. Sustainability Assessment of Utilising Conventional and New-Type Geothermal Resources in East Asia**

In the first phase, the research team extracted common and individual problems on maintaining sustainability in developed areas and installed systems for direct use of geothermal energy. Amongst many techniques for direct geothermal use, sustainable reservoir management and effective information collection for sustainable use of geothermal heat pump were chosen to be studied as methodologies. Case studies, including possible

economic effects, are being collected from each member country along these two topics. The characteristics of geothermal systems are strongly controlled by local geology and other environmental factors. The case study analysis gives developing companies and governments scope for variation of geothermal systems. The guidelines under preparation will help governments make recommendations or regulations for sustainable use that includes protection of the environment.

### **18. Benchmarking of Renewable Mobility Energy in EAS Countries**

The transport system in Asia is 94 percent dependent on oil and is increasing costs to the environment. Research and technological development have successfully demonstrated alternative fuel solutions for all transport modes. However, additional policy action is needed for market take-up.

In this study, the definition of first-generation biofuel is expanded to include bioethanol and biodiesel from food crop; and next-generation biofuel, often called advanced biofuel, refers to bioethanol, biodiesel, and other fuels derived from non-food crop.



An analysis on the technical standards of both biofuels, economic feasibility, and social acceptance is being conducted through case studies. This will lead to development of framework conditions for biofuel activity at the local level and to adoption of multi-sectoral approaches.

With new data, the *EAS-ERIA Biodiesel Fuel Trade Handbook: 2010* will be revised. The first phase of the study concluded that there is a need to (i) develop and improve standards for first- and second-generation mobility fuels; (ii) provide proactive support to new mobility fuel services in the form of timely disclosure of scientifically sound results, and ongoing expert input to policymaking; and (iii) provide coordinated actions to steer activities across the region to adopt agreed standards.

### 19. Energy Efficiency Road Map in Myanmar

Whilst Myanmar has become more popular among foreign investors since its integration into the global economy in 2011, the country still faces many challenges in energy development. Such challenges—and opportunities—are the focus of this study. These will be addressed through (i) a quantitative scenario analysis of major factors of rural

electrification, including future electricity demand forecast, the necessary amount of power generation capacity in off-grid areas, costs required for rural electrification, etc.; (ii) a qualitative analysis of obstacles in power development, particularly in border areas; and (iii) implementation of a human resource programme for energy policymakers and researchers.

Expected outcomes and policy recommendations of this study are as follows:

- Assuming that everyone has access to national electrification in 2030, the integration of decentralised power systems into planned centralised systems might be one of the crucial aspects to make the target feasible.
- To facilitate integrated infrastructure development, public–private partnerships should be soundly coordinated with proper reforms to encourage foreign direct investment.
- For the relevant PDCA cycle, a programme on human resource development for government officials is necessary. It is also important to provide a common ground for energy-related ministries and other stakeholders to discuss and work together.



### 20. Effective Investment of Power Infrastructure in East Asia through Power Grid Interconnection

Electricity demand in East Asia Summit countries is increasing due to population and economic growth. A country usually develops a power source on the premise of self-sufficiency. However, it is possible to optimise or improve the efficiency of power infrastructure investments in terms of supply stability, economic efficiency, and reduction of the environmental burden by considering ways to develop power infrastructure on a pan-regional basis.

This study will quantify the possibility and benefits of a pan-regional optimisation of power infrastructure investments in the region. It will also provide directions for policy decisions towards the development of optimal power infrastructure and investment decisions.

This study is expected to:

- Estimate the benefits of grid interconnection between two countries.
- Identify cost-effective and optimal power transmission routes.
- Identify the institutional obstacles to be removed to attract private sector investments in cross-border power infrastructure and to facilitate the construction and operation of planned transmission lines.
- Propose specific support measures to be implemented by involved countries to incentivise and facilitate the investment.

### 21. Energy Efficiency Improvement in the Transport Sector through Transport Improvement and Smart Community Development in the Urban Area

When this study started in 2012, Jakarta, Indonesia's capital, was selected as the subject of the case study to analyse how to improve traffic flow. However, there was a need to



extend the analysis to small and mid-sized cities in the East Asia Summit region, considering that these were not covered in past studies.

The region has many small to midsized cities that are about to have, or have experienced, explosive urbanisation and motorisation. From the initial development stage, appropriate measures must be implemented gradually to allow these cities to realise sound development.

Under this background, the study in 2014 targets a small to midsized city in its initial development stage and analyses policy and infrastructure measures to improve traffic and energy efficiency. From this analysis, policy recommendations will be derived and made available to many cities in the region.

**22. Study for the Possible Framework of Cooperation to Strengthen Oil Stockpiling and Emergency Response System of East Asia**

Domestic oil production in ASEAN countries has been decreasing in the last decade, resulting in increased demand for energy, which further increases oil imports. These and the increasing share of Middle Eastern countries in ASEAN's oil imports put ASEAN countries in more risk

not only in its increasing dependence on oil import but also in its supply source being concentrated to one region. Furthermore, ASEAN's oil supply security system has not been sufficiently developed. Whilst a regional cooperative framework such as the ASEAN Petroleum Security Act (APSA) has been agreed on and several countries have started to develop their own oil stockpiling system, international cooperation is needed to promote and invigorate oil supply security arrangements in ASEAN.

This research aims to explore and evaluate potential cooperative action amongst East Asian countries to promote the security of oil supply in the region. It will focus on (i) a review of the progress, challenges, and requirements of ASEAN countries' oil stockpiling developments; (ii) potential solutions and cooperative actions to challenges and requirements regarding these developments; (iii) alliance formation amongst members of the International Energy Agency; and (iv) coordination amongst APSA, ASEAN+3, and East Asia Summit.

**23. Energy Outlook and Analysis of Energy Saving Potential in East Asia Region**

In response to the Cebu Declaration on East Asia Energy Security in 2007, Japan proposed to undertake a study on the energy savings and reduction potential of carbon dioxide emissions in East Asia.

ERIA has been preparing an appropriate energy outlook for East Asia Summit (EAS) countries since 2013 as tasked by the Sixth EAS Energy Ministers Meeting in Phnom Penh in 2012.

The study would quantify the total potential savings under the energy saving goals and action plans of each country. Potential saving is defined as the difference between the primary and final energy demand in both the business-as-usual and the alternative policy scenarios. The study would also provide national energy ministers insights on establishing goals and action plans to improve energy efficiency in their respective countries, as well as to prepare a methodology for the monitoring and implementation of energy saving goals and action plans in each country.

This study would also include other studies

related to energy efficiency and saving potential, such as clean coal technologies in selected countries and the impact of energy subsidies in Malaysia, amongst others.

**24. Study on Petroleum Demand Projection in Cambodia**

Demand for petroleum in Cambodia has been increasing rapidly since 1990 due to the country's economic growth; such trend is expected to continue for another two or three decades.

Since future petroleum demand is crucial for Cambodia, especially in relation to its oil supply policy, the Ministry of Mines and Energy (MME) should study such demand. In addition, increased petroleum demand will bring up discussions on the necessity for oil stockpiling to mitigate economic damage brought about by oil supply disruptions.

In this regard, ERIA and the Institute of Energy Economics, Japan will support Cambodia's General Department of Petroleum and MME to develop an econometric model to project the demand for each petroleum product in the country by 2040. Through this project, MME's capability and skills in energy demand modelling is expected to improve.



### 25. Scenario Analysis of Energy Security in EAS Region

Energy security is a key concept of energy policy in East Asia Summit countries. To ensure energy security, possible changes in domestic and overseas markets need to be foreseen, and appropriate policies need to be adopted from a long-term perspective.

However, energy markets continuously change because of various factors. Such change was evident in the 1970 oil crisis, which largely affected the economies of the Organisation for Economic Co-operation and Development and led to subsequent policy development. Whilst it is difficult to anticipate and respond to such changes, countries can anticipate possible changes in the energy market and recognise their predictors.

This study aims to contribute to improving energy security in the region by using the scenario planning approach to analyse multiple possible scenarios in the future, extract possible threats for energy security in the region, and consider policies to avoid or prepare for these threats.

### 26. Strategic Usage of Coal in the EAS Region: A Technological Potential Map

As electricity demand in the East Asia Summit (EAS) region increases rapidly, coal and gas-fired thermal power will continue to play a central role in meeting this demand. As coal is cost competitive compared with gas, coal-fired power generation is anticipated to increase; hence, increased use of coal in the region may enhance energy security.

However, with fast development in the region, the supply–demand relationship of coal has become askew in recent years. Promotion of a cost-effective and sustainable electricity supply system and dissemination of clean coal technologies (CCTs) for clean and efficient use of coal in the region are thus needed.

Phase I of this study focused on the economic return from investments in different types of coal technologies.

Phase II focuses on updating the information from phase I and laying out a technological potential map to facilitate the deployment and dissemination of CCTs. It will suggest a feasible efficiency level, environmental performance,

and maintenance criterion for each technology so that EAS countries can select and introduce the best technologies which suit their specific demands.

### 27. Study on Building a Guideline and a Cooperative Framework in East Asian Countries in Case of Radioactive Emergency

In earlier studies on nuclear safety and security management system in East Asia Summit (EAS) countries, ERIA extracted issues to be solved in how to share information in case of radioactive emergencies and how to achieve cross-border collaboration amongst neighbouring countries. The working group summarised recommendations for a cross-border collaboration framework on nuclear safety and security management in the region, especially during a large-scale radioactive hazard.

The Nordic experience shows the feasibility and necessity of regional guidelines to harmonise criteria, standards, and practices in neighbouring countries in preparing for and responding to potential nuclear threats. These guidelines respect each country's characteristics, needs, and constraints in

designing its own nuclear emergency standards. Aside from providing a coordination scheme, these guidelines also help optimise the use of each country's resources in case of nuclear emergencies.

This study will (i) discuss concrete methods for telecommunication and transport infrastructure in radioactive emergencies, and (ii) establish the feasibility of detailed guidelines based on the framework of the International Atomic Energy Agency for appropriate support and collaboration amongst EAS countries which are developing, or will develop, nuclear technologies.





**28. Sustainable Development of Natural Gas Market in EAS Region**

Energy demand in many East Asia Summit (EAS) countries is increasing. The role of natural gas in energy supply then becomes increasingly important in various aspects. However, since the share of natural gas in total primary energy supply is currently low except in a few countries, its use in EAS countries may be expanded. To make such use sustainable, appropriate actions need to be taken through a supply chain, such as exploration and production, necessary import, transmission, distribution, and consumption. At the same time, adjusting the capability of and enhancing transparency in the gas market by improving liquidity of natural gas is also required. In the EAS region where natural gas demand is increasing, the ground for sustainable use of natural gas should be prepared.

This study aims to draw policy recommendations for sustainable use of natural gas in the EAS region. It will analyse (i) the potential of and challenges in natural gas trading, and of the supply infrastructure; and (ii) the impact of the shale revolution on industry and economy using the Global Trade Analysis Project model.



**29. Study on the Advancement of the Energy Management System in the EAS Region**

The recent economic growth in East Asia Summit (EAS) countries has caused a rapid rise in energy consumption; taking concrete measures to control such consumption has become imminent. The experience of developed countries reveals that energy efficiency needs to be promoted through a diffusion of energy efficiency technologies and the formulation of an institutional framework to support it. This approach is found to be effective for developing countries, which means it is worth identifying a common road map for energy efficiency in the EAS region.

Since the status of economic development and the energy demand–supply structure vary amongst EAS countries, the prospects of EMS technologies is worth studying. The energy efficiency road map may need to be customised for each country during actual implementation to accommodate different conditions of each member country.

This research project is aimed at identifying the common policy challenges to advance the energy management system in the EAS region, and is expected to contribute to its sustainable economic growth.

**30. Low-Carbon Energy Systems: Policies and Practices**

Emerging economies of Asia have an essential role in promoting the global move towards energy security, economic growth, and sustainable development. Despite developmental preferences, equity concerns, and industrial competitiveness in their economic activities, they are important agents in implementing several measures that would mitigate global environmental challenges like climate change.

The way they manage their future energy systems and economic integration activities is critically important. Asian economies have begun responding to this challenge in the form of intended nationally determined contributions and concerted efforts to liberalise trade in environmental goods and services.

However, these commitments are often met with many technological barriers, financial deficiencies, and lack of international cooperation. This study will examine how emerging economies of Asia are operating amidst changing demands for developing a low-carbon energy system and what kind of proactive policies, regional cooperation, and market and non-market policies would strengthen such green growth practices in the future.

**31. Financing Renewable Energy Development in EAS Countries: A Primer of Effective Policy Instruments**

This project aims to identify and update the most effective policies to effectively mitigate the most prominent risks for renewable energy investments, and to target the most promising financial mechanism for ASEAN countries, China, and India.



The working group consists of field experts on renewable energy financing from governments, development banks, project developers, private equity/venture capital, and country experts from above-mentioned countries. Each member has proposed a research topic on his/her area of expertise, addressing a prominent issue on financing renewable energy.

Each paper will contain a comprehensive review and summary of existing literature, latest information and data, an innovative methodology, and a report on its findings, which will identify the opportunities, barriers, and key challenges for policymakers. These are expected to stimulate further policy debate and academic research, especially from the East Asian community, on more specific and technical policy issues on financing renewable energy development.

### **32. Study for Shifting to More Operationalised ASEAN Petroleum Security Agreement / Coordinated Emergency Response Measures**

Oil demand in ASEAN has been rapidly increasing and is forecasted to increase at a stable rate in the future. Yet, oil stockpiling in ASEAN is not sufficient compared to its oil

demand. Whilst the existing ASEAN Petroleum Security Agreement (APSA)/Coordinated Emergency Response Mechanism (CERM) is important for the region, it may not be responsive during emergency situations when oil supply security becomes vulnerable. Thus, APSA/CERM needs to be operationalised.

ASEAN members should be clear on the necessary steps for making the existing APSA/CERM an operable framework for ASEAN in response to supply shortage during emergency situations. This can be achieved by developing a manual to make APSA/CERM operational. Such manual will also elaborate on a common framework for coordination amongst ASEAN members in emergency preparedness and response during normal times and during a supply disruption.

The operationalised APSA/CERM is a first step for ASEAN members to physically set up a strategic petroleum stockpiling in its region and accommodate each other's petroleum stockpiling. The manual with key recommendations is expected to be ready for the 33rd ASEAN Ministers on Energy Meeting in Malaysia in late September 2015.