



## **Design of the Asia-Pacific Environmental Innovation Strategy Project (APEIS)**

Ministry of the Environment, Japan

### **1. Background**

The adoption of Agenda 21 at the Earth Summit in 1992 prompted countries, international organizations, non-governmental organizations (NGOs) and other stakeholders around the world to strengthen actions to address global environmental problems. Nevertheless, as the world prepares ten years later for the World Summit on Sustainable Development to be held in South Africa, the vicious cycle of environmental degradation and poverty continues to worsen and the ideal of sustainable development seems further out of reach. More than ever, today the world needs tangible answers to the question of how to achieve sustainable development.

Conditions are deteriorating in the Asia-Pacific region, home of about 60 percent of the global population, a region experiencing rapid population and economic growth. Many problems exist simultaneously here, because many countries are at different stages of economic development. Examples include the health impacts of industrial pollution, degradation of natural resources caused by industrial development, increases of pollution caused by urban activities associated with greater use of automobiles and a concentration of the population in cities, and increases in greenhouse gas emissions.

To solve such problems, the world needs a tangible path toward sustainable development and clearer plans for implementation. As one step in this direction, since 1993 the ECO ASIA Long-Term Perspective Project (LTPP) has provided policy-makers in the Asia-Pacific region with a scientific basis for policy formulation to achieve sustainable development. Its outcomes were reported to the Environment Congress for Asia and the Pacific (ECO ASIA) 2001 held in Tokyo, Japan on October 13-14, 2001. The participants endorsed the draft of the final report of LTPP Phase II, and also expressed expectations regarding the follow-up activities of the LTPP, i.e., those to be undertaken via the Asia-Pacific Environmental Innovation Strategy Project (APEIS).

The launch of APEIS was proposed at the ECO ASIA 2001, with the anticipation that it would further the outcomes of the LTPP for sustainable development in the Asia-Pacific region. The participants in the congress expressed their high expectations for the new initiative and gave suggestions for its better implementation, pointing out the need for action-oriented research, information transparency, and capacity building, and the value of maximizing participation by countries throughout the region—particularly as they undertake to implement Agenda 21. After a comprehensive discussion, the congress endorsed with appreciation the launch of APEIS as well as the establishment of the ECO ASIA Panel for its coordination.

The basic concept of APEIS is represented in paragraph 94 of the “Draft Plan of Implementation for the World Summit on Sustainable Development” developed at the fourth session of preparatory committee for the World Summit on Sustainable Development (WSSD) held May and June 2002 in Bali, Indonesia. The relevant part of the paragraph reads:

*94. Assist developing countries, through international cooperation, to enhance their capacity in their efforts to address issues pertaining to environmental protection including in their formulation and implementation of policies for environmental management and protection, [including actions at all levels to][with action to]:*

*(a) [Agreed] Improve their use of science and technology for environmental monitoring, assessment models, accurate database and integrated information systems;*

*(b) [Agreed] Promote and, where appropriate, improve their use of satellite technologies for quality data collection, verification and updating and further improvement of aerial and ground-based observations, in support of their efforts to collect quality, accurate, long-term, consistent and reliable data;*

## **2. Objectives and Key Concepts**

### **2.1 What are the Objectives of this Project?**

The objectives of APEIS are three-fold:

- a) To develop scientific knowledge-based tools and innovative strategy options to promote informed decision-making for sustainable development, for the use of

- policy makers in the Asia-Pacific region as a common asset in the region
- b) To promote regional cooperation and capacity building, so as to enable Asia-Pacific countries to formulate and implement their own policies for environmental management and protection that take into account their national circumstances, making use of the scientific tools and options developed, through participation and collaboration in the Project
  - c) To propose a model of a concrete regional initiative that substantiates and realizes the Plan of Implementation for the World Summit on Sustainable Development, that can be presented from this region to the rest of the world

## **2.2 What are the Key Concepts of this Project?**

In order to achieve the above objectives, APEIS will be further designed and implemented along the lines of the following basic concepts:

- a) Ensure the highest possible level of participation and collaboration of countries, relevant organizations and other stakeholders in the Asia-Pacific region
- b) Create a framework in which scientific activities and policy makers interact synergistically and constructively
- c) Fully incorporate and utilize resources of existing regional initiatives, activities and projects by promoting collaboration and coordination, e.g., with ECO ASIA, the Asia-Pacific Network for Global Change Research (APN) and relevant international research projects
- d) Consider and reflect specific needs and diversified national circumstances in the Asia-Pacific countries

## **2.3 Why is this Project “Innovative”?**

The innovation in APEIS can be found in the objectives, processes, outcomes and technical elements, as follows:

- Innovation in objectives and processes, i.e., development of scientific knowledge-based tools and strategy options readily available for policy makers as a regional common asset, through dynamic interaction between scientific activities and policy makers
- Innovation in outcomes, i.e., proposals of innovative policy instruments and environmental strategy options including environmentally sound/sustainable technologies and policy integration beyond conventional policy instruments

- Innovation in technical elements, i.e., employment of innovative methodologies such as satellite- and ground-based integrated monitoring and environment-economy integrated models

### **3. Outline of the Project**

#### **3.1 Framework of the Project**

APEIS is composed of three sub-projects, namely the Integrated Environmental Monitoring (IEM), the Integrated Environmental Assessment (IEA) and the Research on Innovative and Strategic Policy Options (RISPO) sub-projects. APEIS support functions include networking and capacity building, and information sharing and outreach. Although each sub-project could function as an individual research project, synergistic effects are highly anticipated as a result of their active interaction because they collectively cover major elements required for environmental policy-making, i.e., understanding of environmental conditions, assessment and future prediction, and formulation of policy options. Examples of tangible synergistic effects, include the following:

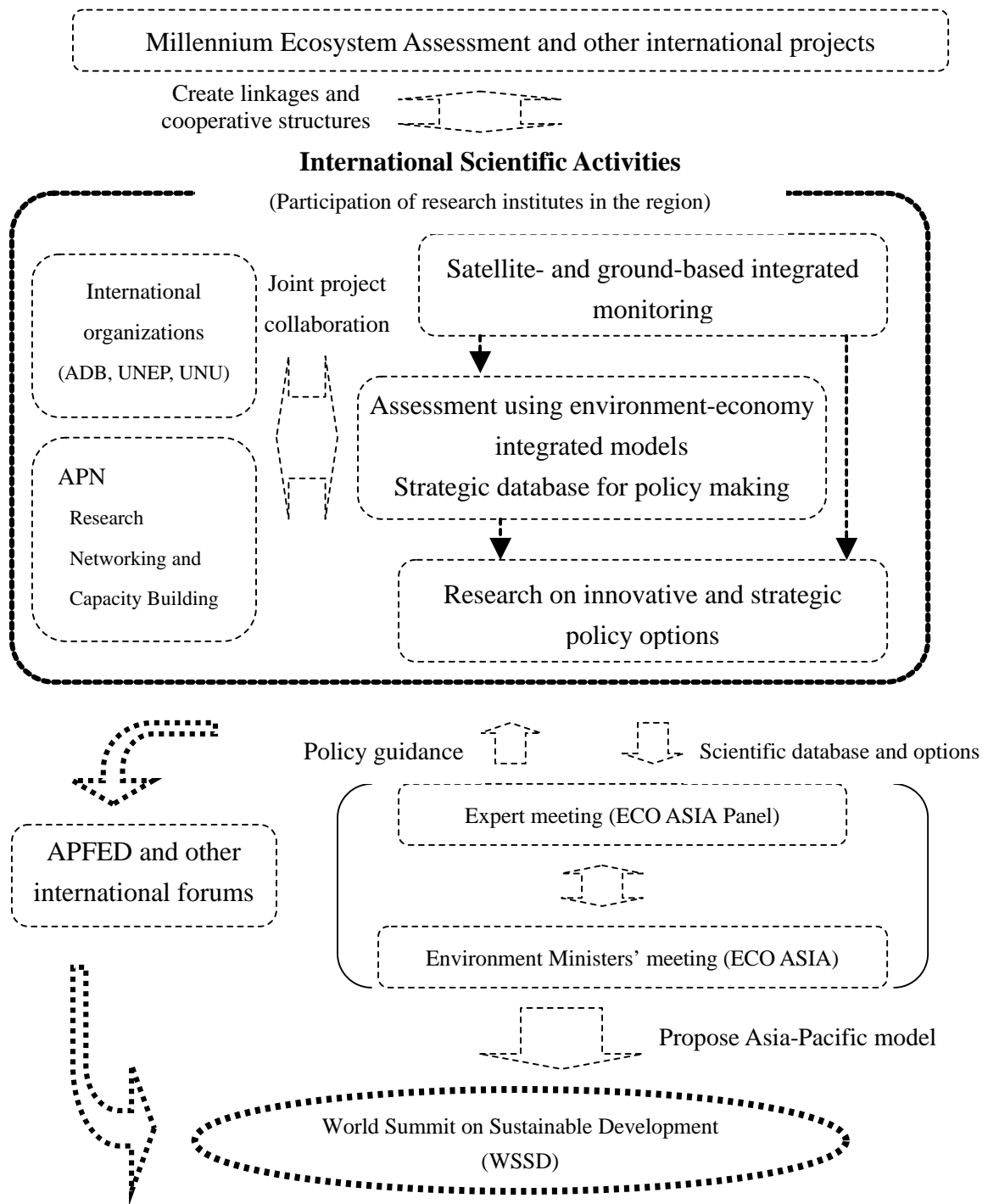
- Improvement and verification of simulation models making use of the data acquired from the integrated environmental monitoring
- Quantification of the environmental and economic effects of strategy options using the environment-economy integrated models
- Identification of target issues and sites in studying strategy options using the outcomes of the integrated environmental monitoring

Outcomes of APEIS activities will be reported at international forums in which policy makers of the Asia-Pacific region participate, and will provide a scientific basis for discussions. In addition, it is anticipated that policy makers will provide policy guidance so that the scientific activities respond to their needs.

APEIS seeks links with other mutually supportive activities at international and regional levels. Such activities include the Millennium Ecosystem Assessment (MA), the APN, and the Global Environment Facility (GEF) project entitled “National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion (GMS)” which is being developed by the Asian Development Bank (ADB) in collaboration with the United Nations Environment Programme (UNEP), the National

Institute for Environmental Studies (NIES) of Japan, and the Institute for Global Environmental Strategies (IGES). The APN is a strong partner of APEIS in terms of networking and capacity building. In addition, its research activities and resources concerning integrated monitoring and assessment can bring potential participators/contributors to APEIS.

APEIS will be represented to the world as an Asia-Pacific model of regional initiatives in the form of “Partnership/Initiatives to Implement Agenda 21” to realize the relevant part of the Plan of Implementation for the World Summit on Sustainable Development, and will be reported at the WSSD to be held August through September 2002 in South Africa.



### 3.2 Major Components of the Project

#### (1) Integrated Environmental Monitoring (IEM)

Rapid agricultural and urban development in the Asia-Pacific region has caused forest

degradation, desertification, salinization, water resource depletion, soil loss and other serious environmental problems. These impacts have become serious constraints on sustainable development in the region. To take measures to counteract further depletion and degradation, it is first of all necessary to collect accurate and reliable data on the present conditions and changes in natural resources and the environment.

The IEM sub-project aims to develop an integrated environmental monitoring system that can cover the entire Asia-Pacific region, mainly by using the MODIS (Moderate Resolution Imaging Spectrometer) sensor mounted on the EOS (Earth Observation System)-Terra satellite, and through cooperative research with countries in the region. This sub-project consists of the following components:

- Establishment of a network of satellite data-receiving stations and analytical systems for MODIS data that covers the Asia-Pacific region
- Development of a ground-truth observation network for various ecosystem types to validate satellite remote-sensing data in the Asia-Pacific region
- Integrated monitoring of environmental disasters such as dust storms, transboundary air pollution, floods, marine pollution and oil spills, forest fires, and so forth
- Integrated monitoring of environmental indices and degradation such as desertification, salinization and deforestation, as well as land use and land cover changes
- Study of land-atmosphere processes and ecological functions at the watershed scale, and eventually, modeling of water resources and agricultural productivity

## **(2) Integrated Environmental Assessment (IEA)**

Policy makers in the Asia-Pacific region are facing serious problems in addressing the tradeoffs between choices for environmental protection and economic growth. In order to find ways to make breakthroughs with these tradeoffs, it is essential to introduce the greatest possible level of innovation into the environmental domain. Such innovations may include the diffusion of advanced technologies, promotion of environmental industry, increase in environmental investment, change in production and consumption patterns, and so forth. These innovations, however, may pose the risks of increased costs of environmental protection and worsened adverse environmental effects unless a delicate balance between the environment and economy is adequately considered prior to their application. It is, therefore, essential to assess the current and

possible future interactions between economic development and environmental changes, and predict the effects of innovations carefully in a quantitative and comprehensive manner.

The IEA sub-project aims to provide integrated models of the environment and economy, as well as a strategic database to assess the current and possible future interactions between economic development and environmental changes, and to predict the effects of strategic policy options. This sub-project consists of the following components:

- Development of a set of integrated assessment models including environment-economy models (AIM/Trend and AIM/CGE), ecosystem/health impact models (AIM/Ecosystem and AIM/Water), a material flow model (AIM/Material) and an energy technology model (AIM/Energy) based on the achievements of an existing computer simulation model development project, the Asia-Pacific Integrated Model (AIM) project
- Development of indicators and a strategic database comprised of the fundamental database, index base, model base and strategy option base, which will be systematically linked to each other and readily available for policy making
- Assessment of the current conditions and possible future changes of the environment and economy, and the quantitative effects and implications of proposed innovative strategy options

### **(3) Research on Innovative and Strategic Policy Options (RISPO)**

Efforts to achieve sustainable development should integrate the three components of economic development, social development and environmental protection, as interdependent and mutually reinforcing pillars. Therefore, strategy options that will lead toward sustainable development are expected to contribute to the improvement of these three pillars simultaneously. Practical and implementable strategy options can be produced by improved collaboration between natural and social sciences, involvement of various stakeholders, and field-based studies, including those that look at local and indigenous practices and study actual circumstances.

The RISPO sub-project aims to propose strategic policy options and to provide policy inventories as knowledge-based tools for informed decision making by examining information about successful or failed practices collected through field-based case studies. This sub-project consists of the following components:



- Conduction of field-based case studies in selected countries to formulate policy inventories and possible strategic policy options in such categories of innovation as creation of eco-markets and eco-industry, introduction of advanced technology, development of innovative urban systems, appropriate use of community resources, and networking of small-sized innovations.
- Development of policy inventories, which consist of a good practices inventory and an innovative instruments inventory, from the data obtained from case studies mentioned above and from other existing projects, such as GEF projects
- Proposal of strategic policy options based on the analysis of practices and instruments compiled in the policy inventories
- Implementation of pilot projects on selected issues and sites, in order to examine the effects, feasibility and applicability of the strategic policy options

### **3.3 Linking the Project to Policy Makers**

The outcomes of the three sub-projects will be presented to ECO ASIA, the ECO ASIA Panel and other meetings of policy-makers, in order to support discussions for formulation and implementation of policies for environmental management and protection in the Asia-Pacific region. At the same time, the sub-projects will benefit from guidance from the policy makers so that these activities can best reflect the policy makers' needs. Also, in order to obtain guidance from a broader perspective, the outcomes of discussions may be presented to the Asia-Pacific Forum for Environment and Development (APFED) and other international forums.

Through such processes, a system of dynamic feedback will be created between the scientific activities and policy makers, ensuring close linkages between them.

### **3.4 Networking, Capacity Building and Awareness Creation**

Because APEIS is in nature a regional research exercise based on innovative tools and methodologies, networking and participation of relevant scientists and research institutes in the region should be encouraged. At the same time, existing research products on integrated monitoring and assessment in the region should be fully utilized in order to implement the project effectively and efficiently. For this purpose, it is expected that the products of APN-funded projects will be incorporated in APEIS.

Capacity building is one of the highest priority activities in APEIS. Capacity building activities will focus on the needs of developing countries to participate in international activities, understand policy options, conduct integrated monitoring and assessments, and to enhance the expertise of individual scientists and institutions. Participation in the scientific activities in APEIS offers research institutes a good opportunity for capacity building at a research level. In addition, outcomes of the research activities are widely disseminated and shared among research institutes and other bodies for their capacity building through workshops and other measures. A series of capacity building sub-regional workshops on specific issues, such as integrated monitoring and data collection and modeling, will be jointly organized by the APN and participating institutes and organizations in APEIS. Capacity building of policy makers is also explored through continuous provision of research outcomes to policy makers.

Another important determinant of the success of APEIS is the level of stakeholder awareness. Thus, awareness creation also commands a high priority. To this end, an information outreach strategy is needed to provide outcomes of research activities in a timely and effective manner, taking into account the specific needs of each stakeholder -for example, researchers in other sub-projects, policy makers, other interested scientists and civil society. An information sharing and outreach system will be established to raise stakeholder awareness as well as to ensure transparency and accountability of the project. For this purpose, the APEIS Internet website will be developed and managed as a subset of the website of ECO ASIA. The types of information made available on the website will include documents on project design and implementation plans, and reports of findings such as technical papers, summaries of technical papers and overall summaries.

#### **4. Management Framework**

(1) Each of the three main components of APEIS is formulated as an independent international research sub-project through research agreements between governmental and/or non-governmental research institutes. The Research Coordination Committee (RCC) has been established to facilitate linkages and coordination between the three scientific activities, and to develop draft research proposals and research summaries to be reviewed by the ECO ASIA Panel. The RCC consists of representatives of each sub-project and the APN, and, as appropriate, also consider other scientific aspects of APEIS activities. The terms of reference and organizational arrangements for the RCC

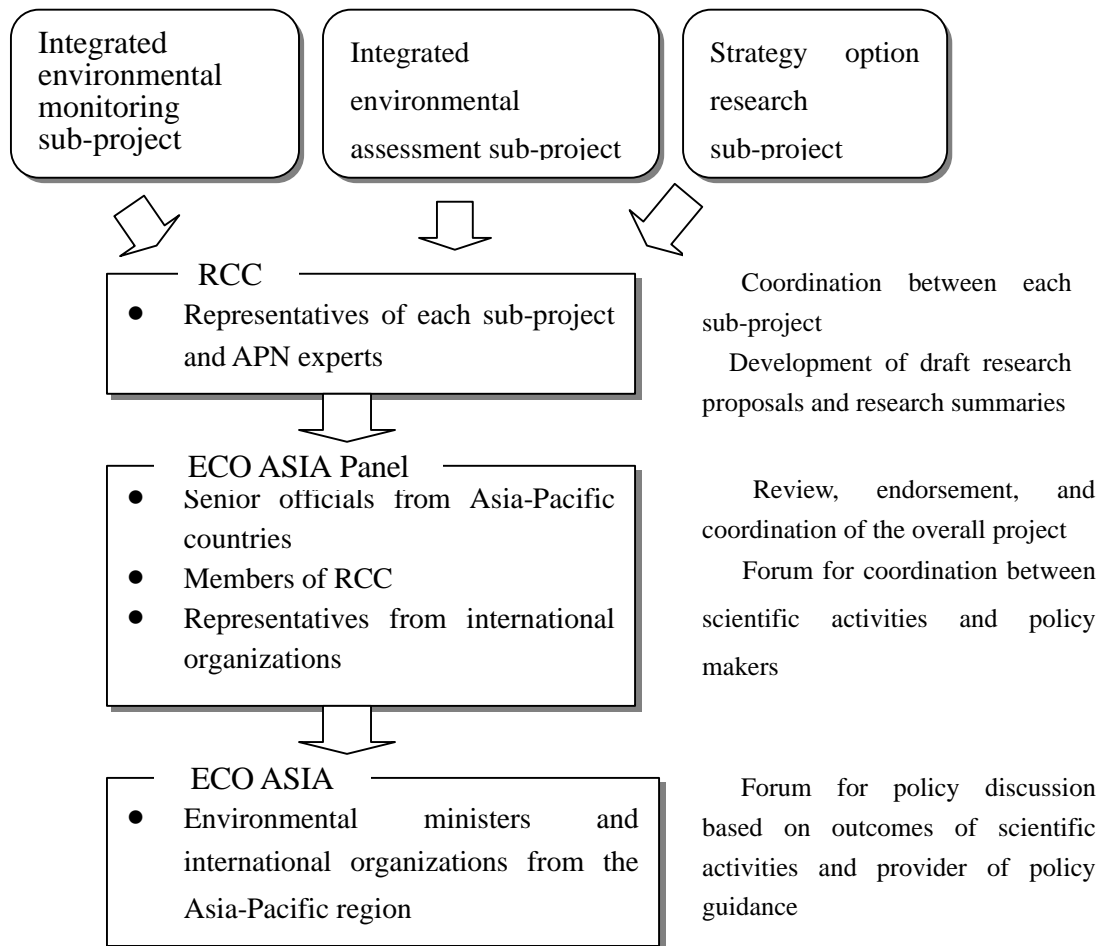
is attached to this document (see Annex).

(2) ECO ASIA is the principal audience of APEIS to receive reports of these scientific activities, and it will also provide policy guidance for the activities. When required, outcomes will be reported to APFED and other relevant international environmental forums, and advice will be sought from these forums.

(3) As one of its functions, the ECO ASIA Panel acts as the coordination body between the scientific activities and policy makers. It consists of senior officials from Asia-Pacific countries, representatives from the endorsed projects such as APEIS, and international organizations, programs and networks. The ECO ASIA Panel will review and endorse implementation plans and coordinate scientific and policy aspects for projects endorsed at ECO ASIA.

(4) Japan's Ministry of the Environment (MOE) will, within the budget available, provide the necessary financial support for the implementation plans endorsed by the ECO ASIA Panel, provided that the results are reported to ECO ASIA and the research is implemented in compliance with policy guidance from ECO ASIA.

The framework of management and supervision mechanism of APEIS is illustrated below.



## 5. Cooperation with Related Projects

### 5.1 Millennium Ecosystem Assessment (MA)

The Intergovernmental Panel on Climate Change implements scientific assessments for the UN Framework Convention on Climate Change. In contrast, other conventions such as the Convention on Biodiversity and the Convention to Combat Desertification do not have such a scientific body.

The aim of the MA is to improve ecosystem management by providing comprehensive

ecosystem information that will be useful for policy making, to international conventions, national governments, non-governmental organizations and the general public.

The MA, which was officially launched 5 June 2001, is implementing assessments at the global level - and simultaneously, at the regional and local levels - over the next four years. A final report is due in January 2005.

(1) Global assessment

- Evaluate impacts on ecosystems from perspectives familiar to the general public, including food, water and health.
- Establish methodologies for integrated assessments, including determination of characteristics and the status of ecosystem utilization, development of future scenarios and proposals of response options.

(2) Assessments at the regional level

- Plans are to target about ten areas, including South Africa, Southeast Asia, western China, and others.
- Utilize integrated assessment methodologies practically at the regional level.

Because APEIS is a research-oriented project, while the MA is basically a review-oriented project, they are fundamentally different in nature. In addition, they differ in their geographical coverage and target/priority subjects of concern. On the other hand, the MA does aim to assess conditions of ecosystems, future scenarios and policy options, and to provide ecosystem information that meets the needs of policy makers. It also gives priority to the use of satellite-based remote-sensing to assess the current situation. These aspects represent some of the similarities between both projects.

Taking into account the similarities and differences of both projects, cooperation between them would be highly desirable for these reasons:

- New knowledge on conditions and trends of natural resources in the region produced by APEIS would benefit the MA's assessments, since such data and information for review are quite scarce in the region; and,
- Feedback of the outcomes of the MA would facilitate future improvements of APEIS since it would enable the incorporation of methodologies that reflect global

trends and comparisons with other regions

Bearing these basic thoughts in mind, an ecosystem assessment project in western China, one of the regional components of the MA, was launched on 15 June 2001 and is being implemented as a joint activity of APEIS and the MA. It is expected to be a good model of collaboration and to provide policy makers in China with important information for sustainable implementation of development in western China

In ways such as these, by providing satellite- and ground-based integrated monitoring data and analytical results using these data and ecological assessment models, APEIS will contribute to the regional assessments of the MA. At the same time, APEIS will benefit from improved scientific capacity and better synchronization with international developments, by receiving data and methodologies from the MA. By deepening this kind of cooperation, further harmonization of scientific methodologies (such as satellite data processing and ecosystem modeling), and interaction among scientists can be expected.

## **5.2 National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion (GMS)**

At present the ADB, in collaboration with UNEP, NIES and IGES, is making a proposal to the GEF regarding the launch of a project entitled “National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion (GMS).” This project will develop national and subregional environmental performance assessment systems in the GMS and a subregional strategic environmental framework. It will assist in the process of integrating environmental objectives in subregional, national and local development policies and programs and thereby support sustainable development.

Its expected outputs include (i) improvement of informed decision-making through better understanding of environmental conditions, trends and impacts, (ii) effective and efficient national environmental program management and improved public accountability for results; and (iii) responses to the national, subregional and international demand for environmental information and performance assessments on issues of regional and global importance.

APEIS and this project both target the Asia-Pacific region and share many similar objectives and contents. In order to effectively utilize limited resources, and develop the scientific tools indispensable to the formulation and implementation of sustainable development policies, both projects are being designed and will be implemented with close collaboration.

### **5.3 Asia-Pacific Network for Global Change Research (APN)**

The APN is a strong partner for APEIS. The APN is an intergovernmental network whose mission is to foster global environmental change research in the Asia-Pacific region, increase developing country participation in that research, and strengthen interactions between the scientific community and policy makers. Its research, networking and capacity building activities are important for the region and can contribute effectively to APEIS.

The annual report using APN existing publications and output from synthesis seminars will be useful resources for APEIS. Moreover, the holding of sub-regional workshops on integrated monitoring and assessment, in collaboration with participating research institutes in APEIS, will offer good opportunities for capacity building, particularly to those researchers who are potential contributors to APEIS and the APN in the future.

## **ANNEX**

### **Terms of Reference and Organizational Arrangements for the Research Coordination Committee of the Asia-Pacific Environmental Innovation Strategy Project**

#### **MANDATE**

1. The Research Coordination Committee of the Asia-Pacific Environmental Innovation Strategy project (APEIS/RCC) serves as the forum for coordination among the scientific sub-projects of APEIS, namely the Integrated Environmental Monitoring (IEM), Integrated Environmental Assessment (IEA), and Research on Innovative Strategic Policy Options (RISPO) sub-projects.
2. The APEIS/RCC will:
  - a. Facilitate collaboration and coordination among the scientific sub-projects of APEIS
  - b. Develop draft research proposals and research summaries of APEIS to be reviewed and endorsed by the ECO ASIA Panel
  - c. Incorporate scientific interests in networking, capacity building and awareness creation
  - d. Consider the inclusion of other scientific matters as requested by the ECO ASIA Panel

#### **MEMBERSHIP**

3. Each APEIS sub-project may appoint representatives from participating research institutes to be members of the APEIS/RCC.
4. The Asia-Pacific Network for Global Change Research (APN) may appoint representatives to be members of the APEIS/RCC.
5. The Secretariat of the APEIS/RCC, in consultation with the APEIS/RCC members, may invite relevant ministries, agencies and organizations to join meetings of the APEIS/RCC as observers.

#### **SECRETARIAT**



6. The Secretariat of the APEIS/RCC will:
  - a. Prepare for meetings of the APEIS/RCC
  - b. Act as the focal point for research coordination among the sub-projects under APEIS
  - c. Implement other tasks, as requested by the APEIS/RCC
7. One or more participating research institutes of an APEIS sub-project will be appointed by the APEIS/RCC to act as the Secretariat of the APEIS/RCC. The appointments will be on a rotation basis, in this order: the IEA sub-project, the RISPO-sub-project, the IEM sub-project.

### **MEETINGS AND OFFICERS**

8. A meeting of the APEIS/RCC will take place annually, unless otherwise decided by its members.
9. At the commencement of the meeting, a chairperson and one or more vice-chairpersons will be elected as officers for the meeting, from among the participants of the meeting.
10. The officers will remain in office until their successors are elected.
11. Decisions of the meeting will be made by consensus.

### **AMENDMENTS**

12. The initial establishment and later amendments of the Terms of Reference and Organizational Arrangements by the APEIS/RCC will come into effect when endorsed by the ECO ASIA Panel.