TECHNICAL SUMMARY

RISPO

Research on Innovative and Strategic Policy Options

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June 2004

APEIS-RISPO Technical Summary

1. What is APEIS-RISPO?

Research on Innovative and Strategic Policy Options (RISPO) is one of the three sub-projects of the Asia–Pacific Environmental Innovation Strategy Project (APEIS). APEIS is an Asia–Pacific region-wide research project registered as a Type 2 partnership/initiative at the World Summit on Sustainable Development (WSSD)[1] in 2002.[2] RISPO, together with the other sub-projects of APEIS, aims to contribute to policy dialogue on sustainable development in the region by providing knowledge-based tools.

1.1 Objectives

RISPO is a region-wide research project to be conducted in collaboration with various research institutes and key international organizations working in the fields of environment and development in the Asia–Pacific region. RISPO aims to jointly develop two knowledge-based reference tools, namely a *Good Practices Inventory* and packages of *Strategic Policy Options*, which can be of use to policy makers seeking better solutions to the sustainable development challenges they face. The two tools will be made available as a common regional asset by March 2005. RISPO considers policy makers to be the primary users of these tools, but intends to invite a wider audience in order to further promote international dialogue among a wide variety of stakeholders and to enhance informed decision-making so as to lead our society along a sustainable path.

Focus	Sub-theme	
Economic Instruments		Innovative financing for renewable energy development
		Creation of inter-boundary markets for recyclable materials
		Improving environmental performance of small and medium-sized enterprises(SMEs)
Social Instruments		Facilitating community-based tourism in protected areas
		Promoting environmental education by NGOs
		Promoting local/indigenous knowledge-based sustainable resource management
Physical Instruments		Development of environmentally sustainable transport systems in urban areas
		Promotion of biomass energy

Table 1 Instruments and sub-themes

The lack of means of implementation is one of the most serious obstacles for promoting environmentally sound policies, especially in many developing countries. Therefore, RISPO focuses on innovative and critical instruments to overcome these obstacles and to develop and implement effective policies for sustainable development. RISPO specifically focuses on three kinds of instrument: economic instruments, social instruments, and physical instruments. Under this framework, research in the eight themes listed in Table 1 is being conducted by international teams of researchers in the Asia–Pacific region.

[1] 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.
[2] The duration of RISPO is from April 2002 to March 2005.

RISPO's approach focuses on ground-based field studies of successful examples of sustainable development practices. By taking a field-based approach, RISPO intends 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 about local perceptions on adaptation to climate change in Chingra Kheli, Bangladesh

1.2. Expected Outcomes and Their Dissemination

The *Good Practices Inventory* (GPI) and the packages of *Strategic Policy Options* (SPO) are two major expected outcomes of RISPO. The preliminary version of GPI is available on the RISPO website. The SPO database will become available on the web by March 2005.

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

Interactions with Policy Makers

RISPO recognizes the importance of interaction with policy makers. RISPO researchers have had interactions with policy makers through such opportunities as local workshops, international conferences, and the Research Coordination Committee meetings. In the final year of the project, it is planned to hold several workshops with policy makers. In November 2004, the RISPO Workshop is planned to be held in conjunction with the Workshop of the National Performance Assessment and Subregional Strategic Environment Framework for the Greater Mekong Subregion with sequential meetings with policy makers to disseminate outcomes and to receive feedback.

Local workshop on sustainable transport, held with policy makers in Thailand, Bangkok, March 2003

2. What are the Expected Products, Scientific Contributions and Current Progress?

2.1. Technical Framework

The most important objective of RISPO is to identify SPOs that promote sustainable development in the region. Since the overall focus of APEIS, the umbrella project of RISPO, is innovation, SPOs proposed under RISPO are expected to be innovative in some way. What are the key elements of innovation regarding policies promoting sustainability in developing countries in the Asia–Pacific? Although the answer to this fundamental question is not easy, the structure and major components of each SPO included in the package (Please refer to Figure 4 in section 2.2. of this summary) are developed on the basis of certain assumptions that may lead to identifying innovative policies.

First, an SPO contains information to prove that each SPO therein has generated an impact. Although this criterion may sound a matter of course, in reality it may not be easy to prove. There is always a certain time lag between the actual action and the intended impacts. Thus, to prove with objective evidence that an SPO is effective sometimes turns out to be impossible. Furthermore, there are almost always some external factors that affect the effectiveness of any SPO. External factors are those that cannot be controlled by the SPO in question. There is always a possibility that such external factors may have influenced the effectiveness of a proposed SPO.

Second, an SPO allocates the biggest space to describing the instruments (economic, social, and physical) adopted by each SPO. This is a clear indication that the choice of policy instruments is likely to be an important element for innovation in policy. Examples of economic instruments are taxes, fees, charges, subsidies, and other financial incentives to promote sustainable activities and to discourage unsustainable practices; social instruments include voluntary commitments, environment auditing, eco-labeling, environmental rating, environmental education, and awareness raising, which use some kind of social pressure to promote sustainable practices; and physical instruments are basically development and provision of infrastructure and technologies that physically alter the behavior of those concerned, i.e. in the form of environmentally sound infrastructure or making available environmentally sound technologies. Thus, the eight sub-projects under RISPO are categorized according to these three types of instrument.

Third, the importance of implementability of SPOs is recognized. In the developing countries' context, implementation is indeed the biggest challenge. Implementation challenges could include lack of funding, equipment, capable staff, and public awareness. Thus, checking whether a proposed SPO has encountered significant problems with implementation is essential.

Categories of Innovative Policies

In the end, those policy options that have met all the above innovation criteria will be proposed as SPOs. What kinds of policy will be finally selected is a matter for future analysis. However, the RISPO workshop held in February 2003 in Japan tentatively listed some broad categories of innovative policies. They are policies: (i) with appropriate policy mix, (ii) that have used strong tools for implementation, (iii) that have addressed essential needs of developing countries, such as poverty and employment, and (iv) that have encouraged increased stakeholder participation.

Reasons for their selection were as follows. First, in many cases, policy mix has become important, because impending environmental problems have to do with more than one stakeholder. Only a good combination of policies can send out the right signal to the different stakeholders. Second, most developing countries have no resources to waste on fancy but costly environmental policies. Thus, the use of an already strong implementation arm of a country always makes sense. Third, the most important policy for many developing countries in the region is poverty alleviation. Therefore, environmental policies that synergistically address poverty and related social issues merit special consideration. Lastly, it is important to realize that policies that have been developed with transparency and extensive participation of stakeholders are more likely to be implemented than top-down policies. Such policies are less susceptible to corruption, and are more likely to be supported by voluntary actions.

2.2. Expected Products

Good Practices Inventory (GPI)

The GPI is an easily searchable database on the RISPO website, consisting of a number of good practice 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 in the GPI. Information on each good practice includes critical and innovative instruments that make the practice successful, lessons learned, and potential for application. Approximately 100 cases have been collected during the first two years and are being uploaded into the GPI.

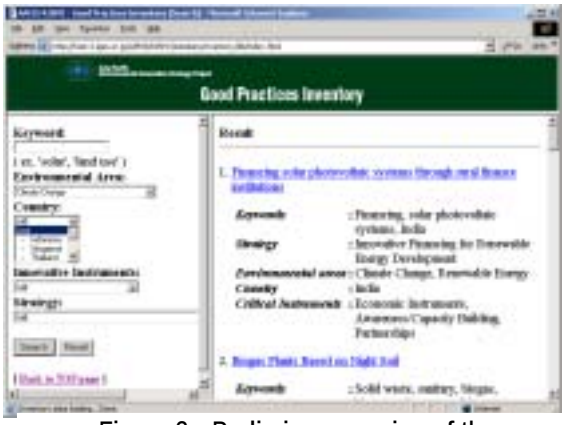

Figure 2 Preliminary version of the *Good Practices Inventory*

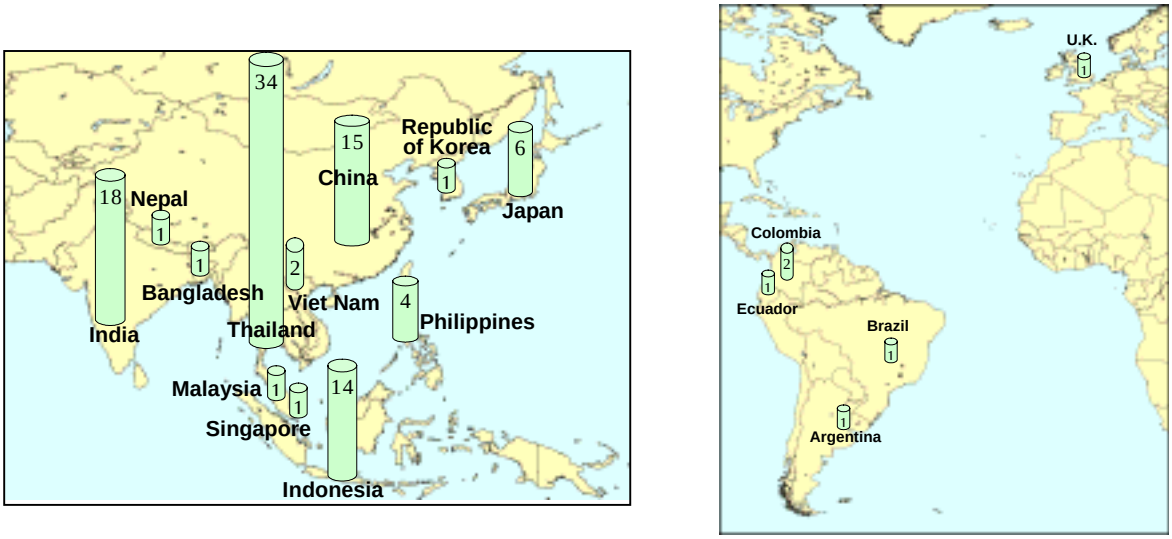

Figure 3 Distribution of cases being compiled into the *Good Practices Inventory*

Strategic Policy Options (SPOs)

SPOs are packages of policy options for sustainable development in selected sub-themes. Strategies have been developed for eight sub-themes to recommend directions policy makers can take for sustainable development in each area. Policies to promote developed strategies are identified as SPOs. Each SPO highlights critical instruments, expected and observed impacts, evaluation, implementation issues, applicability, and limitations.

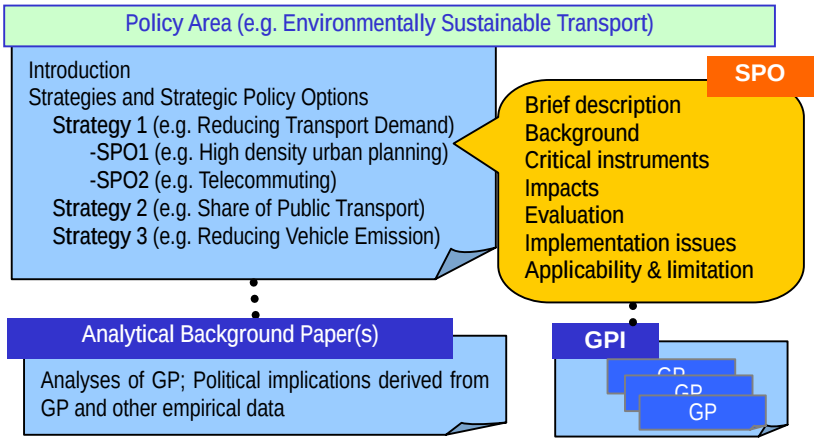

Figure 4 Structure of *Strategic Policy Options* package

2.3. Current Progress on Sub-Themes

2.3.1. Innovative Financing for Renewable Energy Development

Meeting the challenge of large-scale commercialization of renewable energy (RE) products and services requires 1) breaking down the high initial costs of RE systems; 2) increasing competitiveness against traditional fossil fuels such as by removing or redirecting subsidies; 3) ensuring access to affordable consumer financing; 4) enhancing access to credit by the RE industry; and 5) ensuring sustainability without public aid or subsidies. 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 to long term: 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

Solar water pumping in Chandigarh, India

Seventeen good practices have been collected from China and India, in collaboration with the Energy Research Institute of China and the Energy and Resources Institute of India. The practices cover various innovative financing mechanisms, including mechanisms of combined government and community financing (India); developing a market-oriented institutional and financial model for decentralized solar systems (India); wind-power development through a combination of the Clean Development Mechanism (CDM) and public sector financing (India); scaling-up of renewable village power through governmental finance and bidding based on market regulation (China); experience of the first CDM project in renewable energy financing in China (China); financing the utilization of landfill gas through economic incentives (China); commercialization of solar hot water systems through a 'financial intermediary' (FI) scheme (India); market development for solar lanterns in a post-subsidy regime (India); and developing a sustainable financial model for solar pumping systems (India). Economic instruments, awareness raising, partnerships, technologies, design, planning, and management were among the critical instruments in those successful practices.

Strategic Policy Options

Reviewing several successful practices indicates the interdependence between the deployment of RE products and technologies, and their market demand. The availability of financing for research and development and for manufacturing is crucial for reducing the high costs of the systems. Similarly, adequate consumer finance enhances affordability and stimulates demand, which in turn leads to further development of the RE industry. Given this inter-linkage between industry and market growth on the one hand and price reduction on the other, strategies identified aim at supporting technology and product deployment and improving competitiveness of RE markets. Based on these strategies, SPOs have been developed that focus on *innovative modes of delivery* in the four areas of financing addressed.

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
To support technology and product deployment (research, development, and demonstration stage)	- Optimal use of government funds - Attracting international development funding mechanisms - Increasing financing by public/private financing institutions - Promoting private sector finance
To improve competitiveness of renewable energy markets (commercialization stage)	- Optimal use of government funds - Attracting international funding mechanisms - Increasing financing by private/public financial institutions - Leveraging consumer financing - Enhancing private sector financing

2.3.2. Creation of an Inter-Boundary Market for Recyclable Materials

Trade of recyclable materials, such as paper waste, plastic waste, glass waste, and metal scrap, is actually taking place in Asia. For example, Japan exports recovered paper or paperboard (waste and scrap) and plastics (waste, parings, and scrap) mainly to neighboring countries in Asia, such as China, Taiwan, and South Korea, and also imports them from other regions, such as the USA and Canada as well as other Asian countries. Thailand, the Philippines, and other countries in Asia export and import recyclable materials, too. There appears to be an increasing demand for and supply of recyclable materials in Asia as a global manufacturing center. However, market-led trading of recyclable materials might cause environmentally undesirable consequences, because the characteristics of recyclable materials are different from those of ordinary commodities (recyclable materials are by-products). The research in this theme aims to develop SPOs for creating an environmentally and economically viable inter-boundary market for recyclable materials that maximizes the environmental and economic benefits from inter-boundary trade of recyclable materials while minimizing the negative environmental consequences.

Good Practices

Recyclable materials collection event

About twenty good practices of domestic efforts for promoting recycling, as well as inter-boundary trade of recyclable materials, have been collected from Thailand, the Philippines, Malaysia, Singapore, Vietnam, and India in collaboration with the Thailand Environment Institute (TEI) and the Management Association of the Philippines (MAP). Although the research targets four types of recyclable material (in other words, recyclable waste)—paper waste, plastic waste, glass waste, and metal scrap—the good practices collected cover not only these four types, but also other types of waste, such as scrapped electrical appliances and used tires. In addition, these good practices cover the activities by various stakeholders, such as communities, business, governments, and NGOs.

Strategic Policy Options

The domestic market and the inter-boundary market for recyclable materials are complementary in the sense that an inter-boundary market can provide countries with access to cheaper materials than virgin materials when they are not available domestically. At the same time, the development of a domestic market and that of an inter-boundary market for recyclable materials are complementary in the sense that an increase in the recovery of recyclable materials at home could increase the potential for countries to export them, while an increase in the use of recyclable materials at home could increase the potential for countries to import them. In this way, a domestic market and an inter-boundary market for recyclable materials interact closely.

Strategies for creating an environmentally and economically viable domestic market for recyclable materials are likely to contribute to creating an environmentally and economically viable inter-boundary market. There are three strategies. The first strategy focuses on the demand side of the market to increase the use of recyclable materials. The second strategy focuses on the supply side of the market to increase the recovery of potentially recyclable materials. The third strategy puts the focus on both the demand and supply sides of the market. In addition to these three strategies, there is a strategy focused on removing barriers against trading of recyclables. The eight SPOs under four strategies are considered as a single package of policies.

2.3.3. Improving Environmental Performance of Small and Medium-Sized Enterprises (SMEs)

Small and medium-sized enterprises (SMEs) account for a substantial part of the economy in Asia and the Pacific. Their economic activities greatly affect domestic manufacturing and foreign trade through their export products, as does the fluctuation of employment rates. At the same time, along with their dynamics in the economy, the environmental impacts they make have become increasingly serious. Yet the environmental performance of SMEs is far from satisfactory in most cases because of financial constraints and poor access to relevant information and technologies. It is in this regard that identification of relevant policies for improving the environmental performances of SMEs is one of the priorities in countries of this region.

Good Practices

Twelve cases were identified as good practices and were analyzed to delineate elements for success. They include “Environmental Management System for SMEs Project,” “Application of Good Housekeeping in a Small Foundry,” “Accelerating Information Dissemination in Small-Scale Brick Kiln Units through Local Support and Local NGOs,” and “Utilization of Recycled PET Bottles as a Raw Material in the Production of Tufted Carpet.” All collected cases show that awareness and capacity building has been instrumental in their success, suggesting the importance of support in that area.

ISO 14001 Certificate

Strategic Policy Options

In recognition that policies are formulated in response to social issues, this SME study pays attention to major problems with which SMEs are confronted, 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, and weak business operations.

Recycling bins coded by color for good management

In accordance with the identified problems, policy goals, strategies, and SPOs are derived after examination of the collected good practices.

Some examples of SPOs are “Relocating SMEs to an industrial estate and applying shared waste treatment facilities at a cluster level,” “Strengthening roles of industry associations,” and “Facilitating consultancy services for better understanding of business management and long-term benefits through improved environmental performance.”

2.3.4. Facilitating Community-Based Tourism in Protected Areas

Tourism, which is the largest and fastest growing industry in the world, has both positive and negative impacts on destinations. Although nature-based tourism, such as ecotourism, has received much international attention in recent years, managing tourism in ecologically fragile areas, such as protected areas, is a difficult task when taking into account its implications for biodiversity conservation. Historically, in Asia and around the world, the relationship between parks and people has been a strained one. Numerous problems exist in securing local community participation in protected area management, in particular as it pertains to managing its use in the form of tourism. Against this background, this strategic research endeavors to address two challenges: (a) developing sustainable community-based tourism, and (b) securing local community participation in protected area management.

Volunteer interpreters receiving training at BCEC, Gunung Gede Pangrango National Park

Good Practices

Thirteen good practices have been collected from Thailand, Indonesia, India, and Japan in collaboration with participating research organizations. The practices show various challenges for developing sustainable communities through incorporating community-based tourism, including the social capacity for tourism business, the empowerment of communities for sustainable development, and the mechanism of conservation of resources.

Strategic Policy Options

Based on a wide range of good practices, objectives of community-based tourism were identified. Community-based tourism aims at gaining local economic development, reaching some form of participation, giving visitors a socially and environmentally responsible experience, and positively contributing to conservation of natural or cultural resources. In other words, these objectives are critical factors for community-based tourism in protected areas. Thus, four strategies for realizing community-based tourism are set along with the objectives. “Empowerment/Ownership” is a strategy for establishing effective local unity and linkages. “Conservation of resources” is a strategy for participatory management for conservation of resources. “Social and economic development” is a strategy for equitable distribution of the benefits from community-based tourism and for protection from negative impacts arising from community-based tourism. “Quality visitor experience” is a strategy for developing an attractive service and experience to encourage visitors to visit again.

For each strategy, SPOs are identified as listed in the table.

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Empowerment/ Ownership	1. Support establishment of effective local organizations and regulations that allow communities to design and manage community-based tourism (CBT) 2. Promote communication, dialogue and partnership between community members and between communities and government
Conservation of resources	3. Promote participatory monitoring of tourism impacts 4. Raise awareness and capacity building of all stakeholders by building upon existing skills and resources in and around protected areas (PAs)
Social and economic development	5. Ensure fair distribution of PA tourism benefits to all community entities 6. Build local capacity in CBT business skills 7. Support participatory monitoring of social and economic impacts from tourism
Quality visitor experience	8. Support participatory development of appropriate codes of conduct for visitors and for CBT products/services 9. Improve and diversify interpretation programs for CBT in PAs

2.3.5. Promoting Environmental Education by NGOs

Environmental education (EE) by NGOs has increased in importance in the Asia–Pacific region. While EE is an essential part in building a sustainable society, the resources available for formal education are insufficient. To provide adequate EE to the citizens in the region, the effective mobilization, promotion, and use of non-governmental resources is crucial. The recent growth of NGOs in Asia has enhanced the rationale for initiatives to promote EE by making the most of non-governmental resources, especially that of NGOs. This research tries to provide policy options that promote EE by NGOs, as well as good practices that can be shared among concerned parties to improve their programs. This research is focused on Indonesian cases for the moment, considering the limit of time and resources, the richness in number of good practices in Indonesia, and their applicability in other countries.

Good Practices

Eight good practices have been collected in collaboration with RMI - the Indonesian Institute for Forest and Environment, which is an NGO in Bogor, Indonesia. The practices cover NGO activities in formal, non-formal, and informal education settings. They include practices to provide primary and secondary school students with education 'in the field' (environment) and experimental learning. These practices have proved that NGOs with field experience can be good environmental educators who can supplement the knowledge-based classroom learning. Radio programs provided by NGOs are also included as a good practice in raising public environmental awareness and providing environmental knowledge. These good practices show that the radio is a useful medium to reach a variety of people in developing countries. NGO networking at a national level in Indonesia is identified as another good practice, which brings about capacity building of member organizations. The network has also acted as a facilitator among various parties in the field of EE, synergistically combining their various practices. Each good practice shows how EE is promoted by the ideas and ingenuity of NGOs, and many lessons can be learned from these practices.

Children's fieldwork, Surabaya, Indonesia

Strategic Policy Options

Based on the good practices, three strategies have been identified to promote EE: one is for formal education; another is for non-formal education; and the third is for informal learning. In the formal education sector, two major actors are identified: primary/secondary schools and tertiary schools. NGOs and the media are identified as key actors in non-formal and in informal education, respectively. Two to four SPOs are to be made in each strategy (see the table at right). The SPOs itemized (a) are the ones to address the weakness(es) in each sector; SPOs itemized (b) are the ones to promote its strengths. Qualitative research has been conducted in making these SPOs in addition to fundamental numerical data.

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Enhancing formal education with non-governmental resources	*Primary/Secondary Education (a) SPO for supporting extracurricular activities (b) SPO for enhancing curricular teaching *Tertiary Education (a) SPO for enhancing environmental expertise at universities (b) SPO for promoting universities' environmental contributions to local society
Promoting non-formal education by NGOs	(a) SPO for strengthening the capacity of NGOs to promote EE (b) SPO for facilitating the delivery of EE by NGOs
Promoting informal learning (of the general public) through the media	(a) SPO for increasing opportunities for EE in the media (b) SPO for using traditional arts to raise environmental awareness through the media

2.3.6. Promoting Local/Indigenous Knowledge-Based Sustainable Resource Management

For a long time in human history, people maintained their livelihoods by utilizing their immediate natural resources in a largely sustainable manner. The local/indigenous knowledge (LINK) observed in such sectors as agriculture, forestry, and fisheries was developed and tested over time, providing rich lessons for sustainable resource management. Such practices, once commonly observed in many parts of the world, are now rapidly vanishing; however, they are still maintained in some locations. This research aims to illustrate the importance and potential for application of LINK in a modern context in both developing and developed countries, and to develop SPOs to promote LINK-based sustainable resource management.

Firewood Collection in Banh Village, Northwestern Vietnam. Community rule allows each household to collect five shoulder-loads of firewood per month

Good Practices

Various LINK-based agricultural, aquacultural, and forest management practices in Bangladesh, China, India, Japan, Vietnam, and Thailand have been closely examined. Cases such as “Custom-Based Regulations in Managing Community Forests in Vietnam” and “Coastal Marine Resources and Security for the Poor and Landless in Thailand” underline the advantages of LINK-based practices in maintaining sustainable local livelihoods in each locality, while "*Gei Wai*—Traditional Method of Coastal Resource Management (Shrimp Harvesting Practice) at Mai Po and the Inner Deep Bay Ramsar Site in Hong Kong, China” and “Building Partnerships between NGOs and Local People: Sustainable Forest Management in Suburban Areas in Japan” indicate the potential of LINK-based practices for such purposes as environmental education and biodiversity conservation. In most cases, strong leadership by civil societies has played a key role in maintaining and preserving LINK-based practices.

Strategic Policy Options

Major challenges identified include: i) institutional arrangement for LINK conservation inadequately set; ii) LINK marginalized; iii) LINK rapidly vanishing; iv) value of LINK not fully recognized; and v) LINK under-utilised. The five strategies shown in the table correspond to each challenge identified. SPOs under each strategy that enhance the promotion of LINK-based sustainable resource management are currently in preparation.

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Building LINK-focused institutional framework	Build & strengthen national institutions
	Enable collection and dissemination of LINK information
Mainstreaming LINK	Incorporate LINK into education curricula
	Build LINK into cross-sectoral policy development
Preserving/reviving LINK	Empowering LINK communities
	Rediscovering LINK values
	Preserving cultural heritage as a basis for LINK preservation
Promoting/enhancing LINK	Network stakeholders & develop partnerships
	Recognise “market” value of LINK-based goods and services
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

The transport sector provides vital services in urban areas. At the same time, however, road transport creates serious urban problems, including accidents, traffic congestion, air pollution, and noise; and it consumes energy and land and other natural resources in the production of vehicles and infrastructure. In addition, urban transport systems are among the largest emission sources of CO_2, 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 aims to develop SPOs for environmentally sustainable transport (EST) in cities the Asia–Pacific region.

Good Practices

Car-sharing in Fukuoka, Japan

Twenty-two good practices have been 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 practices cover various areas of sustainable transport, including integrated land-use planning, public transport, bicycle lanes, traffic demand management such as road-pricing, car-free days, car sharing, environmental education on car use, regulation of emissions from gasoline vehicles, and alternative-fuel vehicles. Crucial to those practices are economic instruments, awareness raising, partnerships, technologies, design, planning, and management.

Strategic Policy Options

Based on a wide range of good practices, 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 owing to urban sprawl; (2) people use automobiles to meet their travel demands because the supply of alternatives to automobile use such as public transport is not sufficient or people prefer automobiles to public transport; and (3) each vehicle emits significant amounts of air pollutants and CO_2. To address these factors, three strategies were chosen: reducing transport need, increasing public transport share, and reducing emissions from vehicles. For each strategy, SPOs were identified as listed in the table. Scenario analyses are being conducted to develop packages of SPOs reflecting the real situations of cities and to assess the SPOs and instruments as applicable in Bangkok, Beijing, and Taiyuan (China).

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Reducing Transport Demand (Objectives: avoiding urban sprawl; reducing frequency of trips)	Regulation and taxation on suburban development, high-density urban planning, regional system of cities, telecommuting, on-line shopping, video conferences, on-line services
Enhancing Public Transport Share (Objectives: improving public transport and non-motorized transport; reducing ownership and use of automobiles)	Light rail transit, bus rapid transit, metros, improvement of bus routes and services, community vehicles, environmentally friendly use of informal public transport, effective networks among public transport systems, park and ride facilities, environmental commuting passes, bicycle lanes, automobile tax, ownership regulation, entrance regulation to the city center, road pricing, parking policy, car sharing, wise use of automobiles, car-free days, high occupancy vehicle lanes
Reducing Emissions from Vehicles (Objectives: reducing emissions from conventional-fuel vehicles, introducing alternative-fuel vehicles, reducing energy loss due to congestion, reducing energy loss due to poor driving practices)	Emission standards, inspection/maintenance, fuel standards, greening fuel tax, tax breaks for lower emission vehicles, reduction in initial cost of introducing low-emission vehicles, favorable price settings, infrastructure for alternative fuels, reduction in initial cost of introducing alternative-fuel vehicles, Intelligent Transportation Systems, area-wide signal coordination, public awareness raising on environmentally friendly driving

2.3.8. Promotion of Biomass Energy

This research, focusing on biomass energy, is important from three perspectives: those of climate change, energy efficiency, and a recycling-based society. In rural areas of Asian countries, there is still an excessive demand for and dependence upon traditional biomass energy. This is because the storage and delivery of biomass energy is far easier than that of commercial fossil fuels or other renewable energy sources. However, biomass resources, commonly burned for cooking and heating, are used in an inefficient manner, partly due to the lack of infrastructure and of local markets for supporting delivery, financing, operation, and maintenance of more efficient technologies. Developing appropriate technologies to efficiently extract energy from biomass resources and to use and store the produced energy in more efficient ways could introduce a sense of recycling into these countries. Promoting efficient supply and use of biomass energy has significant potential to mitigate climate change, offer a sustainable energy supply, achieve a sustainable and recycling-based social system, and simultaneously support local economic activities. This project aims to develop SPOs to transform energy use in Asian countries from traditional biomass that is currently in use to innovative use of biomass energy, without excessive shifting to fossil fuel.

Good Practices

Fluidized-bed boiler for superheated steam production, Thailand

Six cases gathered from India and Thailand during the first and second years include: 1) Biogas Plants Based on Night Soil, 2) Use of Rice Husks as Fuel in Process Steam Boilers, 3) Satisfying Heating Needs in Rural Cottage Industries through a Cluster- and Application-Based Approach to Biomass Gasification, 4) Biogas Technology for Carbohydrate-Based Wastewater from a Starch Factory, 5) Fluidized Bed Combustion of Biomass, and 6) Biogas Technology for Pig Farm Wastes. These cases imply that regulatory instruments, appropriate technologies for local resources, and financial support play key roles in their success, suggesting the importance of support in those areas.

Strategic Policy Options

Recognizing that innovative policies should be formulated with attention to the wide range of barriers that Asian countries face with promotion of efficient supply and use of biomass energy, this project focuses on prevailing barriers such as unsustainable supply of biomass resources, limited access to appropriate information and technologies, lack of capacity to develop an institutional framework, and weak market incentives. Based on the identified four barriers, four strategies and aggregated SPOs for each strategy have been derived from examination of the collected good practices, as listed in the table. In addition, taking into account specific biomass energy developments in target areas, these policy options are being developed to identify reasonable policy scenarios and to assess the impacts of the policies at the national level.

Strategies and Strategic Policy Options

Strategies	Strategic Policy Options
Development of sustainable availability of biomass resources	Develop a reliable and accessible database system for biomass resources at a local and national level
	Establish an appropriate resource management system to ensure sustainable use of biomass resources
Market development	Develop an efficient and cost-effective delivery system
	Raise awareness of prospective users and investors
	Strengthen competitiveness of bioenergy
Improvement of availability of appropriate technology	Develop policies to continuously promote biomass technology in terms of supply and demand
	Develop innovative information dissemination methods for capacity building
	Promote capacity building for technicians
	Introduce and support appropriate technologies for local resources
Capacity building for policy-making	Promote capacity building for local stakeholders
	Introduce an efficient policy-making system in collaboration with competent authorities

3. How Can the APEIS-RISPO Products be Applied for Policy Formulation/Implementation Work?

APEIS-RISPO products provide policy makers with a database of past experiences and policy guidelines as knowledge-based tools for policymaking. The *Good Practices Inventory* helps policy makers to learn from past experiences. The packages of *Strategic Policy Options* guide the policy makers to examine strategies for sustainable development and offer options for creating policies to move towards those strategies.

RISPO is starting collaboration with the "National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion (GMS)" to have GMS policy makers follow the *Good Practices Inventory* and *Strategic Policy Options* when implementing projects.

Example of cases in the *Good Practices Inventory*

Coastal Marine Resources and Security of the Poor and Landless in Lower Central Thailand

Summary of the Practice: Bang Khunsai Coastal Resource Conservation Association (BKCRCA) is a community-based inter-village organization that was established in 1991 among 11 villages and hamlets in Lower Central Thailand to ensure appropriate utilization of local coastal resources. As local livelihoods are highly dependent on coastal resources such as shells and crabs, which are threatened by outsiders' illegal and destructive fishing operations, community members organized themselves to fight against such operations and self-regulated themselves to strictly follow a community rule under which only traditional and sustainable harvesting methods—*toboggan boards* and *hand-picking*—are allowed. Outsiders who follow the community rule may also use the local common, as their tradition allows.

Critical Instruments: Strong leadership by community leaders enabled the successful organization of BKCRCA. It took initiatives of collecting and exchanging information, raising awareness among villagers, and transparently developing a community rule to enable appropriate utilization of the local common, through, for example, holding monthly village forums and conducting patrols.

Impacts: The coastal ecosystem in the Bang Khunsai area sustains its productivity and biodiversity, while that of Ban Laem—not a member of BKCRCA—has severely declined. The average household income in the Bang Khunsai area is around 200–400 THB per day, which is much more than local daily wages. Equity among villagers in terms of equal access to the local common and opportunities for being involved in decision making is also well addressed.

Lessons Learned: Under the given circumstances, maintaining traditional harvesting methods proved to be effective. Community-based organizations can play a key role in developing unique and in-situ community rules to attain local sustainability and equity; thus, such activities should be further encouraged and strengthened through appropriate legal and financial support. It should be also noted that small fishing communities are threatened by those who do not respect national, local, and/or community rules; thus, there is an urgent need for strengthening legal controls over such violations.

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Potential for Application: Advantages of local/indigenous practices for sustainable utilization of natural resources can be found not only in coastal resource management, but also in fishing, forestry, and agricultural practices. Community-based organizations, such as seen in this case, have a great potential to play key roles in different settings.

Example of *Strategic Policy Options*

Bus Rapid Transit (BRT)

Sub-theme: Development of Environmentally Sustainable Transport Systems in Urban Areas

Strategy: Enhancing Public Transport Share

Background: BRT is a system that emphasizes priority for and rapid movement of buses by securing segregated busways. BRTs are becoming widespread in Latin American cities such as Curitiba, Bogotá, and Quito, and have started to be introduced in Asia.

Critical instruments: Critical instruments for BRT include a network of busways; a single-fare pricing system; payment to bus operators by the kilometer; a relationship between the public and private sectors; high-occupancy vehicles; and segregated busways and modern bus "stations"

Impacts of the policy option: Curitiba's BRT system replaced 41 000 car trips from 1991 to 1999. A 40% reduction in some air pollutants and a 32% reduction in travel time for users are reported in Bogotá after five months of operation.

Evaluation of the policy option

Sustainability: Compared to other modes of mass rapid transit, BRTs have higher rates of self-sustainable operation.

Efficiency: Construction of a BRT requires US$1–8 million/km, which is less than that for a light rail transit system (LRT) or metro. A BRT can carry 15 000 to 35 000 passengers per hour per direction per lane, even more than an LRT.

Applicability and limitations: Requires a high population density, broad streets (existing or potential) where existing demand exceeds 5000 passengers per hour per direction, and the strong political will of local government.

Related Good Practices: (1) Integration of land use and bus system in Curitiba, Brazil; (2) the electric trolleybus system of Quito, Ecuador; (3) the TransMilenio bus rapid transit system of Bogotá, Colombia.

Collaboration with National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion (GMS)—Global Environment Facility (GEF) / SEF II project

Development of environmental performance assessment systems at national and subregional levels is the primary objective of the GEF/SEF II project, in consideration of the great need to have such an arrangement in the GMS. In many cases, however, policies that lead to positive environmental performance are not yet in place. Thus, the comprehensive ideas for policy development based on RISPO's research outputs and offered to the countries participating in the project will be extremely valuable. For example, RISPO's studies for "Development of environmentally sustainable transport systems in urban areas" could be of great value to policy makers in the GMS countries, offering arguments by which to address air pollution issues and improve air quality through policy implementation suitable to their socio-economic conditions.

At the 2nd Plenary Workshop for RISPO.
Dr. Ivan Ruzicka, international consultant of the GEF/SEF II, discusses the collaboration with RISPO
IGES Headquarters, Japan
10-12 February 2004

Participating Organizations

(as of April 2004)

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)

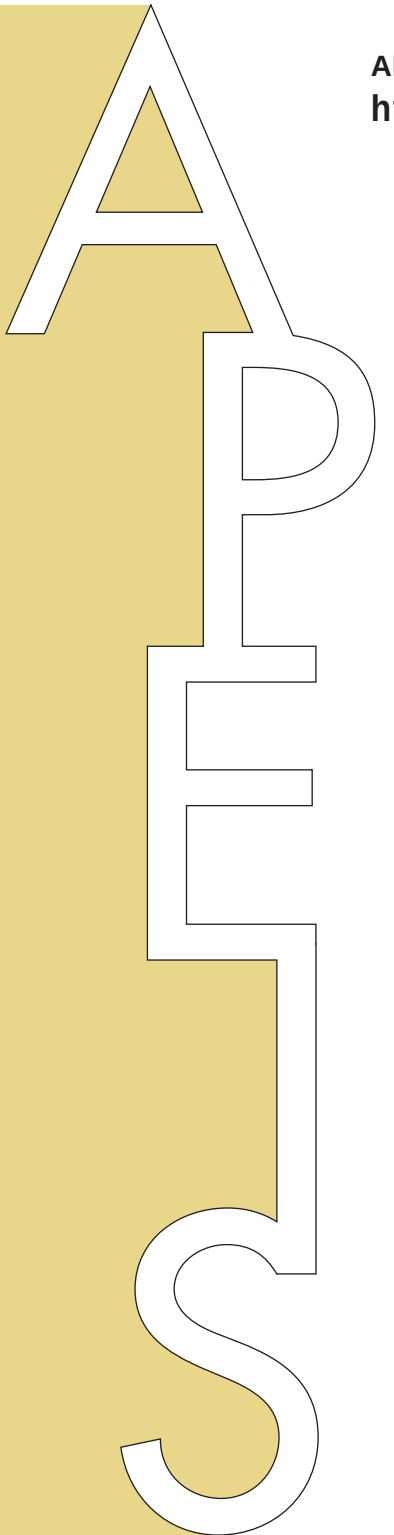
http://www.ecoasia.org/APEIS/

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/



APEIS-RISPO Web sites :

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

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