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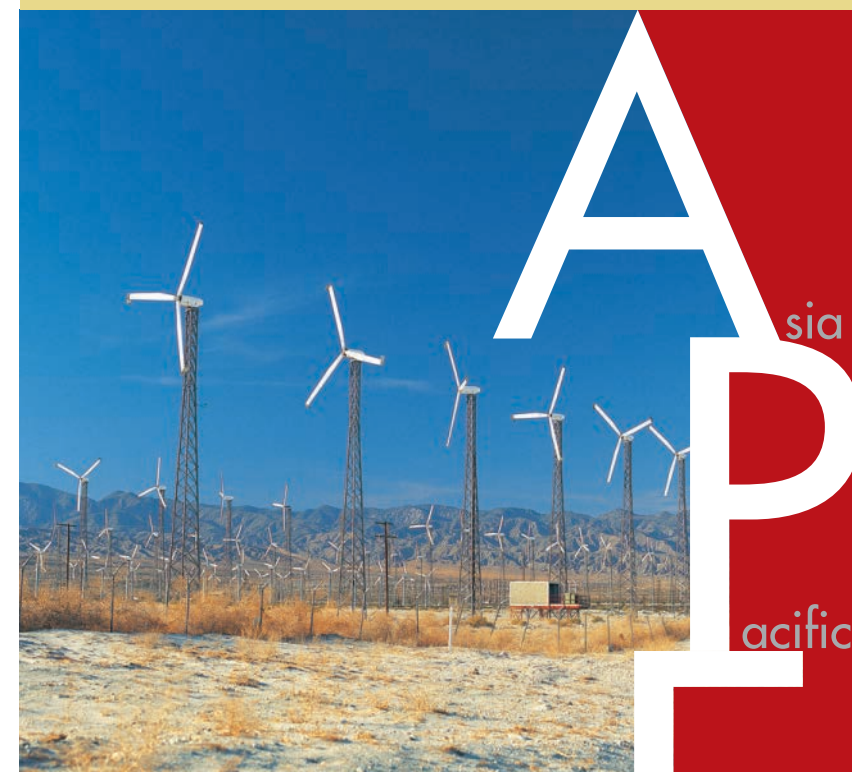
APEIS-RISPO Web sites :
<http://www.iges.or.jp/APEIS/RISPO>



TECHNICAL SUMMARY

RISPO

Research on Innovative and Strategic Policy Options



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Asia
Pacific
Environmental
Innovation
Strategy project



1. What is APEIS/RISPO?









The Research on Innovative and Strategic Policy Options (RISPO) was one of the three sub-projects¹ of the Asia-Pacific Environmental Innovation Strategy Project (APEIS). APEIS, an Asia-Pacific region-wide research project was registered as a Type 2 partnership/initiative at the World Summit on Sustainable Development (WSSD)² in 2002³. RISPO, together with the other two sub-projects of APEIS, aimed to contribute to policy dialogue on sustainable development in the region by providing knowledge-based tools.

1.1 Objectives

RISPO was a region-wide research project conducted in collaboration with various research institutes and key international organizations working in the field of environment and development in the Asia-Pacific region. RISPO aimed to jointly develop two knowledge-based tools, namely a Good Practices Inventory and Strategic Policy Options, which can be of use to policy-makers seeking better solutions to the sustainable development challenges they face. The final products of the two tools are going to be made available as common regional assets in June 2005. The primary audience/users of these tools are policy-makers, however RISPO invites wider audiences to further promote international dialogue among a wide variety of stakeholders and enhance informed policy-making to lead the society towards a sustainable path.

The lack of means of policy implementation is one of the most serious obstacles for promoting environmentally sound policies, especially in many developing countries. RISPO, therefore, focused on the innovative policies and instruments to overcome these obstacles,

Table 1 Focuses and sub-themes

Focus	Sub-theme	
Economic Aspect		Innovative financing for renewable energy development
		Promotion of biomass energy use
		Inter-boundary recycling market for enhancing resource-recycling society in Asia
Social Aspect		Facilitating protected area management using community-based tourism
		Promoting environmental education by NGOs
		Promoting local/indigenous knowledge-based sustainable resource management
Both Aspects (Comprehensive)		Development of environmentally sustainable transport systems in urban areas
		Improving environmental performance of small and medium-sized enterprises

¹ The other two sub-projects are Integrated Environmental Monitoring (IEM) and Integrated Environmental Assessment (IEA) which are conducted by National Institute for Environmental Studies, Japan.

² APEIS was proposed by the Ministry of the Environment of Japan in collaboration with a number of governments, research institutes, and key international organizations in the Asia-Pacific region.

³ Duration of the RISPO First Phase was April 2002 – March 2005.

and to develop effective policies for sustainable development. RISPO had eight thematic research areas as listed in Table 1, which are broadly divided into three groups based upon their focuses. Research under the eight sub-themes was conducted by a group of researchers in the Asia-Pacific region.

RISPO's research approach focused on ground-based field studies of successful examples of sustainable development practices. By taking the field based approach, RISPO intended to complement the other two sub-projects of APEIS and to develop a sound understanding of factors that promote or hinder sustainable development in various settings and to describe lessons thus learned.



Example of field studies:
Interviewing Villagers on local perceptions on adaptation to climate change in Chingra Kheli, Bangladesh

1.2. Technical Framework

The Good Practice Inventory and the Strategic Policy Options (SPOs) under the eight sub-themes have been developed following the steps as outlined in Figure 1.

Figure 1 Steps to develop Good Practices Inventory and Strategic Policy Options



RISPO has identified four sets of minimum criteria, given the characteristics of effective environmental policies in developing countries. They are (i) impacts produced by SPO, (ii) five specific criteria to evaluate each policy option, (iii) ease of implementation, and (iv) applicability. These four criteria were incorporated into the standard format, in which each individual SPO was examined in details.

First, the SPO had to prove that it had generated the intended impact; i.e. successfully changed behaviour of target groups as it intended. Though this sounds as a general matter of course, this criterion is quite important given the fact that there are many policies that have not created the intended impact. In reality, however, it is not easy to get empirical evidence that proves the effectiveness of the policy in question. There are two major reasons for this. First, reason is the fact that there is always a certain time lag between the actual action and intended impact. For example, prohibition of use of hazardous chemicals can result in reduction of chemical contamination only years after its implementation. Thus, to prove that a policy is effective with objective evidence may not be straight forward. In general, however, some changes in the

human response are observed very quickly, as soon as a new policy is introduced. They include, for example, the establishment of a national coordination body, increase in government staff and budget, and special piece of legislation. Then, subsequent impacts may be observed in the change of driving forces. Technologies adopted by targeted industry are expected to change for more environmentally friendly ones, for example. Only after that changes in the quality of the environment can be detected. This time lag varies depending upon what kind of environmental target a policy has, but generally speaking time lag is shorter for localized problems, and longer for global issues. Second, there are always some external factors that affect effectiveness of any policy. External factors, such as political directions, economic growth, social stability, are those that are beyond the scope of the SPO in question. To which extent the policy in question is effective depends, in many cases, on how external factors have manifested themselves.

Other than the impact, the SPO format (Figure 2) has identified the following five criteria, as mentioned above to evaluate the identified SPOs .

- i) Sustainability
- ii) Efficiency
- iii) Effectiveness
- iv) Equity
- v) Relevance

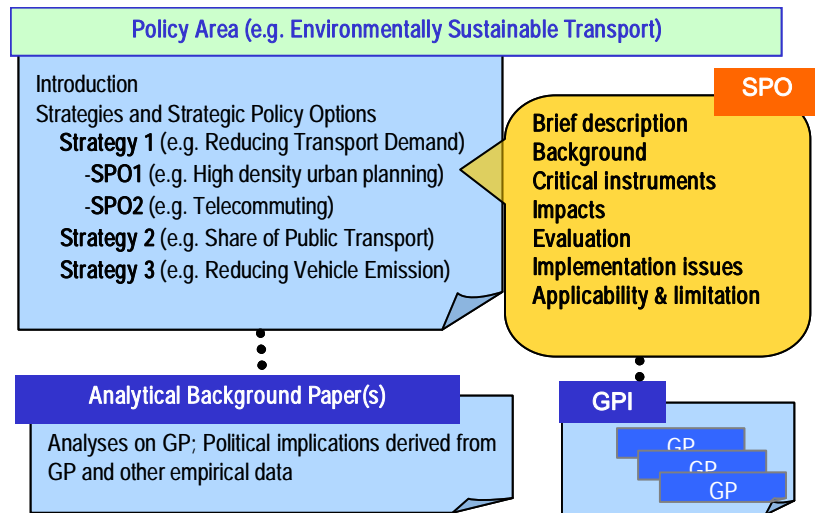


Figure 2 Structure of Strategic Policy Options

Sustainability is an important criterion, particularly when discussing policies for sustainable development. In RISPO, sustainability is defined as “whether the impacts can be maintained for a long time without external assistance.” As the SPOs suggested in terms of national policies, external assistance in most cases means contribution from international governments, agencies and other international finance institutions. Policies failing to meet the sustainability criterion tend to be short-lived, as they will become ineffective once such external contribution ends.

Second, efficiency is defined as “the relationship between outputs and the resources used to produce them. An efficient activity maximizes output for a given input, or minimizes input for a given output.” As efficiency, defined this way could be difficult to prove for certain policies identified under RISPO, figures from related Good Practices (GPs) could be used as a reference for efficiency.

Effectiveness is defined under RISPO as “the extent to which objectives have been achieved and the relationship between the expected impacts and observed impacts of the selected instruments.” In short, this criterion examines if a policy developed has generated intended impacts, and if so, to what extent.

The fourth criterion is equity. It is defined as: (i) equity in opportunities to receive the benefits from the policy, and (ii) equity in bearing costs accrued to the policy implementation, paying due attention to socially disadvantaged population. As poverty is the most important policy issues in many developed countries, equity could be a critical criterion.

In RISPO, relevance means “relevance of the identified objectives of a policy to strategies of sub-themes and national development goals”. This is explained in the background section of each sub-project.

Besides the five criteria outlined above, two other factors that were also considered important in RISPO included:

Ease of implementation, as many policies introduced in developing countries face implementation barriers. For example, policies which lack proper implementation arm within the government have little hope for success. Indeed without proper institutional capacity in terms of staff, funds, technologies and information, no policy can be implemented.

Applicability for each SPO proposed was examined. Applicability referees to the possibility of successful application of the proposed SPO in different countries of the region. As differences exist between countries in terms of seriousness of the problem in question, level of economy, understanding of people affected, and technologies to be applied, there is no guarantee that successful policies in one country are also successful in another country.

Besides the criteria outlined above, RISPO aimed at producing SPOs which are innovative in terms of instruments suggested, uniqueness of policy options or policy mix. Innovativeness as defined by RISPO is:

Basic ideas:

- (i) Policies that turn burden into opportunities and weakness into strength
- (ii) Policies that can introduce new ideas and mechanisms that can prove to be effective

Specific suggestion:

- (iii) Policies that utilize market mechanisms
- (iv) Policies that will promote enabling and catalytic roles of governments
- (v) Policies that improve the use of existing capacities for the betterment of the environment (infrastructure, institutional mechanisms)
- (vi) Policies that harness synergies of the various stakeholders and among countries

Innovative Policies in Developing Countries' Context:

Traditionally, environmental policies were mostly based upon regulatory instruments (i.e. command and control). This was because environmental matters were regarded as technical issues that could be dealt with by controlling a rather limited number of large industries. Consequently, independent but technically oriented environmental bodies were created originally by many developed countries. This pattern has been in one way or another emulated by many developing countries. However, as the environment becomes one of the three pillars of sustainable development, and global environmental issues have come to the center stage of international political arena, a lot of new developments have taken place in the design of environmental policies.

Challenges developing countries are confronted with regarding the environment are formidable. Traditional environmental issues such as pollution have to be addressed, but at the same time, new types of environmental issues caused by the modern life style (e.g. global environmental problems) have to be also coped with. In fact, this situation necessitates innovative environmental policies, which fit into strengths and weaknesses of developing countries in the region: e.g. lack of expertise, funds, equipment, etc. on the down side, and advanced technologies available now, and policy lessons obtained in developed countries on the up side.

As innovativeness means something new, innovative environmental policies should be understood as a relative concept. Those innovative to Country A may not necessarily be so to Country B. A policy applied for a long time to "Sector A" could be innovative to "Sector B" if it generates something new for that sector. What is important is the fact that the proposed policy is effective under local socio-economic and other factors specific to a country to be applied. In other words, environmental policies innovative to a developing country have to properly take into account, among others, nature and scale of the issue in question, as well as local socio-economic conditions and other settings.

2. What has APEIS-RISPO achieved?

2.1. Major Outcomes

The Good Practices Inventory (GPI) and the Strategic Policy Options (SPO) are two major outcomes of RISPO. The GPI and the SPO database are already available on the RISPO website.

Good Practices Inventory (GPI)

GPI is an easily searchable database on the RISPO website, consisting of a total of 146 good practices examples that are rich in lessons and potential for replication or application. Good (or unsuccessful) practices identified and analyzed by each research team are compiled into GPI. Information on each good practice includes critical and innovative instruments that make the practice successful, lessons learned, and potential for application. The users can easily search useful practices on the RISPO web-site (<http://www.iges.or.jp/APEIS/RISPO/index.html>).

The image shows a screenshot of the APEIS RISPO Good Practices Inventory search interface on a Microsoft Internet Explorer browser. The search results are displayed for the keyword "Financing solar photovoltaic systems through rural finance institutions". The interface includes search filters for Environmental Area (Climate Change), Country (India), and Strategy (Innovative Financing for Renewable Energy Development). The example of a good practice is titled "Developing a market-oriented institutional and financial model for decentralised solar systems". The summary of the practice describes a financing model involving umbrellas brand, energy service network, and innovative financing for renewable energy development. The background information mentions that the practice is located in the Thar Desert region of India, where remote villages have limited access to traditional energy sources.

Figure 2 Search Interface of Good Practices Inventory and Example of Good Practice

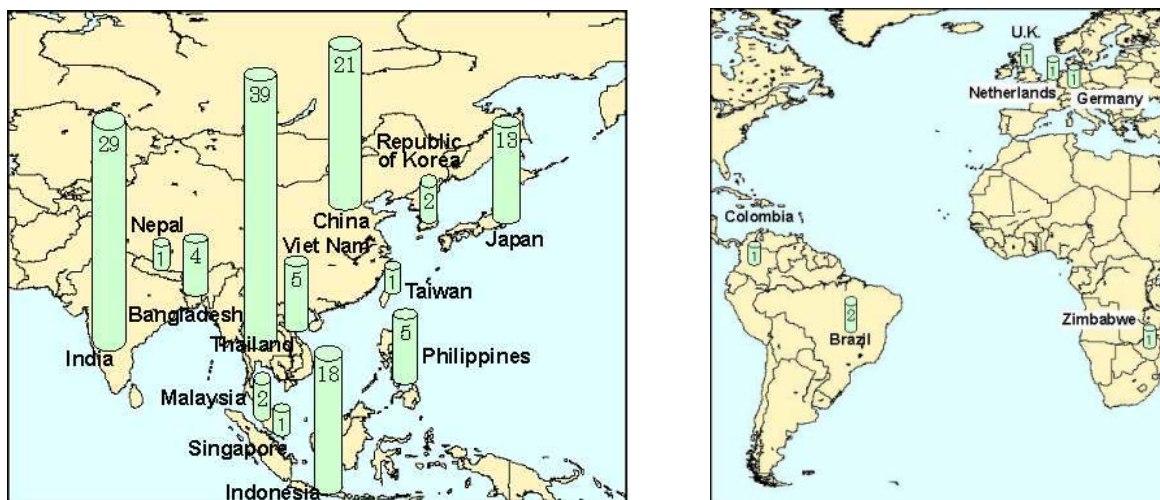
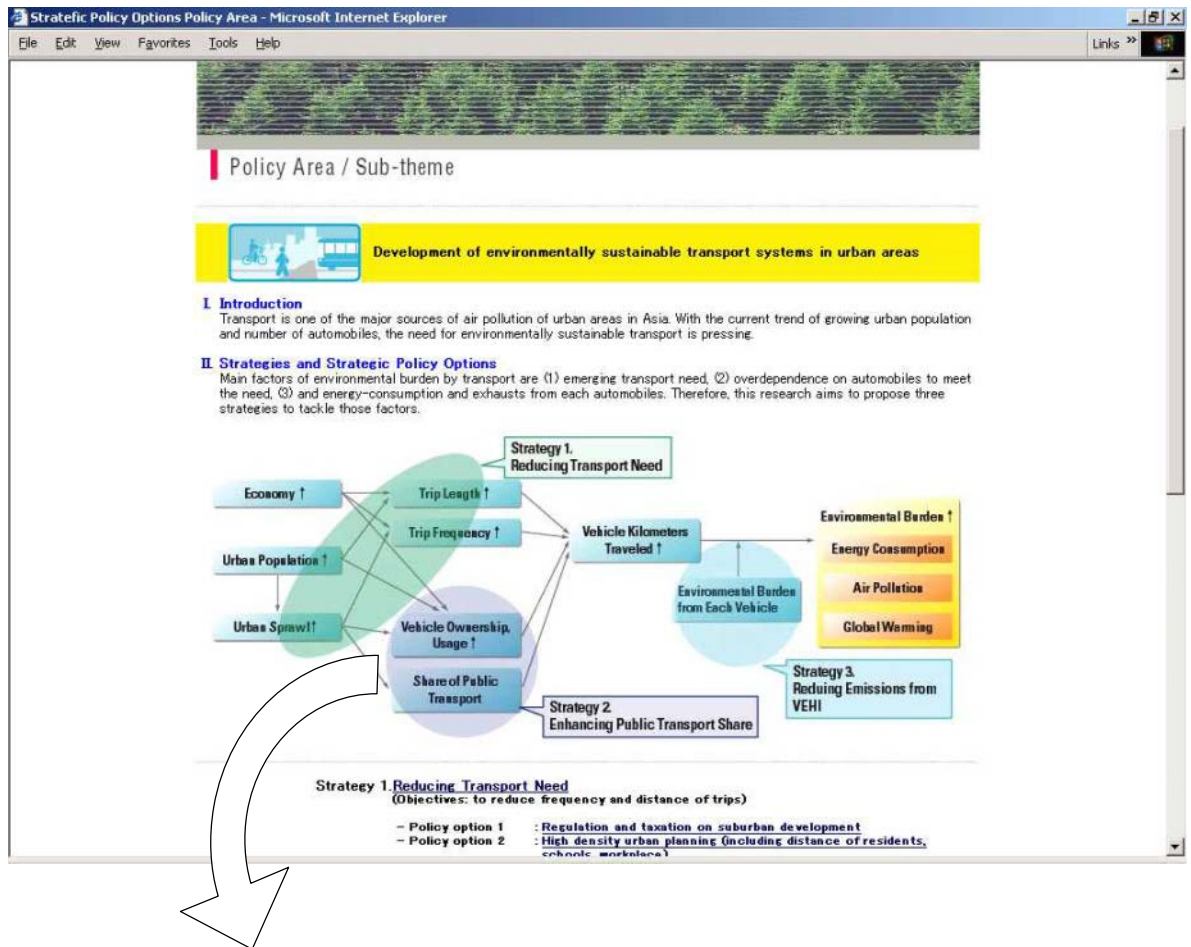


Figure 3 Distribution of Good Practices

Strategic Policy Options Database

SPOs are packages of policy options for sustainable development in the selected sub-themes. Strategies have been developed by the eight sub-themes to recommend directions to policy-makers for achieving sustainable development in different policy areas. Innovative policies to promote development strategies are identified as SPOs. Each SPO highlights critical instruments required for its implementation, expected and observed impacts, evaluation, implementation issues, and its applicability and limitation. A total of 81 SPOs from the sub-themes have been developed and stored in the SPO database on the RISPO web-site (<http://www.iges.or.jp/APEIS/RISPO/index.html>), which is user friendly.



Strategy 2 . **Enhancing Public Transport Share**

(Objectives: to improve public transport and reduce automobile use)

- Policy Option 1 :[Light Rail Transit](#)
- Policy Option 2 :[Bus rapid transit systems](#)
- Policy Option 3 :[Metros](#)
- Policy Option 4 :[Improving bus routes and services](#)
- Policy Option 5 :[Community vehicles \(school bus, private operators\)](#)
- Policy Option 6 :[Environmentally friendly use of paratransit \(jeepneys, tuk-tu](#)
- Policy Option 7 :[Effective network among public transports](#)
- Policy Option 8 :[Park and Ride facilities](#)
- Policy Option 9 :[Environmental commuting pass](#)
- Policy Option 10:[Bicycle lanes](#)

Figure 5 Webpage of SPO Database-overview of sub-theme and list of SPOs (Example of Environmentally Sustainable Transport)

2.2. Outcomes of eight Sub-themes

2.2.1. Innovative Financing for Renewable Energy Development

Meeting the challenge of large scale commercialization of renewable energy (RE) products and services would require 1) breaking down high initial costs of RE systems; 2) increasing competitiveness against traditional fossil fuels including by removing or redirecting subsidies; 3) ensuring access to consumer and industry financing; and 5) ensuring sustainability without public aid and subsidy. This research has explored innovative modes of delivery in four areas of financing which are likely to be primary sources for financing the development and commercialization of RE in the mid-long term period: government finance, international funding mechanisms (including clean climate initiatives), private sector finance (including financing through energy service companies); and micro-credit and community-based financing.

Good Practices

Eighteen (18) good practices from China and India were documented and analyzed, in collaboration with the Energy Research Institute of China and The Energy and Resources Institute of India. The good practices cover a range of innovative financing mechanisms including: mechanisms of combination of government and community financing in India; market development for solar lantern in post-subsidy regime in India; the experience of the first CDM project in RE in China; and funding of rural electrification through international bidding-based government procurement in China.

Strategic Policy Options

The analysis of good practices indicated that most policies for the promotion of RE involved some form of subsidy, either direct or indirect. This is confirmed by extensive international practice. However, it is well understood that sustainable market development is illusionary as long as it solely depends on subsidy. The challenge on the side of policy and decision-makers is to optimize, with a view of sun-setting, RE subsidies. This involves a number of possible options ranging from competitive approaches to the provision of subsidy; models of combining subsidy with loan ownership through a shift from capital

Framework of Strategies and Strategic Policy Options

Strategy	Strategic Policy Options
Optimum use of public funds	Competitive bidding for minimum subsidy
	Combining subsidy with loan ownership
	Renewable energy promotion fund
Enhancing private sector financing	Market-based institutional finance
	RESCO approach to financing
	Renewable energy feed-in-tariff
	Renewable portfolio standards
Leveraging consumer finance	CDM and other clean climate initiatives
	Micro-credit and self help group financing
	Community-based green power purchasing

subsidy towards interest-rate subsidy; to public financial support that is able to drive long-term private investment. Given that many RE technologies have matured and that the market is expanding, there must be a greater role of the private sector and increasing financing by financial institutions, equipment suppliers; utilities; electricity suppliers; and investors. Public policies for enhancing private sector financing are expected to shift some of the investment costs away from the investor (e.g. to the public sector); to guarantee a certain market size (e.g. renewable energy portfolio standards); or to guarantee a certain price for renewable sources of energy (e.g. RE feed-in-laws). In many cases, these different approaches are applied in conjunction. Renewable energy service companies (RESCOs), equipment suppliers and vendors intervene on two aspects of the financing structure: i) in downsizing high initial costs of systems and ii) in serving as financial intermediaries in consumer bank loan procurements as well as guarantees for securing loans. Such interventions reduce risks for the banking sector, enabling consumers' access to loans. As lending mechanisms united to collaterals, credit history, and loan guarantees required in the formal banking sector, micro-credit and self-help group financing have proved certain willingness to pay premium process for "green power". Though so far dominated by institutional consumers, this emerging willingness to pay more for RE, could be nurtured through market mechanisms such as tradable permits and other forms of direct or indirect incentives such as tax rebates.

2.2.2. Promotion of Biomass Energy Use

This research, which focused on biomass energy development, was important from three perspectives: energy related environmental problems, energy security; and local economy. In Asian countries, there is still an excessive demand and dependence upon commercial fossil fuel or traditional biomass energy use reasons being; first, the fact that storage and delivery of traditional biomass energy is easy compared to other renewable energy sources. Biomass resources, commonly burned for cooking and heating, are used in rural area in an inefficient manner, mainly due to lack of infrastructure and local markets for supporting delivery, financing, operation and maintenance of efficient technologies. The second reason is the fact that fossil fuels are cheaper than renewable energy sources. Developing appropriate technologies to efficiently extract energy from biomass resources and innovative policies to use and store the produced energy in more efficient ways could help in developing the biomass energy market. Promoting efficient supply and use of biomass energy has significant potentials to mitigate energy related environmental problems such as air pollution and climate change. At the same time, it offers a sustainable energy supply, and simultaneously supports local economic growth. This project aimed to develop strategic policy options (SPOs) to transform energy use in Asian countries from traditional biomass currently in use to innovative biomass energy use.

Good Practices



Fluidized bed boiler superheated steam, Thailand

Eighteen (18) good practices (GPs) were collected in collaboration with participating research institutes in two countries: Thailand and India. The practices cover various policy areas in relation to biomass energy development, including technology development, information based capacity development and financial supports. These cases basically imply that appropriate selection of instruments as well as appropriate technology development for local resources play key roles for the success in market development of biomass energy, suggesting the importance of considerations in those areas.

Strategic Policy Options

Recognizing that innovative policies should be formulated paying attention to a wide range of barriers and issues which the Asian countries are facing with promotion of biomass energy, this project focused on the prevailing issues such as energy related environmental problems, energy security and rural economy. Based upon the identified issues, three strategies and aggregated SPOs for each strategy were derived by examining the collected GPs collected. In addition, taking into account specific biomass energy development in two countries, different sets of policy options identified under this study were combined to identify reasonable policy scenarios and assess policy impacts in collaboration with NIES.

Framework of Strategies and Strategic Policy Options

Strategy	Strategic Policy Options
Strategy1: Mitigation of energy related environmental problems	Biomass energy development for energy and industrial sector through voluntary agreement
	Innovative biomass technology development and dissemination through consortium
	Localised recycle system for waste utilisation
Strategy2: Strengthening energy security	Efficient and environmentally-friendly logistic system application for potential increase of biomass resource
	Biomass energy resource management based upon integrated information system
	Biomass based hybrid renewable energy development
	Efficient policy-making system through collaboration among competent authorities
Strategy 3: Revitalization of rural economy	Market development by raising awareness for perspective users and investors
	Employment opportunity development by training biomass technician with IT-enabled information dissemination network
	Biomass town: providing modern energy services through multiple biomass use
	Promotion of interactive technology development for local biomass resources
	Community-based financial mechanisms for modern biomass energy to rural areas

2.2.3 Inter-boundary Recycling Market for Enhancing Resource-Recycling Society in Asia

The inter-boundary market on recyclable materials in the Asia region has been expanding sharply in recent years, due to the increasing demand for resources caused by the continuous high economic growth in the region as a major manufacturing center of the world. Particularly increment of import volume of recyclables in China has been remarkable in recent years, which have been a major driving force of rapid growth of the inter-boundary market in recyclables. On the other hand, the growth of inter-boundary movement of recyclable materials has caused illegal dumping, unsuitable treatment through illegal trade on waste, which have led to significant negative impacts such as environmental burden and damage to human health. The inter-boundary market, however, has a potential to contribute to promotion of recycling-based society in the region. This research aimed at developing strategic policy options (SPOs) for promoting an environmentally and economically viable inter-boundary market for recyclable materials so that they maximize environmental and economic benefits from inter-boundary trade of recyclable materials.



Good Practices

A total of twenty three (23) GPs of domestic efforts for promoting recycling as well as inter-boundary trade of recyclable materials have been collected from Thailand, Philippines, Malaysia, Singapore, Vietnam, India, Taiwan, Brazil, UK, Germany, Korea and Japan in collaboration with Thailand Environment Institute (TEI) and Management Association of the Philippines (MAP).

(Picture: Producing excellent designed bag from wasted aluminium package for packed beverage at Kilus Foundation, Manila, the Philippines)

Strategic Policy Options

The ultimate goal of promoting the inter-boundary market for recyclables is to improve efficiency of resource use in the region. In this regard, fostering the domestic market is necessary in order to maximize energy and resource efficiency, and also to avoid neglect of treatment of special recyclables in the domestic market while the inter-boundary market is promoted. Based on this viewpoint, three strategies were identified which aim at enhancing both regional as well as domestic markets for recyclables and for improving the supply capacity of recyclables. In addition, a strategy for regional cooperation was identified, while focused on eliminating illegal and inappropriate activities from the market and promoting exchange of information, technology and human resources. A total of seven SPOs were formulated under the three strategies.

Framework of Strategies and Strategic Policy Options

Strategy	Strategic Policy Options
Promotion of efficient market for recyclables	Increasing the use of recyclables over virgin materials
	Greening supply chain by enhancing recycling supply chain
Improvement for Supply Capacity of recyclables	Private sector involvement and improvement of informal sector in waste management systems
	Strengthening of National and Local Policies for 4R(Reduce, Reuse, Recycling, and Recovery)
	Extended Producer responsibility(EPR) and EPR-like systems on recyclables and Durable goods
Establishment of System and Networks for Promoting regional cooperation on recycling	Standardization and harmonization of Systems and Others for Recyclables
	Regional Network of Recycling Zones
	Regional information system and supportive IEC (Information, education and Communication)
	Programs on waste management, recycling and Inter-boundary trade of recyclables

2.2.4. Facilitating Protected Area management using Community-based Tourism

Protected areas are popular destination for nature tourism which unavoidably, creates both positive and negative impacts. Tourism is one of the largest and the fastest growing industry in the world. The tourism industry has had positive impacts on destination countries, such as economic growth, generation of foreign exchange, expansion of the service sector, creation of employment opportunities, diversification of the economy, and transportation and infrastructure development. But it has led to negative environmental, social and cultural impacts as well. Attention has been paid in recent years to develop sustainable tourism that increases positive tourism impact and reduces negative impacts in protected areas. Against this background, this strategic research endeavoured to address two challenges: (a) to collect and analyze the situation of community-based tourism (CBT) in protected areas through “Good Practice Inventory” cases, and (b) to formulate strategies and strategic policy options (SPOs) for facilitating protected area management using CBT.



Main entrance gate for the Protected Area at KHAO YAI National Park in Thailand

Good Practices

Thirteen (13) good practices were collected from Thailand (4), Indonesia (5), India (1), and Japan (3) in collaboration with participating research organizations. The practices showed various challenges for promoting protected area management through incorporation of community-based tourism, including social capacity for tourism business, empowerment of communities for sustainable development, and mechanism for conservation of resources.

Strategic Policy Options

Based on a wide range of good practices, this project mainly examined the mechanism of protected area management in national parks in the context of community-based tourism, in order to draw lessons especially the successful approaches to tourism in protected areas of the Asia-Pacific region, and to develop policy recommendations for actively involving communities living in or around protected areas in its management. More importantly, this project focused on using tourism as an effective tool for protected area management that should lead to better protection of natural resources and biodiversity within the protected areas as well as enhancement of local community livelihood. Thus, three strategies for realizing protected area management were identified including the strategy on “Improve natural resources conservation systems in protected area” which is a strategy for the establishment of effective management system of protected areas. In all six SPOs were developed to lead to sustainable protected area management.

Framework of Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Improve natural resources conservation system in protected area	Establish co-management system of CBT in protected areas
	Introduce clustering and ranking of protected area management system
Foster low-impact tourism in protected area	Develop and disseminate tourism code of conducts for visitors and tour operators
	Implement interpretation programs in protected areas
Enhance socio-economic benefit from the protected area to local communities	Encourage capacity building programs for members of local community
	Improve benefits distribution mechanisms from protected areas tourism to local economy

2.3.5. Promoting Environmental Education by NGOs

Environmental Education (EE) by NGOs has increased its importance in the Asia-Pacific region. To provide adequate EE to the citizens in the region, what is crucial is effective mobilization, promotion and utilization of non-governmental resources. The recent growth of NGOs in Asia has enhanced the rationale for the initiatives to promote EE by making the most of non-governmental resources, especially that of NGOs. Through this research, successful prototype 'policy options' and 'good practices' for undertaking environmental education by NGOs have been identified and analyzed for facilitating information sharing and the replication of similar initiatives. The cases analyzed in Indonesia have demonstrated the dynamism associated in planning, undertaking and assessing EE by NGOs that provide useful insight and lessons to other countries particularly those at the equivalent level of EE development and implementation.

Good Practices



Children's fieldwork,
Surabaya, Indonesia

Eight (8) good practices (GPs) were collected in collaboration with RMI-the Indonesian Institute for Forest and Environment, which is a NGO based in Bogor, Indonesia. The practices covered NGO activities in formal, non-formal and informal education settings. It included practices to provide elementary and secondary school students with education 'in' the field (environment) / experimental learning. These practices have proved that NGOs with field experiences can be a good environmental educator who supplements knowledge-based learning in the classroom. Each practice also showed ideas and ingenuity of NGOs in promoting EE.

Strategic Policy Options

Based on the GPs, three strategies were identified to promote EE. A total of seven SPOs were developed which aimed at supplementing or addressing the weakness(es) in each sector of learning; and/or promoting their strengths. Based on the lessons learned from the SPOs, some of the key generic elements can be delineated as vital factors for successful environmental education by NGOs: i) human resources are essential in ensuring the effective delivery of EE, ii) institutional capacity development, iii) the use of information and communication technology, iv) networking of stakeholders and NGOs, v) partnership and resource mobilization, vi) monitoring and assessment of EE impacts, and vii) benefit sharing among multi-stakeholders which still need to be further bolstered to forge the partnership and increase the impacts of EE.

Framework of Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Enhancing Formal Education with Non-governmental Resources	SPO for Improving the delivery of Environmental Education at Primary and Secondary Schools
	SPO for Integrating ICT in environmental education policies
	SPO for Establishing Environmental Study Centre at University
	SPO for Enhancing Teacher Education/ Training
Promoting Non-formal Education by NGOs	SPO for Enhancing Environmental Education in Continuing Education
	SPO for Networking Multi-stakeholders
Promoting Informal Learning	SPO for increasing Opportunities for Environmental Learning through the Media

2.2.6. Promoting Local/Indigenous Knowledge-based Sustainable Resource Management

The LINK study aimed at illustrating the importance and potential for its application in a contemporary context in both developing and developed countries. It also aimed at exploring the potential contribution of LINK and its related practices to sustainable development in the Asia and Pacific region. The objectives of the sub-project included i) developing criteria for sustainable utilization of environmental goods and services at the community level; ii) identify and collect good practices (GPs) based on local/indigenous knowledge that would lead to sustainable utilization of environmental goods and services; iii) examine rationality and effectiveness of such practices; iv) identify socio-economic and environmental factors enabling such practices; v) examine the applicability/replicability of such knowledge and practices; and vi) develop strategies to promote preservation and dissemination of such practices.



Dr. Corazon PB. Claudio, Trustee of the Asian Institute of Journalism and Communication, The Philippines

Good Practices

Various LINK-based agricultural, aquacultural and forest management practices in Bangladesh, China, Japan, Vietnam and Thailand were closely examined. The GPs collected from the five project countries revealed that LINK is still actively practiced and has tremendous potential and applicability in the present day context. The GPs also demonstrated clearly that indigenous knowledge alternatives have far higher chances of up-take by local people because they are in keeping with local socio-cultural norms and because in general they are more affordable and sustainable. In all, 15 GPs have been collected in the course of the three years.

Strategic Policy Options

Eleven (11) SPOs were developed under the sub-project addressing the four strategies outlined in the adjoining table. The SPOs developed aim at enhancing the promotion of LINK-based sustainable resource management in the region. Both scientific and traditional knowledge needs to be drawn upon to produce a good mix of policy options for local communities coping with some increasingly complex environmental problems. Also, practical importance of LINK demands that the institutional setting where such knowledge is embedded needs to be strengthened and people possessing such knowledge need to be empowered.

Framework of Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Building LINK-focused institutional framework	Build & strengthen national institutions
	Network stakeholders & develop partnership
Mainstreaming LINK	Incorporate LINK into education curricula
	Build LINK into cross-sectoral policy development
	Empowering LINK communities
Promoting/enhancing LINK	Recognise “market” value of LINK-based goods and services
	Preserving cultural heritage as a basis for LINK preservation
Applying LINK to sectoral programmes	Enhance adaptation to climate change
	Integrate LINK in agricultural policy
	Integrate LINK in forest policy
	Embody LINK in coastal resource management policy

2.3.7. Development of Environmentally Sustainable Transport Systems in Urban Areas

Transport sector provides vital services in the urban areas. At the same time, it is causing serious urban problems including accidents, congestion, air pollution and noise due to road transport, energy consumption and consumption of land and other natural resources for the production of vehicles and infrastructures. In addition, urban transportation is one of the largest emission sources of CO₂ which causes climate change. These negative effects persist and will worsen in many urban areas in the Asia-Pacific region under the current trend of urbanization. This research aimed at developing strategic policy options (SPOs) for environmentally sustainable transport (EST) in the cities of the Asia-Pacific Region.

Good Practices

Twenty two (22) good practices (GPs) were collected from cities in Asia and Latin America: Beijing, Shanghai (China), Kathmandu (Nepal), Singapore (Singapore), Bangkok (Thailand), Seoul (Korea), Sapporo, Fukuoka (Japan), Curitiba (Brazil), Bogotá (Colombia), and Quito (Ecuador) in collaboration with participating research organizations. The GPs covered various areas of sustainable transportation, including integrated land use planning, public transport, bicycle lanes, traffic demand management such as road-pricing, car-free day, car sharing, environmental education on car use, regulations of emissions from gasoline vehicles, and alternative fuel vehicles. Among the critical instruments used in those practices, economic instruments, awareness raising, partnerships, technologies, design, planning and management played crucial roles.



Car-sharing in Fukuoka, Japan

Strategic Policy Options

Based on a wide range of GPs, strategies were identified to tackle major factors of transport that cause environmental problems. Transport leads to environmental degradation because: (1) people need to travel longer distances or more frequently due to urban sprawl (quantity); (2) people use automobiles to meet the travel demand since the supply of alternatives to automobile use such as public transportation is not sufficient and/or people prefer automobiles to public transport (balance); and (3) each vehicle emits significant amount of air pollutants and CO₂ (quality). To address these three factors, three strategies, namely reducing transport need, increasing public transport share, and reducing emissions from vehicles were developed. For each strategy, SPOs were developed as listed in the table.

Scenario analyses was conducted to develop packages of SPOs reflecting the real situations of the selected three cities i.e. Bangkok, Beijing and Taiyuan (China) and to assess the applicability of the SPOs and instruments in these cities.

Framework of Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Reducing Transport Demand (Objectives: avoiding urban sprawl; reducing necessity of trips)	Regional system of cities, Compact city and smart growth, Information Technology based communication and services to reduce transportation need
Increasing Public Transport Share (Objectives: improving public transport and NMT; reducing ownership and use of automobiles)	Rail-based mass rapid transit, Bus Rapid Transit, Improved bus routes and services, Community vehicles, Promotion of special lanes for walking and cycling, Car free zones, Number plate bidding system, Car sharing, Entrance regulation to the city centre (Number plate regulation), Parking policy, High occupancy vehicle lanes, Road pricing, Travel awareness initiative for wise use of automobiles
Reducing Emissions from Vehicles (Objectives: reducing emissions from conventional fuel vehicles, introducing alternative fuel vehicles, reducing loss due to bottle neck/congestion, reducing loss due to driving practice)	Vehicle emission standard and Inspection/Maintenance, Vehicle fuel standard, Greening fuel tax, Promotion of high efficiency vehicles, Promotion of alternative fuel vehicles, Intelligent transport system (ITS), Public awareness raising on environmentally friendly driving

2.2.8. Improving Environmental Performance of Small and Medium-sized Enterprises

Small and Medium-sized Enterprises (SMEs) account for a substantial part of the economy in Asia and the Pacific. Their economic activities largely affect domestic manufacturing and foreign trade through their export products, as well as fluctuations in the employment rate. At the same time, the environmental impacts of SMEs are becoming increasingly serious. Yet, environmental performance of SMEs is far below the satisfactory level in most countries in the region due to financial constraints, and poor access to relevant information and technologies. It is in this regard that identification of relevant policies for improving SMEs' environmental performance is one of the priorities in countries of this region.

Good Practices

Nineteen (19) cases were identified as good practices (GPs) and were analyzed to delineate elements for success. They included "Implementing Environmental Management Systems for SMEs," "Enhancing Energy and Environment Performance in Small-scale Pipe Fitting Units in the State of Punjab (India) through the Adoption of Better Operating Practices," and "Industrial EcoWatch System." Collected cases showed that awareness/capacity building has been a critical instrument for their success, suggesting the importance of support in that area.



Glass factory in Firozabad, India

Strategic Policy Options

In recognition that policies are formulated in response to social issues, the SMEs sub-project paid attention to major problems which SMEs are confronted with as well as the underlying causes of those problems such as financial constraints, limited access to relevant information and technologies, lack of self capacity to attract financial sources, poor communications with public authorities, weak business operations and so forth.

In accordance with the identified problems, policy goals, strategies, and strategic policy options (SPOs) were derived through examination of the good practices collected. In all a total of five strategies and eleven SPOs has been developed under this sub-project.

Framework of Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
I: Minimizing the cost for the environment through resource efficiency	Promoting adoption of Environmental Management System (EMS) for SMEs
	Promoting resource sharing and application of shared facilities through industrial clustering and networking
	Developing research, development and demonstration programs for adoption of cleaner technologies in small and medium enterprises
	Promotion of energy and waste exchange centres
II: Mobilizing the necessary resources	Improving SME access to finance
	Applying partnerships for inter-city technical cooperation
III: Promoting access to information through partnerships and networking	Accelerating information dissemination through local support and local NGOs
	Strengthening roles of industry associations for information flow and active communications
IV: Disseminating the concept of economic benefits created by environmental performance	Facilitating consulting services to improve environmental performance
V: Utilizing external pressure for incentives	Greening supply chain with the prospect of social responsibility
	Initiating media campaigns to stimulate green market

3. How can the APEIS/RISPO products be applied for policy formulation/implementation works?

APEIS/RISPO products provide policy-makers the database of past experiences and policy guidelines as knowledge-based tools for policy making. The Good Practices (GPs) supports policy makers to learn from past experiences. A total of 146 GPs have been collected under the RISPO project during the past three years. The Strategic Policy Options (SPOs) guide the policy makers to examine strategies for sustainable development and policy options to move towards the strategies. Under the eight sub-themes of RISPO, a total of 81 SPOs have been developed.

3.1. Interactive Workshops

The RISPO project also recognized the importance of interaction with policy makers. Over the three years RISPO researchers had various interactions with policy-makers through opportunities such as local workshops, international conferences, research coordination committee meetings and interactive workshops to disseminate the findings of the sub-projects. Interactive workshops were held in March 2005 by the two sub-teams on “Innovative financing for renewable energy development” and “Promotion of Biomass Energy” in India; the sub-team on “Inter-boundary recycling market for enhancing resource-recycling society in Asia” held an interactive workshop in the Philippines in January 2005 and the sub-theme on “Local/ Indigenous knowledge for sustainable resource management” held a workshop in Bangladesh in February 2005.

Interactive workshop on Research on “Promotion of Biomass Energy”

Two interactive workshops were organized by the Biomass sub-project in collaboration with counterparts in Thailand Environment Institute (TEI) in Bangkok, Thailand and The Energy Research Institute (TERI) in New Delhi, India. The interactive workshop in Thailand was held on 7th of February, 2005 where ten resource persons from related government agencies, private agencies, international organizations and academia participated.

The second interactive workshop was held in New Delhi, India on 29th March 2005. Twelve resource persons from various governmental departments/agencies, NGOs, manufacturers, bilateral international organizations and academia participated in this interactive workshop so as to get a wide range of useful feedback. Other than these participants the workshop was attended by senior professionals of TERI (approximately eight) working in the fields of renewable energy, policy analysis and regulatory division in order to share their feedback on the subject discussed.



Interactive workshop,
New Delhi, India, March 2005

The specific objective behind the interactive workshops was to obtain comments, suggestions and feedback from various stakeholders on the research findings and on the Strategic Policy Options (SPOs) developed by various organizations under sponsorship of the Institute for Global Environmental Strategies (IGES), Japan.

3.2. Scenario Analysis

Two of the RISPO sub-themes, “Promotion of Biomass Energy” and “Development of Environmentally Sustainable Transport Systems in Urban Areas (EST)” conducted scenario analysis in order to test the applicability of the proposed SPOs, since the applicability and expected effects of strategies and SPOs differ depending on geographical and socio-economic situations. Two topics were selected for scenario development by the Biomass team, “Thailand: Win-win Situation for Palm Oil Industries (southern part of Thailand) & India: Win-win Situation for Biomass Energy for Rural and Small Industries”. The EST team conducted the scenario analysis for three cities selected from the targeted countries of Thailand and China to test the potential applicability.

Example of Environmentally Sustainable Transport

Objective:

Applicability and expected effects of strategies and SPOs differ depending on geographical and socio-economic situations:

- To identify potentially applicable packages of identified SPOs in the selected cities
- To assess the effects of those scenarios, focusing on energy consumption and emissions of air pollutants and GHGs

Methodology:

AIM Model in collaboration with the IEA sub-project

Target cities:

Beijing (pop 11.34 million): mega city going through rapid economic growth and vehicle pop. Increase

Taiyuan (pop 3.09 million): facing serious air pollution but with low vehicle population

Bangkok (pop 9.67 million): major Asian city suffering from serious environmental pollution due to transport

Example of case studies – Case of Bangkok:

Three Scenarios

- Business As Usual (BAU)
- Scenario I: Use of efficient vehicles (focusing on Strategy 3: Reducing emissions from vehicles)
- Scenario II: Promotion of non motorised transport (focusing on Strategy 2: Increasing public transport share)

	BAU	Scenario I: Use of efficient vehicles (Strategy 3)	Scenario II: Promotion of non motorized transport (Strategy 2)
Vehicle types	Gasoline, diesel, LPG, natural gas driven vehicles	Gasoline, diesel, LPG, natural gas driven vehicles, electricity-driven, methane-driven, fuel cell-driven vehicles	Gasoline, diesel, LPG, natural gas driven vehicles
Clean fuel	No clean fuel is considered	2005: electricity-driven, methane-driven, fuel cell-driven vehicles	No clean fuel is considered
Total passenger demand	2000: 56,192 x 106 p-km 2020: 113,256 x 106 p-km	2000: 56,192 x 106 p-km 2020: 113,256 x 106 p-km	Demand for passenger cars has been reduced. 2010: 28450 x 106 p-km; 2020: 30895 x 106 p-km
High efficiency car	High efficiency cars are not considered	2005: Hybrid car 2005: Fuel cell car 2005: Electricity-driven car, bus, van, and taxi	High efficiency cars are not considered

Result of Scenario Analysis for Bangkok

- Fuel consumption
 - Consumption of diesel indicates the highest share of energy mix during each year of the planning horizon.
 - The energy mix in year 2020 would be 55% of diesel, 23% of gasoline, 19% of LPG and about 3% of CNG.
- Scenario I: the reduction in final energy consumption/ CO₂ mitigation
 - 2005: 1,183 ktoe; 2010: 2363.2 ktoe / 6,071 tons; and 2020: 2,277 ktoe / 6,295 tons
- Scenario II: the reduction in final energy consumption
 - 2005: 3.6 ktoe; 2020: 9.9 ktoe
- Due to the rapidly increasing transportation service demand, non motorised transport through car free days option may not be effective after year 2010.
- Use of efficient vehicles is more effective in terms of reducing final energy consumption and emissions.

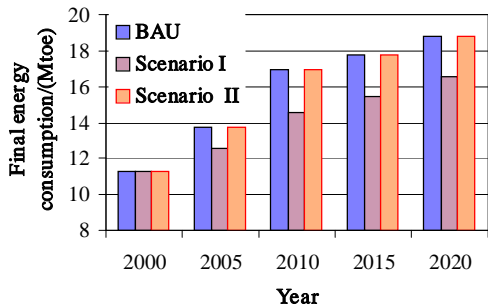


Figure 1: Final energy consumption of two scenarios with BAU case

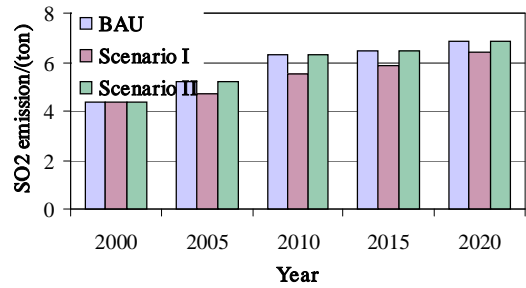


Figure 2: CO₂ emission of two scenarios with BAU case

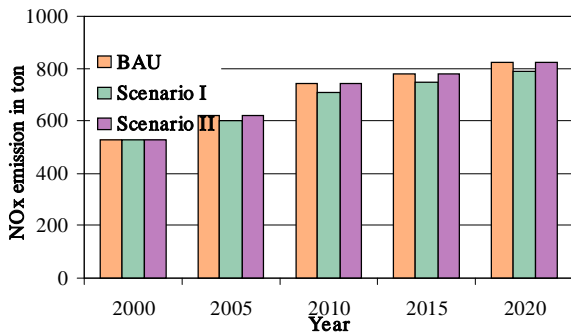


Figure 3: NO_x emission of two scenarios with BAU case

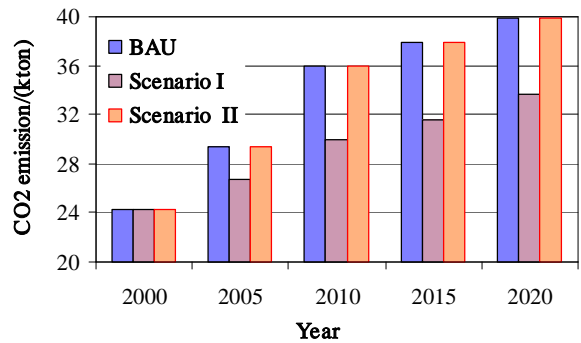


Figure 4: SO₂ emission of two scenarios with BAU case

3.3. Collaborative projects

RISPO collaborated with the project of “National Performance Assessment and Sub-regional Strategic Environment Framework in the Greater Mekong Sub-region (GMS)” to have the products be utilized by policy makers in the GMS through project implementation.

The “National Performance Assessment and a Strategic Environment Framework (SEF II)” is a technical assistance project for the Greater Mekong Sub-region (GMS) implemented by the Asian Development Bank in collaboration with the United Nations Environment Program - Regional Resource Center for Asia and the Pacific (UNEP RRC.AP), Institute for Global Environmental Strategies (IGES) and National Institute for Environmental Studies (NIES).

The objectives of the project are: (1) To promote sustainable development, and achieve global benefits in the GMS through the creation of national performance assessment system (EPA) for the GMS countries and sub-regional EPA system for the GMS sub-region, and (2) To develop national and sub-national capacities for implementing EPA.

Through the research outcomes of RISPO, IGES is contributing to the SEF II Project through peer review of national EPA reports and input into the policy and institutional gap analysis as well as to EPA process at the sub-regional level. To that effect, IGES has been involved in the national EPA workshops of Lao, Thailand and Vietnam, as well as to activities of the Project Steering Committee

Collaboration with National Performance Assessment and Sub-regional Strategic Environment Framework (SEF II) in the Greater Mekong Sub-region (GMS) – GEF and Technical Assistance of ADB

Development of Environmental Performance Assessment (EPA) Systems at national and sub-regional levels is the primary objective of the SEF II project in consideration of the significant needs to have such arrangement in the GMS. Each GMS country identifies its policy concerns and selects indicators to measure “how well the country has done for environmental improvement,” examining the institutional arrangement with the gap analysis. Together with the Project Secretariat and consultants, IGES assisted the countries with suggestions on policy making from the technical point of view. Furthermore, IGES has committed to making technical reviews of the EPA reports with a special attention to the thematic areas covered by RISPO. IGES also expects to provide substantial inputs to the concrete recommendations for action in the EPA report. Collaboration for sub-regional activities of the SEF II project will be also sought in due course.



4. Next Steps

The first phase of the RISPO (RISPO I) project aimed at identifying through research and documentation of good practices, strategic policy options (SPOs) in eight environmental areas. Eighty one SPOs were proposed with a view to propose some innovative policies addressing needs of governments at the central and local levels. Building on policy analysis undertaken under RISPO I, the second phase of RISPO (RISPO II) will consist of research to formulate policy options under the policy and political context of regional economic integration in Asia. Research will be conducted under the theme of “Integrated Policy Design on Trade, Environment, and Sustainable Development in the Context of Regional Economic Integration in Asia”. This research will be undertaken in conjunction with a research partnership initiative under the United Nations Environment Programme-Network of Institutions for Sustainable Development (UNEP-NISD). The UNEP-NISD research partnership initiative is being implemented by a Working Group on “Promotion of sustainable development in the context of regional economic integration. Strategies for environmental sustainability and poverty reduction” for which IGES has been designated as lead institution.

4.1. Background

Since 1999/2000, Asia has experienced a boom in regional and bilateral Free Trade Agreements (FTAs), with the result that trade regimes are increasingly taking place in the context of FTAs and regional economic integration. The current process of bilateral and regional trade agreements is expected to culminate in the creation of an East-Asian community by the year 2020. The East-Asian economic community would be comprised of Japan, the Republic of Korea, China, and the ten member countries of the Association of Southeast Asian Nations (ASEAN). In addition, India has concluded a Framework Agreement on Comprehensive Economic Cooperation with ASEAN, and has manifested interest in being part of the East-Asian community. The East-Asian community and its paving way – bilateral and regional trade agreements –, is expected to be a process of economic integration through reduced barriers to trade and foreign investment, greater flow of technologies and information. This is a major development that will significantly affect the region in terms of structural effects (change in the sectoral composition of countries’ economy); scale effects (change in overall level of economic activity); product or composition effects (flow of products and services); technology effects (transfer of environmentally-friendly technologies or pollution haven); and regulatory effects (“locking-in” reform towards more stringent regulation or regulatory inertia). These five types of effects bear crucial implications for the environment, poverty and sustainable development and need to be examined taking into consideration the already existing knowledge about the potential effects of regional economic integration.

4.2. Objectives

The overall objective of this partnership is to undertake policy research aimed at exploring ways of promoting sustainable development in the context of regional economic integration and identifying strategies for environmental improvement and poverty reduction. This research will focus on regional economic integration in Asia through the process of creating an East-Asian community. To that effect the research envisioned aims:

- a. To evaluate the implications of regional economic integration for the environment;
- b. To assess the capacity of existing environmental policies and institutions to deal with the environmental effects of regional economic integration; and
- c. To propose relevant policy instruments and mechanisms for mitigating potentially negative effects of regional economic integration while enhancing positive ones.

4.3. Specific focuses

The research will be conducted under the following five analytical perspectives:

1. Policies and institutions for enhancing environmental performance of countries in a way that prevents phenomena of a race to the bottom and pollution havens;
2. Policies for promoting trade in environmental and environmentally-preferable goods and services;
3. Policies for harmonization of environmental standards applied to goods and services traded across borders;
4. Policies promoting technological innovation and cross-border flow of environmentally-sound technologies; and
5. Policies that simultaneously address concerns of poverty reduction.

4.4. Project Design

The research activities to be undertaken will focus on environmental policies as they relate to economic integration in terms of safeguards against environmental degradation, trade frictions that may result from disparity in environmental standards, as well as environmental policies as instruments for market creation and ultimately poverty reduction. The research will be conducted under five research components with five specific focuses mentioned above.

The following are the five main components of the project-

- Component 1. Evaluation of the relevance to Asia of models that include the environment in the context of economic integration in other regions (Apr. 2005 – Mar. 2007)
- Component 2. Assessment of the environmental effects of regional economic integration in Asia (Apr. 2005 – Mar. 2007)
- Component 3. Assessment of the response capacity of existing environmental policies and institutions (Apr. 2005 – Mar. 2008)
- Component 4. Case studies on selected priority concerns for an in-depth assessment of the state of policy practice (Apr. 2006- Mar.2008)
- Component 5. Policy innovation for mitigating potentially negative effects of regional economic integration while enhancing positive ones (Apr. 2006 – Mar. 2008)

Participating Organizations

(As of March 2005)

Institute for Global Environmental Strategies (IGES), Japan
Bangladesh Resource Centre for Indigenous Knowledge (BARCIK), Bangladesh
Energy Research Institute (ERI), China
The University of Hong Kong, China
The Energy and Resources Institute (TERI), India
Indonesian Ecotourism Network (INDECON), Indonesia
RMI – The Indonesian Institute for Forest and Environment, Indonesia
National Institute for Environmental Studies (NIES), Japan
Management Association of the Philippines (MAP), Philippines
Asian Institute of Technology (AIT), Thailand
Kasetsart University (KU), Thailand
Mahidol University, Thailand
Thailand Environment Institute (TEI), Thailand
Vietnam National University, Vietnam
The UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC)



Websites

Research on Innovative and Strategic Policy Options (RISPO)

<http://www.iges.or.jp/APEIS/RISPO/>

Asia-Pacific Environmental Strategy Project (APEIS)

<http://www.ecoasia.org/APEIS/>

Integrated Environmental Monitoring (IEM)

<http://www.nies.go.jp/basin/index-e.html>

Integrated Environmental Assessment (IEA)

<http://www.nies.go.jp/social/aim/apeis/>