



# **Summary of ERIA Research Projects**

**2012-2013**

**Summarised By**

**Anita Prakash, Director (Policy Relation)**

**Economic Research Institute for ASEAN and East Asia**

**Jakarta, Indonesia**

**April 2013**

## ERIA Research Projects 2012

<b>Deepening Economic Integration</b>		Page
1	The Mid Term Review (MTR) of the Implementation of the ASEAN Economic Community (AEC) Blueprint <i>Ed. Ponciano S. Intal Jr.</i>	1
2	Explicating Jakarta Framework on Moving ASEAN and AEC Beyond 2015 <i>Ed. Ponciano S. Intal Jr.</i>	5
3	AEC Scorecard Phase III-Towards Informed Regulatory Conversations and Improved Regulatory Regime: Logistics Sector and Trade Facilitation <i>Ed. Ponciano S. Intal Jr.</i>	7
4	Impact of Globalization on Labour Market <i>Ed. Chin Hee Hahn</i>	9
5	ASEAN+1 FTA and Regional Comprehensive Economic Partnership <i>Ed. Lili Yan Ing</i>	10
6	Coherence of Macroeconomic Policies in ASEAN Member States: Empirical Investigation of Experiences in 2000-2010 <i>Ed. Wisarn Puppavesa</i>	12
7	Automobile and its Parts Manufacturing Industry in ASEAN and its Contribution to the Progress of Regional Integration <i>Ed. Prof. Hideo Kobayashi and Prof. Hidetoshi Nishimura</i>	14
8	Moving toward a New Development Model for East Asia - the Role of Domestic Policy and Regional Cooperation <i>Ed. Zhang Yunling</i>	15
<b>Narrowing Development Gaps</b>		
9	Geographical Simulation Analyses for Eliminating the Infrastructure Bottlenecks towards Balanced Growth in East Asia <i>Ed. Satoru Kumagai</i>	20
10	Innovation Between and Within Supply Chain: Empirical Study of Tracing Local and Global Production Knowledge Network in East Asia <i>Ed. Patarapong Intarakumnerd</i>	21
11	Towards Competitive and Innovative ASEAN SMEs: ASEAN SME Policy Index 2012 <i>Ed. Sothea Oum</i>	22
12	Global Production Networks and Host-Site Industrial Upgrading: Evidence from Car, Clothes and Semiconductor Firms in Southeast Asia and China <i>Ed. Prof. Rajah Rasiah</i>	23
13	Public Private Partnership in ASEAN Member Countries Phase II: Institutional Assessment to Develop Public Private Partnership System in Cambodia, Lao PDR and Myanmar <i>Ed. Fauziah Zen</i>	24
14	Enhancing Supply Chain Connectivity and Competitiveness of ASEAN Agriculture Products: Identifying Chokepoints and Opportunities for Improvement <i>Ed. Ponciano S. Intal Jr.</i>	25
15	Intellectual Property Policy for SME Development: Japanese Cases and Lessons to ASEAN <i>Ed. Yoshifumi Fukunaga</i>	28
16	Development Potential of the Content Industry in East Asia and the ASEAN <i>Ed. Takahashi Nakamura</i>	31
17	Standard Distribution Infrastructure for Consumer in the East Asia Region in the Field of	33

	Consumer Goods Distribution for Retailers and Wholesalers <i>Ed. Tran Thi Van Hoa</i>	
18	Myanmar Comprehensive Development Vision <i>Ed. Prof. Fukunari Kimura</i>	36
19	Rule Making Features of New Trade Agreements and Role of Services <i>Ed. Yose Rizal Damuri</i>	38
<b>Sustainable Economic Development</b>		
20	Management of Community Preparedness for Disasters: ASEAN Perspective <i>Ed. Fauziah Zen</i>	41
21	Policy on Disaster Prevention and Reduction for Industrial Parks in East Asia <i>Ed. Shigenobu Tanaka</i>	43
22	Social Security System and Fiscal Policy Response in China, India, Indonesia <i>Ed. Prof. Mukul G. Asher</i>	44
23	Exploring the Environmental, Food and Energy Security Nexus in Southeast Asia <i>Ed. Barry Desker</i>	45
<b>Energy Related Research Project</b>		
24	Economic Impact Evaluation of Investment on the Energy Savings and Low-carbon Emitting Technologies in East Asia -Phase II <i>Ed. Akira Yanagisawa</i>	47
25	Analyses on Energy Saving Potential in East Asia Region <i>Ed. Shigeru Kimura</i>	49
26	Benchmarking of Biodiesel Fuels Standardization in East Asia <i>Ed. Shinichi Goto</i>	52
27	Extending the ERIA Working Group Methodology for Sustainability Assessment of Biomass Utilisation in East Asian Countries <i>Ed. Masayuki Sagisaka</i>	55
28	Energy Efficiency Roadmap Formulation in East Asia <i>Ed. Prof. Hisashi Yoshikawa</i>	58
29	Effective Investment of Power Infrastructure in East Asia through Power Grid Interconnection <i>Ed. Ichiro Kutani</i>	61
30	Development of Energy Security Index and Assessment of Energy Security for East Asia Countries <i>Ed. Ichiro Kutani</i>	63
31	Asian Potential of Biofuel Markets <i>Ed. Kaoru Yamaguchi</i>	65
32	Energy Market Integration in East Asia Summit Region: Deepening, Understanding and Moving Forward <i>Ed. Yanrui Wu</i>	68
33	Strategic Usage of Coal in the EAS Region <i>Ed. Hironobu Oshima</i>	72
34	International Cooperation in Nuclear Safety Management in East Asian Countries <i>Ed. Tomoko Murakami</i>	74
35	Energy Efficiency Improvement in the Transport Sector through Transport Improvement and Smart Community Development in the Urban Area <i>Ed. Ichiro Kutani</i>	76

# 1 The Mid Term Review (MTR) of the Implementation of the ASEAN Economic Community (AEC) Blueprint

---

## Abstract

Mid-term Review of the ASEAN Economic Community (AEC) Blueprint covers the four pillars of the AEC Blueprint on the following key measures:

1. Single Market and Production Base – Tariff, Non-Tariff Barriers, Trade Facilitation, Standards & Conformance, Services, Investment, Labour and Agriculture
2. Highly Competitive Region – Competition Policy, IPR, Transport, ICT and Energy
3. Equitable Economic Development - SME development and Initiative on ASEAN Integration
4. Full Integration into the Global Economy – FTA and CEP

For the analysis of performance, the implementation approach of the MTR project has relied on the results of the AEC Scorecard Phase 2 (also being conducted by ERIA for the ASEAN) and the questionnaires and interviews undertaken under the MTR project. For outcomes, the project relies on both questionnaires and interviews in the MTR project and on secondary data. For contribution to the economy, the MTR project has used three computable general equilibrium models, one geographic simulation model, two gravity equation models, and 2 industry cases/analyses for each ASEAN Member State.

## Key Findings

The drive towards AEC 2015 is already contributing to the surge in foreign direct investment to the ASEAN region drawing from the results of a questionnaire distributed by ERIA to the private sector in the ASEAN. This is in part due to substantial achievements in AEC measures already.

- *Tariffs is a success story* of political commitment for AMSs, with CEPT rates virtually zero in ASEAN-6 and an average of only 2.6 % for the newer CLMV countries in 2010. The impact of the CEPT reduction/elimination on intra-ASEAN trade has been as expected; namely, a rise in share of ASEAN in the import sourcing of AMSs and a geographic spreading of intra-ASEAN trade among AMSs beyond the dominant Malaysia-Singapore trade of the early 1990s.

- *Trade facilitation is an emerging success story* for ASEAN, with five (5) AMSs having live implementation of National Single Windows (NSW) and a planned full roll out to all the AMSs significant ports and airports and larger number of government agencies connected to NSW by 2015. Two more AMSs are well advanced in their NSW development while the last three remain committed to the live implementation of NSW by 2015 albeit likely more modestly in light of the tremendous technical, institutional, and regulatory advances that a fully functioning NSW entails. The technical and legal foundations of the ASEAN Single Window, arguably the world's first regional single window, are also being set up for modest live implementation by 2015.
- *Investment liberalization* commitments in the goods sector under the ASEAN Comprehensive Investment Agreement (ACIA) are remarkably liberal in most AMSs, using as yardstick a minimum of 70% allowable foreign equity. Although, there remains room for further liberalization through a reduction in the number of industries in the ACIA Reservations List.
- There are other more substantial achievements in the AEC Measures, such as the implementation under ASEAN-X formula of the agreements under the Roadmap for Integration of Air Travel Sector (RIATS), the signing and implementation of the five ASEAN + 1 FTAs that cover all of the ASEAN + 6 partners, the signing and implementation of the Chiang Mai Initiative, and the substantial number of regional cooperation initiatives in many sectors such as agriculture, competition policy and IPR.

## **Policy Recommendations**

### **The Way Forward towards Beyond 2015**

1. ***Address the NTB effects of NTMs Systematically:*** The ASEAN economic officials themselves emphasized the importance of having a robust mechanism to address the NTB effects of NTMs considering that there are legitimate reasons for the imposition of a large number of NTMs. The MTR Report recommendations toward a robust mechanism includes standstill on core NTMs, transparency, phase down of both core NTMs and NTMs with substantial NTB effects, establishment of a third party technical monitor and resource, and the strengthening of ACT.

2. ***Trade, Investment and Transport Facilitation:*** Apart from the implementation and continuous improvement of NSW and ASW, *improved trade facilitation* in the region would call for the full implementation of the ASEAN Trade Repository (underpinned by the national trade repository for each AMS) as well as setting and meeting targets to reduce the number of days to import and export (with the implied streamlining of processes as well as reduction in number of documents and rate of physical inspection of imports). Similarly, *improved investment facilitation* calls for streamlining processes (preferably with set targets) together with improved inter-agency coordination and increased transparency during the pre-investment stage and operational stage of the firms. The most important MTR recommendation toward *improved transport facilitation* and connectivity within the region involves the full implementation of the ASEAN transport agreements.
  
3. ***Forge ahead on liberalization:*** Although the private sector in the ASEAN puts AEC liberalization measures well below facilitation measures in their priorities of AEC measures for implementation by 2015, there cannot be deep ASEAN economic integration without considerable liberalization. Thus, AMSs need to forge ahead at further services and investment liberalization efforts toward 2015 given the time table and flexibilities embedded in the current approaches. The MTR Report also proposes, among others, that clear guidelines be set with respect to the inclusion of industries in the “minimum” level under Category 2 of ACIA and recommends that domestic regulations need be consistent with the liberalization program. Key recommendation in trade in services include allowing for at least majority foreign ownership in much of the services sectors of the AMSs and setting guidelines on what could not be included in the 15% flexibility clause.
  
4. ***Enhance AEC Blueprint Third Pillar:*** ASEAN needs to have more concerted regional efforts on SME development to give tangible expression to Pillar III of the AEC Blueprint. This includes the implementation of a number of key initiatives of the ASEAN SME Working Group through the ASEAN SME Strategic Plan and the ASEAN SME Policy Index. Similarly, given the relatively favorable assessment of the programs in the IAI by CLMV respondents, the MTR Report recommendations include greater focus on projects that help the newer AMSs countries to meet their

AEC obligations, greater coordination of projects in IAI and of Dialogue Partners, as well as graduation of the successful newer AMSs from being recipients of to being a partner-benefactor in the IAI.

5. ***Deepen ASEAN Integration with East Asia and Ensure ASEAN Centrality:*** The challenge is in ensuring a “high quality” regional FTA within East Asia under RCEP. The MTR Report presents specific recommendations toward this end, including setting a 95 % tariff elimination target, adoption of a “common concessions” approach as much as possible, deeper services liberalization, extensive use of co-equal rules in rules of origin, and introduction of tangible and concrete trade facilitation programs similar to ASEAN.
6. ***Build Building Blocks by 2015 for a Well Performing Single Market and Production Base and a Fully Integrated, Competitive and Dynamic Economic Community Beyond 2015:*** There is a substantial number of policy actions that can be success stories and good building blocks by 2015 in the other AEC measures such as standards and conformance, MRAs on professional services, capital market development and financial integration, ICT, energy, competition policy, IPR, and agriculture.
7. ***Address Institutional Issues and Undertake Concerted Regulatory Reform:*** Toward a more effective implementation of the AEC Blueprint, the MTR Report emphasizes the importance of strengthening the ASEAN Secretariat as a technical monitor and resource, strengthened monitoring of AEC efforts including the institutionalization of track 1.5 mechanism on AEC, deeper private sector involvement in AEC, more effective dispute settlement system, and the complementary role of concerted regulatory reform in AMSs.

## 2 Explicating Jakarta Framework on Moving ASEAN and AEC Beyond 2015

---

(In Progress)

### Abstract

This project is a follow up of the Jakarta Framework on Moving ASEAN forward toward 2015 and beyond, which was noted by the ASEAN Heads of State during the Bali ASEAN Summit in 2011. As 2015 draws near and the implementation period for the Roadmap for an ASEAN Community 2009-2015 finishes, the ASEAN Member States (AMSs) and ASEAN would likely need to prepare the Blueprint for the ASEAN Community beyond 2015 (say, 2016-2022).

The Jakarta Framework was a product of collaboration between ERIA and the Government of Indonesia. This project, on explicating the Jakarta Framework, is likewise undertaken with the cooperation of the Government of Indonesia. The Jakarta Framework presents the broad framework of pathways for moving ASEAN and AEC beyond 2015. There is a need to explicate or elaborate further the inherently interdependent pathways that characterize the Jakarta Framework. The explicated Framework can provide some basis for the preparation of a *Framework for the Action Agenda for Moving AEC and ASEAN Forward Beyond 2015*, which, hopefully, ERIA and the Government of Indonesia would give to Myanmar government for the latter's consideration as it prepares in 2014 the *ASEAN Agenda for AEC beyond 2015 (e.g., 2016 – 2022)*.

The thought or issues papers will be written by individual researchers. It is expected that the papers will be presented to the public for discussion during a major ERIA-GoI Symposium on Explicating the Jakarta Framework of Moving ASEAN and AEC Beyond 2015, as one of the major events commemorating the 5<sup>th</sup> anniversary of ERIA in early June 2013.

In summary, the project has the following objectives:

1. The Project elaborates on the Jakarta Framework that has been noted by ASEAN Leaders in the 2010 Bali ASEAN Summit.



2. The Project, through the integrative report of the project, provides elements of a *Framework for an ASEAN Agenda for Moving AEC and ASEAN forward beyond 2015*, which will be presented by ERIA together with appropriate official (s) of the government of Indonesia to the government of the Union of Myanmar for its consideration as the latter prepares in 2014 an **ASEAN Agenda on AEC beyond 2015 (e.g., 2016 – 2022 (?))**. In turn, the ASEAN Agenda on AEC beyond 2015 would be the basis for the preparation of the successor AEC Blueprint in 2015 under the chairmanship of the government of Malaysia.
3. The Project's Symposium will serve as the main public event of ERIA for its Fifth Anniversary celebrations.
4. The Project's papers together with the Integrative Report can help catalyze public discussion and debate on the ways forward for ASEAN and AEC especially for the next decade beyond 2015.

The main outputs of the Project are 39 individual papers and an Integrative Report. The Integrative Report will include the proposed *Framework for an ASEAN Agenda on moving AEC and ASEAN forward beyond 2015*.

The project will focus on issues surrounding the following themes:

1. Deepen AEC 2015 towards a single market and production base
2. Plug ASEAN firmly into the networked and innovation world future
3. Engendering an inclusive, resilient and green ASEAN
4. Raising ASEAN voice in global affairs

Finally, there will be an Integrative Report that attempts to tie everything together.

It is expected that the results of the project would provide significant inputs to AMSs as they start deliberating and working on an agenda for the AEC and ASEAN for years beyond 2015.

# 3 AEC Scorecard Phase III- Towards Informed Regulatory Conversations and Improved Regulatory Regime: Logistics Sector and Trade Facilitation

---

(In Progress)

## Abstract

The ASEAN Economic Community (AEC) Blueprint measures involve policy and regulatory changes in ASEAN Member States (AMSs) that lead to the harmonization of rules and regulations as well as standards, liberalization, and reduction in barriers, greater transparency and/or rationalization of process, etc. Thus, the drive to AEC 2015 has the corollary implication of policy and regulatory reform in AMSs.

The AEC Scorecard Phase III project has 4 key objectives. First is to contribute to informed conversations on regulatory reform as well as improved regulatory coherence in the ASEAN with special reference to logistics services sectors and trade facilitation. Second is to contribute to ERIA Research Institute Network's (RIN's) capacity to support regulatory reform in AMSs. Third is to contribute to the Brunei Darussalam's initiative on regulatory reform for ASEAN summits in 2013. Fourth is to strengthen, widen and deepen ERIA's monitoring efforts on AEC.

The AEC Scorecard Phase III project consists of two parts. **Part One** consists of the following outline:

1. Overview of regulatory regime and evolution of regulatory reform in logistics sector and trade facilitation.
2. Regulatory stock take and gap analysis on actual regulations versus "best practice" regulations, preferably together with analysis of major constraints to implementing best practice. The gap analysis will depend in part on the results of the questionnaires in Part Two.
3. Case study of regulatory review and coherence. The components for the case study are as follows:

- a. RIN will need to pick a service or activity under logistics and trade facilitation sector.
- b. Identify all the players involved in that activity.
- c. Identify the regulations affecting the players.
- d. For each regulation, the following questions need to be asked to the stakeholder:
  - i. What problem is this regulation supposed to solve?
  - ii. What are the objectives; are the current regulations actually delivering those objectives?
  - iii. Is there a better way to address the problem and to reach the objectives, given the country's state of development?

**4.** The way forward to further improve regulatory reform, with special reference to logistics sector and trade facilitation.

**Part Two** consists of estimation of expanded restrictiveness index using both border and behind the border restrictions in the logistics sector and trade facilitation, and the analysis of the impact of such restrictions on the economic performance of AMSs.

The final report of the project is expected to be finished and submitted to ASEAN Secretariat in July 2013.

## 4 Impact of Globalization on Labour Market

---

### Abstract

This study is fifth in the annual series of ERIA Microdata Research Project. The objective of this project is to understand better the distributional effects of globalization and the mechanisms by which they operate, utilizing firm- or plant-level micro data. Specifically, this project aims to examine the effects of trade and FDI liberalization, trade (exports and imports), international capital flows, outsourcing and traded intermediate goods on, in particular, wage inequality and the relative demand for the skilled or educated workers.

The research seeks to answer a wide range of pertinent questions which form the objective of the research, including- How did the skill premium (i.e., the difference in wages between skilled and unskilled workers) change? What happened, in parallel, to the relative employment of the skilled? What are the respective roles of supply and demand side factors in these developments? Does trade liberalization increase wage inequality: aggregate, within-industry across-firm and/or within-firm? What about the outsourcing and traded intermediated inputs? What about exporting? Does the direction of trade matter? Does it increase the relative demand for the skilled/educated or for specific occupations? What are the mechanisms? Is there evidence that trade (or trade liberalization) interacts with skill biased technological change (SBTC)? If so, what are the exact channels? What role does innovation play? Does trade-induced “quality” upgrading of firms lead to higher demand for skills? Is the increased demand for skills met by attracting new, better educated workers or by increasing the productivity of the existing workforce? Are the effects different across firms? Do firm productivity level (or distance to frontier) and exporting or importing status, matter? Do domestic institutions (e.g., labor market restrictions) determine the distributional effects of trade policy?

The findings of the studies under this research project reveals that adjustment to globalization is not always straightforward and hence it could take some considerable time to change a structure of an industry. There is also evidence suggesting that the adjustment process may differ between countries, especially between developed and developing countries

# 5 ASEAN+1 FTA and Regional Comprehensive Economic Partnership

---

(In Progress)

## Abstract

The last two decades have witnessed how Free Trade Agreements have surged and evolved in South East Asia, embracing the trading partners mainly in East Asia.

There has been a growing number of studies in accessing the impacts of FTAs on East Asian countries with a particular attention to ASEAN countries, and most of studies claim that FTAs have positive impacts on overall trading flows of not only member countries but also non member countries and the rest of the world. However, only a limited number of studies pay attention on the use of FTAs; how FTAs affect liberalisation in services and how these affect productivity and investment; and moreover, how FTAs affect decision to invest or relocate investment.

While the overall trade and investment performance of ASEAN have improved in recent years, there is considerable room for further improvement of trade, services and investment, particularly in trade and investment processes and procedures in individual countries in order to optimize the use of regional cooperation. This leads to the question as to what kind of government intervention or private sector's involvement is required to optimize the use of FTAs to improve overall welfare.

Moreover, after about two decades since the AFTA came into being, ASEAN has been embracing ASEAN+n FTAs. While most of ASEAN+n FTAs have started to come into effect since 1 January 2010, a new idea of developing a more integrated economic cooperation has since been floated, which is now known as the Regional Comprehensive Economic Partnership (RCEP). While the ASEAN countries have been actively engaged in bilateral or multilateral trade agreements in the previous years; there is also the US which is taking forward the Trans Pacific Partnership (TPP) in Asia Pacific. This besets the question as to how RCEP will work along with other ASEAN+n FTAs; and how South East Asia and East Asia will be integrated in the world economy in the coming decades.

In addressing these questions, this research project aims:

- To provide rigorous evidence of the impacts of the current ASEAN+1 FTAs on trade in goods, trade in services, investment and overall economic welfare
- To illustrate the effective use of FTAs as illustrated by the use of Certificates of Origin (COOs) and how the use of FTAs affect decision of a country to conclude more FTAs.
- To explain the constraints for using the existing FTAs and illustrate the interaction of the implementation of bilateral and plurilateral (multiple) agreements at the same time.
- To review the progress of the implementation of ASEAN+n FTA and how to move forward the agenda toward RCEP as well as to provide inputs for policy interventions to optimize the use of regional economic cooperation.

### **Value Added and Study Coverage**

The main value added component of this study will be two fold. First, this study will be supported by survey '*On the use of FTAs*' which will be conducted in the 10 ASEAN countries. Second, this will contain both rigorous analyses on the impact of ASEAN FTAs on trade in goods, services, investment and overall economic welfare and comprehensive thoughts on how ASEAN will move forward its integration.

The study will cover seven main issues:

1. Overview of Free Trade Agreements in ASEAN
2. *a.* The impact of ASEAN+1 FTAs on trade in goods by sub sector  
*b.* On the use of ASEAN FTAs
3. How do FTAs affect productivity through liberalisation in services?
4. How do FTAs affect decision to invest or relocate investment?
5. The Impact of ASEAN+1 FTAs on economic welfare
6. A thought on RCEP: Its role and implications to the ASEAN economies
7. Lessons learned from other regional FTAs and economic integration: How to move the agenda of ASEAN and East Asian integration?

# **6 Coherence of Macroeconomic Policies in ASEAN Member States: Empirical Investigation of Experiences in 2000-2010**

---

**(In Progress)**

## **Abstract**

This study intends to make an empirical investigation as to whether and to what extent ASEAN Member States practice coherent macroeconomic policies in pursuing the national socio-economic development objectives as well as in response to external economic shocks.

## **Methodology and Estimation**

The study consists of two major components of empirical investigation and has covered the below listed results under the two components:

### **1. ASEAN Business Cycle and Economic Policy Linkage.**

- i. Review literature in estimating correlation using forecast error from Vector Auto Regression Model
- ii. Review literature in estimating dynamic correlation using Dynamic Conditional Correlation GARCH Model
- iii. Estimate interdependence of output growth and stock market between five AEC countries (Thailand, Malaysia, Indonesia, Singapore, the Philippines), Japan, China, South Korea and the U.S. using DCC-GARCH Model
- iv. Evaluate trends of interdependence between countries using the data from dynamic correlation. The results show that the degree of financial interdependence continued to increase over time during the past decade. For output growth, the study found only a temporary change in the dynamic correlation in output in almost all cases. The increasing trends in the degree of interdependence in real economy among AEC countries are not significant. However, there is evidence of increase in degree of dynamic correlation between some of AEC countries and the East Asian countries (China, Korea)

## **2. ASEAN Responsiveness to External Shocks.**

- i. The VAR model for each country (including Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam) has been set up.
- ii. The initial set of data has been collected, as below:
  - Quarterly government expenditure
  - End of period exchange rate for each currency
  - Policy interest rate and money supply (M 2 and M 3) in domestic currency
  - Growth of world GDP
  - Growth of global trade
- i.
- ii.
- iii. Cleaning up of data set by smoothing and seasonally adjusting
- iv. Performing a unit root test for each endogenous variable
- v. Performing the VAR model and impulse response analysis

The analytical models and preliminary findings were presented at the first meeting of this project at TDRI on 28 February 2013.



# 7 Automobile and its Part Manufacturing Industry in ASEAN and its Contribution to the Progress of Regional Integration

---

## Abstract

This study examines the future of automobile and auto parts manufacturing industries from the perspective of regional economic integration. Development of these industries in ASEAN has been substantially affected by the economic integration efforts in ASEAN and East Asia including BBC, AICO, AFTA-CEPT, and ATIGA. Lower barriers at the border (especially tariff), facilitated transportation, together with growing incomes in the region, have created globally competitive production bases for automobiles in ASEAN. However, the level of development in automobile and auto parts industries differ from country to country. The study addresses the following questions:

- How have national policies affected the development of Bangkok and Jakarta into full-set industrial agglomeration?
- How does further integration including tariff elimination among ASEAN will affect the future of Malaysia?
- Can the Philippines and Viet Nam create forge their own industrial agglomeration?
- How will economic integration within East Asia change the industry landscape?

This study covers recent developments in all the 10 ASEAN countries which include:

- Characteristics of the domestic market;
- Capacity of domestic manufacturing firms; changing characteristics of manufacturing industries;
- Development of trade with ASEAN and East Asian countries; and recent policy changes.

Policy recommendations will be made for each country.

# 8 Moving toward a New Development Model for East Asia - the Role of Domestic Policy and Regional Cooperation

---

## Abstract

The world is currently witnessing a major shift in the balance of economic and financial power from the advanced industrialized countries to the emerging economies of Asia, particularly from US-EU-Japan to China-India. Over the past two decades, East Asia has become a growing force in global production, trade, investment and finance. And the region will become the biggest stakeholder in an open trading system, a stable financial system, and a sustainable environment. However, to realize the Asian Century scenario, the region must tackle daunting policy, institutional and governance challenges. The Asian Century is complicated by the less benign global economic environment, and domestic economic, political and social constraints. The global environment holds trade imbalances, threats of protectionism and the need to rebalance away from export-led growth towards domestic and regional demand; there is international financial instability and volatility; and there is increasing concern over food and energy security, climate change and environmental deterioration and lack of sustainability.

In meeting the new challenges, East Asia should unequivocally support globalization, oppose trade protectionism and promote the economic recovery process in developed countries. East Asia is both a global dynamic production and processing base and the world's largest potential market. The regional integration process can tap an enormous internal market potential in East Asia, making up for the lack of external demand. It can also improve the export competitiveness of East Asia, and stabilize the foundation of the export strategy.

The developing economies of Asia are confronted by serious environmental problems that threaten to undermine future growth, food security, and regional stability. They certainly will not be solved by growth, but nor is "rebalancing" or moving to a "green growth" paradigm an easy fix. Seven general principles may be useful across the board: a focus on co-benefits; an emphasis on stakeholder participation; a commitment to scientific research; an emphasis on long-term planning; pricing and broader economic reform; tackling corruption, in addition to

generally bolstering institutional capacity with regard to environmental regulation; and a strengthening of regional approaches and international support.

The big challenge facing many countries today is the growing imbalance between economic development and social development, which causes the potential conflict and social crisis, hampering development. In order to become more resilient, they need to spend more on basic social services, social protection and basic infrastructure, as well as measures to boost the income of the poor. It is crucial to promote intraregional trade and investment flows that benefit the landlocked developing countries.

## **Major Findings and Recommendations**

### **China**

China has achieved rapid economic growth since the introduction of reform and the opening up of the economy. However, China's growth is increasingly constrained by rising social and environment tensions. Faced with new challenges, China needs to search for a new approach for development.

The key components of the new approach may include: a coordinated social and economic development strategy, an innovation-cantered industrial restructuring strategy, a consumption-cantered domestic growth strategy, a resource and environmentally sustainable strategy, and a balanced external economic strategy. To turn to the new approach, China needs to push reform further in key areas. Among other things, the role of government and the way government runs the economy should be reformed; the new round of liberalization of land and financial markets should be pursued; further state-owned enterprises (SOE) reform is also needed.

### **India**

India has emerged as a high-performing economy with a vibrant external sector and a rapidly expanding domestic sector. There are, however, many issues which need to be examined. Is the present development paradigm inclined towards export-led growth or domestic demand-led growth? India has entered into the group of middle income countries, and some of the advantages which India used to enjoy earlier as a low income country, are likely gradually to be lost. This is amounts to loss of comparative advantage in both

domestic production and export sectors. India retains, however, export competitiveness in a large number of sectors of the world economy. It will continue to rely on an export-led growth strategy as long as it has not fully exhausted its global competitiveness. India will continue to focus on the simultaneous use of the key policies of domestic demand-led growth, as well as export-led growth to shape its development strategy in the long run. This policy mix would contribute to the integration of the Indian economy with the East Asia Summit framework.

## **ASEAN**

To realize the idea of inclusive development, both Indonesia and ASEAN as a whole now are facing a new challenge, or have a new role to play, namely to promote high and sustainable economic growth with high quality: growth which is environmentally friendly and generates equal opportunities for all individuals in member countries. Indonesia must improve the welfare of its people, enhance the justice sector, apply better governance, raise the quality of democracy and improve the maintenance national unity and security. In increasing regional economic cooperation, the role of ASEAN in realizing inclusive development is to increase welfare for all members of communities in member countries, not just to expand trade and investment activities and to achieve higher rates of national economic growth.

Thailand is now facing many challenges. The first is to ensure that future growth will be not too low compared to its past performance. Specifically, the country needs to escape from the middle-income trap, in which it seems already to have been struggling for more than a decade. One of the causes of this recent slow economic growth is the country's low resilience to economic crises, both home-grown and imported. On the social front the country does quite well in many areas and can claim to have achieved a satisfactory level of economic-social development balance. These areas include the alleviation of poverty, basic and advanced health-care and basic education. There are, however, some social areas showing significant development delay. Economic and social inequality stands as a top priority problem for the country. Environmental sustainability is also problematic. The quality of human capital is also lagging, as indicated by the low performance of the education system and labour skills training. The three fundamental problems hindering the development of a more balanced society in Thailand (human development, unequal society,

and environmental challenges) can only be overcome with strong institutions, as they are problems that cannot be entirely dealt with using market mechanisms. However, to realize its potential the country needs strong economic and social institutions that would steer the politicians to a more balanced, productive and sustainable path of future economic and social development.

To achieve more inclusive growth and sustainable development, and narrow the development divide in ASEAN and East Asia, the CLMVs, their private sectors and development partners must focus on: hard and soft infrastructure for connectivity; economic diversification and private sector development; agricultural development, diversification and productivity; trade, transport and investment facilitation; regional integration and the capacity to implement domestic policy for the cross-border movement of goods, services and people, particularly education and skills development responsive to the labour market; institutional strengthening and governance; aid effectiveness and graduation from aid dependency. CLMVs need to focus on the following reform policies for regional economic convergence and cohesion; human capital formation; a conducive investment climate and sound macroeconomic fundamentals; distribution of land ownership and mitigation of asset inequality.

### **East Asia Community**

After the global financial crisis and the European fiscal crisis, East Asia is expected to become the engine of growth for the world economy. In order to meet such high expectations, East Asia should maintain its economic dynamism by raising its economic efficiency as well as by enlarging its internal market. In order to realize a region-wide FTA in East Asia, East Asian countries need to overcome existing obstacles and meet the new challenges.

Considering the great need for restructuring the economic development model, it is highly desirable that East Asia moves from an FTA/CEP to an economic community. This seems possible since ASEAN will realize its Community by 2015 and the negotiation on a broad regionally based FTA/CEP will also be completed. An East Asia Economic Community will be helpful for policy coordination and cooperation on stimulating regional

demand, and moving toward a social-economic balanced development structure. Within a Community, the institutions could be more effective in regional economic governance.

### **Regional Production Networks**

East Asia's economies have benefitted from the regional production networks. It is strongly connected to the outside economies through the production networks, in addition to the countries in the region. There is a big challenge, whether each economy in East Asia can implement the necessary strategies and policies, depending on its stage of development and involvement in the production networks.

To further utilize the mechanics of production networks, development strategies and industrial policies have to be considered together. For instance, innovation in industrial agglomeration is necessary. Small and medium sized enterprises (SMEs) should play an important role in forming industrial agglomerations, and thus SME-related policies must be reviewed; better access to technology, better access to finance, fostering human resources, and establishing industrial organization may be helpful for their involvement in the industrial agglomeration. It is also important to identify and resolve bottlenecks that prevent participation in production networks. International connectivity and new business models need to be considered, particularly to further deepen the regional production networks.

### **Green Economy**

Moving toward a new and sustainable development mode, it is necessary to build a recycling society. The sluggish recovery from the global financial crisis of 2008 in affluent markets has affected exporting countries, and prompted consideration of ways to increase domestic demand. Mining the waste stream for recyclable materials offers prospects of both stimulating domestic activity and securing supplies of some rare and expensive materials. The experience of New Zealand in evolving waste management and recycling policy over recent decades, primarily for the purposes of environmental improvement provides a valuable model for moving toward a sustainable future. Institutional changes in both general legislation and specific waste policy have contributed to reductions in waste disposal, but the economic stimulation is more difficult to measure and has probably been rather small. There are complementary roles to be played by small consumer markets and larger producing countries in the effective recycling of materials across the region.

# 9 Geographical Simulation Analyses for Eliminating the Infrastructure Bottlenecks towards Balanced Growth in East Asia

---

## Abstract

ERIA and IDE-JETRO have been developing Geographical Simulation Model (GSM) since 2007, and now GSM has become a useful tool of policy analysis. Using this tool, it is now possible to predict what kind of physical or institutional integration has positive/negative impacts on a given region at the sub national level. It is also possible to lay down policy measures to facilitate international transaction which affects the traffic on different routes. This is done by predicting the possible bottlenecks in the route.

## Methodology

- In the analyses conducted in FY2012, the geographical coverage was extended to the world to make this analysis more reliable.
- The simulation incorporated 80 major countries all over the world into the model. World coverage of the model in terms of GDP improved from 81.9% to 93.9%. In addition, routes and logistics data were refined in line with the real condition.
- The specifications for Roll-on/Roll-off mode and ‘cargo only’ mode were improved.
- Tariffs and Non-Tariff Barriers are set in the baseline scenario in accordance with actual FTA/EPA schedule.

Using these, more complex scenarios can be run, such as impacts of disasters, SEZ development, tariff reductions and combinations of those measures or incidents. This IDE/ERIA-GSM 6.0 study aims to improve upon the previous versions of IDE/ERIA-GSM and to study the development related policies in the East Asia region.

# 10 Innovation Between and Within Supply Chain: Empirical Study of Tracing Local and Global Production Knowledge Network in East Asia

---

## Abstract

The motivation of this project is to answer the research question on what really drives product and process innovation. Product and process innovation may happen in customer-supplier interactions along a supply chain. Since manufacturing processes has been fragmented and extended globally, product and process innovation might happen across firms in developed and developing countries like ASEAN countries. The main objectives of the research project are twofold:

1. To measure causal impacts of organizational capacity and inter-firm learning on performances of local firm (especially small and medium firm), and
2. To better understand why many firms are not involved in global supply chains (GSCs) and what can be done to promote them entering into GSCs.

A twofold approach has been used to address the research objectives:

- I. To conduct large-scale surveys in Indonesia, the Philippines, Thailand and Vietnam and develop longitudinal data at least for the Philippines to:
  - estimate the causal effect of organizational capacity and inter-firm learning on firm performance, and
  - examine the mechanism of network evolution
- I.
- II. To conduct detailed industry-specific case studies to
  - understand why few local firms can transact with foreign firms in developing economies
  - discuss what can be done to accelerate the entry into production processes within a global supply chain, and
  - consider industry characteristics.



# 11 Towards Competitive and Innovative ASEAN SMEs: ASEAN SME Policy Index 2012

---

## Abstract

The Framework for ASEAN SME Policy Index prepared by ERIA follows the approach of the OECD SME Policy Index; that is, the Index is composed of a number of policy dimensions, each of which is subdivided into a number of sub-dimensions. Each sub-dimension is in turn composed of a number of indicators. Finally, each indicator will have a number of levels of policy reform or a set of policy reforms.

What would differentiate the ASEAN SME Policy Index from the OECD SME Policy Index is that the policy dimensions, sub-dimensions, indicators and levels of policy reform need to reflect more the specific circumstances of the ASEAN region and hence may differ somewhat from the details of the OECD SME Policy Index.

The list of the policy dimensions is based on the ASEAN SME Blueprint, the Strategic Plan, and the OECD. The following is a list of 8 policy dimensions, proposed for the ASEAN Policy Index after rigorous discussions and consultations with experts, stakeholders, and concerned government and ASEAN officials:

1. Institutional framework;
2. Access to support services;
3. Cheaper and faster start-up and better legislation and regulation for SMEs;
4. Access to finance;
5. Technology and technology transfer;
6. International market expansion;
7. Promotion of entrepreneurial education; and
8. More effective representation of SMEs' interests.

The elaboration of the list of sub-dimensions, indicator and levels of policy reform has been drawn from the inputs from experts, stakeholders, and concerned government and ASEAN officials.

# 12 Global Production Networks and Host-Site Industrial Upgrading: Evidence from Car, Clothes and Semiconductor Firms in Southeast Asia and China

---

(In Progress)

## Abstract

This project seeks to expound the critical concepts, review the main arguments, and establishes firm-level benchmarks and dynamics to examine regional production (domestic) linkages, host-site institutional support under which host-site small and medium enterprises (SMEs) appropriate the most technological synergies from the operations of multinational corporations (MNCs) with a focus on ASEAN and China.

## Industry and Country Coverage

The automotives, clothing and semiconductors industries have been identified to be suitable as there is evidence of strong regional production linkages and the industries are important for the respective countries.

Automotives are one of the main industries characterized by production tiering and linkages, while semiconductors and clothing have dominated the internationalization of production. China was included for all three industries because of the significance of exports. Automotives were also chosen for Indonesia, Philippines, Thailand and Vietnam. Automotives had already become important in Indonesia, Philippines and Thailand; it has started to grow rapidly in Vietnam since 2000. Clothing was also chosen for Cambodia, Laos and Myanmar as the industry figured prominently in national exports. Electronics components were also chosen for Malaysia, Philippines, Singapore and Thailand because of the importance of the industry to their exports.

# 13 Public Private Partnership in ASEAN Member Countries Phase 2: Institutional Assessment to Develop Public Private Partnership System in Cambodia, Lao PDR and Myanmar

---

## Abstract

This project is a follow-up to the previous research project on “*The Role of PPP in ASEAN*” which emphasized on mapping the historical and current situation of PPP implementation in 5 ASEAN member countries (i.e. Indonesia, Malaysia, Philippines, Thailand, and Vietnam).

In the previous project, the Cambodia, Laos, and Myanmar (CLM) were purposely not included in the scope. CLM have been known to possess the problem of lack of infrastructure, at the level and scale more massive than other ASEAN member countries. Further, the institutional capacities of CLM indicate that it takes some time for them to take non-conventional measures, including PPP, to solve their infrastructure problem.

Implementation of a PPP system requires an existing set of precluding systems. The establishment of a PPP system itself requires several stages to be completed—to wit, the government should: determine the problems to be addressed by PPP scheme; formulate the objectives of PPP; assess the prerequisites and requirements; establish the system; monitor and evaluate. Accordingly, the objectives of this research are:

1. To assess the areas where PPP scheme can fit.
2. To examine the CLM’s current positions in readiness for adopting PPP scheme.
3. To suggest the steps to be taken.
4. To show examples of potential PPP projects in respective countries

The methodology of this project is a combination of examining best practices from PPP-experienced countries and checking the reality at ground level. The working team consists of two national researchers from each country teamed up with one international consultant for each country, making the total working group members six. As the first step, the country teams identify the current situation of infrastructure development and relate it with existing forms of public-private cooperation. Next, a gap analysis will be made to prepare the establishment of PPP unit in the countries.

# 14 Enhancing Supply Chain Connectivity and Competitiveness of ASEAN Agriculture Products: Identifying Chokepoints and Opportunities for Improvement

---

(In Progress)

## Abstract

Agriculture is a very important sector for the ASEAN region. One of the major strategic approaches adopted by the ASEAN Member States under the AEC Blueprint is to “enhance intra-and extra-ASEAN trade and long term competitiveness of ASEAN’s food, agriculture and forestry products/commodities.” The action points indicated in the AEC Blueprint are related mainly to production practices, SPS and certification in addition to the monitoring of the CEPT-AFTA scheme for agriculture (and forestry) products.

The Mid Term Review of the AEC Blueprint has revealed that nontariff measures (NTMs) are increasing in policy concern in view of the significant reduction and elimination of agriculture products. Moreover, the Report brings out the importance of trade facilitation, infrastructure and logistics to have a more integrated, and hence more competitive, ASEAN.

In this background, this Study attempts to contribute to the drive of ASEAN towards an integrated economic region as expressed in the AEC goal of a ‘single production base’. Specifically, the project examines critical “choke points” in the supply chain of agricultural products within AMSs and the whole ASEAN region. The choke points tend to be policy and institutional constraints. The main objective of the study is to help improve the movement of goods from farm to firms and consumers, domestically and regionally; thereby moving towards a single production base in agricultural products in the ASEAN region.

The Study draws heavily in approach from the USC study on **APEC Supply Chains: Identifying Opportunities for Improvement** for the APEC Business Advisory Council, but modified to focus more on ASEAN agriculture. The Study will consist of both regional and national level analyses. At the national level, the choke points are examined in terms of a supply chain (or production network) of two selected commodity groups that are of interest to the ASEAN region. At the regional level, the determination of the significant chokepoints that deter increased intra-ASEAN agricultural trade relies on broader factors affecting trade

across countries. The regional and national level analyses are complementary because the broad factors that shape intra-regional trade are largely national in character. The Study relies substantially on country case analysis of the supply chain and major choke points of the two selected commodity chains for each country. The examination of the major choke points will provide the basis for the specific recommendations.

The project will consist of a country study for each of ASEAN-8 (excluding Singapore and Brunei Darussalam), three thematic papers at the regional level, and an integrative paper.

The component papers and topics are both at the regional level and at the national level. The following are the component papers and major topics:

#### **I. Regional level analysis:**

##### **Towards Enhanced Regional Supply Chain Connectivity in Agriculture Products**

- A. Evolution of intra-ASEAN trade in agriculture products: any indication of value chain or production networks at work at the ASEAN level?
- B. Identifying Chokepoints to increased ASEAN agricultural trade and supply chain
- C. Addressing Non-Tariff Barriers to ASEAN agricultural trade and supply chain.

#### **II. National level analysis:**

##### **Understanding and Addressing Domestic Major Choke Points in the Supply Chain of Agriculture Products at the National Level**

- A. Description of the selected commodity (group) and its supply chain processes.
- B. Determination of relative importance of choke points in the supply chain of the two selected commodity groups.
- C. Analysis of policy, regulatory and institutional issues affecting major internal choke points in the agricultural supply chain of the two selected commodity groups.
- D. Towards enhanced supply chain connectivity domestically and internationally: Some recommendations.

#### **III. Choice of the two Commodity Groups**

For the Study, the two commodity groups chosen are the following:

1. Animal/vegetable fats and oils, etc (HS 15); and
2. Fish and crustacean, molluscs, and other aquatic invertebrates (HS 3)

Both commodity groups are important for intra-ASEAN agricultural trade, bannered by the most important group (HS 15). ASEAN is a global leader in one (HS 15) and a significant global player in the other (HS 3). Sanitary and phyto-sanitary measures, as well as the issues of certification and more complex trade facilitation, are very important in at least in one commodity group (HS 3).

### **Study Methodology**

**A. Country Papers:** Each country study will undertake surveys and interviews of key informants from associations, transport and logistics service providers, and other private stakeholders involved in the supply chain to determine the relative importance of the various major choke points in the supply chain of the two selected commodity. Concerned government officials will also be surveyed and/or interviewed in order to capture the policy, regulatory, and institutional issues affecting the supply chain. ERIA will develop the detailed questionnaire.

### **B. Regional Papers**

For the regional papers, the structured questionnaires are expected to be distributed and then gathered through the ASEC with the support of SOM-AMAF.

# 15 Intellectual Property Policy for SME Development: Japanese Cases and Lessons to ASEAN

---

## Abstract

This study was requested by the ASEAN-Japan Heads of Intellectual Property Offices (IPOs) to examine the SMEs' IPR utilization and supporting policy measures in Japan. This study also analyzes the IPR environment in four ASEAN countries (namely, Indonesia, Malaysia, Thailand and Viet Nam) through interviews of the government officials, SME associations, and SMEs who are currently utilizing or have the potential to utilize IPRs, as well as using available statistics.

## The Japan Model

Japanese SMEs have steadily contributed to roughly half of GDP in the manufacturing sector. However, the productivity of these SMEs varies: some SMEs are highly productive while others are not. Technology innovation takes place in these highly productive firms. Therefore, Japanese SMEs recognize that their technology advancement and R&D as well as brand development is their priority strategic areas in 2012. Japanese SMEs' share in IPR utilization (e.g., application and registration) is much higher than those in the ASEAN countries. In Japan, for example, SMEs apply for 10% of patents, 30% of industrial designs, and 40% of trademarks.

However, SMEs in Japan face many challenges in fully utilizing IPRs. Their awareness of IPRs are relatively low compared with larger firms. SMEs have limited budget, limited human resources, limited technology access, and limited access to IPR information which provides basis for considering new inventions, new designs and new brands. Many SMEs lack successful experiences in utilizing IPRs. To ease these challenges, Japanese government provides a number of policy measures. For instance, SMEs can enjoy expedited examination for their applications. This is important when SMEs need to use the IPRs for the promotion of their new products. Also, with rights granted by the government, they can start negotiating licensing contracts even if they do not have sufficient production capacity. SMEs can also enjoy discounts for application fee and registration fee when they meet certain thresholds. Japanese banks also consider IPRs in credit rating of firms (including government banks' IP-

collateral loans). SMEs in rural areas can approach their prefectural governments for the IPR one-stop counters which provide basic consultation of IPR utilization for free. Japanese government develops an open database to facilitate licensing contracts which are an important source of technology access for SMEs who do not have their own capacity to invent. The national IPR strategy is updated every year. Some prefectural governments adopt this national strategy to the local level and create their own IPR strategies. While the attribution is hard to determine because many other factors are also involved (e.g., business strategy, macroeconomic situation), usage of expedited examination has significant contribution to the success of SMEs. Also, local prefectures with local IPR strategies have increased the usage of IPRs in their respective territories more than those who do not have ones. Finally, Japan Patent Office publishes every year a book on SMEs' success in IPR utilization. This book covers 50 success stories from across the country, covering patents, industrial designs, and trademarks. Those SMEs include a micro firms with less than 10 employees yet succeed in marketing their products overseas by protecting their rights as IPRs.

### **The ASEAN Scenario**

Overall, SMEs in ASEAN contribute smaller share of GDP. ASEAN also has much limited utilization of IPRs. To begin with, the four countries examined in this study do not have official statistics on SMEs. Judging from the numbers of resident applications (including large and small firms as well as MNCs' local subsidiaries), ASEAN has much lower utilization of IPRs than Japan. However, there are success stories of SMEs in all the four ASEAN countries covered in this study. In general, SMEs do not recognize values of IPRs and hence perceive that IPRs are irrelevant to them. In some cases, SMEs believe that exclusive nature of IRPs do not match the culture - because SMEs help each other in coming up with new designs, the new designs should not be exclusively owned by a designer. IPRs can be collectively shared by those who contributed to design creation but such aspect is not recognized. As a result, some of these SMEs start to suffer from lack of IPR registration - e.g., their designs are registered in foreign countries and thus their products cannot enter the markets.

ASEAN countries also provide policy measures to enhance IPR utilization by local firms, but the details vary from country to country. Compared with Japan, policy measures in ASEAN are less comprehensive. For example, despite an expedited examination procedure,



being an SME per se does not fulfill the requirement in the four ASEAN countries and hence SMEs need to prepare documents to prove eligibility (e.g., their rights are being infringed). Also, SMEs who want to enjoy this special procedure have to pay extra fee which may practically prevent SMEs from using such mechanism.

## **Major Recommendations**

The project which consists of members from Indonesia, Malaysia, Thailand and Viet Nam has recommended the following measures for initial consideration by the governments:

- 1) Design national IP master plan (with high-level political commitment)
- 2) Promote success stories in IPR utilization (e.g., collect real stories from the country or other countries at similar development stages and communicate them with public)
- 3) Develop SME-statistics on IPRs as the basis of policy discussion
- 4) Introduce expedited examination for SMEs (possibly with free of charge); and
- 5) Strengthen regional IP supports

# 16 Development Potential of Content Industry in East Asia and ASEAN

---

## Abstract

To support the establishment of the ASEAN Community by 2015 and the economic integration in East Asia, it is important to strengthen economic partnerships and to foster a community through common social and cultural infrastructure. Cross cultural connections through TV, movies, and tourism will contribute to the strengthening of people-to-people connectivity. Sharing good quality “content” (e.g. music, movies) created in Asia can also be an important connectivity tool.

The average market size of the content industry in Asia in 2009, except for Japan, China, Korea and India, was 4.5 billion dollars (all the countries of ASEAN). The rate of increase in the content industry between 2009 and 2014 is expected to be about 160% in Indonesia and about 140% in Malaysia/Thailand compared to about 120% in the US.

With an increase in the viewing rate of video content via satellite or the internet along with penetration of highly functional devices like smart-phones, new businesses using video content are expected to grow in Asia in the future. The impact of video content on people and industries via TV or the internet will be significant. Video contents (characters from animation or movies) directly affect manufacturing industries, especially automobile and fashion industries and service industries including food and tourism industries. In particular, the content industry will actively promote employment creation in Asia and export expansion to the US and Europe due to its labor-intensive processes and close connect to tourism.

The objective of this Project is to set the direction for further promotion of the content industry by examining the increased demand and also analyzing the economic effects (employment creation effects and ripple effects on supporting industries, etc.) in the entire industry of Asia. Moreover, measures for strengthening of the value chain in Asia will be examined for further promotion of economic cooperation within the region. As one of the specific strategies, the effects of a “platform” for the promotion of content distribution will be reviewed.

The market size (demand expansion prospects), employment creation effects, and ripple effects on supporting industries of the content industry in Asia as a whole will be analyzed through exchange of opinions among the stakeholders, namely government, industry and academia. Based on this analysis specific measures for the promotion of the content industry will be examined. The study will also examine the effects of platform for the promotion of content distribution and make policy recommendations for productivity improvements in entire Asia.

# 17 Standard Distribution Infrastructure for Consumers in the East Asia Region in the Field of Consumer Goods Distribution for Retailers and Wholesalers

---

## Abstract

In order to reinforce economic connectivity, consumer goods distribution can be viewed as part of efforts to alleviate the gap of distribution infrastructure across countries in South East Asia. The important factors that are considered related to connectivity are:

1. Keeping consistency among each nation's public policy for distribution
2. Establishing standard distribution infrastructure (software and hardware) among the East Asia region, including "security of the consistency of the circulation policy of each country" and "establishment of the circulation base common throughout the level".

The expected deliverables are:

- a. The roadmap of policy to reinforce the East-Asia economic connectivity depending on the degree of distribution infrastructure development in each nation.
- b. The standardization roadmap for distribution infrastructure which has consistency with distribution policy of each nation.

## Methodology

The study group consists of researchers from Japan, Indonesia, Malaysia, Singapore, Thailand, and Vietnam. The project is conducted in the two steps for each factor abovementioned. First, the study group conducts an analysis of current status and extract the issues to be addressed. Second, the group discusses and develops the roadmap. For the consistency aspect, the group collects and analyses current regulatory framework, current physical and institutional connectivity among the countries. Further, the group will develop roadmap aligned to the medium and long term growth strategy for each nation. As for establishing standard distribution infrastructure, the study group will define the target field and current status of standardization, and set up the framework for further investigating the roadmap to promote standardization.

## **Major Findings and Policy Implications**

### **Ensuring Food Safety**

Important policies to enhance food safety from the viewpoint of the consumer-goods distribution field would be: 1) regional harmonization of standards of the quality of goods throughout the supply chain of foods for preventing their deterioration; and "2) development and dissemination of a system and technical standards on the traceability of foods in the supply chain (manufacturers, wholesalers, retailers) within a country and among countries in the region.

### **Consumer Protection**

While ensuring food safety, it is necessary to consider consumers' right to obtain information on safety and quality of food. There is a variation of enforcement levels in the consumer protection in the East-Asia region.

It is therefore important to refer to the advanced system in development countries, and introduce and implement them in countries which are lagging in consumer protection. This will also require harmonisation of institutional requirements on consumer protection.

### **Supply-Chain Cost Reduction**

Major cost issues pertaining to supply-chains can be divided into two: 1) Cost of transport, warehouse expense, and various costs which suppliers pay to retailers like returned-goods expense or sales promotion supporting fee, rebate; and 2) The foods disposal cost which arises due to inefficiency of a supply chain.

Physical distribution expense or foods abandonment loss are comparatively high in less developed countries within the region. As institutional solutions for increasing efficiency of a supply chain through reduction of such costs, the following policies are suggested to be implemented in East-Asia region.

- Ease regulations on foreign-capital companies in distribution industry while conducting training of SMEs in the consumer-goods distribution field and accelerate economical exchange within the region by introducing the know-how of advanced distribution industry.

- Enhance capabilities of standardization organization to promote implementation of ICT standards (product ID, electronic commerce, etc.), which help to increase efficiency of supply chain.

### **Training of Small and Medium Sized Enterprises in the Consumer Goods Distribution Field**

The rate of SMEs occupying the consumer-goods distribution field in East-Asia region is still high (40 to 60% in sales, and 80 to 90% in the number of companies). The number of employers is also high. Though the advanced know-how of foreign-capital companies in distribution industry is there, it is important to raise and develop SME distribution industries in the region for industrial prosperity and secure employment.

For institutional solutions for advancing SME distribution industry, the following policies are suggested to be implemented in East-Asia region.

- Harmonization of standards of human resources in East-Asia, which complements the training of human resource of SMEs in distribution industries.
- Facilitate implementation of efficient business operations by convenience store chains in distribution industries.
- Develop a business environment where SME distribution industries can use low-cost ICT based on global standards.

# 18 Myanmar Comprehensive Development Vision

---

**(In Progress)**

## **Abstract**

As the Comprehensive Asia Development Plan (CADP) and CADP 2 stated, Myanmar has long been the weakest link in the region in spite of its huge potential and strategic location. However, the Myanmar government has now inaugurated the wide-ranging reforms in both economic and political arenas. The government has improved monetary and fiscal management, facilitated trade and foreign direct investment (FDI), and started to build physical, legal and institutional infrastructure. In June 2012, Myanmar entered into the second phase of reform strategy, which focused on economic development. The government has drawn up the five-year short-term National Plan (FY2011-FY2015) and submitted it to the Parliament. The Myanmar government targets a 1.7-fold rise in per capita GDP during the National Plan. The government has announced four economic policies, that is, (1) Sustaining agriculture development towards industrialization and all round development; (2) balanced and proportionate development among states and regions; (3) inclusive growth for entire population; and (4) Quality of statistics and statistical systems.

Given its rich endowment of resources including diligent and literate sixty-million population and rich investment opportunities in a range of sectors, the prospects for Myanmar's high growth are many. To realise this, Republic of the Union of Myanmar Government and Economic Research Institute for ASEAN and East Asia (ERIA) have jointly initiated a joint exercise, Myanmar Comprehensive Development Vision (MCDV). Objective of the exercise is to deliver a sectoral vision plan which would be instrumental in bringing economic prosperity to Myanmar and the Mekong Region as a whole, so that Myanmar could be the next engine of ASEAN economic growth and Asian economic growth. MCDV seeks to lay down growth and development strategies which are, 1) People-centered, 2) High-growth & Globally Linked, 3) Inclusive & Balanced, 4) Green & Sustainable for the relevant policy areas and sectors.

The MCDV will consist of 16 development plans for the following sectors, including the subsets of the plan (shown in the parentheses):

1. Concept of MCDV (Current Status, Future Vision and Growth Plans)
2. Supporting Policy (Monetary, Fiscal, Financial, Trade, Investment and Labour Policy)
3. Agriculture Sector Development (Main Agriculture, Cropping, Fisheries and Livestock)
4. Industry Sector Development (Labour Intensive and Export Oriented, Domestic and Heavy Industry; SME Development; Human Resource Development for Industrial Sector)
5. Natural Resource Sector Development (Mining, Oil and Gas, Forestry)
6. Service Sector (Tourism and Tourism Retirement Business, Logistics, IT Outsourcing, BPO and Call Centers)
7. Economic Infrastructure Development (Road, Rail, Water and Air Transport, Communication, Electric Power, Industrial Estate and SEZ)
8. Integrated Energy Development
9. Financing Mechanism
10. Legal Framework
11. Development Governance
12. Rural Development and Poverty Reduction (Microfinance)
13. Environmental Preservation
14. Disaster Management
15. Sub-National Development (Regional Development Strategy for Seven Regions, Regional Development Strategy for Seven States, Border Area Development Including Job Creation Schemes, Economic Corridors)
16. Growth Poles (Greater Yangon - including Thilawa SEZ, Greater Mandalay)

Working Groups consisting of researchers, consultants and resource persons from related departments have been created for each sectoral plan.



# 19 Rule Making Features of New Trade Agreements and Role of Services

---

(ERIA-CSIS Project)

**(In Progress)**

## **Abstract**

This research project is conceptualized under the capacity building activity for local think tanks. The study examines political economy features of the implementation of ASEAN Economic Blueprint (AEC), with focus on international rule-making aspects of the roadmap and how it influence domestic regulatory process in Indonesia and to increase public awareness in Indonesia on ASEAN and other international economic cooperation.

The study has three main components: (i) analytical and field studies, (ii) public awareness-raising, and (iii) capacity building of CSIS researchers and wider stakeholders.

## **Analytical and Field Studies**

Analytical and field studies conducted by CSIS focus on how Indonesia should respond to the implementation of integration initiatives in the AEC Blueprint and other regional FTAs, in particular on the aspect of international regulatory harmonization, as well as increasing the country's competitiveness in order to realize benefits from deeper integration.

Two studies are being conducted under this component:

### **1. New Rule-Making Features of New Trade Agreements**

This first study focuses on examining the rule-making features of the new type of trade agreements, the so-called 21st century trade agreement. As ASEAN integration gets deeper involving many behind-border measures, the efforts toward more harmonized domestic regulations become more important. Other trade agreements formed by Indonesia and its trading partners also cover many provisions that need to align domestic regulatory framework to international best practice. This will create new political-economy pressure on the domestic rule-making process in Indonesia. Decentralization and delegation of various regulatory processes to sub-national level make the harmonization efforts more difficult.

This study will look at the dynamic of this political-economy process of aligning domestic regulations to the international best practice, in particular with relation to the realization of ASEAN Economic Community. The assessment relies on the comparison of various official rules and regulations as well as current implementation regime. The study would come up with some indicators on how well a certain policy area fit into the international practice and in what way the related regulations can be improved. It will also examine possible policy areas where problems and challenges are likely to occur, in addition to the identification of possible sources of problems.

## **II. Indonesia's Services Sectors: The Key to Global Production Network and Employment Opportunities**

The emergence of global production network required efficient and reliable services sectors to facilitate and link production process. Competitive services matter for productivity, as services are intermediate input for producing goods and services. In Indonesia, however, services industry as a whole has not received the attention it deserves. While some sectors, most notable finance and telecommunications, have experienced significant development in the past two decades, other services such as health, air-cargo, express courier, domestic sea transport, and those in the business services sector are relatively small and underdeveloped.

The second study will examine problem found in Indonesia's service sectors and how trade liberalization and regulatory reform in services would help in creating more efficient and reliable services. It also examines the impact of trade liberalization in services on the employment situation in Indonesia. While the study relies on examination of various indicators and related data, both secondary and field interviews, some modeling-based analysis might be conducted to see the impact of reform in service sectors.

### **Public-Awareness Raising Activities**

Several activities will be conducted to increase public-awareness on ASEAN, as well as its impact to Indonesian economy and the future formation of the economic community. The activities comprise of a series of public seminar in Jakarta and two other big cities, stake-holders' discussion in Jakarta and distribution of briefs and research papers, both in hardcopies format and electronic format which will be published on the CSIS website.

Better public understanding of ASEAN and East Asia integration process would determine the future of successful integration process in the region. Unfortunately, public awareness on various issues related to ASEAN and regional integration is still very low. General public does not have sufficient information about the ongoing process and many important stakeholders have little idea about the impact of such moves.

The purpose of these activities is to provide better information on the current state of regional integration among East Asian countries, and how it would affect Indonesia's Economy. Seminars, conducted in several big cities, would aim to raise public awareness on the recent ASEAN integration plan as well as other trade related initiatives in the region. Smaller discussions intended to provide better understanding to specific stakeholders, such as private sectors and NGOs, will also be held. Printed and electronic publications are aimed at reaching wider coverage.

# 20 Management of Community Preparedness for Disasters: ASEAN Perspective

---

(In Progress)

## Abstract

A series of catastrophes in recent decades have called for better preparedness in disaster-prone countries. In the last decade alone, the combined major natural disasters in Asia-Pacific, namely the 2004 Indian Ocean tsunami, 2008 Cyclone Nargis, and 2011 Tohoku earthquake & tsunami have caused 780,246 deaths with at least US\$ 250 billion loss. The fact is even more devastating when accompanied with the findings that the vulnerabilities differ among socio-economic groups. The Asia-Pacific Disaster Report 2012 by United Nations concludes that whereas Asia-Pacific continent is the one most-prone to natural disasters, its preparedness still has a large room for improvement--particularly on harnessing the economic impact of the disaster.

This project run by ERIA is a support for serious endeavor of Asian nations to be better prepared in responding to natural disaster. It focuses on the methodology of impact assessment, the cases for impact on poor households, and on disaster-linked financial instruments.

## Objectives:

1. To explore the methodology to estimate the economic impact of natural disaster and its distribution.
2. To examine the impact of natural disaster on household welfare.
3. To review current insurance system on natural disaster and propose the improvement for ASEAN.

The Project is conducted by a Working Group on Disaster Management (ERIA-WG on Disaster Management) that will deliver the papers on following topics:

- a. Economic impact of disaster on Asian economies
  - i. Exploratory methodology to estimate impact of disaster at macro level
  - ii. Methodology to estimate distributional impact of disaster

- b. Impact of disaster on Household Welfare
  - i. The Framework of Disaster, Poverty and Coping Strategy: Indonesia's Micro/Household Level Study
  - ii. The Framework of Disaster, Poverty and Coping Strategy: Philippines' Micro/Household Level Study
- c. Insurance system and Risk Management
  - i. Imposing Risk Management for Natural Disaster
  - ii. Natural Disaster Insurance in Developing Countries and Regional Cooperation
- d. ASEAN efforts on Disaster Management
  - i. AHA Center: The current role and future
  - ii. For Better Preparedness: What can we do?

# 21 Policy on Disaster Prevention and Reduction for Industrial Parks in East Asia

---

(In Progress)

## Abstract

Recent disasters, such as the 2011 Japan Earthquake and Bangkok flood, have caused significant damage to industrial clusters in East Asia. The impact of these disasters is felt on the global supply chain and it also triggers the shifting of production sites from existing industrial clusters in order to diversify natural disaster risks. However, existing industrial clusters continue to play important roles for an efficient production network. This study addresses the need to take sufficient policy measures to counter natural disaster risks as an integral part of policies promoted for industrial clusters.

The objectives of the study are:

1. To identify vulnerabilities of industrial parks and their supply-chain/logistics network to counter large natural disasters in selected East Asia industrial parks.
2. To identify issues of concern on disaster prevention for the industrial parks including disaster recovery on their logistics networks.
3. To propose necessary policies on disaster prevention for the industrial parks from the point of view of resiliency of logistics network.

## Methodology

The study is divided into two parts: (i) Survey and Analysis, and (ii) Examination of Critical Issues and Policy Recommendation. Survey and Analysis related to the logistics network is conducted in selected industrial parks in ASEAN countries to review and analyze the characteristics, vulnerabilities, policies adopted, preparedness, and response from industrial parks to natural disasters. The examination is aimed at elaborating critical issues on disaster management policy for the industrial parks based on the report from part (i). Further, the study will make policy recommendations for necessary measures to be taken by the governments from the perspective of disaster risk management and strengthening of logistics networks which will help in sustaining the supply-chain for industrial parks in East Asia.

# 22 Social Security System and Fiscal Management in China, India and Indonesia

---

**(In Progress)**

## **Abstract**

A Social Security System is crucial for developing countries since the countries' private insurances generally have a small role in covering risks for majority of people. A large number of people who work for SMEs or are self-employed are not covered by any insurance, leaving them vulnerable to risks. As such, the role of government becomes important in ensuring the enforcement of principles of equity.

Developing social security systems has fiscal implications, where the fiscal burden is dependent upon various aspects of the social security system which include coverage, role of private sector, demographic profile etc. Some countries opt for unstructured social spending instead of financing a structured social security system. This is because of partial system regulation or partial implementation of a comprehensive system.

The current project, originally intended as an overview of social security programs in three largest emerging economies of Asia (China, India, and Indonesia), has been trimmed to focus on the more tangible issue of future age-related expenditure (more specifically, the issue of pension payments). Each country team is tasked with projections of pension burden and fiscal capabilities in 2010-2030, and to come up with the recommendations of pension burden financing strategies. The country team consists of one senior researcher and one junior researcher supported by a model expert.

The project is expected to come up with following outputs:

1. A forecast of public expenditure for social security spending that takes into account demographic projection in China, India, and Indonesia.
2. Fiscal policy suggestions to meet the fiscal implication.
3. The recommended strategy to implement social security system.

# 23 Exploring the Environmental, Food and Energy Security Nexus in South East Asia

---

(In Progress)

## Abstract

Food insecurity presents one of the greatest challenges to Asia. Feeding the region's growing populations amidst price volatility, environmental degradation, climate change, changing food preferences and urbanization is proving to be an immense challenge for food security stakeholders in the ASEAN region. As the region's food security is increasingly affected by medium to long-term factors such as climate change, energy and water constraints, and regional economic integration, conducting a deeper study of the specific drivers of change is timely and imperative to understand better the implications and contextualize the findings to the region. This study will seek to look into the impact of climate change on food security in the region. This proposal serves as a follow-up to the broader proposal that was submitted to ERIA July 2012 on examining the Environmental and Food Security nexus.

## Understanding the Linkages and Impact of Climate Change on Food Security

Asia is deeply endowed with natural resources that are valuable for agriculture, yet environmental stresses continue to threaten many key environmental systems and, by extension, future food production. Because food security is multidimensional, environmental change impacts not only on food production, but also on the two access points (physical, economic) and on utilization. Additionally, these environmental challenges are set to become more pronounced as food demands continue to rise.

In the face of these challenges, this project will aim to:

- a. Define climate change scenarios that are most likely to impact on food security in the ASEAN region, recognizing the inter-connectedness between geographic regions for food trade;
- b. Define clearly which aspects of the food security ecosystem are directly impacted by the effects of climate change;
- c. Estimate the impact of climate change scenarios on the food security ecosystem components; and



- d. Identify policy implications on the ASEAN region and Singapore, and potential policy interventions.

### **Approach**

The project will be led by the RSIS NTS Centre and involve knowledge partners from the International Agricultural Research Centers [e.g. International Rice Research Institute (IRRI), Asian Vegetable Research and Development Center (AVRDC), World fish Centre], participants of the United Nations Inter-Governmental Panel on Climate Change, the NTU Institute of Catastrophe Risk Management, the Asia Risk Centre, and the academia. The approach towards the project is as follows:

- Determine a list of five to seven commodities to be examined. Possible commodities include rice, general livestock, eggs, fish and vegetables (highland and lowland).
- Conduct an ex-ante evaluation by examining all studies on climate change thus far and mapping the findings of climate scientist, so as to understand and translate the findings into drivers that affect food security.
- Organize a consultation through an expert group meeting, to determine which climate change scenarios would affect food security the most in the ASEAN region.
- Estimate the impact of climate change on food security ecosystem components according to geographic locations, taking into account the sources from which ASEAN imports food or the areas of surplus food production for specific commodities; and
- From the results of the study, identify policy implications and recommendations for the ASEAN region and Singapore.

Deliverables will include:

- i. an expert group meeting that will foster greater understanding of pertinent climate change scenarios and lead to methodologies and strategies for exploring the impact of climate change on the food security ecosystems; and
- ii. an issues paper and a policy report/paper, including sets of actionable policy recommendations.

# 24 Economic Impact Evaluation of Investments on the Energy Savings and Low Carbon Emitting Technologies in East Asia – Phase 2

---

(In Progress)

## Abstract

A policy shift has been observed in the East Asia Summit countries to promote energy efficiency improvement, as well as the use of low-carbon technologies.

The first phase of this study projected energy supply and demand for 16 EAS countries upto 2035 in two scenarios: Business-as-Usual Scenario (BAU) and Alternative Technology Scenario (ATS). The BAU considers the continued implementation of current policies and the use of current level of technology application, while the ATS considers technological energy saving potential compared with the BAU and estimates the potential of those countries to reduce CO<sub>2</sub> emissions through low-carbon technologies. In the first phase, the study also evaluated the investment requirements for meeting the energy supply and demand, and conducted the analysis of the costs of introducing energy conservation and low-carbon technologies, and the direct benefits from reducing the fuel import spending.

Building on the findings from the first phase, the second phase of this study is aiming to estimate the comprehensive impact from the introduction of energy conservation and low-carbon technologies on the economy of each country in the EAS.

Based on the estimations of the investment requirements to introduce energy conservation and low-carbon technologies and their energy saving effects by sector, the study is going to analyze the direct impacts to each sector, and later the indirect influence on the economy by using computable general equilibrium model, namely the Global Trade Analysis Project, or GTAP, on the premise that the current economic structure will be maintained through 2035. Change in prices, the balance between supply and demand, and international trade will be calculated. Eventually overall impacts of these changes on GDP of each country will be estimated.

Based on these analysis results, the study will classify the EAS member countries into several groups in trying to draw policy implications specific to each group. Considerations

will be given to facilitate cooperation among the EAS member countries toward achieving green growth, and regional prosperity.

## **Expected Findings and Policy Implications**

Each member country of the EAS will be differently affected by the introduction of technologies for energy savings and CO<sub>2</sub> emissions reduction as it depends on (1) economic development level, (2) economic structure, and (3) energy supply and demand structure.

Given the current economic structure through 2035, those countries prompting the export of energy saving and low-carbon technologies will have positive economic impact from the introduction of those technologies in the region. In contrast, those countries where export earnings rely on energy exports, domestic energy savings can strengthen the export capacities, causing a positive impact on the economy. However, significant positive impact can not be expected due to the reduced exports of fossil fuels.

The overall impacts of energy conservation and low-carbon technologies will also differ by sector. Some sectors will benefit more from fuel savings than additional investments due to lower marginal abatement cost, while other sectors may witness less benefits from introduction of high efficient but low cost-performance appliances.

Understanding of these different economic impacts of energy efficiency improvement and CO<sub>2</sub> emissions reduction on countries and sectors would create a basis for policy-making in the realm of energy efficiency in the region. The study can also help in drawing policy implications of facilitating cooperation among the member countries in the EAS for regional growth.

# 25 Analysis of Energy Saving Potential in East Asia Region

---

**(In Progress)**

## **Abstract**

This study is a support study for the EAS Energy Ministers Meeting (EMM) and the EAS Energy Cooperation Task Force (ECTF), and is the fifth in the series of studies on energy saving potential in East Asia. The results of the previous four studies have been reported to the past four EMMs and have been highly appreciated by the Ministers.

Based on social, economic and technological assumptions which are exogenous to the modeling, this research develops a Business as Usual (BAU) scenario for each EAS country outlining future sectoral and economy-wide energy consumption, assuming no significant changes to existing government policies. An Alternative Policy Scenario (APS) is also designed to examine the potential impacts of additional energy efficiency goals, action plans and policies that have been reported by the Governments. The difference between the BAU and APS represent potential energy savings.

The current study is extending and enhancing the analysis of energy saving potential undertaken in the past five years with new data and additional policy targets from the member countries. The study also examines other scenarios such as energy security scenario that estimates the necessary energy savings to maintain energy supply security at 2000 level and clean coal technology scenario that estimates the impact of this technology to supply security and GHG emissions.

In 2012-2013, three additional and supportive research studies were conducted by the Working Group for Analysis of Energy Saving Potential in East Asia and the Biofuel Sub Working Group. These are the revision of power ratings of appliances in the questionnaires collected through the pilot residential end-use energy consumption survey, assessment of technical energy saving potential prepared by another ERIA study project and study on CO<sub>2</sub> emission reduction in road transport sector. These three studies are complementary to the main research on energy saving potential in East Asia.

## **Major Findings**

In the EAS region, growth in energy consumption and greenhouse gas emissions is driven by increasing population, sustained economic growth, increasing vehicle ownership, and increasing access to electricity.

Thermal efficiency in the EAS countries is expected to improve considerably over time in the BAU as well as APS scenario as more advanced generation technologies such as natural gas combined cycle and supercritical coal plant are implemented.

Throughout the region there exists potential to increase energy efficiency and reduce the growth in energy consumption and greenhouse gas emissions. Relative to the BAU scenario, by 2035 the implementation of energy efficiency goals, action plans and policies used in the study could lead to additional reductions in primary energy demand, and in energy derived CO<sub>2</sub> emissions across the EAS region.

On the other hand, according to the assessment report on technical energy saving potential, the technical saving potential could be smaller than the energy policy saving potential due to high costs of more efficient technologies, less coverage of technologies and no energy saving potential brought by energy conservation. The report also emphasizes large energy saving potential by insulation in buildings and houses.

For the revision of power ratings, the energy management consultant of the working group studied the “Diversity Factor (DF)” of each appliance and prepared a table on suggested DF for each appliance. The DF made the power ratings in the questionnaire more reliable in the estimation of end-use energy consumption in the household sector.

The road transport experts are studying best possible mix of vehicle types in future, such as: ordinary cars with high fuel economy, hybrid, electric, fuel cell, biofuel and etc. Based on the mix, the CO<sub>2</sub> emission reduction potential will be estimated..

## **Expected Policy Recommendations**

The working group will identify policy implications and aggregate them into three major categories. The identified policy recommendations are based on a shared desire to enhance promotion of energy efficiency and conservation policies, increase low carbon energy such as biomass, monitor energy saving goals and action plans, and prepare accurate energy

consumption statistics. However, appropriate policies will differ between countries based on differences in country circumstances, policy objectives, and market structures.

### **1. *Energy Efficiency and Conservation and Renewable Energy Policies***

- Policymakers should set and continuously improve the energy saving goals and action plans for each sub-sector to have a basis in setting the target saving potential such as promoting insulation in buildings and houses.
- Policy mechanisms, which include incentives, to promote the use of renewable energy and implementation of energy efficiency and conservation programs are needed to be established.
- Policies to remove subsidies to fossil fuel energy and provision of incentives will encourage further development of energy efficiency and conservation programs and renewable energy.

### **2. *Energy Efficiency and Low Emissions Technologies***

- Technology development supporting improvements in energy efficiency and reducing CO<sub>2</sub> emissions is needed.
- Measures to reduce CO<sub>2</sub> emissions would include provision of subsidies for the application of low emission technologies such as PV and high efficient vehicles.

### **3. *Enhancing Reliable Energy Statistics for Monitoring of Energy Saving Goals, Action Plans and Policies***

- Reliable sectoral energy statistics are necessary for understanding the current characteristics of energy consuming sectors and to qualify and quantify energy efficiency and conservation policies and action plans.
- Detailed surveys are required to acquire information and data on energy saving policies and current energy consumption.
- Monitoring will be necessary using reliable energy consumption data.
- Capacity building on data collection and modelling will be important to analyse the policy options for promoting EEC programs.

# 26 Benchmarking of Biodiesel Fuel Standardization in East Asia

---

(In Progress)

## Abstract

Asian countries are actively promoting the introduction of biofuels due to soaring oil prices and increasing energy consumption. The utilization of biofuels is also important from the viewpoint of energy security and alternative fuels. However, the low-quality biodiesel fuel raises serious concerns regarding the effect on engine performance caused by fuel impurities and the oxidation. Therefore, it was considered practical that biodiesel fuel standards should be established in each country to promote more efficient distribution in the region.

The objective of this research is to define appropriate utilization of biodiesel fuel, by establishing the quality standard and quality control/management method that is required in the market. To achieve this objective, production of high-quality biodiesel fuel, its smooth distribution, and stabilization of economic infrastructure is an expected requirement.

This project was started in 2007. In FY 2009 it published the “EAS-ERIA Biofuel Trade Handbook: 2010”, which includes the EAS-ERIA Biodiesel Fuel standard (EEBS: 2008) and measures to control biodiesel fuel quality in the real market. From FY2010, the study is focusing on examining other feedstocks than those in the Handbook, such as second and third generation feedstocks, testing biodiesel fuel quality and implementing the standards in the real market. The details of the objectives are as follows:

- Investigation of quality control and management method in the actual market for EAS countries
- Updating EAS-ERIA Biodiesel Fuel Standard: 2008
- Investigation of biomass resources such as non-edible oils, agricultural residues, and forest resources
- Investigation of fuel / vehicle adaptation to reach emissions targets (including ethanol)
- Updating the Biodiesel Fuel Trade Handbook (for example, adding and expanding the chapter of 2nd generation biodiesel fuel) every two years.

To achieve these objectives, the following five tasks have been undertaken in FY2010-2012.

- i. Guideline for Quality Control and Management of BDF in East Asia
- ii. FAME Characteristics and Engine Performance
- iii. Guideline of How to Produce/Handle FAME
- iv. Sustainability of Biofuels
- v. Next Generation Biofuels

The project is collecting information on test laboratories in each EAS country; comparing test results and considering harmonization of the test methods for the benchmark stand; and examining quality control measures at the pump in each EAS country.

In the future, the WG is planning to update the biodiesel fuel standard that was proposed in 2008, to survey other biomass resources and to investigate fuel/vehicle adaptation to reach emission targets.

## **Expected Findings and Policy Implications**

- Guideline for Quality Control and Management of BDF in East Asia, testing laboratories, which have a potential to evaluate the biodiesel fuel quality of EEBS: 2008, were listed up completely.
- For certification of test methods in the EEBS: 2008, it was concluded that each country's test method can be used for EEBS: 2008 by the comparison experiments on Thailand's palm methyl ester.
- FAME Characteristics and Engine Performance, on which following have been agreed:
  - ✓ New and simple testing method for oxidation stability & filterability should be considered
  - ✓ Some experimental data testing should be performed under this WG's activity
  - ✓ 10 hour-oxidation stability in EEBS: 2008 should be permanent so there is no need to put a remark for "need more data & discussion from 6 to 10 hrs"
  - ✓ 4ppm limit on phosphorous should be discussed



-For Next Generation Biofuels, the efforts on technology improvement and higher conversion efficiencies for the advanced biofuels production have been emphasized to reduce capital investment cost as well as production and process costs in order to compete with the conventional fuels.

From these findings, EEBS: 2008 will be revised and issued as a leaflet, and Revision of EAS-ERIA Biodiesel Fuel Trade Handbook will be published.

## 27 Extending the ERIA Working Group Methodology for Sustainability Assessment of Biomass Utilisation in East Asian Countries

---

### Abstract

The ERIA Working Group (WG) on “Sustainability Assessment of Biomass Utilisation in East Asia”, sponsored by the Economic Research Institute for ASEAN and East Asia (ERIA), started its activity on sustainability assessment of biomass energy utilisation in the East Asian context since 2007. In the first phase (2007-2008), the WG extracted issues of concern for sustainability assessment of biomass utilisation and summarised a WG report entitled “Sustainable Biomass Utilisation Vision in East Asia”, which played an important role for scientific backup for the adoption of the “Asia Biomass Energy Principles” endorsed in the “Second Meeting of Energy Ministers of East Asia Summit” held in 2008. In the second phase (2008-2009), the WG developed a methodology to evaluate sustainability of biomass utilisation based on environmental, economic and social pillars and framed the “Guidelines to Assess Sustainability of Biomass Utilisation in East Asia”, incorporating the methodology developed and data required for sustainability assessment for biomass utilisation. Consequently, in the third phase (2009-2010), the WG conducted pilot studies in four selected East Asian countries to field-test the methodology developed and presented in the WG report “Sustainability Assessment of Biomass Energy Utilisation in Selected East Asian Countries” and the research of the fourth phase (2010-2011) upgraded the methodology based on the lessons learned from the pilot studies, which is summarised in the WG report “Sustainability Assessment Methodology for Biomass Energy Utilisation for Small and Large Scale Initiatives: Lessons Learned from Pilot Studies in Selected East Asian Countries”.

The activities of the ERIA WG during the fifth phase (2011-2012) were mainly aimed at two objectives: (1) checking the indicators developed by the WG for assessing sustainable biomass utilisation with other international efforts such as the Global Bioenergy Partnership (GBEP) and the Roundtable on Sustainable Biofuels (RSB), and (2) developing a basic framework of an ex-ante decision support tool for assessing sustainability of biomass utilisation systems.

## **Major Findings and Recommendations**

For the first objective, the sustainability indicators of biomass utilisation identified in the international initiatives were considered and compared with those selected for the ERIA WG's methodology. The sustainability indicators in the ERIA WG's methodology were found to be consistent with those in GBEP and RSB. For the case of environmental assessment, life cycle greenhouse gas (GHG) emissions are considered relevant. As an additional indicator to be included in the ERIA WG's methodology, soil quality was reviewed. For the case of economic assessment, Total Value Added (TVA) was seen to capture the most important consideration for the East Asia context even though the other international initiatives included more indicators. For the case of social assessment, Employment and Access to modern energy, as identified in the earlier report by the ERIA WG, were considered as the relevant indicators.

These indicators were then field tested and in the process, refined to suit the conditions and context of East Asia. During the period of the ERIA WG activities, several international initiatives such as GBEP and RSB also came up with their own set of indicators. Hence, it was imperative to check the methodology that had been developed and tested by the ERIA WG. In general, though the ERIA WG methodology used fewer indicators for assessment of environmental, economic and social aspects of biomass utilisation than GBEP or RSB, the indicators used were nevertheless identified to be relevant and robust. Thus, for the case of environmental assessment, life cycle GHG emissions was retained as the main indicator noting also the importance of emissions from land use change (particularly direct land use change) as well as other impact categories including impacts on air, water and soil. Among other categories, soil quality was picked up to explore a possible indicator to be considered in the ERIA WG methodology. For the case of economic assessment, TVA as selected earlier on was considered adequate. The production and expenditure approaches to estimating TVA have been outlined in this report. For the case of social assessment, the two indicators – “Employment” and “Access to modern energy” – have been confirmed. These indicators have been further described and methods for their quantification presented.

To meet the second objective, the framework of a decision support tool to make ex-ante sustainability assessments on biomass utilisation was developed and the relevance of the indicators developed by the ERIA WG was discussed. Life cycle GHG emissions, TVA (using

production approach) and Employment were identified as the indicators most suitable for use in the ex-ante decision support tool. The need for such a tool had been identified earlier on to facilitate evaluation of planned biomass utilisation projects before they have actually been implemented. To this end, the indicators for sustainability assessment were once again tested for relevance and applicability first on a theoretical basis and then by means of a case study. The tool was then tested using a case study of utilisation of empty fruit bunches from palm oil mills in Malaysia for producing pellets (energy carrier) and biofibre composite profiles (biomaterials).

The study revealed that using data from existing systems that were not necessarily identical to the proposed systems, reasonably accurate estimations could be made ex-ante. Uncertainty and sensitivity analysis would enhance the reliability of the study. It is also observed that the assessment result would give different information if the system boundary or the function of products was set in a different way. It implies that boundary and functions should be clearly defined so that the assessment result could provide the target of the study with appropriate information.

In order to understand the potential impact of biomass utilisation before the development project goes into operation, the ex-ante decision support tool for biomass sustainability assessment can calculate a variety of indicators in environmental, economic and social aspects for given options, which will help decision makers decide which option would be in their best interests. Such calculations are made based on a hypothetical scenario for each option. Data required for the calculation would be gathered from literatures or pilot testing. However, it should be noted that it is unlikely that the indicator results of all three aspects give the same preference. Thus it is recommended that the trade-offs between these aspects have to be made by the policy makers using the ex-ante decision support tool.

# 28 Energy Efficiency Roadmap Formulation in East Asia

---

**(In Progress)**

## **Abstract**

In the 4<sup>th</sup> East Asian Summit (EAS) Energy Ministers Meeting held in 2010, the Ministers appreciated the steady implementation of action plans to achieve voluntary energy efficiency goals by the EAS participating countries. The Ministers also welcomed the Energy Efficiency Roadmap Formulation Project as a means to accelerate the deployment of energy efficient technologies.

This project aims to develop the Energy Efficiency Roadmap with economic and social impacts of prospective technologies in East Asian countries. From FY2010 to FY2013, energy development with environmental consideration in Lao PDR has been the focus. In FY2012, the scope was extended to Myanmar. As an interim result of the work in FY2012, two major issues were established and seven policy recommendations were drawn. The two findings are: (i) Target year has to be set up ahead of the original schedule in the roadmap; and (ii) S&L (Standard and Labeling) policy for electric appliances is an important concern. Second, three expected findings are: (i) Energy saving potential of S&L policy in Vientiane; (ii) Optimum grid extension in accordance with multiple scenarios; and (iii) Strategies for energy access improvements in peripheral regions.

The following recommendations were set out:

- i. Technology policy should be revised regularly
- ii. Technology transfer with capacity building should be more accelerated than expected
- iii. S&L policy for appliances will have a substantial energy saving potential
- iv. The Thai's previous success experience is insightful for Lao PDR
- v. International cooperation are essential to overcome the obstacles around S&L
- vi. The resource sharing with neighboring countries could be an option to improve peripheral energy access; and
- vii. The further grid extension should be carefully analyzed in multiple scenarios.

## **Major Findings**

### **Revision Original Energy Roadmap**

In accordance with the rapid social dynamics as well as the recent economic development in Lao PDR, the energy roadmap made in the previous year was revised. The stakeholders consultations revealed that (i) there are massive investments in the infrastructure especially in the urban area; (ii) EVs have been sought for its feasibility; and (iii) the rural electrification target has been achieved earlier than expected. Thus the target year was set up ahead of the original schedule in the roadmap.

### **Stakeholder's Meeting on Energy Efficiency: S&L and its Challenge**

As a result of the stakeholders' meeting with the Lao Ministry of Energy and Mines, it was found out that Standard and Labeling (S&L) policy could be one of the options for the energy efficiency. But there were concerns like lack of statistical data, financial considerations, political leadership, legal arrangement and capacity development. Energy saving potential by the S&L policy will be taken up in the next survey by Chulalongkorn University, National University of Lao, and PARI, the University of Tokyo.

### **Demand Side Survey in Vientiane**

Survey is being conducted in Vientiane City on a representative sample of 1,000 households which are selected randomly. The objective is to unveil the relationship between household's attributes and energy efficiency behavior. Income level, education status, and house size are taken as the main independent variables affecting the related behavior. After grasping the relationship, a projection will be made about the future energy consumption by each appliance. Based on these projections, potential of S&L policy with regional practitioners could be taken up.

### **Grid Simulation in Myanmar**

Given the surging power demand in its economic development, the government has to plan its grid extension. There are many uncertainties such as decrease in FDI, minority issues, population mobility, etc. Given these uncertainties, Myanmar's grid extension requires planning with multiple scenarios

## **Expected Policy Recommendations**

### **Lao PDR**

- In keeping with the rapid economic development, technology policy should be revised accordingly.
- In accordance with the rapid economic growth both in urban and rural regions, technology transfer with capacity building should be accelerated.
- S&L (Standard and Labeling) policy for electric appliances (eg. CFL, A/C, and Refrigerator) will have a substantial potential of energy saving.
- Substantial international cooperation is essential to pursue the S&L policy.

### **Myanmar**

- To improve energy access in peripheral regions, resource sharing with neighboring countries could be an option.

To deal with the future uncertainties, further grid extension should be carefully analyzed in multiple scenarios.

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

---

(In Progress)

### Abstract

In the EAS countries, electricity demand is steadily rising due to population increase and economic growth. Moreover, as improving the electrification rate is an important policy task in many countries, electricity demand appears certain to increase more in the future in line with a rise in living standards. Meanwhile, as income is relatively low except for a small group of wealthy people, it is necessary to supply electricity at minimal possible cost. Therefore, for the EAS countries, implementing large-scale power source development steadily in an economically efficient way is an urgent task.

Basically, a country implements power source development on the premise of self-sufficiency. This is natural from the perspective of energy security, and it is a rational approach when demand growth is moderate or the country can implement economically efficient power source development on its own so as to meet the demand. However, when demand growth outstrips the capability to employ necessary domestic resources (technology, manufacturing, human and financial resources) or when economically efficient power source development is difficult due to some constraints, such as high fuel transportation costs and power loss during transmission, importing electricity from neighboring countries should be considered as an option. In light of the above, it may be possible to optimize or improve the efficiency of power infrastructure investments in terms of supply stability, economic efficiency and reduction of the environmental burden if we consider ways of developing power infrastructures (power sources and grids) on a pan-regional basis.

In the ASEAN region, HAPUA (The Heads of ASEAN Power Utilities / Authorities) and the Asian Development Bank are implementing initiatives related to intra-region power grid interconnections, and bilateral power imports and exports are ongoing. However, individual countries are still placing priority on optimization of investments at the domestic level. Besides, power imports and exports are not brisk enough to contribute to “power grid interconnection,” and moves toward pan-regional optimization have been slow.



This study will quantify the possibility and benefits of the pan-regional optimization of power infrastructure investments in the EAS region. By doing so, the study will provide clues for facilitate policy decisions toward the development of optimal power infrastructures and investment decisions.

## **Expected Findings and Policy Recommendations**

The followings are the expected findings and policy implications.

1. There remains a possibility to improve the efficiency of power infrastructure development of the EAS region beyond 2020.
2. By taking into consideration of appropriate electricity import from neighborhood country, a country is able to reduce both investment cost and CO2 emission.
3. Effect of each power grid interconnection is different in terms of total investment cost reduction and CO2 emission reduction. Therefore, to identify priority for power source development and interconnection is required to make investment more efficient.
4. Power grid interconnection will diversify power supply mix of each country. This will enhance the energy security not only for each country but also for East Asia region.
5. To facilitate the grid interconnection in the region, it is important to harmonize institutional and technical framework related to grid connection and power transaction.

# 30 Development of Energy Security Index and Assessment of Energy Security for East Asia Countries

---

## Abstract

Enhancement of energy security is becoming one of the top priorities for each East Asian country as they commonly need to achieve sustainable economic growth and development. It is also essential to recognize that East Asian countries have a wide range of diversity in areas of energy resources endowment, economic development stage, industrial structure, stage of technology development and deployment, etc. Under the circumstance, it will be required to analyze energy security situation and the policy implications in East Asian countries, with due consideration to the diversity mentioned above. Furthermore, since East Asian countries have already deepened their economic and energy relationship in a bid to explore regional integration, it is very important to promote energy security enhancement not only in each country but also in East Asian region as a whole through regional cooperation.

The first objective of the research is to develop Energy Security Index which allows policy planners in the region help accurate understanding of energy security situation in each country. The second objective is to make assessment of energy security policy impacts in East Asian countries by using Energy Security Index. Energy security policy development will be analyzed with comparison to historical changes in Energy Security Index, country-by-country difference in the Index, etc. The third objective is to draw policy recommendation for energy policy planners in the region from the above analysis, with reference to- what is the best approach/practice to enhance energy security for each country; what is the most effective way forward to enhance energy security for each country with different energy/economic conditions; how the regional cooperation can be best promoted to enhance energy security; etc.

## Expected Findings and Policy Implications

The followings are the expected findings and policy implications.

- 1) It is important to have accurate understanding of current energy security situation in each country, which will be a basis for policy planning and implementation of energy security

enhancement in the future.

- 2) From the analysis of the Index (international and historical comparison), each country will be required to identify the strengths and weaknesses of its energy security situation and the effectiveness of the policies employed in the past
- 3) Some countries had improved their energy security situation by implementing appropriate policy measures. By analyzing the past policy and transition of the ESI, effective approach or good practice of policy measure to improve energy security can be drawn from the results of past policy experiences in the East Asian countries.
- 4) Although the surrounding situations are different in each country, each East Asian country will need to enhance energy security policy by best utilizing the findings in this study. But at the same time, regional cooperation should be emphasized to compliment policies undertaken by countries so that enhancement of energy security in the region as a whole can be best achieved.

Energy security policy development will require significant role of private sector, through their active investment in and commercialization of advanced technology. Appropriate role sharing between government and private sector and encouragement of private sector investment and involvement will be the key.

# 31 Asian Potential of Biofuel Markets

---

## Abstract

Asia's growing appetite for energy but relatively limited resource reserves makes it vulnerable to changes in international energy prices. For liquid fuel, the situation is even worse. Concerns on environment deterioration caused by the burning of fossil fuels have been growing. In facing the challenges, most Asian countries promote production and utilization of biofuels as one of the possible solutions. However, it is an intensively debated option. Some of the issues include: biofuels versus food security, biofuels versus land use, deforestation, and so forth. Therefore, promotion of biofuels' production and utilization should be planned and implemented with caution.

This study explores the Asian potential in the biofuel market. Indonesia, Malaysia, Philippines, and Thailand were selected for study at the first stage, as these countries are relatively advanced in the production and/or utilization of biofuels in ASEAN. The research consists of 4 parts: 1) Survey of R&D and Development, 2) Survey of Promotion Policies, 3) Outlook of Biofuels Demand and Supply, and 4) Identification of Barriers and Suggestions for Policy Makers. The information on biofuels promotion policies and research and development and dissemination is summarized country wise in this report.

In this study, Biofuel supply and demand outlook is projected and analyzed for each selected country. Established results of other ERIA working groups on "Analysis on Energy Saving Potential in East Asia (ESP)" have been utilized as "Business as Usual (BAU)" case. The Working Group also developed "Biofuel Promoting Cases (BPCs)" based on the desired policy for ambitious biofuel utilization.

The BPC's demand and supply projection has been analyzed by econometric methods based on the assumptions by the ERIA ESP working group and government blend rates. Since demand for biofuels is dependent on the number of vehicles, estimating vehicle ownerships was the priority for calculating liquid fuel demand. It has been assumed that the development in vehicle ownership per capita could be described by a logistic function with a cap value of vehicle ownership per capita for each country. To calculate future gasoline and

diesel demand, the whole vehicle fleet was further divided into passenger cars which mainly consume gasoline and buses & trucks that mostly run on diesel.

The supply of biofuel depends on the potential feedstock supply. Therefore, this study calculated the supply potential as the surplus potential of the production of energy crops beyond domestic consumption. The Cobb-Douglas production function was used for calculating the production of energy crops by explanatory variables (e.g. cultivation area, agriculture population, capital stock and other inputs) and time variant.

In summarizing the four countries, it was noted that the market prospects are different between the countries, including demand schedule and supply potential. Thailand has rich resources for bioethanol. As an exporter of sugar cane and cassava, Thailand has enough raw materials to provide for domestic transport fuel. Although Thailand has the potential to supply palm oil as feedstock for biodiesel in the short to mid-term, the producers are more interested in exporting palm oil because of high profits. Therefore, price incentives for the domestic biodiesel market will be required. Moreover, as suitable land for oil palm cultivation is limited mostly to the south of Thailand, alternative crops or second generation technologies are necessary in long-term.

## **Major Findings and Policy Recommendations**

Among the four countries, the largest supply and demand gap anticipated for both bioethanol and biodiesel is in the Philippines. The domestic feedstock supply will not be enough to achieve the mandated target. However, under competitive pressure from other crops as well as imports, sugar cane is becoming less attractive for farmers. Cassava is another option now under discussion as additional feedstock, using marginal lands. As for biodiesel, the expansion in coconut cultivation is too slow in contrast to the increase in population that consumes coconut for food. In this regard, biodiesel from coconut will not be enough. Alternative crops such as oil palm in Mindanao and other islands in the south of the Philippines should be taken into consideration.

Malaysia's focus is on the utilization of palm oil for biodiesel. The potential of this feedstock is enough to support the national mandated target of 5% of blend rate. But to realize the domestic market, policy should focus on the pricing system to support the expansion of biofuels. Forest protection will become the main issue in the future. To reduce

forest exploitation, policies should focus on replanting, replacement from other land uses, and effective utilization of reserve agriculture and fallow lands to maintain production levels.

In Indonesia, though the cultivation area of sugar cane and cassava will increase in the future, domestic demand for both crops is also increasing. The research establishes that the increase in production will not be enough to secure the national target for bioethanol. As such, the expectation is mostly on cassava, which is less demanding in terms of the quality of soil. Cassava has the potential to be cultivated in a broader variety of lands, even on scattered small scale lands with low investment using existing technology. As for biodiesel, Indonesia has enough feedstock of palm oil to achieve the target. Policies should focus on biodiesel manufacturing, distribution infrastructure, and price issues. Forest protection will become the main issues in the future. The development of new land should be controlled with specific guidelines.

Although East Asian countries have enough physical resources for biofuel production in general, the total amount of supply and demand forecasted for the four countries implies huge ethanol supply shortage to the forecasted demand. For further analysis, there is a need to examine the biofuel supply and demand outlook for the whole EAS region and consider biofuel supply and fuel demand in the transportation sector.

To cope with the anticipated supply shortage, it is important to promote the agricultural sector and develop unutilized land. Increasing productivity of energy crops through enhanced technologies and system efficiency should be encouraged. On the other hand, all the measures to improve productivity in existing agricultural lands might not be enough to sustain biofuel production considering the potential impacts on our societies and also the environmental constraint. It is therefore important to promote commercialization of next generation biofuel technologies for sustainable supply growth, including newly developed feedstocks.

# 32 Energy Market Integration in East Asia Summit Region: Deepening, Understanding and Moving Forward

---

(In Progress)

## Abstract

The Energy Market Integration (EMI) study is planned to be a continuous work since FY2009-2010. The focus of the current study is on renewable energy (RE). For this year, 9 research papers are being conducted, of which six focus on renewable energy. All the original proposals have been endorsed by the Singapore Energy Market Authority. Topics addressed include impact of price distortion on national economy, diversity in an integrated energy market, and cash transfer (subsidy removal) in India. Regarding renewable energy issues, studies will address integration in ASEAN, trade and price support policy, case studies in Cambodia, Indonesia, New Zealand, and also the global perspective.

The project is due to be completed in July. However, findings and policy implications from last year's study (FY2011-2012), which were reported to the 2012 EAS Energy Minister Meeting in September 2012 are produced here. Four papers from this study have since been published by "Energy Strategy Review".

## Major Findings from FY2011-2012 Study

In the FY2011-2012 report, nine papers were included. These can broadly be divided into three categories with three papers in each, namely: the general EMI issues, case studies, and energy sector subsidies.

In terms of the general debate on EMI, this study shows that industrialization may lead to an increase in energy consumption per capita as well as the income (expenditure) elasticity of energy. This tends to generate a surge in the overall demand for energy. In contrast, energy market integration may help reduce the pressure on energy demand as it smoothes demand shock. The findings in this report also demonstrate that a more open power trade regime encourages the development of renewable sources such as hydro and wind for power generation and hence the total cost of meeting region-wide electricity demand will be reduced. Finally, a review of the trends of integration in the world's major electricity

markets shows that the main initiatives in electricity market integration share some commonalities. First, interconnections mainly occur among neighbouring countries which have well-developed national markets. Second, bilateral electricity exchanges are often initiated first and then expanded to become sub-regional markets. Finally, market integration is accompanied with domestic reforms and international harmonization of regulation standards.

The three case studies in this report cover Cambodia, China and New Zealand. With a rate of electrification of about 25%, Cambodia is expected to expand electricity capacity and coverage. The country will need a large amount of capital for investment in the future. This demand is well beyond the capacity and resources of Cambodian economy. There are however major barriers to investment such as insufficient legal and institutional framework and high administrative costs. Thus the country's business environment must be enhanced in order to attract both foreign and local investment.

Though China's electricity sector has been reformed, barriers to foreign participation in this sector still exist. The case study shows that the electricity sector reform alone cannot deliver the expected benefits associated with the participation of the private sector. Changes in the broader institutional arrangement in the economy are needed in order to cope with issues such as regulatory system fragmentation, uncertain pricing mechanism, limited access to the transmission, disadvantage of accessing fuel and finance for private sector, and rampant expansion of state-owned sector.

In New Zealand, market development and restructuring in the electricity sector were successful initially but had problems later. The Electricity Industry Act enacted in 2010 effectively allows the bundling of distribution and retailing and also raises the threshold for ownership separation among distribution, retail and generation. This new policy can also create vertically integrated electricity utilities, encompassing generation, distribution, and retailing. This practice is against the theoretical preference of competition and unbundling and its impacts are yet to be assessed.

The last three reports deal with subsidies in the energy sector in Indonesia, Malaysia and Vietnam, respectively. In the Indonesian case it is found that the removal of fuel subsidies affects production output, employment and income in the country. In particular, the impact on labour income is higher than that on capital returns and the lowest income group will be



affected the most. The latter is also observed in Vietnam where the average electricity tariff rate is far below the international rate. The report shows that a one short increase in electricity tariffs (to match the international price) would lead to a substantial increase in the CPI (Customer Price Index) and hence would be socially unacceptable. The findings support a gradual approach towards subsidy removal and separate implementation in each sector. The last report investigates the effects of subsidy removal on the Malaysian economy. It is found that phasing out oil subsidy would initially increase the general prices but eventually bring about an increase in output due to the improvement in efficiency and a decrease in the cost of production. There are however significant variations across industries. In general, the less energy intensive industries and domestic resources-based industries are least affected by the removal of subsidies.

### **Policy Recommendations from the FY2011-2012 Study**

The findings from these reports have important policy implications. Specifically, this project's findings imply:

- i. Less developed countries should be prepared for faster growing energy demand when their industrialization process commences;
- ii. Countries can gain from sub-regional cooperation and electricity trading on the one hand and will benefit from a resilient, competitive and effective energy market on the other hand;
- iii. Full-scale power trade tends to lead to full utilization of hydro power, which produces the lowest cost option ;
- iv. Deregulation and unbundling may have unintended consequences;
- v. Market integration is often accompanied with domestic reforms and international harmonization of regulatory standards; and
- vi. The lower income group and the energy intensive industries will be disadvantaged by the removal of energy subsidies.

The study makes the following policy recommendations for governments within the EAS member countries.

1. To promote a closely integrated energy market, which can lead to a less volatile, more flexible and resilient market through regional cooperation such as infrastructure

connectivity, trade and investment arrangement, and the harmonization of regulatory and technological framework.

2. To encourage free trade of electricity and more coordinated development of energy projects.
3. To build an open, competitive and effective domestic energy market. Equal access to energy infrastructure and finance for private investors is also important. In addition, it is necessary to enact necessary regulations, such as competition law, to protect both consumers and investors.
4. To adopt a gradual and incremental approach of subsidy removal so as to minimize the interruptions in member economies concerned.
5. For EAS members with low electrification, the focus should be infrastructure development. For others, the policy priority is to achieve regional and nationwide interconnectivity.
6. To harmonize regulations and technical standards gradually in the electricity and gas sector.

# 33 Strategic Usage of Coal in the EAS Region

---

(In Progress)

## Abstract

With rapid economic development, electricity demand in the EAS region is also increasing. It is generally understood that coal- and gas-fired thermal power generation will continue to play a central role in order to satisfy this demand. As coal is cost competitive compared with gas, it is anticipated that coal-fired power generation will increase on a broad scale. With the increase in demand for coal, notably in China and India, the supply demand relationship of coal has been in spotlight in recent years. For the sustainable usage of coal, the dissemination of Clean Coal Technology (CCT) for clean and efficient usage in the EAS region is of pressing importance.

While the necessity for the dissemination of CCT has been recognized, inefficient technology is still being widely used. It is therefore a concern inefficient technology will lead to wastage of valuable coal resources, environmental impacts will not be sufficiently reduced and sustainability will be harmed.

Based on the above-mentioned concerns, the current study is a technological potential map for efficient CCT dissemination. It aims to suggest a feasible efficiency level, environmental performance and maintenance criterion of each technology so that a country in the region is able to select and introduce the best technologies based on its own situation. It is expected that the study will provide a “practical” technological potential map for efficient CCT dissemination which can be used by policymakers in the region.

## Expected Findings and Policy Implications

This study has three important findings; 1) the importance of coal in the East Asia region, 2) impact of CCT assimilation, and 3) policy implications for policy makers.

### 1. Reconfirming the Importance of Coal

The effect of CCT deployment is quantitatively shown for the EAS region for the first time. In 2030, 51% of total installed capacity is forecasted to come from coal-fired power stations. On a heating value basis, coal is always more cost-competitive than natural gas,

providing high economic rationale. Furthermore, Australia and Indonesia have large lower rank coal reserves, which have high potential for contributing to energy security. These three factors can be leveraged through strategic use of coal by deploying CCT,.

## **2. Impact of CCT Assimilation**

In the analysis of economic impacts of CCT deployment, three benefits applicable to the EAS region are identified:

Long-term energy security and self-sufficiency.

Job creation.

GHG emission reduction.

## **3. Formulation of Technological Potential Map**

The technological potential map formulated in the course of this study serves as a policy reference for policy makers. Different policy guidelines are proposed according to the respective stage of economic development in member countries. This will assist EAS member countries to assess the optimum technology for their current state of economic development, and technologies which will be relevant in the future. The technological potential map also provides a set of policies to assimilate these technologies.

# 34 International Cooperation in Nuclear Safety Management in East Asian Countries

---

**(In Progress)**

## **Abstract**

Some of the ASEAN countries plan to introduce commercial nuclear reactors in early 2020s due to high growth of energy demand. In the 1<sup>st</sup> Working Group meeting of this study, the information on the current development plan with regard to safety regulation and nuclear security systems has been shared among the member countries in order to identify problems in establishing an emergency action plan for accidents and in considering desirable cross-border cooperation. The 2<sup>nd</sup> Working Group meeting will discuss proposals for regional cooperation such as emergency response, planning and management, technology and industrial development for nuclear safety and security.

Some of the progress made in the study so far are:

- All member countries have some kind of a national nuclear regulatory body and have a common awareness that every country should play a role in regional cooperation on nuclear safety, irrespective of the development status of commercial nuclear power generation.
- The countries which already have nuclear energy technology, namely Korea, China and Japan, will be expected to provide information on the reactor and fuel technologies, safety regulatory schemes, security and safeguard issues and most of all, human resources development plans.
- Nuclear accident at the Fukushima Daiichi in 11 March 2011 has had a serious impact among ASEAN countries even though the location of the accident is far from their location. Prompt and accurate information sharing at a regional scale would be the top priority in case of a serious nuclear accident.

## **Expected Policy Implications**

The basic principle for international safety cooperation can be summarized to 3 major issues which would make major contribution for enhancement of domestic and regional nuclear safety:

### **Participation in the Initiatives of International Organizations which include International Convention, Code of Conducts and other Collaborative Programs in Proactive Manner**

The activities to establish the regional nuclear safety regime would include the implementation of the international treaties and conventions for nuclear safety, exchange of information on nuclear safety and regulation, cooperation of R&D on nuclear safety and various international cooperation and supports.

### **Contribution to Regional Nuclear Safety from Experienced Countries to Newcomers**

The strategy for supporting newcomers would be implemented by installing safety networks to enhance effectiveness and efficiency for cooperation, such as ANSN, which would be one of the good examples for the regional cooperation. Providing some training and education programs for regulatory staffs in ASEAN countries through the expert organization such as Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) in Japan, or as International Nuclear Safety School of KINS (INSS) in Korea would be an important measure.

### **Exchange Information, Experience and Technologies by Building Cooperative Relationship with Regulatory Organization Worldwide**

Establishment of the ASEAN Regional Radiological and Nuclear Emergency Preparedness and Response Hub (tentative name) is proposed by the member countries, which would provide expertise and technical assistance on preparedness and response among the regional countries in case of radiological or nuclear emergencies, as well as contributing to establishment of the global nuclear safety regime by leading regional nuclear safety networks.

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

---

(In Progress)

## Abstract

Energy demand of EAS countries has been growing substantially, led mostly by energy for the power sector and transport sector. Energy for the transport sector in EAS is dominated by oil, of which imports have been increasing rapidly as the domestic production slows, rendering energy supply security concerns. Meanwhile, some EAS countries subsidize oil products to ensure affordable price levels for social considerations, and this exacerbates fiscal balances. In addition, motorization in the urban areas of some EAS countries has worsened the air quality. As these incidents prove, increases in transport oil demand have great socio-economic impacts, and the improvement in efficiency for the transport sector oil demand would be the important policy agenda across the EAS countries.

The growth in transport sector oil demand has been led by motorization in some EAS countries of which income level is growing rapidly. Particularly, the expanding urban area of higher income level than the country average, and their soaring passenger vehicle ownership has been causing a number of socio-economic issues, including chronic traffic congestion. In fact, the average travel speed of some urban areas of Asia represents low level, Jakarta at 15 km/hour, and Bangkok at 12 km/hour; and this in turn means the energy waste, time losses in economic activities, and worsening the air quality.

With respect to the transport sector, smart community aims to simultaneously achieve the efficiency improvement in the transport sector and lowering environmental burden through the optimization of transport infrastructure – such as road and rail, introduction of the next generation vehicles (hybrid, PHV, and EV), and transport demand management. In other words, smart community for the transport sector could cope with various transport issues in the urban areas of Asia.

A number of studies have been implemented to consider the energy saving potential in the transport sector of Asia through the shifts towards fuel efficient vehicle units. Meanwhile, in addition to the policy analysis, this study will utilize a simulation model which would be able to analyze the impacts of infrastructure development on the traffic flow and subsequent impacts of the overall transport sector energy efficiency improvement within the rapidly developing Asian cities. The outcomes from the study would provide new insights that would contribute to the sustainable development for the cities of EAS countries with the urban transport improvement through smart community development.

## **Expected Findings and Policy Recommendations**

The followings are the expected findings and policy implications.

1. Provision of urban transport measure is an integral part of the transport sector energy efficiency improvement.
2. Traffic demand management within a city will ease congestion, which in turn contribute to oil demand savings, and CO<sub>2</sub> emissions reduction.
3. Introduction of public transport systems will be able to further assist the city's efforts towards traffic demand management.
4. It is important to consider benefits and costs from the infrastructure investment for road, rails and buses since the utilities obtainable from the additional urban transport infrastructure investment would face limitation at certain level.
5. The benefits obtainable from the urban transport measures would be different from city to city as they differ depending on the economic development, infrastructure development level and population density.
6. Aside from the transport infrastructure development, economic measures such as imposition of various taxes on passenger vehicle ownership/usage may need to be considered to manage road traffic.