



# Summary of ERIA Research Projects in 2010-11

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By

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## ERIA Research Projects 2010-11

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## **ERIA Research No 1**

### **Globalization and Innovation in East Asia**

#### ***Abstract***

This report is second in the series of *ERIA Microdata Research Project of Fiscal Year 2010*. The project is part of the broader research pillar of ERIA on *Deepening Economic Integration*. The project in this fiscal year addresses the theme of globalization and innovation. The research aims at understanding the process and determinants of innovation and regards innovation as important for sustaining a country's competitiveness in a more globalized environment.

The research contributes to understanding the process and determinants of innovation, which is unarguably a research and policy issue of vast importance. Though not the first to explore globalization-innovation linkage, this research attempts to explain challenges of economic development in developing countries that have been regarded by policymakers as synonymous with the challenges of innovation: How is globalization related to innovation? Is globalization a cause of innovation, or is innovation a cause of globalization, or both? Does increased trade and investment liberalization lead to more innovation, or does it depress innovation activity? In either case, what are the exact mechanisms? These are some of the most important questions that this report aims to address.

This report collects findings based on the papers/studies done to cover many countries in East Asia region. The uniqueness of this project is that, it utilizes micro-level data at plant, firm, or product level addressing the innovation linkage to globalization, and focusing on the rapidly growing region in the world.

#### **Major Findings**

##### **Role of innovation in the exporting-productivity relationship**

Papers in this research provide evidence to confirm the positive impact of exporting on firm innovation activities and performance. Three papers from Japan, Korea and Australia specifically show this evidence in the context of the role of innovation in the exporting-productivity relationship. The Japanese case study on this subject shows that the first-time exporters indeed increase their R&D expenditure immediately after they export, albeit the increase depends on the export-market destinations. One of the Korean studies shows that exporting promotes the creation of new product while the Australian study reveals that exporters in services sector do indeed increase their process-innovation activities. Besides supporting the positive exporting-innovation

relationship, they also show that the positive impact is further translated to superior firm performance.

### **Role of foreign ownership in firm's innovation**

Three papers from Thailand, China and Indonesia focus on the research and development (R&D) activities in the firms as an input of innovation outcome. Key findings within this subject are related to the role of foreign ownership in affecting firm innovation. The Thai and Chinese studies show that MNEs tend to import their technology from their parent companies, resulting in rather low innovation activities of these MNEs in their host countries. However, the Thai and Indonesian study have also underscored the positive effect of MNE presence on R&D or innovation process. They suggest that the presence of MNEs stimulate locally owned firms to conduct R&D. In other words, MNEs presence create 'R&D spillovers'. The Indonesian study also finds a positive relationship between the acquisition of new machinery and the extent of R&D expenditure. The ups and downs of firm innovation output are closely related to the ability of the firm in acquiring new machinery.

### **Impact of globalization on innovation through competition link**

The research also presents some findings on impact of globalization on innovation through competition link. The study from Philippines finds that trade reforms in the country increase the extent of competition in domestic markets. The paper also suggests that higher competition stimulates R&D. Overall, trade liberalization positively affects R&D through product market competition channel. Consistent finding on the impact of competition is shown by the Vietnamese study which finds that tight price competition increases the likelihood of Vietnamese SMEs to engage in R&D.

### **Globalization and knowledge creation and absorption**

Globalization and knowledge creation and absorption is closely related. Another Korean paper shows that positive innovation premium can be accounted for by both the utilization of existing knowledge and active investment in new knowledge. Foreign MNE affiliates participating in export markets utilize existing knowledge more than investing in new knowledge in generating their positive innovation premium. In contrast, investing in new knowledge seems to be more important than utilization of existing knowledge in explaining the premium of the non-MNE exporters and domestic MNE parents with export participation. The Malaysian study shows that relationship between various aspect of organization and innovation is a complex one. Different types of internal and external knowledge flows are likely to be driven by different organizational variables. For

example, while knowledge flows from other companies within the same group are determined by whether or not the firm is a subsidiary. However another study, examining the impact of international research collaboration involving patent registered in Korea, China, and Taiwan, finds that international co-inventions are strongly associated with more science linkage, with higher quality of patent, and larger group of research team.

### **Policy Implications**

The research conducted by all papers in this project asserts that globalization encourages firm-level innovation. This policy implication is very important in the context of the usual approach that countries rely on R&D subsidies. The key policy message is the existence of an alternative way for a country to promote innovation, which is done by, and through, maximizing the benefit from globalization.

Within this broad message, there are more specific policy-implications.

First, policy to promote exports encourages firm innovation; hence, policy to assist firms to export more, as well as to make more firms to engage in exports, is implied. Most findings on the positive relationship between exporting and innovation activities and/or performance support this policy implication.

Second, policies for higher foreign involvement should be encouraged. The justification of this is based on the evidence of the existence of ‘R&D-spillovers’ impact on domestically owned firms, from the presence of MNEs.

Third, continued trade liberalization and maintaining a relatively open trade regime is suggested. A high domestic market competition drives firms to engage in innovative activities, and create a contestable market situation. A liberalized trade regime could be even more beneficial if it is put in a framework of deepened integration of a country in Southeast and East Asia regions. The report on Thai manufacturing underlines this in the context of linking firms with the already-established international production networks in the region. This study finds positive relationship between participation in the production networks on greater R&D activities by firms.

Fourth, findings from the research suggest that globalization seems to also benefiting SMEs – not only large firms. The important issue is to devise policies to materialize this suggestion. The Australian study in this report suggests that, at least conceptually, the policy is to gear SMEs to learn more about process innovation – rather than product innovation – from utilizing globalization forces.

## **ERIA Research No 2**

### **Comprehensive Mapping of FTAs in ASEAN and East Asia**

#### ***Abstract***

The aim of this study is to construct comparable and comprehensive database on FTAs in this region by investigating articles of concluded agreements of ASEAN FTAs with the dialogue partner countries and bilateral FTAs between ASEAN countries and other East Asian countries in order to serve as a knowledge base of mapping for efficient FTAs strategy and the region-wide FTA architecture in this region. This study is distinguished from several existing FTA stocktaking studies by providing comparable and quantitatively-analyzable database of commitments and indices of the liberalization of FTAs. By constructing such intensive database based on a common framework of each issue enables us to conduct comparative and multidimensional analysis which offers persuasive and strong policy implications for construction of efficient region-wide FTA system. This study will complement the existing studies on FTAs by offering powerful and intensive measures to compare various characteristics of all FTAs at once.

This study covers ASEAN+N FTAs as well as AFTA, bilateral FTAs among ASEAN members and the dialogue partners. For the first step, the following four chapters; 1) Tariff components; 2) Rules of Origins; 3) Trade in services; 4) Investment are covered. Also, we conduct several analyses on FTA convergence based on our database.

#### **Major Findings**

##### **FTA Quantitative Database**

At the end of March 2011, the project has constructed FTA quantitative database of the above four chapters. As for the tariff dataset, the current version of the dataset covers 56 signatory-level tariff schedules bound under the five ASEAN+ n FTAs namely, the ASEAN-Japan Comprehensive Economic Partnership (AJCEP), the ASEAN-Korea FTA (AKFTA), the ASEAN-China FTA (ACFTA), the ASEAN-Australia-New Zealand FTA (AANZFTA), and the ASEAN-India FTA (AIFTA). This product-level preferential tariff dataset contains 14 variables. Regarding the dataset of ROOs, matrixes of ROOs, including the product specific rules (PSRs) comparison, matrixes of Operational Certification Procedures (OCP), matrixes of Verification Procedures at 6 digit 2002 HS classification have been constructed on ASEAN +n FTAs. Using the dataset, we assess the various ROO regimes of these FTAs, particularly with regards to their degree of commonality and relative

restrictiveness. The research has found substantial commonality in ROOs across the 5 ASEAN FTAs although considerable variation still exists across FTAs and sectors.

### **Indexation of Degree of Liberalization in Services Trade**

Regarding the dataset of service trade, we have conducted indexation of degree of liberalization of each FTA's commitment by 55 sub-sectors by 4 modes and by two aspects of liberalization. Also, we constructed Hoekman index of each FTAs by sectors. Based on the dataset, comparative analyses using correlation coefficients across countries of each FTA and clustering of countries under each FTA are conducted. In addition, with regards to Investment rules of FTAs, we constructed FDI restrictiveness indexes by 156 sectors by 6 areas based on temporary exclusion lists and sensitive lists of each country as well as their more recent individual action plans. Comparative analyses were also conducted regarding on restrictiveness on each sector across countries under ASEAN FTAs

### **Policy Implications**

The database is still under construction and it plans to cover all ASEAN+1 FTAs and bilateral FTAs of ASEAN countries and the dialogue partners. Therefore, this study has not yet achieved a comprehensive policy implications to draw an regional integrated FTA architecture. However these are the preliminary findings leading to policy implication.

### **Tariff Dataset**

A policy implication regarding the preparation and distribution of tariff data by East Asian countries will ensure that countries could standardize the contents and the format of publicly available electronic data on MFN and preferential tariffs. Standardizing publicly available MFN and preferential tariff data could contribute to enhancing the transparency of tariff structures in the region for business and public sectors, and promote more effective and efficient FTA negotiations in this region in the future.

### **ROOs Dataset**

Although the noodle bowl of FTAs might not be as messy as it may seem, it would still be cumbersome for Customs authorities to be processing different Certificate of origin forms. Harmonization across FTAs at least, of these forms, would simplify not just administration but compliance of exporters dealing with multiple markets.

### **Services Trade Dataset**

Overall, though, the absolute degree of commitment in service sectors remains rather low, even under the FTAs with a preferential nature. Given that there are more benefits than costs arising from deepening trade in services, further harmonization of the service chapters under the four FTAs studied is economically valid for bringing about more benefit to the ASEAN members, as well as all the other participating countries in the Asia Pacific region.

### **FDI Restrictiveness Dataset**

There have been significant improvements on direct measures to improve and facilitate FDI in ASEAN, especially on cross borders investment. At the same time, indirect measures such as the time required to open and close investment establishments have deteriorated much. In order to secure sustainable liberalization and facilitation in FDI, it is critically important that a system of reliable monitoring mechanism is initiated and established in ASEAN.



## **ERIA Research No 3**

### **Toward a Competitive ASEAN Single Market: A Sectoral Analysis**

#### ***Abstract***

This project aims to update and expand quantitative analysis and conduct in-depth analysis of trade facilitation, service trade liberalization, FDI inflows and skilled labor mobility among ASEAN countries by sector and country. Based on results of the project on quantitative measures regarding key policy pillars in the ASEAN Economic Community Blueprint conducted during 2007-2009, this project focus on analysis on the current status and progress of liberalization of trade of goods, services and investment and mobility of skilled labor in order to draw implications for realization of a competitive ASEAN single market and production base which is an important target of the ASEAN Blueprint.

#### **Major Findings**

With respect to service trade liberalization, the study has mapped the actual policy space by conducting questionnaires in five key service sectors, medical, health, banking and insurance services, and accountancy. The first four of these sectors were also mapped in the study of 2008, thus it can be indicated the extent of real reform since 2008 and indicate whether this reform was generated by AFAS commitments. There has been at least some progress since 2008 in all four the sectors, Some of this has been in direct response to AFAS commitments, but most has other proximate causes. Some of the policy changes in banking and insurance services involved a tightening of prudential regulation in response to the global financial crisis.

Regarding FDI climate, firm survey was conducted on FDI environment on foreign firms in ASEAN countries for deeper understanding of the FDI policy environment of ASEAN countries and to help them formulate FDI policy. The analysis of the FDI climates of the ASEAN countries faced by Japanese and non-Japanese foreign firms conducting operations in ASEAN revealed that impediments to FDI are found not only in the policies but also in their implementation and enforcement. Although wide variations were found among countries, ASEAN countries as a whole tend to have relatively improved the explicit investment climate as the number of the incidents revealing problems preventing FDI directly declined in so far as FDI liberalization is concerned.

As for trade facilitation, a comprehensive and extensive empirical analysis was conducted by using trade data and various indexes on trade barriers in order to find significant trade barriers and quantify the benefit of trade facilitation in the ASEAN. It was found that effort for trade facilitation

by ASEAN only marginally contribute to creation of the intra-regional trade, but it will have much greater effect on trade expansion with the rest of the world.

In addition, we explored the framework of liberalization of skilled labor in ASEAN since the AEC Blueprint covers only “free flows of skilled labor” and is silent on flows of unskilled/semi-skilled labor. Based on comparative analysis on WTO and ASEAN FTAs as well as policy framework in ASEAN countries such as MRA, we tried to draw an framework of liberalization of skilled labor mobility in this region.

### **Policy implications**

#### **Service Trade Liberalization**

Medical Service: some ASEAN countries still need to take definitive action to achieve the target of allowing 70% foreign equity participation, and barriers to the movement of individual professionals are still prevalent. There is significant further scope to promote a single market for medical professional services by ensuring that existing regulation does not discriminate against foreign providers.

Health Service: Non-discriminatory barriers to entry and operations have already been removed; however, removing discrimination against foreign suppliers is the only remaining task.

Banking Service: Six out of ten ASEAN countries have foreign equity limits that do not yet meet the ASEAN Blueprint’s benchmark. Also, there is evidence that some countries are still using unnecessary restrictions in place of better-targeted prudential requirements. With the recent strengthening of prudential regulation, there is scope for further market opening.

Accountancy: Although six ASEAN countries already meet the Blueprint’s targets for foreign equity participation, restrictions on the movement of individual professionals are more prevalent than restrictions on commercial presence. A single market for this and other professional services depends crucially on the free mobility of individual professionals. Mutual recognition agreements can help, but the relaxation of other restrictions on entry and operation is also required.

#### **FDI Environment**

In order to promote FDI policy liberalization, the ASEAN countries should use various existing frameworks, such as WTO/GATT’s Trade Related Investment Measures agreement, bilateral investment treaties, free trade agreements, and other legal frameworks. In particular, ASEAN should use the ASEAN Comprehensive Investment Agreement.

To overcome obstacles concerning FDI facilitation, the ASEAN countries should actively use various cooperation programs with developed countries to improve human resources engaged in the implementation and enforcement of FDI policies. Possible multilateral and regional sources of technical assistance in this area may be UNCTAD, the OECD, and ERIA.

Monitoring of the achievement of FDI liberalization and facilitation has to be emphasized, in order to achieve a freer FDI environment. In this regard, a monitoring mechanism should be established in ASEAN, if it has not been established yet, or in ERIA.

### **Trade Facilitation**

From a view of trade facilitation, port efficiency and customs environment should be priority areas for capacity development. In addition, it is proved that trade facilitation in this region contributes to a long-term growth. Collective actions are needed, at the same time a step-by step building block approach from core principles towards expanded ones.

## **ERIA Research No 4**

### **Fiscal Issues in Asian Economy: Assessment on the Impact of Stimulus, Fiscal Transparency and Fiscal Risk after the Crisis**

#### ***Abstract***

The research aims at making a country assessment on fiscal position before and after the Global Financial Crisis. It studies the impact of Stimulus Package, Exit Strategy and Identification of Future Fiscal and Macroeconomic Risk. This includes an evaluation of the effectiveness of fiscal stimulus combating an economic crisis. The research aims at answering the questions if the exit strategy has been clearly laid out? Has the fiscal expenditure to GDP become permanently higher? Is there any risk to fiscal sustainability?

**Fiscal Transparency and Anticipating Policy for Future Crisis:** The research aims to study the fiscal transparency and anticipate policies for future crisis. To achieve this it answers many questions, such as: Is all the fiscal information readily available to the public? Is there any hidden deficits or debts that are not shown in statistics? Is future liability of social security and health care projected correctly and funded sufficiently? Has a fiscal trend and rule—counter-cyclical policy; the tax burden in GDP—changed by the experience of Global Financial Crisis?

#### **Major Findings**

##### **The Effect of Fiscal Stimulus**

In China, the policy has greatly stimulated China's economic growth and GDP growth has bounced back to 10.3% in 2010. Consumption was the main driver of GDP growth from 1978-2000. The impact of Stimulus Program in ASEAN, Japan, China, India and Korea are variegated. In most of ASEAN countries it contributes to positive growth, with good initial fiscal position as a requirement.

However, in Japan the impact has created a concern over the balance of Government debt and its sustainability.

The Stimulus Program also varies from country to country, mostly on expenditure side. However, there is future challenge in some of these programs that tend to be permanent instead of temporary, such as social security related program.

Fiscal transparency is still a challenge for most of ASEAN countries. There is a tendency to hide contingent liabilities (such as future pension liabilities, health care, guaranteed SOE) from Government budget reporting.

### **Policy Implication**

The research suggests various fiscal governance measures that include reformation of tax systems. Governments should look into increasing direct taxes (e.g. personal income tax and personal property tax) and reduce indirect taxes (e.g. VAT, business tax and consumption tax). It should also be lowering the tax rates, expanding the tax base and reducing tax evasion.

Some of the other measures that governments must look into are: establish a new social security system of a large personal account and reduce government budget deficit. Government should also follow balanced budget principle in the long run and increase fiscal transparency.

## **ERIA Research No 5**

### **The Comprehensive Asia Development Plan - Phase II**

As a follow-up of the CADP, which was submitted to the East Asia Summit in October 2010, this project aims to explore three important issues: 1) ASEAN-India connectivity, 2) innovation strategies for developing East Asia, and 3) a new capacity building program to facilitate the implementation of PPP projects listed in CADP.

#### **1. ASEAN-India connectivity (Tiers 1, 2 and 3)**

- The project invites a team of researchers from three key countries, India, Myanmar, and Thailand, to conduct up-to-date and in-depth studies on the current status and the future prospects and challenges of two major initiatives to enhance the connectivity between ASEAN and India, namely, the Mekong-India Economic Corridor (MIEC) and the Trilateral Highway.
- Dawei has a potential to pursue Tier 2 development strategy by taking advantage of its strategic location between Bangkok metropolitan area and the east coast of India. The success of Dawei development depends heavily on the political will of the countries of concern (Myanmar, Thailand, India, China, Japan, etc.), including policy coordination among them. For example, in order to invite FDI to Dawei, Myanmar needs to assure the protection for investors, market-friendly policy environments, and political stability in the neighborhood, all of which are still challenging agenda for Myanmar government.
- For Thailand, the development of Dawei can be a critical component of its “Western Seaboard” initiative. Therefore, Thai government is expected to provide further supports to the private developer (Italian-Thai) in attracting investment for the project.
- In Chennai, a number of infrastructure projects are planned or ongoing in order to improve (1) ports (Chennai, Ennore, Tuticorin) including the access to the ports, (2) urban transportation in the city of Chennai (Chennai Metro Rail), (3) multifaceted bypass roads surrounding Chennai (inner ring roads, Chennai bypass, outer ring road, outer-outer ring road), and (4) the access to Bangalore (Chennai Bangalore Industrial Corridor: CBIC) as a part of the Golden Quadrilateral (GQ) under the National Highway Development Project (NHDP).
- The western segments of MIEC (BKK-Dawei-Chennai) is expected to promote the expansion of the production networks in the continental ASEAN (centered in BKK) to India, one of the most vigorous emerging economies in the world. This development is expected to open a new window for the private firms operating in the region to enhance their competitiveness by further taking advantage of various aspects of location advantages.
- Trilateral Highway connecting Northeastern India, Myanmar, and Thailand can offer an alternative route to connect ASEAN and India, and expected to contribute to narrow

development gaps in the region by raising the income level in the Northeastern India and Myanmar (mainly for Tier 2 and 3).

- Kaladan Multi-modal Transit Transport Project, which is to connect the port of Kolkata, via Sittwe in Myanmar, and the Northeastern India (bypassing Bangladesh) is another potential route to enhance ASEAN-India connectivity. However, this project can be regarded as a political response of India to cope with the strategic investment of China in Kyauphyu (deepsea port, industrial estates, and gas pipelines). Therefore, we need to be careful in evaluating the economic impacts of these two projects supported by two neighboring superpowers.

## **2. Innovation strategy for developing East Asia (Tier 1)**

- Innovation do exist in developing East Asia, in contrast to the widespread notion that the private sector there is dependent on foreign firms in terms of innovation, although the linkage between public research institutes/universities and private firms are still weak.
- The technological factor of *the constructed capability index* is significant for product innovation. The organizational factor is significant for process innovation. The human resource factor is significant for both. Another econometrics study also revealed that internal resources (capability) did matter in materializing innovation based on the information from external resources.
- Three sets of policy recommendations which relate to each other: a) to stimulate “demand” for the enhancement of technological and innovative capabilities (ex. business matching); b) to upgrade the technological and innovative capabilities of firms (ex. tax incentive, govt. consultancy); and c) to strengthen linkages between internal and external resources (ex. tax and other incentives).

## **3. Capacity building to facilitate implementation**

- A workshop will be held on 30 May 2011 by inviting relevant researchers, consultants, and/or government officials from Vietnam, Thailand, and India.
- The objective is to draw recommendations for the design of ERIA PPP Meister Program, with the cooperation with the APEN (Asian Professional Education Network).

## **ERIA Research No 6**

### **ERIA Study to Further Improve the AEC Scorecard - Phase 2**

The project is a continuation of the Phase 1 project in FY 2009-10, which is a response to a request from the ASEAN Economic Ministers to ERIA to help improve the current official scorecard for the ASEAN Economic Community. In Phase 2, the activities consist of (a) determine the core measures in the AEC Blueprint using the results of a survey of the private business sector as well as economic analysis; (b) develop alternative scoring system for the core measures; the scoring system can indicate the degree of implementation of the AEC measures, (c) gather information, primarily through structured interviews using questionnaires, needed to score ASEAN member states on the core measures using the scoring system designed in the Study, and (d) generate recommendations, primarily through consultations with stakeholders, on actions that need to be taken by the ASEAN member states in order for their implementation scores to increase.

What has been completed so far is the survey of the private sector in order to determine the core measures among the measures in the AEC Blueprint. The results of the survey indicate that the private business sector puts more emphasis on improving trade facilitation measures (e.g., National Single Window) first and foremost, then investment and transport facilitation measures in the AEC Blueprint for implementation in the run up toward of AEC by 2015. There is more varied response, with a stronger opposition, to the issue of opening up industries to foreign equity participation of **at least 70 percent**, which appears to be the de facto definition in the of a free and open market access in investment in the ASEAN. Nonetheless, taking into consideration of the criteria used to define what constitutes as “core measure” in the AEC Blueprint, the Study indicates that the major measures included in the Pillar 1 of the AEC Blueprint (i.e., Towards a Single Market and Production Base) are all considered as “core measures”.

The project is now on the second activity of designing the alternative scoring system to determine the degree of implementation of the AEC Blueprint measures. After these scoring systems are finalized in early April, the data gathering will start by mid April. The scores and the analyses of the scores of the implementation of the AEC core measures for each ASEAN country will be presented to the SEOM, HLTF-EI and the AEC Council during their respective meetings in August. *The usefulness of this project lies in that the alternative scores crafted in the Study will allow the ASEAN member states to know the true situation on how far they have gone towards the objective of having an ASEAN economic community by 2015.*

The project is still ongoing and will end in late October 2011.



## **ERIA Research No 7**

### **Agricultural Development, Trade and Regional Cooperation in Integrating and Industrializing East Asia**

#### ***Abstract***

Agriculture remains an important sector of the economy for both the lower income ASEAN countries and the middle income ASEAN countries as well as China and India. Agricultural development remains an important pillar for balanced growth, sustained poverty reduction, and deeper domestic consumption base for their manufacturing and service industries.

An integrating and industrializing East Asia offers both opportunities and challenges to the region's agricultural sector. On the one hand, a robustly growing East Asia is a growing source of demand for a wider range of agricultural products for food and industrial purposes. At the same time, improving infrastructure, transport systems and manufacturing capabilities concomitant with the industrialization process open up markets and improve efficiencies in (commercial) agricultural production, processing and marketing.

However, the increased opportunities for agricultural exports from a robustly growing and industrializing East Asia are tempered by the political and social imperative of food security. This is because natural disasters like drought or widespread pest infestation that significantly reduce domestic food production can spike up food prices unless global prices are stable. Substantial increases in food prices have significantly negative welfare implications on the whole populace; as a result, at times they also have political ramifications. Given that agricultural land, especially good agricultural land, is finite, food deficit countries thus face the dilemma of addressing food security considerations on the one hand and maximizing agricultural growth and trade potentials on the other hand

The research attempts to address the twin issues of the growing opportunities for agricultural development and trade arising from a robustly growing East Asia on the one hand and the political and social imperative of food security on the other hand. The key way forward is to have a relatively more open agricultural economy along with investments in productivity enhancing interventions like irrigation and agricultural research and development on the one hand, and also engender regional cooperative efforts that redress the negative welfare effects of crises and natural disasters.

## **Major Findings**

### **The critical role of appropriate incentive structure**

Farmers respond well to favorable incentive structures for farming; e.g., institutional reforms in Viet Nam; lack of restrictions on pulses in Myanmar; significant drop in relative price of fertilizer to rice in Viet Nam.

Good investment climate and investment incentives contributed to sharp expansion of oil palm farming and processing in Indonesia and Malaysia

### **Government Support is important**

Government investments in irrigation, agricultural research, roads, and rural education are the most important contributors to agricultural production and productivity growth in China and India. Irrigation investments are also central to Myanmar and Viet Nam's agriculture growth

Export support facilities and rules (eg., testing laboratories; quality surveillance) contributed to Thailand's agricultural export competitiveness

### **Organizational Structure of the industry**

Cohesive networking of firms, research and training institutions, and private sector driven government policies (i.e., industrial cluster development) is a critical factor for Malaysia's success in oil palm industry

### **The importance of innovation and productivity growth for international competitiveness**

PORIM's varietal research breakthroughs are the foundation of Malaysia's oil palm industry boom. PORIM's new product research important factor to Malaysia's global leadership in oil palm

China's agriculture growth stems in part from research breakthroughs in rice, ground nuts, etc.. China's agriculture R & D to agricultural ratio is relatively stable from the 1950s to the early 1990s. China has the world's largest agriculture research system and personnel.

Thailand's agriculture R & D to agriculture GDP is comparatively high although declining in recent years; its private sector firms are investing more and more on agriculture R & D.

## **Policy Implications**

Favorable incentive structure to farmers and private investments in agriculture and agri-business creates a foundation for robust development of agricultural sector. Similarly, favorable macroeconomic regime and investment climate is also important for the sector.

Mobilizing the government support to infrastructure and mechanisms of the agriculture sector is important for its growth. A network of cohesion among firms, institutions and policies adds to this development.

Globalizing and creating a more open agriculture sector is necessary to engender more efficient utilization of limited agricultural resources in the region. Improved trade facilitation also contributes to deeper intra-regional integration. There is also a need for institutionalizing the safety net programs with effective targeting mechanism

There is an urgent need to invest more in agriculture R & D (both government and private) to improve agriculture R & D and agriculture extension capacity

Finally, explore the possibilities of regional cooperation in managing crises and disasters (as well as in managing regional commons). This cooperation is also the key to expanding the reach and benefits of new technologies for agricultural development.

## **ERIA Research No 8**

### **Thematic Issues in Social Protection Issues in East Asia Economy**

#### ***Abstract***

The need to strengthen pension systems in East Asia countries has been evident since at least the 1997-98 Asian financial crises. As the economic recovery was swift, the initial efforts to strengthen social protection systems made to address the crisis, were not sustained in many parts of Asia.

The dominant thinking that Asia should concentrate on high economic growth, and not construct robust social protection systems therefore continued among the policymakers and influential stakeholders. The current global crisis is once again leading to intense focus on pension reforms as credibility of pension promises has come under scrutiny.

The main objectives of any pension system security are consumption smoothing over an individual's lifetime; insurance (particularly against longevity and inflation risks); income redistribution for society as a whole; and poverty relief. However, these have to be traded off against economic growth, labor market efficiency.

As resources devoted to social protection have opportunity costs, needs of groups other than the elderly in society, and other needs such as health, education, and infrastructure, have to be traded off against allocations for retirement. Moreover high rate of growth in employment, particularly in the formal sector where workers are more likely to receive pension and health care benefits, has traditionally been the instrumental factor leading to expanding coverage of the labor force.

This research covers the rapidly ageing economies of Japan and Korea. It then continues to examine China which is in a critical decade as rapid aging will manifest from this decade onward. Similar problem exists in India and Indonesia, with a large share of informal labor. Finally, the research evaluates the structuring Payout Phase in high income countries such as Singapore, Australia and New Zealand

#### **Preliminary Findings**

##### **Sustainability of Social Protection**

The problem in the sustainability appears in rapidly ageing economies of Japan and Korea. This is mainly caused by too many *pension promises*, while sufficient funding sources had not been

arranged. *Lower compliance* in contribution and increase in the drop out by the young have added to recent concerns as well.

### **Insufficient and Uneven Systems**

Assessment of china's pension system show insufficient coverage in rural area, uneven coverage in urban area, fragmentation of the system, unsatisfactory investment return, and poor collaboration between ministerial agencies. The fragmentation of the system consists of vertical fragmentation and the pooling level is very low, mainly at county level. There also appears to be horizontal fragmentation among urban enterprise, urban residents, migrant workers, PSU and civil servants.

Study of Australia and New Zealand reveal that payout phase of Direct Contribution schemes are still undeveloped. There is a rather short menu of retirement income streams and are under insured against longevity risk. The policy response required in these countries must stimulate consumer demand, assist product providers hedge risks, coordinate public policy/regulators, regulate information provision and enhance financial skills of retirement savers.

### **Governance and regulation**

The main issues in Civil Service pension in middle income countries is of governance and regulation and non-transparency of actual functioning and actuarial and other studies. In case of Philippines, the challenges are to broaden coverage and promote compliance, a very high replacement rate compared to contribution, high operating expenses, and equity issues which results in redistribution in favor of high income group.

### **Coverage to the informal sector**

In case of India and Indonesia, the efforts to extend the coverage to the informal sector are facing challenges such as fragmented programs and lower coverage (about only 18% of total workforce). Affordability of pension programme is an issue due to low income, absence of employer's participation and irregularities of income stream. There is also a prevalence of benefits not related to priority needs as also a lack of awareness and willingness towards these programmes.

## **ERIA Research No 9**

### **SME Access to Finance in Selected East Asian Economies**

#### *Abstract*

Findings from ERIA's SME research project in FY 2010 confirmed that access to finance is amongst the most critical factors determining the competitiveness readiness of regional SMEs and their ability to fully exploit and participate in the global economy and business opportunities from regional economic integration and, in particular, participation in regional production networks. In this context the present study is concerned with:

*Elaborating in more detail the key factors that are statistically significant in impacting upon SME access to finance and its performance, and*

*Provide evidence based policy recommendations addressing the issue of credit rationing or limited access to finance for this critical group of enterprises for the regional economy.*

The project covers 7 ASEAN countries: Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam, and China.

#### **Major Findings**

First, although a significant number of SMEs still rely on their internal resources for both start-up and business expansion, external finance is very important for aspiring smaller domestically owned companies in less developed economies which make lower profits and which have insufficient access to funds. Moreover, the size of the SMEs and stage of the country's development (reflecting the financial market conditions) also affect the diversity of choices of financial institutions and financial products that SMEs can access.

Second, there is potential for credit rationing, or risk premiums exercised by the financial institutions on SMEs. The key findings from our analysis suggests that size and stage of country development (financial market development) do affect the conditions of external finance offered to SMEs, i.e., larger SMEs in more developed economies tend to get bigger loans, with longer terms, and at a lower interest rate than otherwise.

Third, the results suggest that the owners' net worth, collateral, business plan, financial statement, and cash flow are critical for financial institutions in devising the financial conditions they extend to SMEs. In other words, financial intuitions seem to put higher risk premiums on

opaque SMEs by offering less favourable financial conditions to less well-established and transparent SMEs.

Finally, financial access has a significant impact on SMEs' innovation capability and participation in the export market. The study suggests that bigger SMEs with access to larger loans with longer terms and at a lower interest rate are more capable of innovation and exporting activity, since these external finances with favourable conditions would provide SMEs enough time and resources to innovate and enter foreign markets.

### **Policy Implications**

In order to address these shortcomings in terms of SMEs' access to finance, particularly in emerging market and developing economies, a number of policy measures need to be addressed and in particular the following: First, regional governments, particularly in emerging market and developing economies, will be required to maintain frugal and sustainable macroeconomic policy settings. Overly expansionary macro policy measures that contribute to sizeable budgetary imbalances and inflationary pressures would reduce the availability and increase costs of finance for productive firm investment in the private sector. This will further compound difficulties faced by private sector SMEs, in particular, in gaining access to finance. Government policies that place emphasis on rapid industrialization through discriminatory measures that favor large firms will also add to the problems facing SMEs wishing to gain access to finance.

Second, on the supply side, measures will be required to deepen and broaden financial markets in regional economies with the aim of encouraging greater competition in terms of providers, reducing the cost of borrowing, and greater provision of sources of finance (non bank financial institutions, equity markets, venture capital markets etc.) that will enhance the provision of diversified products and services, bringing them more into line with meeting the needs of SMEs.

Third, the empirical results suggest that smaller SMEs in emerging market and developing economies have serious difficulty in obtaining finance, and face higher interest rates. This is not surprising, and consistent with the literature, in the context of economies where a lack of transparency in firm operations and poor corporate governance contributes to asymmetric information and greater lending risk as perceived by financial institutions. In this context it is essential to implement policy measures aimed at improving the legal, institutional, and regulatory framework. The legal framework should ensure property rights and contain provisions that protect lenders against bankruptcy and delinquent loans, encouraging lending institutions to lend to SMEs. In addition, they should also contain provisions that ensure access to land and land-use rights,

which is particularly important for SMEs as a source of collateral in emerging market economies. The institutional and regulatory framework should also encourage the formal registration of SMEs and not contain bureaucratic and regulatory processes that make the costs of formalization (compliance costs) greater than the benefits obtained from formalization. Finally, the regulations should be as transparent and simple as possible, aimed at improving corporate governance and transparency arising from the adoption of stringent book-keeping and accounting standards.

Fourth, microeconomic policies aimed at opening up markets and creating a level playing field for all enterprises will encourage more efficient resource allocation and improve productivity. The establishment and nurturing of a vibrant SME sector will encourage greater competition. This should also be encouraged in the financial sector, with the objective of, promoting access to finance in general as well as reducing the cost of finance.

Fifth, encourage the establishment of industry organizations for SMEs that will represent the interests of members and provide market information and capacity building.

Finally, introduce credit guarantee schemes subject to rigorous and viable business plans, credit rating, and information systems. Establish specialized and more effective development financial institutions such as an SME bank, and the provision of business development services that can assist SMEs with embedding business training (e.g. management, business planning, book keeping, accounting, and financial literacy) and network promotion.



## **ERIA Research No 10**

### **Impacts of Conditional Cash Transfers on Growth, Income Distribution and Poverty in Selected ASEAN Countries**

#### ***Abstract***

In fiscal year 2010, ERIA completed a research project entitled: “Social Protection in East Asia – Current State and Challenges” covering 13 countries in the East Asia. The project highlighted the current state of social protection, and identifies broad avenues to strengthen it.

Even though, the project provided useful overviews and broad directions of reforms, various thematic issues and impact were not analysed. These are gaps that the proposed research attempts to fill.

As a starting point, this study analyses the impacts of conditional cash transfers on income distribution and poverty in Cambodia, Laos, and Vietnam.

Existing safety net interventions normally exclude some important vulnerable groups. The supports often fall short of providing assistance to those who have recently fallen into poverty, or are poor for a transient period, such as farmers during the lean season or victims of natural disasters. In order to address these gaps, assistance could be provided by expanding and improving existing social assistances and others type of social transfers programs in selected areas. There are a number of countries (Mexico, South Africa, Bangladesh etc.) that have achieved considerable success with conditional cash transfers (programs which provide households with cash payments so long as they make use of public services). Learning from this success, it may be worth considering incentive-based cash transfer schemes for Cambodia, Laos, and Vietnam.

In order to provide some assessment of the proposed schemes, the objectives of this research are as follow: (i) to show the income distribution and poverty implications of providing cash transfers to vulnerable households; and (ii) to provide cost estimates and practical policy implications for introducing such programs.

#### **Major Findings**

- Paper on Vietnam quantifies the potential impacts of various cash transfer programs on poverty in old-age in Vietnam by using the Vietnam Household Living Standards Survey (VHLSS) of 2008. Given current characteristics of the elderly population in terms of poverty and vulnerability, three programs are considered: (i) a universal program for all elderly people; (ii) a program for only female elderly; and (iii) a program for only rural elderly. In general, the

simulation results indicate that, given the same fiscal costs, the program for rural elderly would be the most effective in terms of poverty reduction. Also, with the same fiscal costs, programs providing lower benefits to a wider group of beneficiaries would be more effective in poverty reduction than programs providing higher benefits to a more limited number of beneficiaries. The paper argues that it would be financially affordable for Vietnam to expand the current cash transfer program to wider groups of the elderly, so as to reduce their poverty and vulnerability.

- The second paper on Cambodia presents the complexities of designing a pilot CCT (Conditional Cash Transfer) scheme in Cambodia, focusing on the benefit level, potential selected beneficiaries, and tentative costing in different scenarios. The paper argues that high school dropout rates and a high incidence of child labor are serious outcomes of the vulnerability affecting children. They also have a profound effect on the likelihood of future generations moving out of poverty. Programs intended to fight child labor and keep children in school (in-kind transfers including school feeding and take-home rations, cash scholarships) should be not only expanded but also harmonized. While addressing demand constraints that prevent parents from sending their children to school, it is equally (if not more) important to also improve the quality of education. Cash transfers help poor households to access services and can provide incentives to change behavior. Given the importance of behavior in determining nutrition outcomes, a cash transfer program, in particular, could be used to address demand constraints in fighting chronic malnutrition, the main source of vulnerability among infants and small children. Such a program would fulfill the dual objectives of alleviating chronic poverty while combating maternal mortality and malnutrition. The paper provides clear evidence of favorable income distribution and poverty impacts with affordable fiscal costs.

- Last paper on Lao PDR emphasizes that the country has poor social protection, especially for poor people, and the economy is vulnerable to external shock, especially from the Global Financial Crisis. Therefore, it is important to consider cash transfer programs for the poor. The study focuses on cash transfers to poor households with children who live in rural and urban areas. There is no existing comprehensive social assistant program or conditional or non-conditional cash transfer program in Laos as yet. Since empirical results show that cash transfers could reduce poverty and improve income distribution, it is clearly crucial for the Lao government to consider establishing comprehensive social support programs for reducing poverty in Laos. However, in order to establish social support programs, it needs to consider appropriate program design, including target groups, revenues and capacity of institutions.

## **Policy Implications**

What emerged from the three studies is that cash transfer programs (both conditional and unconditional) could play very important roles in mitigating gaps in income distribution and reducing poverty in these dynamic and emerging economies. The initiatives could be managed effectively through the existing institutional arrangements without putting too much strain on the national budgets. The findings from this research provide a clear picture of the impacts of the proposed programs, and also provide justifications for governments to take these initiatives into consideration.

There are some lessons for other developing Asian countries in considering social pensions for older people. First, a universal social pension can work in low-income countries. Given limited funding, targeting the most vulnerable groups, such as rural older people, would help reduce the incidence of poverty among older people substantially. Second, in countries where the incidence of poverty among older people is a significant issue, a universal social pension scheme providing low benefits to a large number of beneficiaries would be more beneficial in terms of poverty reduction than a universal social pension scheme providing higher benefits to a small number of beneficiaries. Third, aging and older people should not be ignored in any development strategies. Cash transfers are not the sole solution for fighting poverty among older people, and should be considered merely as an instrument to help reduce poverty. It is necessary to prepare well for an aging population from now on, by promoting education and health for youth, which in turn will guarantee older, healthier, and wealthier nations.

## **ERIA Research No 11**

### **Analysis on Energy Saving Potential in East Asia**

#### ***Abstract***

This study is a support study for the EAS Energy Ministers Meeting (EMM) and the EAS Energy Conservation Task Force (ECTF). The results of this study have been reported to the past three EMM and have been highly appreciated by 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 government policies. An Alternative Policy Scenario (APS) is also designed to examine the potential impacts of additional energy efficiency goals, action plans or policies that have been committed 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 three years. In addition to the estimation of potential, this projects also has two sub-WG studies:

#### *Pilot Study on Energy Consumption Survey in the Residential Sector*

*Test calculation of energy saving potential in a specific sector applying bottom-up approach (Technology Approach)*

This survey has been tested in 8 ASEAN countries and China. The technology approach evaluates the technical saving potential in the cement industry (the Philippines and Vietnam), the residential sector (Cambodia, Laos and Myanmar), and the commercial building sector (Indonesia and Thailand).

#### **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 2030 the implementation of energy efficiency goals, action plans and policies proposed in the study could lead to an additional reductions in the APS of 17 percent in primary energy demand, and 23 percent in energy derived CO<sub>2</sub> emissions across the EAS region. The technical approach ensures that there may be larger saving potential than the governments have committed.

### **Policy Implications**

Countries need to continuously improve the energy saving goals and action plans for each sub-sector in order to set the target saving potential such as promotion of mass transport system. A technical approach may be applicable to provide a benchmark of energy saving and thus help government to set reasonable targets.

Policy mechanisms should be introduced to include incentives for promoting the use of renewable energy and implementation of energy efficiency and conservation programs.

Policies to remove subsidies to fossil fuel energy will encourage further development of energy efficiency, conservation programs and renewable energy.

Development (and subsidy, where possible) of low emission technologies will support improvements in energy efficiency and reducing CO<sub>2</sub> emissions.

Enhancing reliable energy statistics and survey for monitoring of energy saving goals, action plans and policies. Capacity building on data collection and modelling will be important to analyse the policy options for promoting EEC programs.

Many EAS countries already have a variety of policies aimed at achieving energy saving goals. However, a detailed action plan should also be developed which outline in a broad sense how these energy savings will be achieved.

## **ERIA Research No 12**

### **Energy Market Integration in East Asia Summit Region**

#### ***Abstract***

The Energy Market Integration (EMI) study is planned to be a continuous work of the 2007 and 2009 EMI. For the current study, ERIA recalls the EMM4's request of "how to reap the benefits from EMI and to assess the collaborative measures to improve the market regulatory framework and to establish a conducive environment for the flourishing of the energy industry" and the fifth East Asia Summit (EAS) leaders emphasis that "the need for greater regional cooperation on energy and welcomed the efforts to address market barriers and promote more transparent energy trade and investments and enhance dialogue and communication between energy producers and consumers".

In line with these instructions and past studies, ERIA started to invite research proposals from December 2010 and finally got 12 research proposals. After consultation with Singapore and evaluation of academic significance, 10 proposals were accepted.

Considering the debates of shifting away from nuclear energy as a consequent of the triple disasters in Japan, one existing study was diverted to study the impact of shifting away from nuclear energy. We also invite another study to estimate the economic and environmental impact of such policy change in Japan.

This year, the topic is set as "Energy Market Integration in the East Asia Summit Region—Deepening Understanding and Moving Forward". Part of the studies will further deepen our understanding about the impact of EMI; while the other part explore ways to move the EMI forward, which echo the instructions from the Leaders and the energy ministers.

The original proposals have been reported to the East Asia Summit Energy Cooperation Taskforce (ECTF) EMI work stream chair, co-chair, and other stakeholders at the early stage. The final research plan, including the study on nuclear energy issues, was reported to the 15th EAS ECTF meeting held on 7 April 2011. The results of the eight policy related studies will be reported to the 16th ECTF meeting on 25-26 Aug and are expected to be reported to the fifth Energy Ministers Meeting to be held in later September. For the presentation to the next ECTF meeting, Singapore, as cochair of the ECTF EMI Work Stream, asked ERIA to do a half day workshop to give senior office detailed information about six of the policy studies.

## **Recommendations**

A significant amount of policy implications is proposed by these studies. It shows that EMI should be promoted actively, but in a gradual approach; interregional governance is necessary and a regional coordinating agency is desirable; Cross-border cooperation in energy projects should be promoted and financed with proper funds; and gas market can lead the EMI.

Based on the findings and policy implications, ERIA suggests policy makers to take actions on the following issues:

East Asian countries may consider to institutionalize an energy policy cooperation framework, or establishing a single high level organisation, similar to IEA, to coordinating activities in the energy sector and the delivery of certain services across the whole region. ASEAN can form the basis of such organisations in Southeast Asia, but steps need to be taken to establish a coordinating organisation for Northeast Asia and the whole East Asia .

Come concrete cooperation activities can be proceeded, such as emergency gas stocks, sea-lane security, emergency response teams, and pollution clean-up capacity.

Different technical, legal and institutional systems among the member countries should be harmonized, and transparency of laws and regulations must be improved so as to support the EMI.

The quality and timeliness of energy data and statistics need to be improve to improve transparency in the energy market.

It is recommended to explore and establish multilateral and applicable financing approaches, such as regional infrastructure fund and regional development banks.

Promote and nurture the development of gas markets in member states and phased sectoral reforms in relatively mature markets through multilateral agreements.

Although having a systematic and well planned subsidy reduction policy is a big challenge for the countries in this region, the time has come to act prudently to reduce such slow poisoning destructive policies to make the countries prosperous in the future.

Countries with interests in nuclear energy needs to carefully review nuclear energy policy considering the revealed additional risks, uncertainties, as well as the costs and benefits that have been identified in these studies. Individual and cooperative actions on improving safety operation and dealing with accidents should be considered.

For the next year, studies will focus on how to move EMI forward in the region, and what lessons have been learned in moving the EMI forward. These will include general as well as case studies. Studies on sub-regional level, such as GMS, or at sectors in members, are also welcome.

## **ERIA Research No 13**

### **3R Policies for Southeast and East Asia**

#### ***Abstract***

The objective of the project is to share the experiences in 3R (Reduce, Reuse and Recycling) policies among ASEAN and East Asian countries and to formulate vision on regional 3R policies in the region, thus to reduce economic burden with environmentally sound management of waste, to utilize waste as resource and to increase resource productivity, and to increase job opportunities through promotion of 3R.

For the FY 2010, the project focused on the importance of recycling statistics, to identify the different indicators and definitions of recycling rate and to propose strategies on how to develop statistical system to evaluate policy impact. Also, international trade of recyclables and recycled goods were studied both the aspects on environmental pollution from trading of recyclables and the need for effective resource utilization in the region wide.

#### **Major Findings**

Waste sector generates less than 5% of Green House Gas emissions in the world. However, improper waste management affects health, and causes flooding in the city and other environmental problem. Life Cycle Analysis shows the energy saving potential in various sectors, such as paper recycling, PET bottle recycling, glass recycling and metal recycling.

Most of efforts on 3R in ASEAN countries are focusing on waste generator side, or the upstream of waste management system. Policies to improve the downstream, such as recycling industrial park, standards for recycled goods, support for R&D, and investment in 3R technology are still not common in the region. The followings are the major findings on different aspects of 3R policies.

#### **Review of 3R policy in ASEAN countries**

- Some ASEAN countries have national target to reduce waste or upgrade waste management.
- Regarding 3R policy, conducting source separation and applying extended producer responsibility principle are considered as main instruments.



- 3R industrial policy, which focuses downstream of waste stream, are not well recognized by government officials. 3R Policy is not regarded as a part of industrial policy by most of ASEAN countries.

### **Industrial 3R policy**

- It is important to create sorting criteria which is convenient for industries using recyclable waste.
- Support for increasing capacity of recycling industry is also necessary. Such support could be as follows:
  - a. Subsidy for R&D on recycling technology
  - b. Tax incentive for investment in recycling
  - c. Developing Recycling Industrial Park
  - d. Developing industrial standards for recycled goods
  - e. Industrial Waste Information Exchange Program

### **Review of trade statistics, trade policy on recyclable and hazardous waste**

- International recycling and reuse can increase resource efficiency. Asian countries also need to minimize the environmental cost of international recycling and reuse.
- Various types of trade policies are applied to optimize international recycling and reuse.
- Illegal shipments still exists. Asian countries should cooperate to decrease illegal shipments.
- To avoid conflict between nations and to make trade regulation more effective, Asian countries should make mutual understanding. Harmonization of regulation and clear definition may reduce the conflict between countries.

### **Policy Implications**

Importance of development of the recycling statistics is recognized. One of the common problems in the implementation of the 3R programs is the lack of reliable statistics on recycling. It will be also useful for developing and evaluating effective 3R policies. Identification of the

common indicators and development of regional definition of recycling rate are also important. A guideline for the proper use of recycling statistics is needed to be developed.

Development of policy support to promote international trade of recyclables is important. Two of the important aspects that need to be addressed to promote international trade of recyclables are: 1) how to prevent the existence of environmental pollution from the activity; and 2) how to improve resource utilization by international recycling. Thus, development of a common understanding of recyclable wastes and goods and a strong collaboration among countries are necessary to ensure safety of imported and or exported recyclables, and to maximize the benefits of international trade for effective resource utilization.

## **ERIA Research No 14 and 15**

### **Analysis of Safety and Environment Standardization and Conformity Assessment in East Asia**

- Environmental Certifications and Standards in East Asia; Study on Refrigerator Performance
- Standardization on Green and Safety in East Asia: Research on Accessible Design in East Asia

#### ***Abstract***

The objective of these projects is to realize the present situation of international standardization activities on key issues of East Asia region, and share the problems to make relevant international standards more appropriate for the region's conditions. These projects provide the public and private sectors with a window of opportunities for joint efforts in research, study, discussion, and agreement on recommendations to further facilitate cooperation in the field of international standardization among East Asian countries.

Study on refrigerator performance was conducted to analyse the development and dissemination of high-energy efficient products in the global market through standardization of relevant methods of measuring and assessing energy efficiencies of consumer electronics based on the usage pattern in East Asian countries, and improvement of capability of testing laboratories in the region. Labelling scheme with regard to the performance of refrigerator was also studied.

Research on Accessible Design in East Asia was conducted to draw up a roadmap for strengthening the partnership, situation analyses on domestic standardization, and information exchange among consumers and people from industry and government, with recognition of the growing number of senior citizens in the population and the needs of standardization of Accessible Design by taking into account of Asian people's needs.

#### **Major Findings**

##### **Study on Refrigerator Performance**

The present international standards cannot be used for the evaluation of the refrigerator energy saving performance and technology because they do not contain the Asian climate and usages. The participating test laboratory conducted testing of refrigerators using IEC working documents and prepared a final report including the problems of the IEC working documents. The importance of the standard which reflects actual usage was shared among the members.

It was revealed that each country had test laboratory with different level of knowledge and none of them had enough ability to wipe out the false figure on the energy label when IEC standards were introduced. The energy labelling scheme was found very effective for energy saving but introducing IEC standard and catch-up test capability could not be so quick, therefore it would be one of the way to introduce the mandatory requirements of the third party's test data whose IEC testing capability was high enough.

### **Research on Accessible Design in East Asia**

Most East Asian countries are experiencing growing number of senior citizens in the population and are expected to enter into super-graying societies. In these countries, standardization of Accessible Design (AD), which refers to products and facilities with considerations for older persons and persons with disabilities, will play an important role. At the same time, it is reasonable and effective to promote international standardization in East Asia as a whole, as the people in the region share similar physical characteristics.

So far, several opportunities for information exchange have been materialized: technical collaboration among ASEAN countries, cooperation among Japan, China, and Korea for international standardization, information-sharing in the Asia-Pacific region etc. However, cooperation scheme in East Asia across the board for international standardization is yet to be realized due to lack of standing table for the discussion.

### **Policy Implications**

#### **Study on Refrigerator Performance**

Each country is recommended to participate in IEC activities of household appliance performance standards in order to reflect the country's common features, technologies and usages. It is also recommended to adopt the newly modified IEC standard which reflects actual usages, and to introduce energy labelling scheme in the wide range of the electrical appliances in order to achieve CO2 reduction.

Each country is recommended to start the energy labelling scheme as soon as possible with the utilization of its own laboratory and other qualified laboratory in other country, while manufacturers are recommended to bear the duty to make the third party test report of the qualified test laboratory.

## **Research on Accessible Design in East Asia**

The promotion of social improvement for older persons and persons with disabilities (AD products and facilities) is strongly required in East Asia area where many countries have a large population of these persons and social improvement is not in sufficient conditions.

There is a need for a platform where persons or organizations which take responsibilities in each field (disability organizations, elderly organizations, standardization organizations, research institutes, industries, governments and so on) can share information, formulate the same recognition and have organic linkage, which will contribute to social improvement for older persons and persons with disabilities in East Asia region.

## **ERIA Research No 16**

### **Study on the Economic Impact of Chemicals Management in ASEAN and East Asia**

#### **Abstract**

The objective of the project is to conduct a case study on the economic impact of chemicals management in East Asia and to develop a recommendation on the appropriate approach to achieve the World Summit on Sustainable Development (WSSD) target to minimize significant adverse effects of chemical production and use by 2020.

In the study, REACH regulation in EU was employed as the model regulation of the No-data, No-market Approach in which all chemical substances are subject to risk assessment, and CSCL regulation in Japan was employed as the model regulation of Prioritization-Led Approach in which risk assessment is conducted in a prioritized manner. Analysis of qualitative impact and economic impact of these model regulations in ASEAN and East Asia region was conducted to develop policy recommendations.

#### **Major Findings**

The qualitative impact on introducing No-data, No-market Approach was summarized in the following 8 items based on the field survey in several countries.

- a) High economic burden
- b) SME may not bear the cost burden
- c) Requirement on information sharing would be increased
- d) Externality can be included in private costs of producers and distributors
- e) Rate of innovation may be slow down because of the additional cost for developing new products
- f) Issue on competitiveness and nontariff barrier
- g) The employment of risk assessment staff should be increased
- h) Education on risk management may developed in business sector

In the same way, the qualitative impact on introducing Prioritization-Led Approach was summarized in the following 7 items.

- a) Low economic burden
- b) Protection of SME Groups from the cost burden
- c) Government expenditure may rise because of setting prioritization for all chemicals

- d) Burden of citizens may rise via taxation, and this would be rationale in terms of benefit principle
- e) Smaller effects on the rate of innovation
- f) Issue on competitiveness and nontariff barrier
- g) Education on risk management may developed in academic sector

As for the economic impact of introduction of the model regulations, introduction of the “Prioritization-Led Approach” to ASEAN+6 as a whole is preferable in terms of total cost burden. The results reflect the trend that, as expected, setting prioritization becomes less costly alternative to the “No-data, No-market”, and also introducing single registration into ASEAN+6 region becomes less costly alternative to introducing individually in the aspect of total cost.

In case of introducing REACH-like regulation, the private sector is required to pay a large amount of expenses. In this regard, it should be considered whether such a cost burden by the private sector is actually feasible in ASEAN and East Asian Countries, where there are many financially weak companies relative to Europe.

On one hand, as both total costs and testing costs are low for the introduction of the Prioritization-Led Approach, it is expected to have a large advantage in terms of cost burden. On the other hand, however, it should be noted that this is not the least expensive alternative in terms of restriction cost and agency fee. While certain feasibility is ensured by the Prioritization-Led Approach due to a lower percentage of cost burden (especially by the private sector), it needs to be noted that the amount of cost borne by the government may increase under the former approach.

### **Policy Implications**

As is shown in the economic impact analysis, the perfect harmonization of chemical management systems among ASEAN and East Asian countries may lead to the minimum cost requirement in total, though it is almost impossible in practice because of the difference of industrial structure and historical background. It is therefore emphasized that at least the easiest and most effective part in management flow of chemical substances should be harmonized and built in cooperation with each member country of ASEAN and East Asia.

One of the best solutions could be the building of the “ASEAN data center” which has the following merits;

- Saving the testing cost, which occupies main portion (about 80%) of total cost calculated in the economic impact analysis

- Helping the member countries of ASEAN and East Asia also in the aspect of the implementation of GHS
- Able to harmonize the inventory of existing chemical substances in ASEAN and East Asia

Therefore, the next action to build the “ASEAN data center” should be taken up promptly. In addition, capacity building is also required to let the member countries conduct risk based chemical management in more efficient and precise measure.



## **ERIA Research No 17 and 18**

### **Benchmarking of Biodiesel Fuel Standardization in East Asia**

This project is continued from FY 2009-10 when it published the “EAS-ERIA Biofuel Trade Handbook: 2010”, which includes the EAS-ERIA Biodiesel Fuel benchmark standards and measures to control BDF quality in the real market. Currently, the Working Group is working on further technical and management methods to ensure that the quality proposed in the benchmark standard will be secured. The project is collecting information about test laboratories in each EAS country; comparing test results and considering harmonization 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 BDF standard that was proposed in 2008, investigate other biomass resources and investing fuel/vehicle adaption to reach emission targets.

### **Sustainability Assessment Methodology for Biomass Energy Utilisation for Small and Large Scale Initiatives: Lessons Learned from Pilot Studies in Selected East Asian Countries**

In the FY 2009-10, the Working Group of the project conducted four pilot projects in India, Indonesia, the Philippines and Thailand to test the methodology for assessing sustainability of biomass utilization. This year, the WG is summarizing major findings and policy implications from these pilot projects. This information will be used to modify the methodology in the future. Currently, the project is also disseminating the methodology through seminars, forum and meetings. The future task will be to upgrade and simplify the methodology.