Summary of ERIA Research Projects in 2008

Major Findings

Policy Recommendations

and

Issues for Further Research

By

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ERIA Research Projects for 2008

Research Paper 1	Deepening East Asian Economic Integration: *Ed. Jenny Corbett and So Umezaki*
Research Paper 2	Developing Internationally Comparable Industrial Statistics in East Asia: Current Status, Issues and Challenges for Improvement: *Ed. Tomoyuki Kuroda*
Research Paper 3	Strengthening Information Security in the Business Sector: *Ed. Komain Pibulyarojana*
Research Paper 4	Establishment of a Secure and Safe e-Commerce Marketplace: *Ed. Tsuneo Matsumoto*
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Research Paper 8	Mainstreaming Sustainable Development Policies in East Asia: *Ed. Cielito F. Habito and Satoshi Kojima*
Research Paper 9	Sustainable Mobile Society in East Asia: *Ed. Arianto A. Patunru, Kiyoyuki Minato, Masahiko Hori and Keiko Hirota*
Research Paper 10	Analysis on Energy Saving Potential in East Asia: *Ed. Shigeru Kimura*
Research Paper 11	Guidelines to Assess Sustainability of Biomass Utilisation in East Asia : *Ed. ERIA Working Group on "Sustainability Assessment of Biomass Utilisation in East Asia"*
Research Paper 12	Benchmarking of Fuel Diesel Standardisation in East Asia. *Ed. ERIA Research Project Working Group on "Benchmarking of Biodiesel Fuel Standardization in East Asia"*.

Research Finding 1:

Development of international production and distribution networks is one of the key factors behind economic growth and integration in East Asia.

- The next stage of economic growth requires deepening of regional economic integration by actively forming bilateral and multilateral FTAs among the East Asian countries. The ASEAN Economic Community (AEC) is a vital step towards deepening the economic growth in East Asia.

There are considerable variations in the frequency of restrictions in key policy areas of services liberalization, trade facilitation and investment liberalization across countries in the AEC.

- In ***Services***, the *medical professional services* have:
  - considerable variations in the frequency of restrictions across countries
  - but there is a broad tendency for countries with more transparent regulatory regimes to have lower prevalence of restrictions
  - relatively little variation within countries across the different categories of medical profession
  - considerable variation in restrictions by mode of delivery.
- In *health services* the pattern of restrictions is similar to medical professional services.
- In *banking* the most prevalent restrictions are on:
  - foreign ownership
  - movement of intra-corporate transferees
  - commercial presence of foreign banks, and
  - discriminatory restrictions against foreigners.
- In *insurance* there is little variation of restrictions across different insurance products. Foreign ownership restrictions are not as prevalent in insurance as they are in banking, though cross-border trade in insurance is widely restricted.
- In ***trade*** *in logistics services*:
  - restriction is linked to the perceived performance of the logistics sector.
  - additional discriminatory barriers against foreign suppliers are high in Indonesia, Philippines, China, and Malaysia.
  - the degree of restrictiveness falls as per capita income rises
  - Customs documents is identified as the major impediment to trade facilitation.
  - trade costs in ASEAN countries have been converging towards the best practice level set by Singapore, though there remains large variation.
- In ***investment*** *liberalization*, there are relatively higher restrictions in:
  - market access in Myanmar, Thailand, Malaysia, and Lao PDR

- screening and appraisal in Indonesia, Cambodia, Myanmar, and Lao PDR
- national treatment in Brunei and Malaysia and
- services sector.

Quantitative measurement of impact of economic integration will help in planning, implementing and monitoring policy reforms for AEC.

Micro studies of corporate activities reveal that economic integration has positively impacted the performance of firms in selected East Asian countries. Production fragmentation, learning by exporting and liberal trade policies are the keys to deepening of economic development of East Asia. Close cooperation among countries through bilateral and multilateral FTAs will further narrow development gaps.

Scorecard on Restrictions on Services, Trade and Investment Liberalisation in ASEAN Countries

		Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Services Liberalization	Banking	35.2	21.5	19.5	41.5	43.9	88.1	35.9	11.5	42.5	45.8	**38.5**
	Insurance (Life, Medical, Property, Reinsurance, and Broking)	31.5	21.2	22.3	40.6	23.8	84.3	22.9	7.6	36.8	34.1	**32.5**
	Medical Professional (Medical, Dental, and Paramedical)	31.4	20.6	36.5	33.4	49.9	63.7	32.4	7.4	15.0	14.7	**30.5**
	Health (Hospital, Laboratory, and Ambulance)	29.2	13.0	54.8	26.1	47.1	76.8	30.4	2.9	24.7	8.7	**31.4**
Trade Facilitation	Logistic Restrictiveness Index											
	Domestic	25.4	34.8	32.7	38.6	37.1	37.0	39.2	7.3	35.7	38.2	**32.6**
	Foreign	36.2	44.7	53.3	49.6	58.7	49.3	54.9	16.3	50.0	51.7	**46.5**
	Trade cost estimates (CIF/FOB Ratio, Singapore 2007 = 100)											
	1990 -1999	467.1	400.4	393.7	361.6	301.4	505.4	363.1	248.8	326.0	503.0	**387.1**
	2000 - 2007	180.5	303.2	254.5	185.2	183.7	161.4	196.6	143.7	230.2	199.8	**203.9**
FDI Policy	Overall Index (Weighted Average)	39.4	29.7	27.3	38.7	41.0	48.3	21.9	12.5	25.2	31.5	**31.5**
	Market access (Weight= 0.4)	24.3	14.0	31.0	40.1	40.6	45.3	25.7	16.5	42.2	33.8	**31.4**
	National treatment (Weight= 0.2)	79.5	39.5	5.0	29.8	82.8	39.2	18.8	5.2	0.0	26.2	**32.6**
	Screening & appraisal (Weight= 0.1)	43.4	75.0	76.2	66.5	23.6	69.6	11.2	13.7	8.5	36.4	**42.4**
	Board of directors (Weight= 0.1)	59.0	0.0	5.0	32.9	37.7	39.2	51.9	25.0	2.4	28.6	**28.2**
	Movement of investors (Weight= 0.1)	18.0	75.0	52.5	46.3	10.9	75.7	4.3	4.8	62.7	46.9	**39.7**
	Performance requirement (Weight = 0.1)	18.0	11.7	5.0	21.4	9.5	39.2	10.7	4.8	10.0	15.2	**14.5**

Liberal **Restricted**

Source**:** Deepening East Asian Economic Integration: Ed. Jenny Corbett and So Umezaki (Survey Responses)

Policy Recommendations 1:

East Asia should pursue reduction of barriers to trade in goods and services and efficient use of economic resources through policy reforms and further development of production networks in the region. Some major steps are:

- Tracing the progress in the ASEAN Economic Community building by updating and expanding the quantitative measures developed in this project. This would enable policymakers (1) to capture the current status of remaining barriers to trade by country, by mode, and by sector, (2) to define the detailed target and milestones in each policy action with reference to the regional best practice, and (3) to facilitate the implementation process through peer pressure.

- The ASEAN countries should establish satisfactory regimes for regulating and enforcing acceptable quality standards, both for individual medical professionals and for healthcare institutions with the aim to establish minimum acceptable quality standards.

- Removal of significant barriers to cross-border trade (Mode 1) still exist in financial services would be an important mechanism to facilitate trade.

- Accelerate the efforts toward streamlining and harmonize customs procedures.

- Regional cooperation in statistical policy should be strengthened to improve both rule-based access to micro data for researchers and the quality of the data

- The momentum created by the Free Trade Agreements (FTAs) toward a more liberal and open economic regime has to be maintained or accelerated. The goal and timelines of ASEAN Economic Community (AEC) by 2015 are to be clearly defined with quantitative measures to visualize the process of policy reforms, its implementation and evaluation.

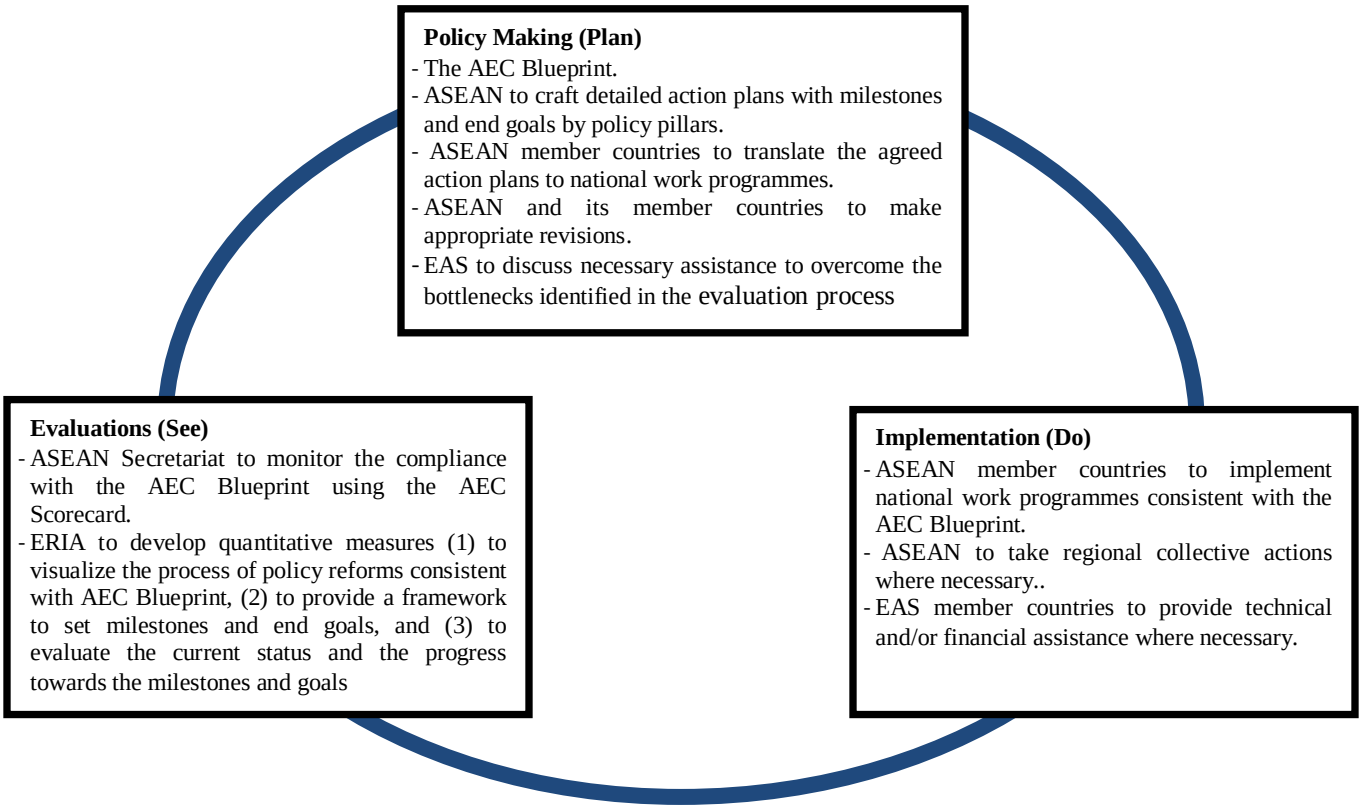
- Quantitative measurement of the current status of ASEAN member countries in selected key elements of the AEC Blueprint to enable identification of policy areas where additional policy reforms and resource allocation is required and, thereby, facilitate the successful and on-schedule implementation of the AEC Blueprint.

- One very basic recommendation emerging from our work on developing the quantitative measures is that the cyclical process of ‘policymaking- implementation- evaluation’ as illustrated in the following figure should be continued until the successful establishment of the AEC by 2015.

Future Research Topics:

- Further study should be conducted to deepen understanding of the impacts of economic integration on corporate activities, and thereby to design more effective and efficient policy reforms.

A Cyclical Process Towards Establishing the ASEAN Economic Community



Source: Deepening East Asian Economic Integration: Ed. Jenny Corbett and So Umezaki

Research Finding 2:

East Asia has emerged as a single economic area without an established internationally comparable manufacturing statistics

- Research on the regional economy in East Asian region is hindered by this absence. Most East Asian nations are inwardly focused on organizing their own economic statistics. There is an acute need for developing an internationally comparable statistics data in a format that allow analyses of the effects of East Asian economic integration.

Countries in East Asia are at different stages of development, even in terms of implementation and organization of government statistics.

- Harmonizing and maintaining quality of statistical data and improving international comparability is important for directing East Asian industrial statistics toward the future. However, given the various levels of development among the East Asian countries, achieving the goal of harmonized and internationally comparable statistics data may take some time.

Development of industrial classification based on international good practices and capacity building programmes for nations which are lagging behind in this process are the immediate steps required to establish internationally comparable manufacturing statistics

- Empirical studies reveal that there is an urgent need to develop uniform statistics for the East Asia region to help understand a country's position in the international and regional economies. In particular, the manufacturing industry occupies prominent positions in the domestic economy of each East Asian country. Hence compilation of manufacturing statistics in East Asia also has value for increased private enterprises and FDI.

- Studies also suggest that capacity building programs should be employed for those nations which require support in this exercise.

Policy Recommendations 2:

The improvement in the international comparability of industrial statistics in East Asia region will improve the quality of statistical information required when the ASEAN Economic Community (AEC), the East Asia Summit or the AEM considers regional policies.

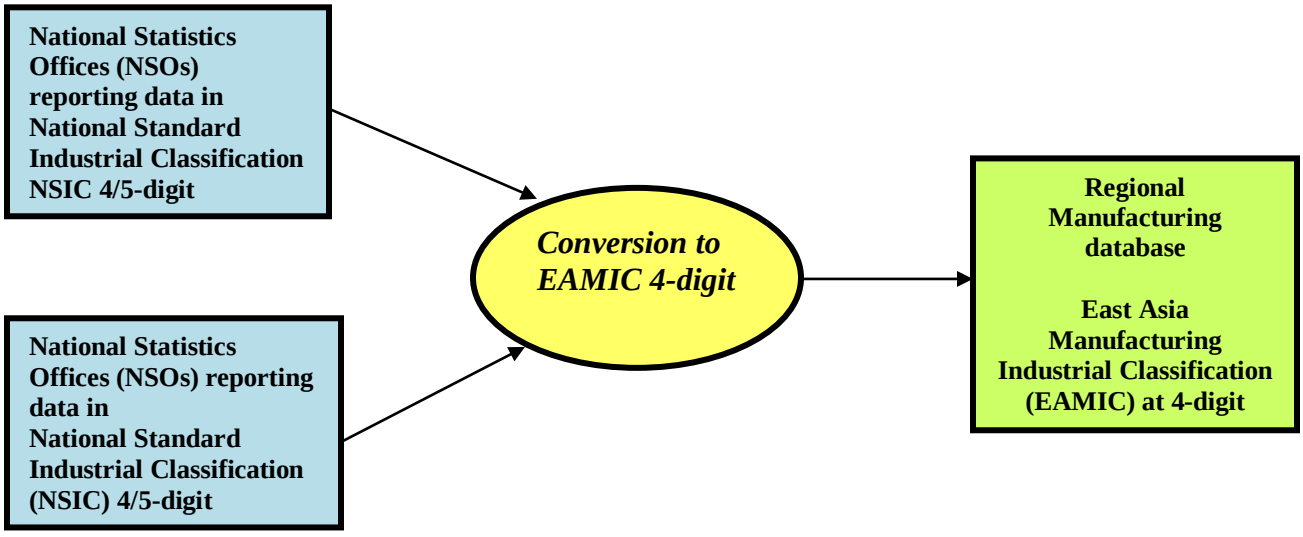
- It is recommended to establish a comparable regional database of industrial statistics in collaboration with regional organizations. This would include identification of issues for improving the international comparability of industrial statistics and a draft action plans to resolve those issues.

Future Research Topics:

Twofold proposal for countries with different levels of development

- A survey of the current status of countries towards developing internationally comparable statistics has to be conducted. Simultaneously, capacity building programmes for the countries lacking in expertise on industrial classification have to be developed through training of core personnel and officials.

Regional Manufacturing Database



Source: Developing Internationally Comparable Industrial Statistics in East Asia: Current Status, Issues and Challenges for Improvement – Ed. Tomoyuki Kuroda

Research Finding 3:

Along with the economic growth, there is a qualitative shift in the economy of the ASEAN + 6 region which has been moving toward a knowledge-based economy.

- These developments have been due to increased direct investments in high value-added industries through cross-border technology transfer, knowledge transfer and global supply chains.

Consolidation of the gains made by economic development of Asia requires constructing an advanced cross-border information security system suitable for a knowledge-based economy.

- Empirical research conducted by ERIA shows that information security problem in the business sector is perceived as one of the high level risks that impact businesses.

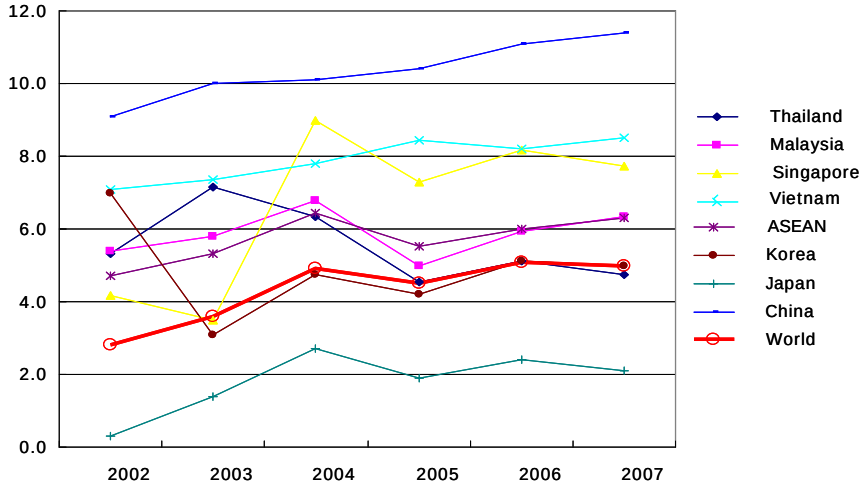
- In an integrated economy, it is important for entities in the value chain to have a common understanding of risks involved in collaboration among companies.

- For continued and increased foreign direct investment in Asia, a secure business environment needs to be created by developing an information security system, which will be the highlight of the industrial policies of ASEAN+6 region.

An information security system is basic to economic development in this region as it ensures protection and promotion of business development.

- As a comprehensive risk communication tool, the common information security system enables organizations to improve their sense of information security through visualization of risks. Hence, it is important to invest in development of an information security benchmark system which will ensure the confidence of investors in this region.

Real GDP in Asia (Annual percent change)



Source: IMF. "World Economic Outlook, 2008" and World Bank

Policy Recommendations 3:

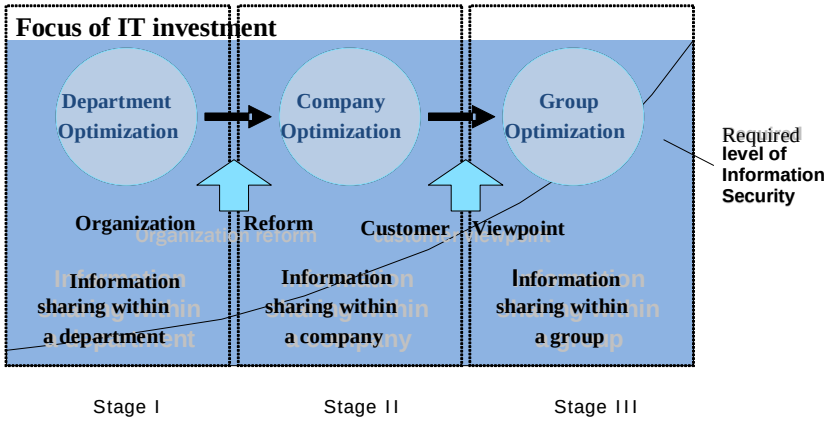
An Information Security Management (ISM) system in the ASEAN + 6 region will lead to strengthened economic competitiveness.

- An initiative has to be taken by industries and governments of this region to build a common Information Security Management (ISM) benchmark in the ASEAN + 6 region. A common ISM benchmark will build and promote a trustworthy economic partnership that encourages more foreign direct investment (FDI) and business outsourcing in this region.

Future Research Topics:

- Presently, there are no tools to measure common information security levels which can be used internationally. There is an urgent need to draft an ISM benchmark which provides acceptable and comparable indicators of information security management level of organizations. As a comprehensive risk communication tool, the common ISM benchmark should address the issues of positioning (target companies), specifications (risk assessment criteria), customization (original situation of each country) and operational (ownership and management). This will enable organizations to improve their sense of information security through visualization of the risks.

Progress of IT Investment and Enterprise Management



Source: Strengthening Information Security in the Business Sector: Ed. Komain Pibulyarojana

Research Findings 4:

E-Commerce market in the East Asia region is growing rapidly

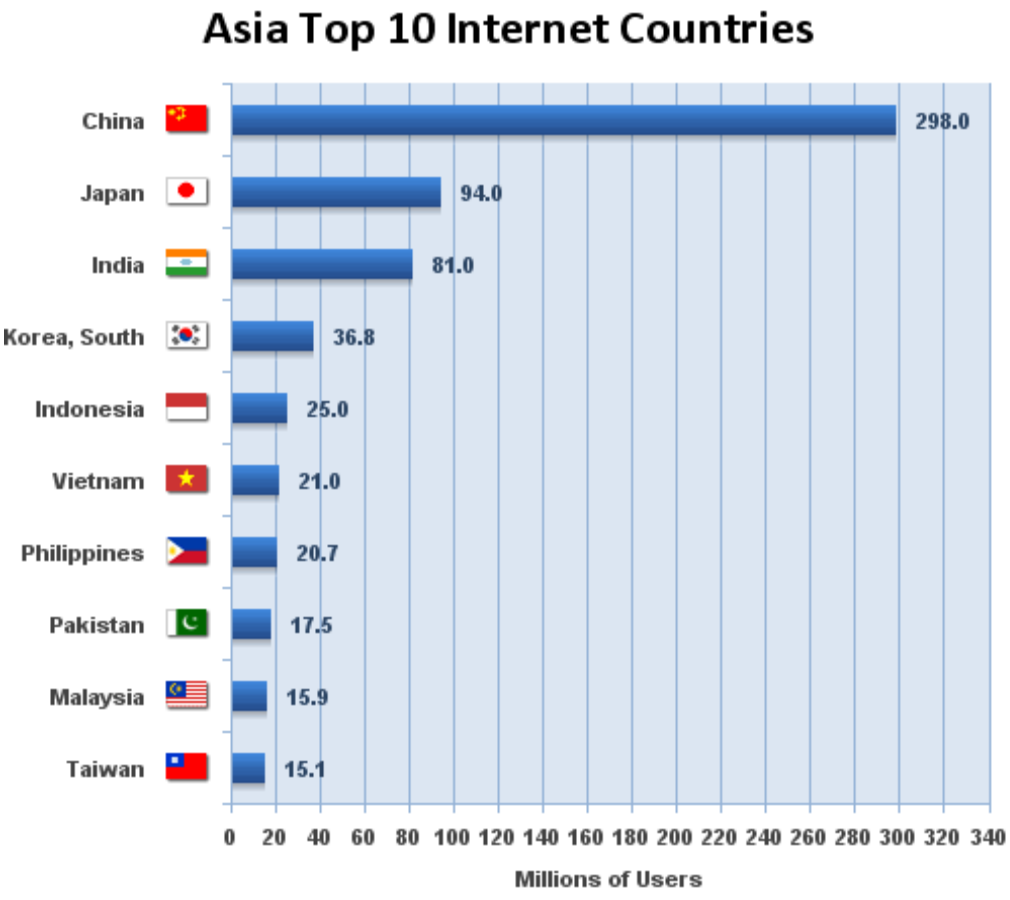
- But safety and security of the market is essential for the expansion of the e-commerce market in ASEAN and East Asia region. It is imperative to improve the e-commerce environment throughout the region where both consumers and businesses can participate in secure transactions.

E-Commerce market requires a common and effective legal system

- For further economic integration in the Asian region, a harmonized legal system in the region is required for the long term growth and efficiency of e-commerce market.

A comprehensive scheme/platform is required for building consumer confidence in cross-border transactions

- A framework for cooperation among Asian countries in handling consumer complaints internationally needs to be established for securing consumer confidence in e-commerce transactions.



Source: www.internetworldstats.com/stats3.htm

Policy Recommendation 4:

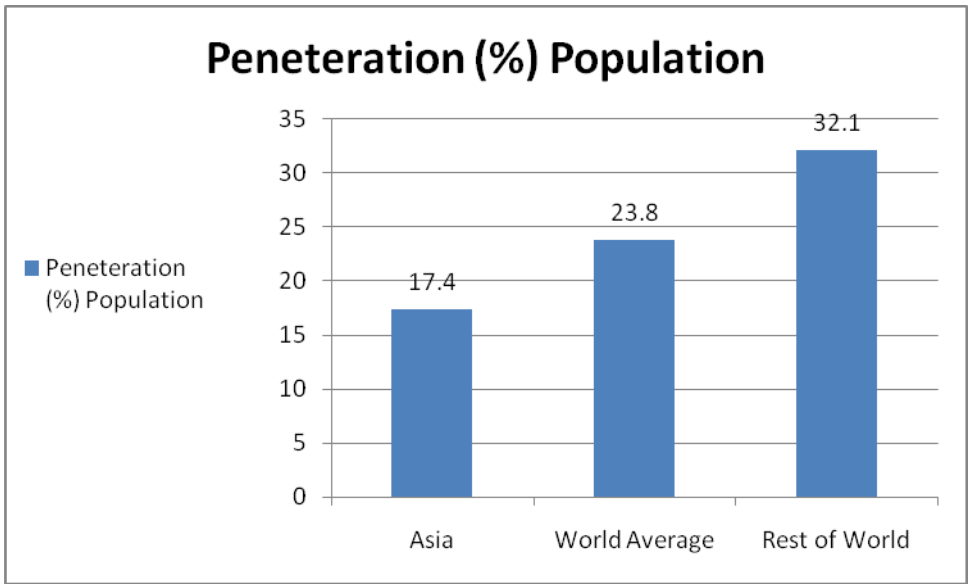
Confidence of consumers and their trust in e-commerce market is required for expansion of market

- It is recommended to establish a dependable, common platform that can support all consumers in the region, and that can bring an effective resolution to any dispute arising in the e-commerce market. For this purpose, an international framework may be established to consolidate the systems, allowing all countries to cooperate with each other for consumer protection and dispute settlement arising from cross-border transactions.

Future Research Topic

- Setting up of a common platform for the e-commerce market requires collection and sharing of detailed information related to each country's system, especially relevant laws and regulations for e-commerce and consumer protection. Study of systems already implemented by some countries and their effectiveness (including cases of failure) would contribute to robustness of the common platform which will be shared by all countries in the Asian region. Such studies would also help in compilation of database relevant for cross border e-trade.

Internet Penetration in Asia
March 2009



Source: www.internetworldstats.com/stats3.htm

Research Findings 5:

The economies in the ASEAN and East Asia have shown an unprecedented improvement in their international production networks with lower business linkage costs.

- However, formation of industrial clustering is an essential step for emerging developing economies to catch up with countries that have developed early in this region.

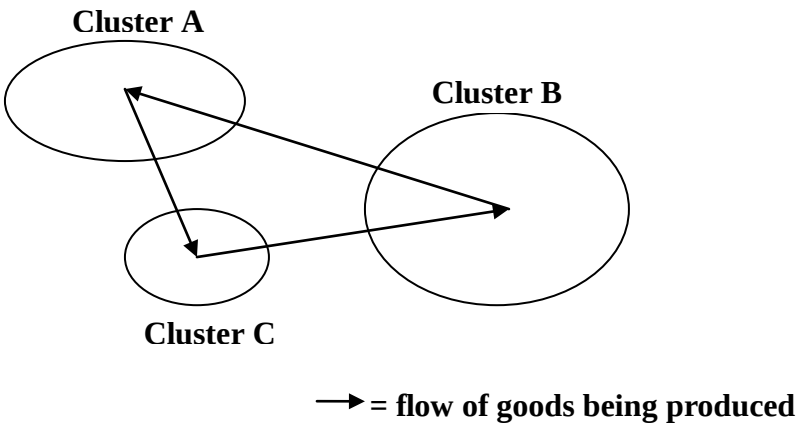
A baseline study suggests that industrial growth in sectors like automobile, electronics, textile and garments and food processing have taken place in countries which have comparative advantage over others.

- But the study also suggests that the less developed countries have higher potential to grow than the existing production regions.

The IDE/ERIA Geographical Simulation Model suggests the effectiveness of a dynamic relocation of population and industries from congested (developed) core regions.

- Industrial agglomeration in the region is possible with introduction of infrastructure projects like the road system along the East-West Economic Corridor (EWEC). A coordinated effort among the countries covered by the EWEC to balance the benefits and drawbacks of the agglomeration dynamics will bring larger economic benefits in the region.

Gross Production Network Model of Industrial Cluster



Source: Global Production Networks in East Asia's Electronics Industry and Upgrading Prospects in Malaysia: Ernst, D. (2004).

Policy Recommendations 5:

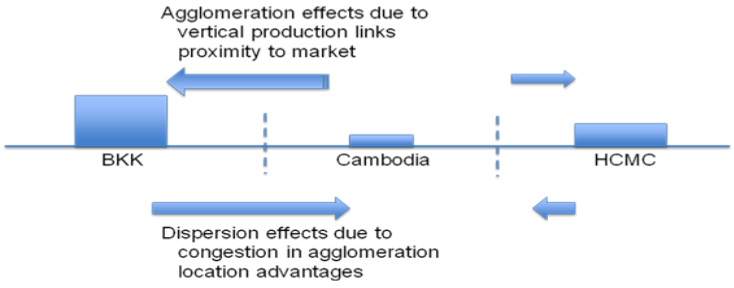
A coordinated effort among countries is required for strategic and socio-economic development in the East Asia region. This encompasses:

- Establishment of an international body for planning and coordinating balanced and strategic development of infrastructure in East Asia.
- Attention towards small and medium-sized enterprises
- Establishment of geographical economic and social database in East Asia through harmonized data collection
- A public-private partnership for R&D related services sector to facilitate innovative activities. Deregulation and FDI promotion in the private services sector will also stimulate growth.
- Further cooperation in FDI and trade policies, including bilateral and regional agreements on trade and investment
- Elimination of impediments in movement of goods
- Localized partnerships for goods transactions among production partners for timely information about changes in the market, especially for the SMEs.
- Facilitation of movement of knowledge workers in order to achieve innovations. This may include simplification of visa requirements and procedures for skilled labour, mutual recognition of certificates, qualifications and occupational licenses for technical works and other intellectual professions such as patent attorney and lawyer.

Future Research Topic

- The IDE- Geographical Simulation Model needs to be further extended to cover the aspect of income distribution in future studies. The model extension would have to be economy-wide with spatial dimension of database for parameterization. It is recommended that this be pursued further through continuous cooperation of all countries in East Asia. In particular, it is necessary to construct a common data base on spatial dynamic network the East Asian regions.
- It is recommended to develop a regional economic and demographic data base. If required, capacity building programmes may be conducted among the officials of East Asian countries for developing a harmonized data base.

New Economic Geography: Dynamism of Agglomeration and Dispersion



Source: Fukunari Kimura, Izuru Kobayashi, ERIA Policy Brief No. 1, "Why Is the East Asia Industrial Corridor Needed?"

Research Findings 6:

The CLMV countries can increase their participation in production networks.

- There are bottlenecks being faced by the CLMV countries in attracting foreign direct investment (FDI) from multinational enterprises (MNEs), participating in production networks, and forming competitive industrial clusters.

CLMV countries have SEZs and industrial zones with low levels of operational efficiency.

- Empirical studies show that poor development of infrastructure is the main hindrance to participation of these countries in the production and distribution networks in East Asia in spite of its abundant, reasonably well-educated and low-wage labour.

Additional costs of operations and logistics for a new business setup exceeds the projected savings on labour costs in CLMV countries.

- For production fragmentation to become economically feasible, these business setup costs, operation costs and logistics costs must be reduced substantially. The CLMV countries can increase their chances of participating in production networks in the region by taking appropriate measures to reduce these costs.

Evolution of Industrial Policies in Southeast Asia, 1950s-1990s

Economy	1950s	1960s	1970s	1980s	1990s
Singapore	IS (while still part of Malaya)	EO			Strategic independence (high technology and services) Regionalization
Malaysia	Moderate IS Added EO			1971-85 Continued IS, started EO	1986- Liberalization
Thailand		1961-71 IS		1971-86 IS (capital goods, beginning in 981)	1986- EO Technology-incentive Industries Some EO
Indonesia		1967-73 Stabilization Beginning IS		1974-85 Strong IS	1986- Liberalization EO
Philippines	1950- IS	Continued IS		1980s Liberalization (political instability)	1990s Continued liberalization (strengthened political stability)

Note: IS: Import Substitution
EO: Export Orientation
Source: Masuyama, Vandenbrink and Chia, *Industrial Policies in East Asia,* 1997

Policy Recommendations 6:

The CLMV countries are well located to attract production blocks especially from neighbouring East Asian countries.

- CLMV countries should focus on the improvement of overall business environment such as providing legal framework, macroeconomic stability, general infrastructure, free trade and open investment policies and human resource development. These conditions are necessary for development of a private sector, including foreign firms, in the CLMV countries.

- Operating SEZs should be given priority in resource allocation to allow industrial clustering which can then become show windows to attract FDIs. These steps may be undertaken before the world economy recovers and MNEs restart to increase FDIs in this region.

Future Research Topic

- It is relevant to explore industrial policies that are effective in the age of market liberalization and globalization, when participation in the WTO and FTAs are becoming the norms.

- The twin constraints of CLMV, namely, shrinking policy space and the constraints on state capability must be considered while exploring feasible and appropriate industrial policies. These generic policies which are relevant for the less developed Southeast Asian countries should take into account both their institutional capabilities and stages of economic development.

Industry wise Share in GDP in CLMV Countries

(Figures in %)

	1990			2000			2006		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Cambodia	55.6	11.2	33.2	37.9	23.0	39.1	31.7	27.6	40.8
Lao PDR	61.2	14.5	24.3	52.6	22.9	24.6	42.6	31.8	25.6
Myanmar	57.3	10.5	32.2	57.2	9.7	33.1	NA	NA	NA
Vietnam	38.7	22.7	38.6	24.5	36.7	38.7	20.4	41.5	38.1

Source: Asian Development Bank, Key Indicators for Asia and the Pacific, Manila, 2008

Research Findings 7:

There is an urgent need to review and analyze policies and current problems on 3 R (reduce, reuse and recycle) in each country.

- There is not much information on recycling infrastructure, responsibilities of stakeholders and industrial standards for recycled goods in the region.

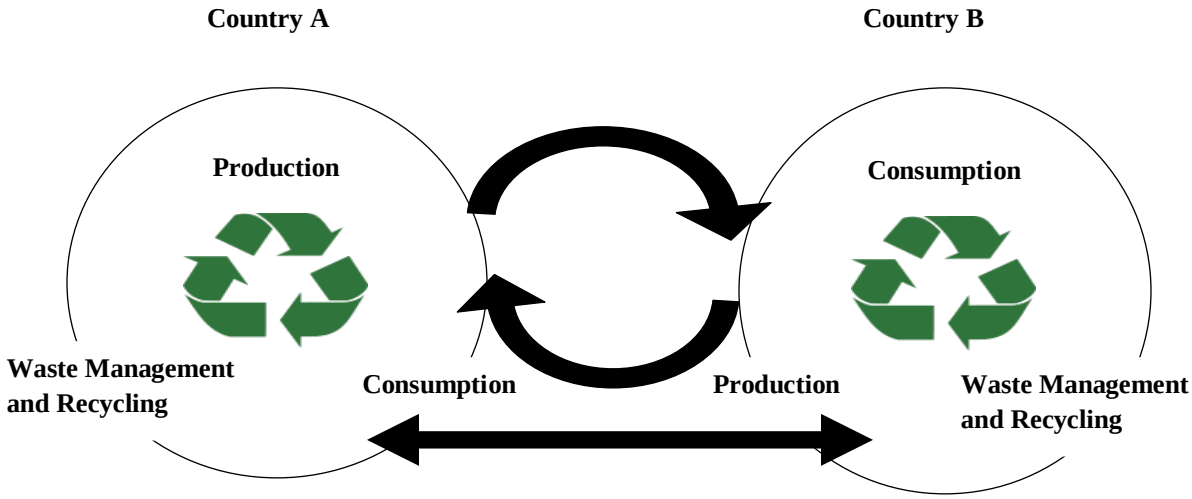
3 R approach is more than just management of waste at source.

- It entails understanding and mutual cooperation among stakeholders to minimize the consumption of natural resources. Successful implementation of 3R policies has beneficial effect in generating employment and improving resource efficiency and productivity.

An integrated 3 R policies will be more successful in the long run.

- The critical success factors contributing to the success of waste management include public-private partnership, an integrated and long term plan for waste management and clear targets. This also includes technical supports from experts to develop appropriate technology to utilize the wastes and to advise companies on the commercial potential of these wastes.

Building an Appropriate Cross-Border Recycling System in the Asian region



Source: Working Group on Enhancing International Recycling, Waste Prevention and Recycling Sub-committee, Industrial Structure Council/ Ministry of Economics, Trade and Industry, Japan. *Towards a Sustainable Asia Based on 3 R s, 2008.*

Policy Recommendations 7:

A joint ownership of 3Rs policy among various stakeholders and clear task definition is important for its success.

- The Industrial Waste Information Exchange Program as practiced in Japan, Philippines and Thailand should be upscaled for usage in other Southeast Asian countries. The information exchange programme should have provisions for disclosure of information on recyclers, guidelines for specific industries on recycling, and promoting technological development in recycling.

- A legal framework addressing the issues of industrial waste management should also be evolved.

Future Research Topics

- Industrial Waste Management Programme policies which have been relatively successful in other countries/regions of the world should be reviewed and analysed. In particular, policies relating to responsibilities of various stakeholders, voluntary collection program, industrial standard for recycled goods and developing recycling industrial park should be compared and reviewed. A framework to address the legal issues of industrial waste management should also be evolved.

Research Findings 8:

In the growing economy of East Asia, sustainable development (SD) can achieve poverty alleviation, economic development and environmental protection simultaneously.

- A large population of the poor in developing East Asian countries are engaged in resource-dependent activities such as small-scale farming, livestock production, fishing, hunting, artisanal mining and logging. Poor people rely on related harvests as a primary source of income and fall back on natural resources when other sources of income fail.

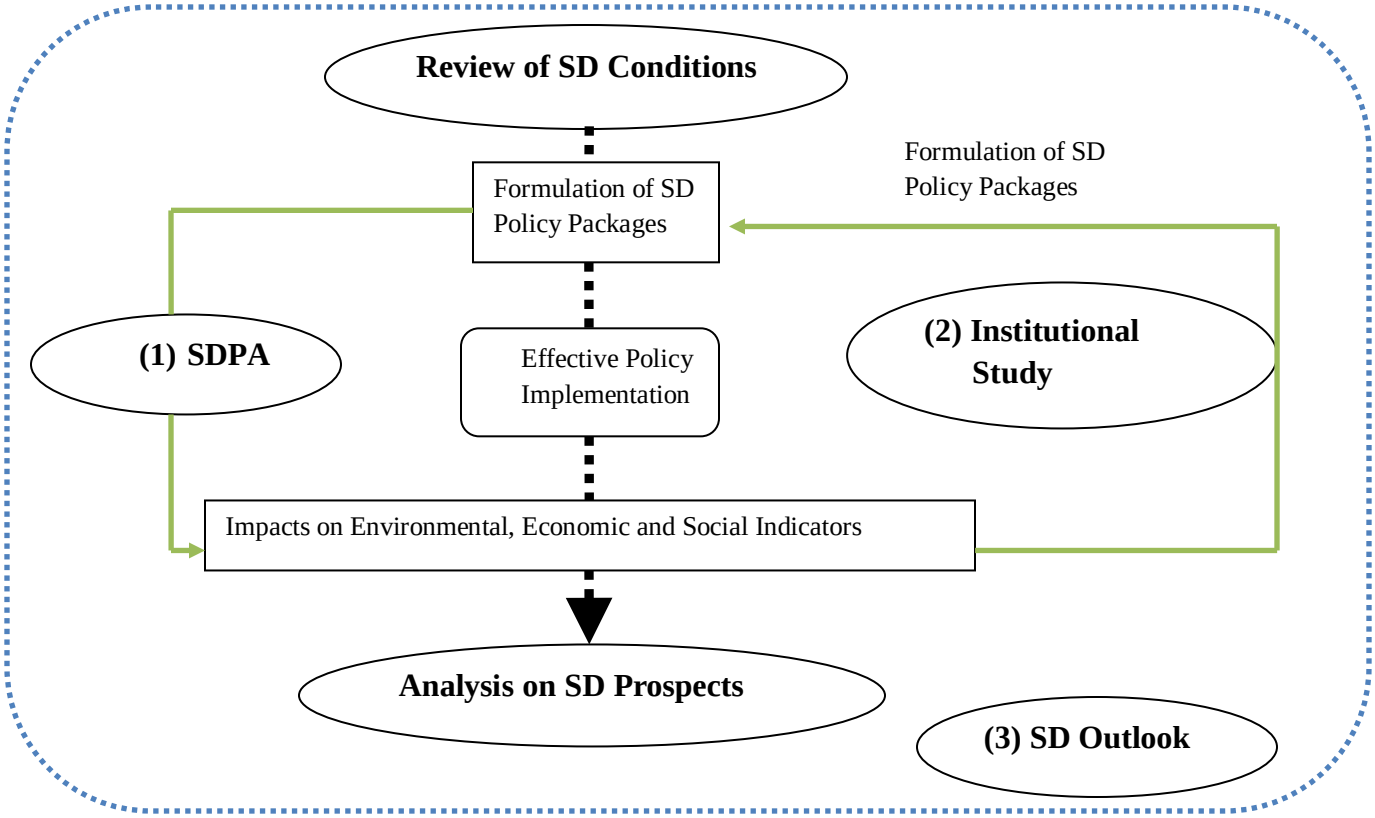
There is a clear and positive link between sustainable resource management and poverty reduction.

- Natural resources and healthy ecosystem play a vital role in extricating the poor out of the poverty trap. Sustainable management of natural resources and creating stable and reliable income for the poor should be an integral part of poverty reduction strategies in East Asia.

There is a pressing need to mainstream sustainable development concerns into the policy making process in this region.

- East Asia is facing both rapid economic growth and aggravated environmental problems. Promotion of sustainable development (SD) that simultaneously achieves poverty alleviation, economic development and environmental protection is the most urgent issue in this region.

Major Research Components for Sustainable Development Policy Analysis (SDPA)



Policy Recommendations 8:

Assessment of the impacts of policies from the view point of sustainable development should be carried out in the Southeast and East Asia region.

- Selection of proper development path decoupling environmental degradation and poverty from economic growth to ensure long-term sustainability, especially under the current global economic downturn, is fundamental and imperative task for East Asian countries. With diversity in social and political systems, cultures and natural endowments, these countries are struggling with both common priority policy issues and country-specific issues.

- Through the Sustainable Development Policy Analysis (SDPA), it is proposed to analyse/assess impacts of proposed environmental, trade and energy policies on selected economic, environmental and poverty indicators. The research project will mainly address sustainable development policies to be implemented at the national level as well as regional level.

Future Research Topics

- The ERIA-SD project will develop certain quantitative policy assessment tools for decision/policy makers to effectively develop and then successfully implement the policies under different development scenarios. Further research on impacts of on-going global economic recession and its long term impacts on the future direction of the environmental policies especially in the developing countries will also be required.

- In addition to quantitative analysis, ERIA-SD project may also include qualitative analysis, if necessary. While the research is primarily designed for national SD policies, regional aspects can also be considered for reflection in the analysis. The regional economic integration can be incorporated as background scenarios to see how such integration will affect policy impacts.

Research Findings 9:

Asia is expected to account for most of the growth in world economic activity by 2030.

- Growth in GDP is leading to an even stronger growth in energy consumption.

Economic growth in Asia has led to increased demand for energy, housing, employment, resources and transportation.

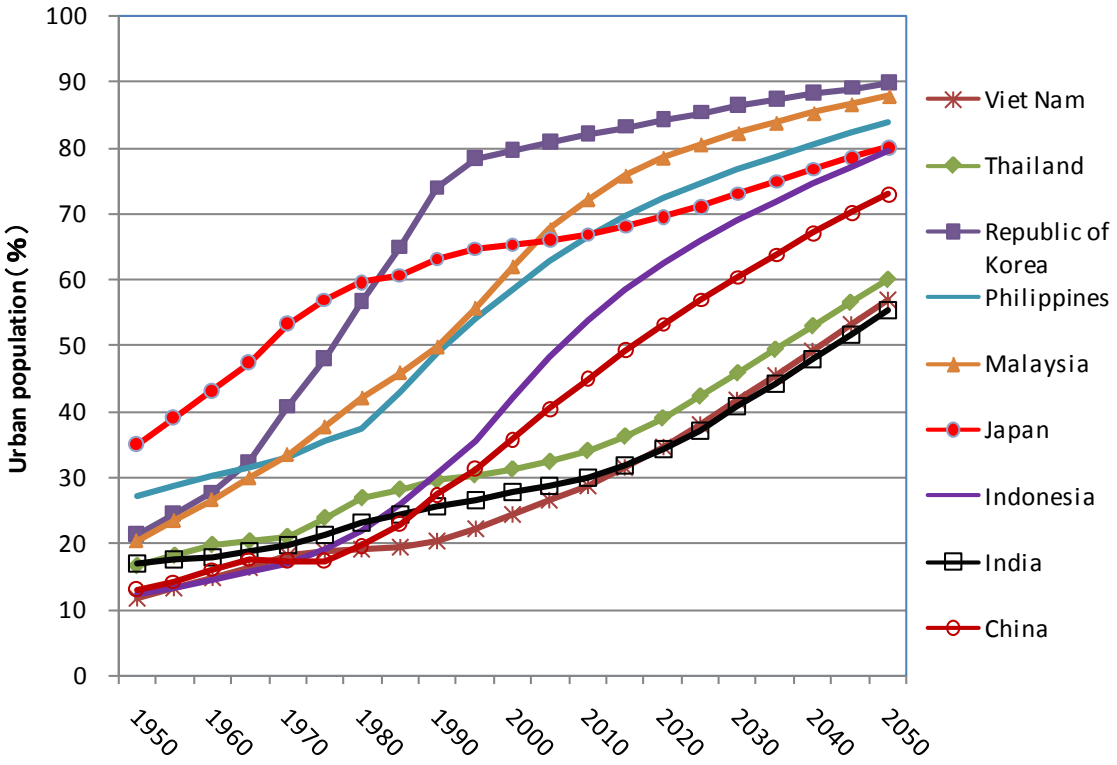
- Population and economic growth have the potential to further increase emissions in the absence of stringent measures for air and fuel quality.

There is a need for building a sustainable automobile society in East Asia.

- Following the economic growth and urbanization, motorization has increased air pollution and energy problems in Asia. Left unaddressed, the environmental pollution created by vehicles will adversely affect the health and productivity of the society.

- These will have a negative bearing on the economic development in the region. Asian countries have a responsibility to improve urban environments in order to sustain the current economic growth.

Urbanisation in Asia



Source: http://esa.un.org/unpp/p2k0data.asp

Policy Recommendations 9:

A study of data and information about ASEAN + 6 countries recommends an integrated policy on air pollution arising from vehicular traffic.

- An early implementation of air pollution reduction policies in the region will ensure better economic development in the future. In order to be effective, the integrated policy would require consensus of the stakeholders, public awareness and better implementation/enforcement. Such a policy would also ensure environmentally sustainable development.

- However, given the variegated nature of air pollution conditions in the East Asian region, it is recommended to establish a common database of vehicle related issues in order to make the above policy recommendations feasible.

Future Research Topics

- Information/data about vehicles, traffic flow, regulations, standards, evaluation of emissions from each category of vehicle and estimation of air pollution have been found to be different in each country in the ASEAN + 6 region. There are also cases of lack of data and analytical methods. It is recommended that a common and precise data, statistical treatments and analytical measures for the countries in this region be put in place in order to plan appropriate strategies to improve air quality in the big cities of Asia.

Current and Proposed Emission Standards for New Vehicles in Asia

Country	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
European Union	E1	Euro 2					Euro 3				Euro 4				Euro 5					E6
Bangladesh[a]											Euro 2									
Bangladesh[b]											Euro 1									
PRC[a]							Euro 1			Euro 2			Euro 3			Euro 4				
PRC[c]							Euro 1		Euro 2			Euro 3		Euro 4 Beijing only						
Hong Kong, China	Euro 1		Euro 2				Euro 3					Euro 4			*Euro 5*					
India[d]							Euro 1				Euro 2					Euro 3				
India[e]					E1		Euro 2				Euro 3					Euro 4				
Indonesia											Euro 2									
Republic of Korea												Euro 4			Euro 5					
Malaysia			Euro 1											*Euro 2*				*Euro 4*		
Nepal						Euro 1														
Pakistan	No conclusive information available																			
Philippines									Euro 1				Euro 2							
Singapore[a]	Euro 1						Euro 2													
Singapore[b]	Euro 1						Euro 2					Euro 4								
Sri Lanka									Euro 1				*Euro 2*							
Taipei,China					US Tier 1									US Tier 2 Bin 7[f]						
Thailand	Euro 1						Euro 2			Euro 3								Euro 4		
Viet Nam													Euro 2							

Source: ADB, A Road Map for Cleaner Fuels and Vehicles in Asia, 2008

Research Findings 10:

Sustained population and economic growth in the East Asia region will lead to significant increase in energy demands and green house emissions.

- While all the East Asia Summit countries are actively developing and implementing Energy Efficiency and Conservation (EEC) goals, action plans/policies, their progress varies widely. Some countries are quite advanced in their efforts, while others are just getting started.

Advanced energy efficient and low emissions technologies need to be widely deployed throughout the region for simultaneous achievement of socioeconomic and environmental development goals and increased energy security.

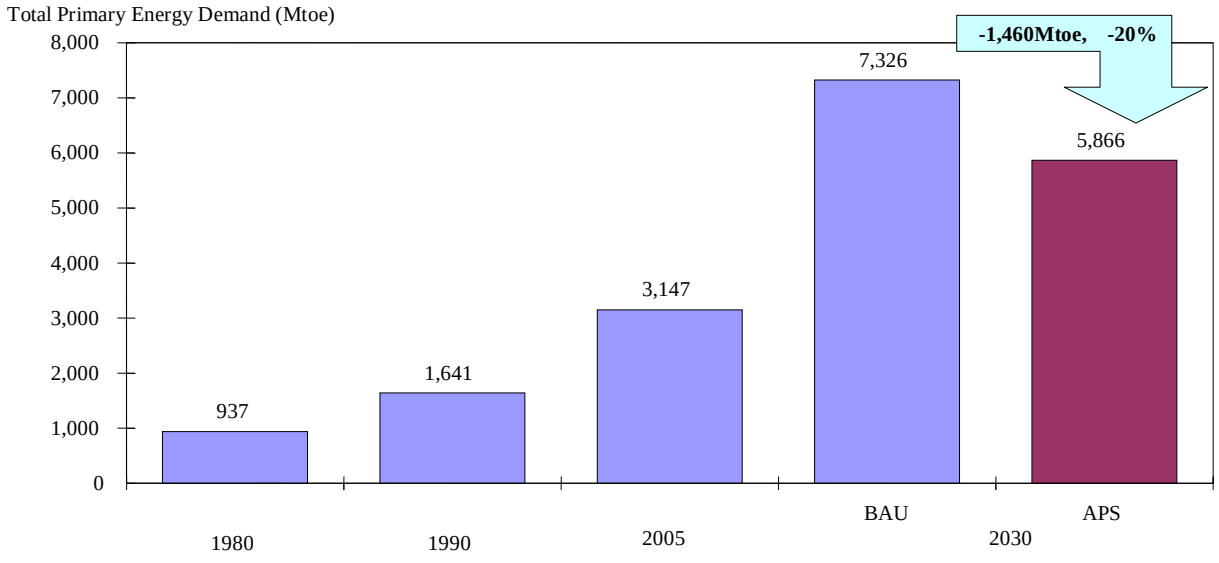
- Though increased consumption of energy is fundamental for achieving a range of socioeconomic and development goals, adopting an Alternative Policy Scenario (APS) which incorporates additional goals, action plans and policies and low emissions technologies would lead to additional energy savings.

There exists a great potential to increase energy efficiency and reduce energy consumption and greenhouse gas emissions in this region.

- By 2030, the implementation of currently proposed energy efficiency goals, action plans and policies across the EAS region could lead to further reductions of upto 20 percent in primary energy demand and energy intensity and 30 percent in energy derived emissions.

- This will also reduce the share of carbon intensive energy (oil, coal) in the regional energy fuel mix and contribute to improvements in regional energy security.

Total Primary Energy Demand in East Asia Summit Countries



BAU – Business as Usual, **APS** – Alternative Policy Scenario, **Mtoe** - Million tonnes of oil equivalent (1 Mtoe = 41.868 PJ)

Source: Analysis on Energy Saving Potential in East Asia: Ed. Shigeru Kimura

Policy Recommendations 10:

East Asian countries should work individually and cooperatively to ensure implementation of their Energy Efficiency and Conservation (EEC) goals.

- It is recommended that EEC goals be established and concrete action should be developed to achieve these goals in the region. It is also recommended that capacity building programs be offered to assist countries to develop and practically implement energy saving goals, action plans and policies.

Additional measures and technologies can achieve further energy savings and reductions in emissions.

- In addition to the APS measures, additional application of low carbon technologies, such as biofuels, civilian nuclear power and carbon capture and storage could significantly reduce emissions to about 2005 levels by 2030.

Even further improvements in energy efficient and low emissions technologies and emissions intensity beyond those analyzed and projected in this report are possible and achievable.

- A wide range of initiatives like government leadership and funding, energy conservation laws, long term energy efficiency goals or plans, performance and emission standards, use of more energy efficient vehicles, labeling systems with energy efficiency standards, renewable energy targets, enhanced research and development funding, advocacy campaigns, and explicit emission pricing instruments such as taxes and emissions trading will lead to even greater energy efficiency and reduced greenhouse emissions.

Future Research Topics

- The study has revealed that goals, action plans and policies for reducing energy consumption are still relatively new in most countries. However, there are still many potential EEC policies and technological options that have not been examined or incorporated in the Alternative Policy Scenario. Hence, there is an overwhelming need to repeat this study periodically, as the quality and scope of the national goals, action plans and policies are likely to improve and expand considerably over time.

- Further, there is a need for capacity building to assist countries to develop and practically implement energy saving goals, action plans and policies.

Research Findings 11:

Growth of the biofuel industry is on rise especially among the developing countries that have seen renewable energy (RE) as a potential fast-growing economic sector.

- Economic sustainability of biomass utilization will ensure similar benefits for the future generation. Developing a set of indices would encourage sustainable development goals to be included in policy and decision-making.

Guidelines for Sustainability Assessment of Biomass Utilisation in East Asia are based on the three pillars of social, economic and environmental perspectives.

- For environmental sustainability, global warming potential (GWP) has been proposed as the priority indicator in line with the current world effort in reducing greenhouse gas emissions.

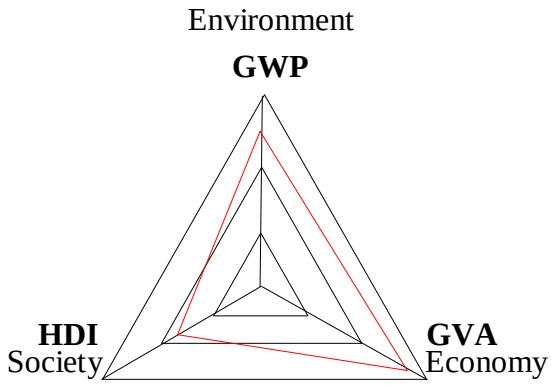
- For economic sustainability, gross value added (GVA) and for social sustainability, the human development index (HDI) which is an aggregate index have been proposed for sustainability assessment of biomass utilisation.

These three broad indicators/indices can be integrated to address the need of policy and decision-makers.

- Other impacts which are more qualitative in nature could also be used to indicate current status and targets to be achieved. Such an approach would address the need of policy and decision-makers for integration but at the same time will have enough detail to allow transparency at the level of communication.

- A further integration of the indicators for environmental, economic and social performance could be done numerically, by setting target values of performance for each issue.

Illustrative Diagram for Representation of Sustainability Assessment Indicators



Other Indicators	Target	Current Status
Air Quality		
Water Use		
Others		

Source: Working Group on "Sustainability Assessment of Biomass Utilisation in East Asia"

Policy Recommendations 11:

The objective of these guidelines is to facilitate biofuel policy formulation in the region that may be used at the stage of decision making.

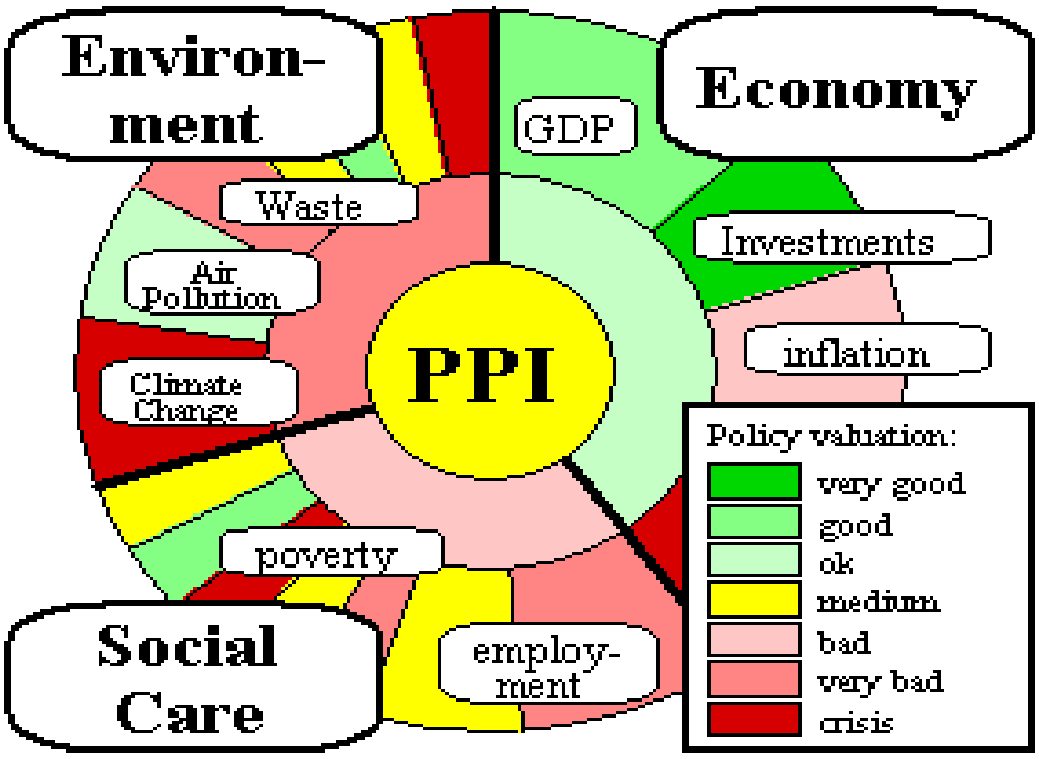
- Using the guidelines for sustainability assessment of biomass utilisation, East Asian countries should develop and share common methodologies and data regarding estimates of greenhouse gas emissions to support scientific Assessment. These countries should also take into consideration the guidelines of ISO, GBEP and similar other international organizations while implementing and enforcing their own policy framework developed for biomass utilization.

- It is suggested that an expert working group be formed in East Asia, which meets regularly to discuss the relevant issues. Outcome of such discussions would be conveyed to the representatives of the member countries at various international forums.

Future Research Topics

- The results of this study are based on secondary data, which highlights the planned or projected figures but do not depict the factual situation. It is suggested that, in the next phase of the project, some pilot scale studies should be taken up in the region, which would focus on collecting actual data and information through field surveys of various stakeholders involved in biofuel production. .

Dashboard of Sustainability Screenshot



Source: http://esl.jrc.it/dc/pics/ppi_fut.gif

Research Findings 12:

Development of biomass and bio-fuels is important from the viewpoint of energy security, diversification of energy supply sources and also in CO2 reduction.

- But low-quality biodiesel fuel raises serious concerns regarding the effect on engine performance caused by fuel impurities and the oxidation. Harmonization of standards within the East Asia region will facilitate the use and trading of good quality biodiesel**.**

The ERIA Working Group on Biodiesel Fuel Standardisation focused on Fatty Acid Methyl Ester (FAME) as a biodiesel fuel.

- The Working Group discussed the harmonized specification based on European Standard (EN14214), which is set for rapeseed oil only. But the group found that there is a need to consider other feedstock used in the East Asia region, such as coconut (low viscosity and flashpoint) and soybean (iodine number) etc.

- Several important factors like oxidation stability, iodine number, metal corrosion, storage stability and antioxidant additives need to be addressed from consumer's point of view.

The Working Group has found that winter grade palm biodiesel is highly suited for countries in South East Asia region.

- Compared with other types of liquid oil derived biodiesel (e.g. rapeseed and soybean), the winter grade Palm Biodiesel (PME) contains bulk of mono-unsaturated methyl ester and thus, it is a premium grade biodiesel with good storage stability, low cold filter plugging point (CFPP) and is able to decrease polymerization degree of biodiesel at high combustion temperature.

- In Japan and the East Asian countries, if industrial rice (not intended for food) is cultivated on the non-producing land, using low cost fertilizers and low-energy methods, it is possible to make rice into bio-ethanol and make rice-oil from the rice bran into a bio-diesel fuel feedstock.

In 2008 the Asian biodiesel industry saw a capacity increase of 2.59 billion litres (648.2 million gallons) coming mainly from Singapore, Malaysia, India and China.

- A further 7.41 billion litres (1.96 billion gallons) of new capacity is expected to start operations in 2009 in several Asian countries. China, Indonesia and Malaysia are expected to become major growth areas in new biodiesel capacity in the region.

Policy Recommendations 12:

ERIA study group has recommended commercialization of good quality biodiesel fuel in the East Asian region, and a benchmark has been set for the quality of diesel fuel-mixed biodiesel fuel with harmonized specification

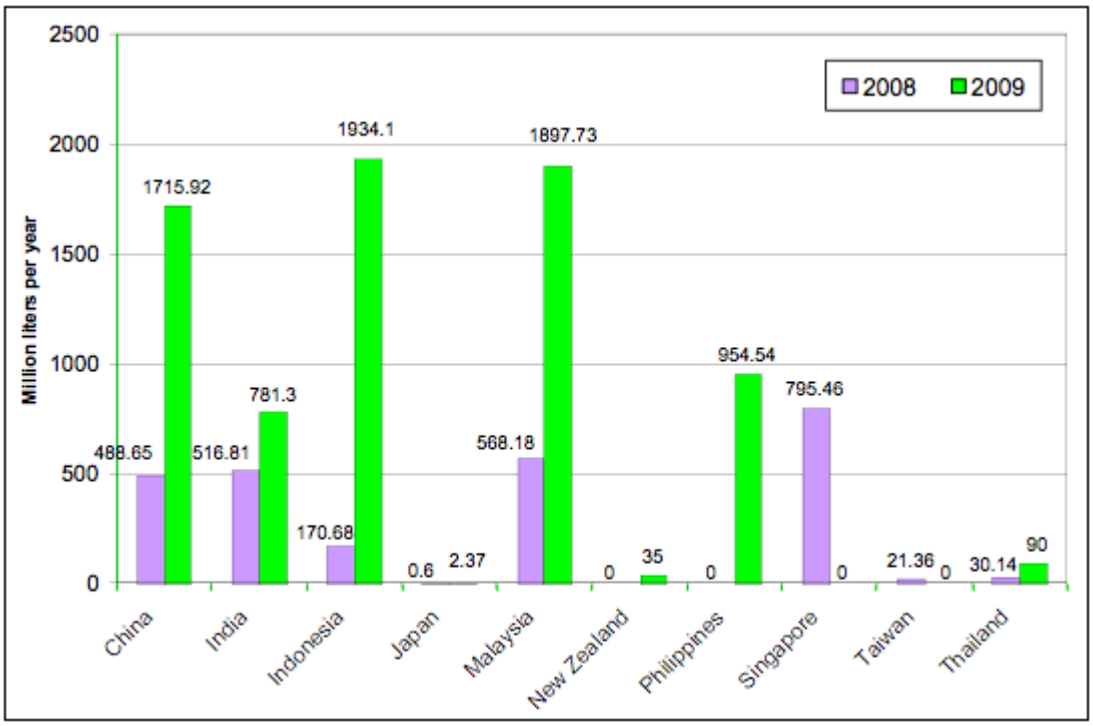
- Integration of existing palm biodiesel production plant with winterization technology will provide the solution for palm biodiesel to be used in the temperate countries to suit the regional temperature requirement. The winterization technology existing with Malaysian Palm Oil Board (MPOB) in this region can be used for this purpose.

- It is further recommended that countries in this region should also explore the feasibility of hydrogenated biofuel production processes as these are expected to be contenders for production of the next generation biodiesel fuels.

Future Research Topic

- Further research needs to be taken up for sustainable production of biodiesel from microalgae as well as development of new crops as feedstocks for biodiesel.

New and Expanded Biodiesel Capacity in 2008 and Outlook for 2009 in Asia Pacific



Source: Global Biofuels Center, Special Biofuels Report: Asia Pacific - Update on Biofuel Production Capacity, February 2009

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