Report of the Second Phase Strategic Research

(April 2001 – March 2004)

March 2004

Institute for Global Environmental Strategies

Report of the Second Phase Strategic Research

Table of Contents

Climate Policy Project

Shuzo Nishioka
Project Leader

1. Overview

1.1. Background, objectives, and approach

1.1.1. Background

During the first three-year phase of research (April 1998–March 2001), the Climate Change Project conducted research on initiatives based on international negotiations held under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol processes. The primary focus during that phase was on the system design of the Kyoto Mechanisms, such as emissions trading and the Clean Development Mechanism (CDM). Several timely proposals were made to both domestic and international audiences, and a number of contributions were made to academic journals. In parallel, the project established a basis for long-term research by developing original methodologies such as IGES' regional energy/environment model, called the Greenhouse Gas Emission Model for Asia (GEMA).

Building on these accomplishments and based on intensive discussions with policy-makers and researchers across the Asia-Pacific region, the project re-oriented its work in the second phase (April 2001–March 2004) with a focus on three main sub-themes: domestic policies, international cooperation, and vulnerability and governance issues. Additional work on a few related topics (e.g., post-Kyoto issues) was initiated in preparation for the third phase. To emphasise the shift of our focus to strategic climate policy research, the name of the project was changed from the "Climate Change Project" in the first phase to the "Climate Policy Project" (CP) in the second phase.

The second research phase of IGES was characterised by divergent and sometimes conflicting developments in international, regional, and national climate policy. Such developments obviously influenced and will continue to affect the nature and focus of our work. First of all, there is significant scientific, political, and economic uncertainty surrounding the climate issue, but there is a growing consensus that prompt global action to mitigate climate change is essential. At the international level, scepticism on the vitality of the global climate regime prevailed in some circles because of the rejection of the Kyoto Protocol by the United States (U.S.) and the slow progress in its ratification by Russia. On the other hand, several countries including those in the developing world continued to repose confidence in the Protocol. As of 1 February 2004, as many as 120 countries have ratified/acceded or approved the Kyoto Protocol, including 32 industrialised countries representing 44.2 percent of global emissions. Likewise, international negotiations on methodological issues related to Kyoto mechanisms, particularly the Clean Development Mechanism (CDM) advanced rapidly. Despite the uncertainty surrounding the fate of the Kyoto Protocol, preliminary research on further commitments for the period from 2012 onwards has been taken up by a few progressive groups in the world. We are pleased to report that our team is now recognised as one of these groups. At a regional level, the European Union (E.U.) recently adopted a directive on an E.U.-wide emissions trading system for companies to be effective from January 2005. Indeed many European policy-makers and businesses now seem to favour going ahead with designing and implementing such systems irrespective of the status of ratification of the Kyoto Protocol. At the domestic level, Japan ratified the Kyoto Protocol in June 2002, but different schools of thought both in support of and against the Protocol emerged and added to confusion in international circles on Japan's ability to meet the emission reduction targets for the first commitment period.

1.1.2. Objectives and approach

The main questions posed by our team in each sub-theme at the beginning of the second phase are listed below, and the approach followed to achieve various objectives is briefly discussed under each question.

a. Domestic policies

1. What should the Japanese domestic policy entail in order to comply with the Kyoto Protocol?

As Japan is one of the major industrialised countries in the world, the design of its policy measures is a key issue in formulating international policy measures for climate change mitigation. Research was focused, therefore, on determining the "best policy mix" for Japan in order to comply with the Kyoto Protocol not only through examination of current policies of Japan but also those of countries with progressive policies such as Germany. Some effort was directed to the understanding and design of international mechanisms such as emissions trading that conform to the domestic policies.

2. Which policy measures are effective in encouraging the participation of the industrial/business community and promoting technological innovation?

This issue was originally planned to be addressed by examining the impact of domestic climate policies on the business sector and by exploring prospects for long-term technological innovation by industries. It was also proposed to examine a greenhouse gases (GHG) accounting system of the private sector and determine the industrial structural change necessary to promote innovation of climate-friendly technologies and policy measures to promote such structural change.

b. International cooperation

1. Which measures and mechanisms are necessary to effectively promote international cooperation between developed and developing countries in Asia?

Japan, as the only Annex I country in Asia, recognises the need to take specific actions domestically and internationally to reduce its GHG emissions. It also has a great responsibility for technology transfer and financial assistance to developing countries. On the other hand, in light of the rapid economic growth in developing countries of Asia, GHG emissions are expected to grow rapidly. Therefore, cooperation between developing and developed countries in Asia is essential to meet the ultimate objective of the UNFCCC (i.e., stabilisation of GHG concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system).

Research was directed on several fronts to address this sub-theme. Substantial efforts were devoted to identify measures to close the gap in discussions between developed and developing countries and to motivate developing countries to reduce their GHG emissions. Additional work was planned to identify measures for effective utilisation of Japanese overseas development assistance (ODA) with a view to ensure prioritisation of environmental protection programmes for developing countries. The prospects for international energy and environmental cooperation among Russia, China, Korea, and Japan, and the impact of such programmes on energy and environmental policy in Asian countries were also examined.

The optimal design of the CDM from the developing countries' viewpoint, including its integration in domestic policies and evaluation of prospects for replication of policies of developed countries in developing countries, are vital to promoting North-South cooperation and sustainable development. A few studies were conducted, therefore, to examine both the methodological and implementation aspects of the CDM. Measures for establishing cooperation mechanisms in the background of changing domestic and international geo-political conflicts were also explored. Field studies to establish a model case for climate policy in Asia were conducted.

2. How much progress has been made in research on estimation methods of greenhouse gas emissions and absorption?

The national GHG inventory is the ultimate measure against which a country will be judged in reporting under the UNFCCC and the Kyoto Protocol in the future. Progress is measured through the use of a set of inventory methodologies and reporting guidelines agreed to by the Framework participants. Studies to determine the level of accuracy in the measurement of GHG emissions in Asia, and the compilation of a database were, therefore, considered critical to this effort. In addition, studies to determine the extent and accuracy of understanding regarding the carbon sequestration sinks in Asia and to analyse implications of the establishment of an inventory estimation method on international policy were planned.

c. Vulnerability and governance issues

1. How can the vulnerability to climate change in Asia be evaluated? What kinds of adaptation strategies are desirable?

As Asian countries are already facing adverse impacts of climate change, it is important to design policies to reduce such vulnerability. The design of such policies, however, is very much dependent on accurate vulnerability assessments. Therefore, studies were planned to identify the most vulnerable areas to climate change in Asia and to review the concept of "adaptation." Since local knowledge is an important component in designing adaptation policies, a few efforts were directed towards analysing options for integration of such knowledge into adaptation policies.

2. How should the governance of climate policy be conducted in terms of global carbon cycle management including the sink issues and international politics?

International climate policy has been evolving gradually with the emergence of new actors (e.g., the private sector and non-governmental organisations), parallel approaches, and regulatory mechanisms encompassing different sections of society. An increasing rift in climate policies between major players, namely, the United States, European Union, Japan, and major developing countries, is a point of concern in determining the success of the future climate regime. Preliminary studies on governance of climate policy including work on incentives for achieving global participation were, therefore, initiated in this phase to provide a base for further studies in the third phase.

1.2. Review of achievements

1.2.1. Domestic policies

Studies under this sub-theme form the core of our support towards Japan's national climate policy development, which includes work on Japan's approaches and options to achieve the Kyoto Protocol targets. Key accomplishments are discussed below.

One major outcome from our project's research on Japan's domestic climate policy is a report entitled "Policy Proposal for Japan's Domestic Climate Policy" (IGES August 2002), which is a compilation of achievements over the past few years. It is a comprehensive proposal covering a wide range of fields, and it integrates the outputs of various public forums and workshops, including the IGES Open Forum on Countermeasures for Global Warming (which staff from business, research, and government sectors attended), the Joint Research Workshop on the U.K. Climate Policy (June 2001) with major think-tanks, and several brainstorming workshops with the Japanese business community (August–October 2001). Based on an analysis of current policy measures and issues to be addressed, various combinations of economic measures, command-and-control measures, and voluntary measures were recommended as part of a new institutional framework. Although further discussion is necessary in terms of the feasibility of a new institutional framework and its consistency with the existing framework, it must be noted that the formulation of such a draft by a non-governmental organisation (NGO) was a breath of fresh air into the system design and that it formed a solid basis for further discussions in Japan. The

report was presented in August 2002 at a meeting attended by nearly 250 participants from public and private organisations. It was accepted as the first recommendation for a comprehensive global warming countermeasure policy. A comparative study on energy policies of Japan and other developed countries, and a study on domestic policies including emissions trading systems, which formed the basis of this report, were published elsewhere.[1] Our researchers also co-authored a Pew Centre report on climate change mitigation in Japan, focusing on policy aspects.[2]

The IGES Open Forum on Countermeasures for Global Warming was held twice in 2001 and once in 2002, where issues for further development of domestic climate policy were discussed by the officials of concerned government agencies, researchers, and business personnel. The forums were especially appreciated because critical aspects for adjustments of domestic legislation in order to ratify the Kyoto Protocol were discussed and the differences among views and interests of various stakeholders were clarified. Indeed, discussions at these forums in 2001 served as an input to the comprehensive report published in 2002. All open forums drew wide attention, as evidenced by the high participation of diverse stakeholders. Summaries of the forums were posted on the IGES Web site for further feedback.

A report entitled "Technologies for the Reduction of GHG to Achieve the Goals of the Kyoto Protocol" was compiled by the project leader, who also served as chair of the Global Environmental Committee of the Ministry of the Environment. The report examined in detail the technologies to reduce GHGs in Japan and derived a GHG emission reduction cost curve. The report was used as the basis for preparation of the *Guidelines for the Prevention of Global Warming in Japan 2002*.

In order to inform the Japanese public of the progress in international negotiations in the abatement of global warming, post-Conference of the Parties (COP) seminars were held every year in association with the Global Industrial and Social Progress Research Institute (GISPRI). The presentations made by our researchers at these seminars were appreciated by people from all sectors of Japanese society, and the proceedings of these seminars were published and disseminated to various Japanese stakeholders.

Now that the Kyoto Protocol is close to coming into force (with the expectation that Russia will ratify it in mid-2004), how to achieve the GHG emissions reduction goal as promised in the first commitment period is an important challenge for Japan. The present policy, based on the Guideline of Measures to Prevent Global Warming, is to be reviewed in 2004. Since achieving the reduction goal by the current policy framework is regarded as unlikely, enforcement of more effective policy packages would be necessary from 2005. Therefore, policy research focusing on the design of a domestic system that complies with the Kyoto Protocol is in progress. A revised package of policy proposals is in preparation, and it includes both quantitative evaluation of policies using energy modeling approaches and qualitative evaluation such as through comparative studies on global warming policies among developed countries.

A comparative analysis of climate policy decision-making in the E.U. and Japan was conducted not only to find ways to design and implement effective climate policies appropriate to the Japanese context, but also to contribute to discussions on post-Kyoto issues by finding incentives for the E.U. to lead international negotiations. As voluntary approaches were used as the main instrument for addressing carbon dioxide (CO_2) emissions from the industrial sector in both Japan and the E.U., a comparative study of such approaches was undertaken in 2001 and 2002. Findings from this study were published in an academic journal[3] and a number of books[4] and used as inputs to the IGES proposal titled "Domestic Policies and Measures to address Climate

1 Matsuo, N. 2001. "Bonn Agreements as a New Business Opportunity: How to develop the new businesses under the carbon constrained world," Energy Forum, October (in Japanese).

2 Yamaguchi, K. and Matsuo, N. 2001. "Climate Change Mitigation in Japan" (chapter) pp. 132–147. In: Climate Change: Science, Strategies & Solutions, E. Claussen, V. A. Cochran, and D. P. Davis (eds.) Pew Center, USA.

3 Watanabe, R. 2002. Voluntary approaches in energy policy—A comparative study among four European countries and implications for Japan. *Journal of Environmental Law and Policy* Vol.5, Shojihomu kenkyukai (in Japanese).

4 Watanabe R. 2001. Voluntary Approaches. Environmental Management Handbook Sangyo Kanri Kyokai (in Japanese); Watanabe R. 2003. Voluntary Approaches. Environmental Law and Environmental Policy. Yumihiko Matsumura (ed), Sangyo Kanri Kyokai. (in Japanese);

Change Mitigation in Japan." A report on a comparison of voluntary approaches to curb global warming by two Japanese cities—Kitakyushu and Yokohama—was published by the Organisation for Economic Cooperation and Development (OECD).[5] In 2003, a more comprehensive analysis of Japanese and German climate policy decision-making processes was undertaken, and preliminary results were summarised and presented at a seminar at Bonn University.

In July 2003 the directive on establishing an emissions-trading scheme within the E.U. was adopted. As the scheme will cover an increasingly large proportion of the total emissions regulated under the Kyoto Protocol, it is expected to bring in many changes in the policies and measures of member states. Voluntary approaches, most dominant so far in member states, would be forced to adjust to emissions trading. Furthermore, the birth of the first regional emissions-trading scheme would indirectly affect climate policies and measures in Japan. In order to examine the rationale for introduction of the emissions-trading scheme in the E.U. and the issues to be overcome for its introduction, one of our researchers conducted research on the directive-making process of the E.U.'s emissions-trading scheme, utilising the opportunity to stay as a visiting researcher at The World Conservation Union (IUCN) Environmental Law Center and Wuppertal Institute in 2003. The findings were published as an IGES working paper in Japanese[6] as well as in English. As part of the comparative studies on the characteristics of transport energy demand in the United Kingdom (U.K.) and Japan, and their implications for energy and climate policies, one of our researchers published a report in an academic journal.[7] Our researchers disseminated a report to Japanese policy-makers on domestic emissions trading in the U.K. as soon as the system was introduced there.

Since the U.S. is the world's biggest GHG emitter, its policies have wide implications on the stabilisation of the global climate. One of our researchers analysed the new administration's climate initiative and its long-term implications.[8] The issue of U.S. state and local climate policies was also the subject of studies by one of our researchers and an intern, and it was concluded that state-level initiatives deserve appreciation but do not meet the expectations of the global community and that there was a strong need for integrating such initiatives with those of the federal government. A preliminary report is in the process of being published in a Japanese journal.[9] At the request of Japan's Ministry of Environment (MOE), our researchers compiled various publications on domestic policies in the U.S. and submitted them at regular intervals. These reports were used as an information source for Japanese policy-makers. In cooperation with Resources for the Future (RFF), we held a one-day workshop sponsored by the MOE in Washington D.C. on domestic policies in the U.S. and Japan.

Insofar as the work on the role of Japanese businesses and industries in the abatement of global warming is concerned, our progress has been patchy. As explained earlier, several brainstorming workshops with the Japanese business community were held in 2001, but specific policy measures were not published due to lack of suitable human resources to follow up on such discussions. And a reshuffling of research themes among IGES projects also led us to reduce our focus on this sub-theme, in part for reasons such as the fact that it was chosen as a field of study by researchers at the Kansai Research Centre, and that some aspects of the role of Japanese businesses have also been taken up by the Environmental Industry sub-project of IGES' Long-Term Perspective Project (LTP). Another reason was that a researcher who had originally proposed to conduct research on prospects for long-term technological innovation left IGES to join a university.

Watanabe R. 2004. Climate policy in the Netherlands—Law and policy for addressing global warming. Tadashi Otsuka (ed), Showa-do, Sangyo Kanri Kyokai (in Japanese).

5 Imura, H. and Watanabe, R. 2002. Voluntary Approaches—Two Japanese cases: Pollution Control Agreements in Yokohama city and Kitakyushu city, Env/EPOC/WPNEP(2002)12, Paris, OECD.

6 Watanabe, R. 2003. Directive Making Process of EU Emissions Trading <http://www.iges.or.jp/ipkp/pdf/EU_watanabe.pdf>.

7 Hunt, L. and Ninomiya, Y. 2003. "Unravelling Trends and Seasonality: A Structural Time Series Analysis of Transport Oil Demand in the UK and Japan." *Energy Journal*, Vol. 24, No. 3, pp. 63–96, 2003.

8 Matsuo, N. 2002. "Analysis of the U.S.'s New Climate Initiative: The attitude of the Bush Administration towards Climate Change," *International Review for Environmental Strategies*, 3(1): 177–187.

9 Tamura, K. 2004. State-level mitigation policy in the USA. *Environmental Science* (in press) (in Japanese).

1.2.2. International cooperation

Asian countries are diverse in their interests on the issue of climate change. The CP Project examined the diversity of such interests by conducting policy dialogues and undertaking research collaboration with policy-makers and researchers in various Asian countries. The international cooperation component also helps Japan maximise its ability to meet the Kyoto commitments, contributes to global climate change objectives, and maximises opportunities for cooperation among policy-makers and business circles in Japan and developing countries.

Limited understanding of climate change issues is a major barrier in designing pragmatic policies. Our efforts were, therefore, first directed to enhancing dialogues among various stakeholders in developing countries. At first, with cooperation from the United Nations Environment Programme's (UNEP) Collaborating Centre on Energy and Environment (UCCEE, Denmark), the Energy Research Institute (ERI) of China, the Korea Economics and Environment Institute (KEEI) of South Korea, The Energy and Resources Institute (TERI) of India, the Thailand Environment Institute (TEI), the Environment Agency of Vietnam, and the Environment Ministry of Cambodia, bilateral workshops on the theme of "Climate Policy Dialogue in Asia" were held in China, South Korea, India, Thailand, and Vietnam. At each workshop, a detailed analysis of climate change issues was made, along with discussions on each country's specific needs to mitigate global warming and the common challenges facing policy-makers across Asian countries. The results from this series of workshops were published as a report entitled "Climate Policy Dialogue in Asia" (IGES, August 2002). It was widely distributed at international conferences such as the World Summit on Sustainable Development (WSSD) and COP8. The dialogues also served as a forum for preliminary discussions on the role of developing countries in future commitment periods. Side events were held at both COP7 and COP8 to discuss findings from the policy dialogues in Asia. Based on consultations in the above stakeholder dialogues, it was concluded that further efforts to promote information outreach in the region in the climate policy arena are critical. Country-specific climate policy fact sheets are considered a useful medium to fill this gap. A presentation on IGES climate policy dialogues and the utility of fact sheets was made at the World Climate Change Conference held in Moscow (29 September–3 October 2003).[10]

In addition to bilateral workshops, an international workshop titled "Climate Policy of Asia" was held to exchange information and conduct comprehensive and integrative discussions on climate change issues and policies in Asia. Many specialists and government officials from both within and outside Asia attended the workshop, and a wide range of issues such as the energy forecast of Asia, GHG emissions profile, and domestic climate policies were discussed. Extensive discussion was also held on challenges that a researcher or government representative will face in the next few years. A CD-ROM report, *Climate Policy of Asia*, was produced as a result of the conference and distributed on various occasions including COP8 and COP9.

In order to analyse the obstacles and opportunities for regional cooperation in implementing the Framework Convention on Climate Change by the four countries of the Northeast Asia Region (Japan, South Korea, China, and Russia), the CP Project conducted an international collaborative research programme entitled "Policy Design of Climate Change Collaboration in Northern Asia" with ERI, KEEI, the Russian Academy of Sciences, Asia Pacific Energy Research Centre (APERC), and other research institutes. In addition to conducting a qualitative analysis of the potential and outcomes of cooperation in Northeast Asia, the project completed a quantitative analysis using the IGES Greenhouse Gas Emission Models for Asia (GEMA). The research results (a final report and workshop proceedings) were published as a CD-ROM—*Policy Design of Climate Change Collaboration in Northern Asia* (March 2002). The report was also posted on the IGES Web site. The above-mentioned study on

10 Srinivasan, A., Nishioka, S., and Morishima, A. 2003a. Climate policy fact sheets for Asia and the Pacific: A new IGES initiative for climate information outreach. Abstracts World Climate Change Conference. 106–107.

———. 2003b. Climate policy dialogues and fact sheets: IGES initiatives for information outreach in Asia and the Pacific. Proceedings of the World Climate Change Conference. 12pp. (in press).

the potential of Northeast Asian regional cooperation was published as a research paper, which was acclaimed to be spearheading research in this field,[11] and as part of a book.[12]

Since the discussion on ways to implement the Kyoto Protocol was opened up following the adoption of the Marrakech Accord at COP7, the CP Project, in collaboration with Japan's Ministry of Foreign Affairs, held an informal international symposium in July 2002 to explore the role of international cooperation in climate policy. The symposium was recognised for its contribution to the promotion of Japanese diplomacy in the field of climate policy.

In December 2002, IGES hosted a workshop entitled "Energy Modelling for Climate Change Countermeasures" with the participation of energy modelling researchers from all over Asia to exchange information on energy policies, energy demand and supply models, possibilities for the development of an integrated energy model, and modelling techniques in Asia. This workshop was widely considered as a new attempt to focus on energy modelling that incorporated special characteristics of Asia. Participants of each country, therefore, expressed strong desire for such meetings to be held on a regular basis in the future.

At both COP8 and COP9, it was pointed out that promoting informal dialogue with developing countries is fundamental to achieving global participation. Our staff therefore examined concrete cases of win-win solutions in promoting knowledge/technology transfer in order to further enhance the dialogue between developed and developing countries. The CDM is considered a win-win strategy aimed at reducing GHG emissions while promoting sustainable development in developing countries. Our initial work in this phase focused on the methodological issues of the CDM, which was appreciated worldwide. An output of such work on the reality and development of the CDM baseline setting was posted on the IGES Web site as a working paper. We are also pleased to report that a project design document (HFCs decomposition project in Ulsan, Korea), prepared with the help of a former staff member (currently a visiting researcher), was accepted by the CDM Executive Board. As part of the IGES-Wuppertal Institute joint symposium, held in Berlin in October 2003, one of our researchers discussed opportunities for creating a market and enabling environment for the CDM in Asia.

Because the CDM is now entering the implementation phase, building the capacity of policy-makers, the private sector, and academia in Asia is vital. Building capacity can increase the chances for the transfer of clean technologies and finances to mitigate climate change, thereby contributing to a range of benefits, including reduced air pollution, improved natural resource management and, of course, the mitigation of climate change impacts. The success of the CDM, and therefore the ability of Japan to benefit from it, rests on the capacity of Asian developing countries to develop and screen CDM projects. At the request of the MOE, our researchers designed a framework for a new project on integrated capacity strengthening for the CDM that focuses on three sectors: waste management, biomass and renewable sources of energy, and small-scale integrated CDM projects. Various capacity-building activities were initiated in 2003 in Cambodia, Indonesia, India, and the Philippines, in collaboration with various local organisations (e.g., TERI, Winrock International and Development Alternatives in India, and Pelangi and YBUL in Indonesia) and national and international organisations (e.g., UNEP, UNDP, World Bank). In order to publicise this activity and build further networks with organisations sharing mutual interests in the CDM field, a side event entitled "CDM in Asia: Opportunities and Obstacles" was held at COP9 in Milan in December 2003. This event was successful both in terms of attendance and presentation contents. At this event, our researchers discussed "methodological and technological barriers for CDM implementation in Asia" and an "IGES initiative on integrated capacity strengthening for CDM in Asia." In addition, one of our researchers made a presentation at the Climate Technology Bazaar, held in Delhi, India, on Japan's policy to operationalise the CDM. Our staff also directed the work of an intern from Kyoto University, who examined various barriers for capacity building for the CDM in Asian countries and the ways to close the gap between Asia

11 Takahashi, W. and Asuka, J. "The Politics of Regional Cooperation on Acid Rain Control in East Asia," *Water, Air, and Soil Pollution*, 130: 1837-1842, 2001.

12 Takahashi, W. 2002. "Problems of Environmental Cooperation in Northeast Asia: The Case Study of Acid Rain" pp. 221-247. In: International Environmental Cooperation: Politics and Diplomacy in Pacific Asia, Paul Harris (ed.) University Press of Colorado, USA.

and Latin America in terms of CDM information outreach and implementation activities. A working draft of her work is nearing completion. A presentation on the capacity-building needs of Asian countries, based on missions to Indonesia, Thailand, Cambodia, and India, was made at the 13th Asia-Pacific Seminar on Climate Change in Miyazaki, Japan. In addition, a visiting researcher from the Energy Research Institute of China analysed CDM potential in China, investigated various barriers for CDM cooperation between China and Japan, and suggested measures to promote effective technology transfer. She pointed out that enhancing dialogue between the private sectors of Japan and China is vital for promoting CDM cooperation.

Photo 1. COP9 side event "CDM in Asia: Opportunities and Obstacles" (Milan, Italy, 5 December 2003)

Financing climate change mitigation projects in developing countries will continue to be an important area in climate policy. We focused some of our research in this area, especially in 2001. A report based on this work was published in an international journal.[13]

a. International cooperation in GHG inventory preparation

Starting from its first research phase, the CP Project attempted to improve the GHG inventories of various countries in Asia, as part of a three-year project (1999–2001) funded by Japan's Ministry of Environment. This activity was intended to support and contribute to the activities of the Technical Support Unit (TSU) of the Intergovernmental Panel on Climate Change (IPCC) National Greenhouse Gas Inventories Programme established at IGES in September 1999.

The Asia-Pacific region inventory researcher network, which is an outcome of our project in its first phase, was fully utilised in the second phase to promote experimental research and focus discussions on emission sources and sinks of high priority in various countries. Significant research results were obtained and several recommendations were made to the IPCC. For example, in the field of land use and forestry, researchers of three Southeast Asian countries (Thailand, the Philippines, and Indonesia) collaborated and collected various data on

13 Zhong Xiang, Z. and Maruyama, A. 2001. Toward a private-public synergy in financing climate change mitigation projects. *Energy Policy* 28/15, pp.1363–1377.

forest carbon, and then evaluated and improved the biomass volume (carbon stockpile) estimation model using allometric growth measurement formulae. In the field of agriculture, they examined recent research on estimation methods of GHG emissions from rice cultivation, and contributed to the discussions at the IPCC for further improvement of the estimation method.

An international workshop on GHG inventories was held at IGES (Hayama, Kanagawa Prefecture) on 17–18 January 2002 to summarise the activities of the three-year project (1999–2001). At this workshop, besides presenting the research results of three years and sharing knowledge with inventory specialists from Asian countries, topics were discussed such as "The Application of Good Practice Guidance and the Priorities for Future Research," "Challenges to Create a GHG Inventory from the Standpoint of the Institution, Methodology and Organisation," and "The Role of the Specialist Network Now and in the Future (The importance of Asian initiatives and the active participation of specialists from Asia)." The workshop greatly contributed to the diffusion and exchange of useful information and knowledge on the improvement of GHG inventories in Asia. Research outcomes of various participants were published in academic journals, and their papers were compiled as a report of the workshop.

The need to develop and strengthen local know-how and expertise in GHG inventory preparation on a continuing basis is critical in developing countries. As part of this project in this phase, we hosted a Cambodian researcher and trained him in various aspects of GHG inventory preparation. We are glad to report that his training at IGES helped him in part to reach an important position within Cambodia's Ministry of Environment. Additional work on GHG inventories was stopped largely because the Technical Support Unit of the IPCC at IGES and the National Institute for Environmental Studies (NIES) took over this function.

1.2.3. Vulnerability and governance issues

COP6 and COP7 of the UNFCCC established the Adaptation Fund, Special Climate Fund, and the LDC Fund for National Action Plan for Adaptation (NAPA) and delegated the management of these funds to the Global Environment Facility (GEF). The GEF has been working with its implementing agencies (UNEP, UNDP, World Bank) on the formulation of investment strategies and has been requesting advice on technological issues from the Scientific and Technical Advisory Panel (STAP). The leader of the CP Project was appointed to be the chief of the adaptation policy study at STAP, and he chaired the brainstorming sessions and workshops which gathered together experts, including the chairman of the UNFCCC Subsidiary Body for Implementation (SBI) and Subsidiary Body for Scientific and Technological Advice (SBSTA) at that time. The report of the workshop was submitted to the GEF.

In December 2002, the project organised a capacity-building workshop that included adaptation policy for developing countries, and conducted a training programme for policy-makers from Cambodia, Laos, and Vietnam. Since adaptation to climate change is often site-specific, the importance of local knowledge in designing relevant adaptation policies can't be overstated. Initial research along these lines on ways to shift the paradigm of adaptation policy from the present "top-down approach" to the "bottom-up participatory approach" was presented at the 12th Asia-Pacific Seminar on Climate Change (Bangkok, Thailand, July 2002).

A field survey was conducted in Bangladesh in July and August 2003 to examine the utility of local assessments of vulnerability and identify ways to integrate indigenous knowledge in climate change adaptation plans. Findings from this survey were recently presented at the Open Meeting of the International Human Dimensions Programme (IHDP) held in Montreal in October 2003. A summary of the presentation was published in a recent *IHDP Newsletter* (04/2003). As mountain ecosystems are one of the highly vulnerable regions affected by climate change, an international workshop entitled "Adaptation to Climate Change in Mountain Ecosystems: Bridging Research and Policy" was held in March 2004 in Kathmandu, Nepal. Our researchers made a presentation on approaches to integrate local knowledge into adaptation policies. As part of collaboration with IGES' RISPO (Research on Innovative and Strategic Policy Options) sub-project of the LTP (Long-Term

Perspectives and Policy Integration), several indigenous practices aimed at enhancing adaptation to climate extremes (droughts, floods, and sea level rise) were identified.

In the later part of the second phase, our researchers began to look at governance issues.[14] For example, one of our visiting researchers looked at the global climate change regime building process and its relation to domestic capacity and regional organisation, and a report based on his work was published in a book.[15] As per COP guidelines, discussions on the creation of an international framework applicable after the Kyoto Protocol are supposed to start in 2005, and many people have already started such research. Although this issue will be the main research theme for the third phase, basic research was initiated in fiscal year (FY) 2003. We conducted an open symposium for Japanese stakeholders and an informal expert consultation on post-Kyoto issues in Tokyo in October 2003. The symposium was well attended by over 300 participants representing various sectors of society. In order to publicise our research and establish a cooperative research framework with various organisations, we organised a side event at COP9 in Milan entitled "Climate Regime beyond 2012: Incentives for Everyone." At this event, we released a preliminary publication on the incentives for global participation in collaboration with NIES.[16] Six out of eight reports in this publication were prepared by our researchers. Our researchers, in collaboration with NIES, published a summary report on important side events related to post-Kyoto discussions held at COP9.[17] As part of our discussions with U.S.-based think tanks (e.g., Resources for the Future), we jointly organised a U.S.–Japan workshop on post-Kyoto issues in February 2004. At the request of Japan's MOE, our researchers provided relevant data, information digests, and other summary reports as a base for discussions on post-Kyoto issues by the Global Environmental Committee of the Central Environmental Council.

Photo 2. COP9 side event "Climate Regime beyond 2012: Incentives for Everyone" (Milan, Italy. 3 December 2003)

14 Kanie, N. 2003. "Johannesburg Summit and Governance for Sustainable Development." *Environmental Research Quarterly*, Vol. 128, pp.37–44; Kanie, N and Haas, P.M. eds. 2004 (in press). Emerging Forces in Environmental Governance. United Nations University Press: Tokyo.

15 Kanie, N. 2003. "Domestic Capacity, Regional Organization and Global Climate Change Regime Building Process," in Michael Faure, Joyeeta Gupta and Andries Nentjes eds., *Institutions and instruments to control climate change: Kyoto and after*. Edward Elgar: U.K.

16 IGES-NIES. 2003. Climate Regime beyond 2012: Incentives for global participation.

17 Kameyama, Y. and K. Tamura (eds.) 2004. Summary report on COP9 side events related to post-Kyoto climate policy architecture. 16pp. (in Japanese).

Significant progress was also seen in terms of strengthening partnerships with other institutions working on post-Kyoto issues. For instance, our researchers participated in discussions led by the Stockholm International Institute (SEI) and contributed to a joint proposal on post-Kyoto issues submitted by 15 organisations to the Swedish Ministry of Environment.

1.2.4. Others

Several commissioned works were undertaken at the request of various ministries in Japan.

Compliance issues: Despite the adoption of the Bonn Agreement and Marrakech Accords, which both include compliance mechanisms and procedures, parties have different views on the nature of compliance mechanisms and procedures (legally binding or not). Since the definition of legally binding compliance procedures is diverse even among international law scholars, Japan's Ministry of Environment (MOE) requested IGES to prepare a report in order to help Japanese policy-makers negotiate better on this issue, and the findings of the work were summarised in a report.[18]

Environmental information disclosure: On 30 October 2001, the Aarhus Convention on access to information, public participation in decision-making, and access to justice on environmental issues came into force. It would result in a change of information disclosure laws on environmental issues in countries ratifying the Convention. Responding to the awareness on information disclosure on environmental issues raised by the Aarhus Convention (UNECE Convention), the MOE requested IGES to examine the current information disclosure laws in major countries, including the United States, Germany, and Japan, and the findings of the work were summarised in a report.[19]

In addition, at the request of the MOE, several reports were compiled to assist Japanese policy-makers (e.g., Framework for Creation of a National Registry in Japan under the Kyoto Protocol [2002]; Achievements of WSSD with Regard to Climate Change [March 2003]; Prospects of Domestic Climate Change Policy in Japan, [March 2003]; Current Status of International Negotiations on Climate Policy: UNFCCC Achievements [March 2003]). At the request of the Ministry of Agriculture, Forestry and Fisheries of Japan, training course materials on the CDM related to afforestation/reforestation were prepared. And as part of the commissioned work from the Ministry of Education, Science and Technology, our researchers prepared a comprehensive review of domestic emissions trading in the U.K.

1.3. Degree of attainment of the objectives

Most of the objectives set at the beginning of this phase were accomplished in all sub-themes. However, progress was inadequate in areas such as the role of Japanese businesses and GHG inventory aspects. Reasons for the inadequate progress were already discussed in Section 1.2. In some areas such as post-Kyoto issues, however, progress was beyond original expectations—leading to the creation of a sound framework for further research in the third phase.

2. Self-evaluation of the project

2.1. Evaluation of achievements

2.1.1. Impact on the policy formulation process

The CP Project disseminated its research outputs and outcomes and influenced policy both directly and indirectly through various domestic and foreign channels in different ways. The research was reported to an academic

18 A report of study group concerning compliance procedures and mechanisms for the Kyoto Protocol (2003) Ministry of Environment.

19 A report of study group concerning environmental information disclosure (2003) Ministry of Environment.

audience via papers in relevant journals and to a stakeholder audience via reports, workshops, and contacts with policy-makers. One major opportunity for the CP Project to influence policy research in Japan is through Prof. Akio Morishima, the Chair of the IGES Board of Directors, and Shuzo Nishioka, CP Project Leader. Prof. Morishima is also the chairman of the Central Environment Council and plays a leading role in formulation of Japan's climate policy. Based on thorough discussions with our research staff members at regular intervals, both the chair and the project leader not only direct research of our members but also convey specific outcomes of our research to various policy discussions held in Japan and internationally. Both of them attend not only the IGES Climate Policy Dialogues held in various Asian countries but also important international conferences held by organisations such as the UNFCCC, Association of Southeast Asian Nations (ASEAN), United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), and the Asia-Pacific Forum for Environment and Development (APFED). Through such activities, the outputs of our research are strongly reflected in policy decisions.

As a member of the Central Environment Council, Dr. Shuzo Nishioka, Climate Policy Project Leader, also actively makes recommendations to its Earth Environment Sub-Committee based on IGES research. He chaired the Sub-Committee for the Investigation of Greenhouse Gas Reduction Scenario and analysed the technical potential of Japan to achieve the Kyoto Protocol's target, which became the basis of another report entitled "Re-examination of Guidelines of Measures to Prevent Global Warming" (2002). Dr. Nishioka gave a private one-hour briefing to Japanese Prime Minister Mr. Koizumi, prior to his meeting with U.S. President George Bush, on scientific and policy aspects of global warming and the stance that Japan should take in future. After his meeting with the president, the prime minister stated in an interview that he was able to clearly explain Japan's stance to President Bush. As chief of the policy research group of Climate Change Research Initiatives, which was set up under the Council for Science and Technology Policy, where Prime Minister Koizumi serves as chairman, Dr. Nishioka organised a dialogue between policy-makers and researchers. At the international level, Dr. Nishioka took the lead in designing climate change adaptation policies as a member of the Scientific and Technical Advisory Panel (STAP) of the GEF, and contributed to discussions on effective ways to use the International Environmental Funds. These activities were partly based on our research.

Research by the CP Project is action-oriented, in that it not only promotes research but also uses research outcomes to actively participate in decision processes to prevent global warming and to promote formulation of appropriate policies. For instance, our project staff participated in a number of research committees of the Ministry of Environment, Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry, Ministry of Agriculture, Forestry and Fisheries, and research groups hosted by industrial circles, where they presented their research.

The project regularly holds a seminar after COP meetings and publishes an interim analysis of international climate policy. Moreover, the IGES Climate Policy Open Forum, which always receives over 150 participants, including policy-makers, researchers, industrial circles, and non-profit organisations, is now recognised as an established forum in Japan to exchange diverse views on climate policy.

At the request of Japan's Ministry of Foreign Affairs, the CP Project organised an informal meeting of climate change experts in 2002, using its close network of researchers and policy-makers. Our presentations and discussions at the workshop were highly valued by one and all. Internationally, too, the CP Project held five policy dialogues targeting various Asian nations and deepened the understanding of policy-makers in developing countries toward climate change, thereby contributing to capacity building in the region. Many researchers and policy-makers in the region informed us that the discussions at these dialogues were helpful in formulating their own domestic policies. For example, we understood that our dialogues in Korea helped their negotiators fully examine the implications of unilateral CDM and prospects for setting dynamic targets for developing countries.

Our researchers participated in discussions on post-Kyoto issues with several policy-makers. Although research on these issues will be mainly conducted in the third phase, our staff provided concrete suggestions on ways to

engage various countries in different ways in order to ultimately achieve global participation in the climate regime. As the CDM is now entering the implementation phase, our researchers have recently designed a framework for a three-year capacity-building programme for the CDM in Asia at the MOE's request. Many international organisations and institutes in Asia expressed interest in collaborating on this initiative. The CP Project thus disseminated its research and influenced policy through various foreign and domestic channels in different ways.

2.1.2. Response to research needs

The CP Project conducted several side events at each COP meeting of the UNFCCC and these events were well attended by policy-makers, negotiators, and researchers. Our staff also contributed to discussions of associations such as RINGO, of which IGES is a member. This project has promptly provided useful and practical information for policy formulation by tackling cutting-edge issues in cooperation with various organisations. Internationally, the project follows the discussions at COP/SBSTA/SBI meetings, and always sets up future-oriented research topics (e.g., post-Kyoto issues) in close collaboration with policy-makers. At the request of the Japanese government, the project researchers served as members of the Japanese delegation at COP and took charge of some UNFCCC negotiations as representatives of the country. The researchers also disseminated their knowledge on climate policy in response to the needs of business circles or local governments and held talks regularly with MOE policy-makers, and they established a system that can conduct research on priority issues at any time. As well, a system to facilitate quick action in response to research needs was firmly established.

2.1.3. Originality, creativity, and effectiveness

The main characteristic of the CP Project's research is its integrative, strategic, and action-oriented research style, which takes into account the rapidly changing trends and developments in international climate policy. The research targets of the project are set in accordance with the COP schedule. The project also promotes activities to advance policy formulation and identify new research needs through organising various interactive meetings and workshops.

The merit of an independent research organisation such as IGES is its ability to promote interdisciplinary research and make recommendations that can integrate the policies of individual government agencies (for example, the package proposal on domestic policy measures is one form of its research outcomes). The CP Project has thus established a niche and comparative advantage as one of the major environmental policy research units in Asia.

2.2. Evaluation of project management

During this phase, the project made headway in all five critical aspects of project management: team competence, project effectiveness (in terms of cost, time, and quality), implementation planning, end-user satisfaction, and risk management. One of the characteristics of our team members is diversity of expertise and adequate representation of both natural and social sciences. Team formulation, alignment, and coordination to achieve the project goals have been satisfactory. Discussions with various stakeholders of our research indicated that most stakeholders were satisfied with our achievements. The strong interest expressed by various organisations both in Asia and other continents to collaborate with us is an indication of their satisfaction. The project also made progress in terms of creating a project management framework that yields high performance with a quality service to its stakeholders in the long run.

The CP Project seems to have met up to 80 percent of its original objectives. It initially planned to undertake research on the promotion of policies for the business/industry sectors for prevention of global warming, but could not complete it due to lack of suitable manpower. IGES' Kansai Centre is now taking up this research by focusing on environmental management in business enterprises.

Human resource efficiency was about 90 percent. Personnel changes were severe during this phase, as one researcher joined the United Nations Environment Programme (Paris), another took up a position at a university, and a leading senior researcher became an independent consultant in the middle of the phase. However, a few new researchers were hired later in the phase, and they are performing well and producing good results.

Regarding results from an academic viewpoint, the research performance was not adequate. The submission of one or two papers to academic journals in a year is usually encouraged; but activities such as workshop presentations kept everyone busy, so few results were put into paper form. On the other hand, in regard to our contributions to policy promotion, the accomplishment rate was 90 percent.

The CP Project made intensive efforts to acquire external funding in this phase. In total, the project received nearly 105 million yen from external sources out of a total budget of 401 million yen for the entire phase. For example, the project received a research grant from Japan's Ministry of Education, Culture, Sports, Science and Technology (about 8 million yen each year from 2000–2003, Design of Kyoto Mechanisms), the Asia-Pacific Network for Global Change Research (APN) (about 6 million yen each year for 2000 and 2001, North Asia Regional Cooperation), and the Ministry of Environment (about 8 million yen each year from 1999–2001, Asia GHG Inventory). In 2003, we received another three-year competitive grant from the MOE for joint IGES-NIES research on post-Kyoto issues (IGES allocation is about 7 out of 26 million yen each year). There are many other research grants for IGES on climate change besides these research funds, and they are managed by the General Affairs Department. For example, IGES received funding from the Ministry of Foreign Affairs for organising the "Informal Meeting of Climate Change Experts."

In addition, many other joint outreach activities (e.g., climate policy dialogues, capacity-building workshop in Cambodia, workshops on climate change and sustainable development held in Korea) were supported by funds from other organisations such as UNEP-RISO, Korea Environment Institute (KEI), and others. These contributions were not reported, as they were mainly for joint activities in other countries. In-kind contributions from several developing country institutions in Asia were also received, but these are difficult to valuate in pure economic terms.

All in all, it is no idle boast to claim that the CP Project may be considered as IGES' "flagship" project. During this phase, the CP Project's profile has grown significantly in Japan and in the international community, particularly in the areas of climate policy dialogues and international cooperation. Our staff successfully provided policy inputs to both domestic and international climate policy discussions on various matters; for instance, Japan's domestic policies, the technical and methodological issues related to the Kyoto Mechanisms, international cooperation, and capacity building. Gradually, our staff members are getting involved in proposing joint initiatives with partners in other institutions around the world.

3. Conclusion

The main purposes of our work in this phase were to propose a coherent and comprehensive policy mix for Japan to attain the Kyoto targets, identify effective measures for promoting international cooperation in Asian climate policy, and lay the foundation for further work on post-Kyoto issues and adaptation policies. Substantial progress was made in meeting all these goals. Our research showed that Japan needs to implement a broad portfolio of measures and policies step-by-step to achieve both cost effectiveness and environmental efficiency. In terms of international cooperation, our work showed that further work on implementation issues of the CDM, including capacity building, is critical. Through conducting a number of workshops and policy dialogues, our project was successful in raising the general awareness and knowledge among planners and policy-makers on climate change-related issues in the region and, subsequently, a regard for such issues in policy-making and development planning of the various sectors. Besides stimulating discussions among policy-makers, industry, the general

public, and other stakeholders, our workshops contributed to promoting public knowledge of policy issues and options in Asia.

Our work on vulnerability issues showed that several policy options could be built with bottom-up approaches, wherein local knowledge could be integrated with adaptation policies. The work on post-Kyoto issues demonstrated the urgency and need for identifying critical incentives necessary to achieve global participation in the future climate regime. Our work also strengthened the existing collaborations and institutional networks, and contributed to both institutional and individual capacity building in the region. A self-assessment of key performance indicators of the project (timeliness, response to stakeholder needs, completion of planned activities, attainment of outputs, impacts on local and international policy, and cost performance) showed that the CP Project made satisfactory progress in all areas. The long-term nature of the challenge of climate change indeed requires long-term efforts to design coherent and durable policy options that can maximise environmental protection and sustainable development in Asia. Building on our accomplishments and progress so far, our project is well positioned to contribute to meeting this challenge in future.

Urban Environmental Management Project

Prof. Hidefumi Imura
Project Leader

1. Overview

1.1. Background

Rapid economic growth and increasing urbanisation have become typical characteristics of the cities of Asia. Industrialisation is the major driver of economic growth in many countries. The more developed cities of Asia have been undergoing a shift to a more materially balanced society, whereas the still developing cities are undergoing a process of increasing industrialisation. Substantiating this pattern, the changing trends of market globalisation are bringing about considerable change in the environmental status of these cities. Cities of the region testify to these changes with contradicting aspects of economic development and environmental degradation. Economic growth, on one hand, causes various environmental problems, but on the other hand, it enhances the capability of making investments and mobilising resources that are necessary for overcoming such problems. With cities at various stages of economic growth and industrialisation, Asia is essentially experiencing an increasing consumption of energy and materials and the resulting environmental problems. The trends of energy consumption and emissions need to be understood to a greater degree in order to develop future policy options and control measures with the necessary precision.

Spatial growth is another characteristic of these cities that is driving the environmental changes, and understanding the trends of such growth, especially in peri-urban areas, is important for growing cities and their environmental management. Poor environmental infrastructure has been the root cause of many environmental problems, which is observed in many Asian cities, due to the status of economic growth and differential competing priorities. Under these circumstances, cities have to resort to innovative mechanisms in order to cater to the need for improved urban environmental infrastructure in order to achieve better urban environmental management. Understanding the best environmental practices and adapting lessons from successful practices to other similar cities is a key, and requires substantial networking at the city level as well as the national level. Given these needs, the Urban Environmental Management Project (UE Project) in the second phase made efforts to understand the situation in Asian cities and tried to develop innovative mechanisms to substantiate environmental management and urban environmental infrastructure. The project also carried out a study on successful practices in order to improve urban environmental management with extensive networking among cities.

1.2. Goal and targets

1.2.1. Objective

The goal of the UE Project is to propose and examine innovative ideas and models, and also to provide a baseline for improved urban environmental management policies for the cities in Asia placed under diverse economic and social conditions. To achieve this goal, the UE Project conducted research in the second phase, based on comparative analysis and evaluation of the present conditions and past experiences of urbanisation as well as environmental problems in Asian cities. The research conducted in this phase was tailored towards showing examples of policy options, institutional systems, technical options, urban planning, infrastructure development, and financial mechanisms for better urban environmental management. In this phase the UE Project attempted to achieve this by using the information set generated in the first phase as background material. As a mechanism to

"trickle down" the impacts of the research results, the UE Project, in association with the Kitakyushu Initiative Network (KIN), compiled information on successful experiences of urban environmental management in the cities of Asia and the Pacific, and then analysed and disseminated it among various actors, including city authorities.

1.2.2. Issues addressed

The UE Project has employed continuous efforts, executed under different phases, in understanding the historical development and trends of various important aspects of urban environmental management, comparing situations across countries/cities of varied socio-economic status, and promoting the successful experiences for improved urban environmental management. It cuts across various sectors of urban development, viz. transportation, water and wastewater, and solid waste management. Based on the background information given in the previous section, the second phase of the project was focused principally on the following three themes:

1. study on the dynamics of urban environmental processes to draw-up policy suggestions for improved environmental management and urban environmental infrastructure;
2. urban policy integration of energy-related environmental issues in selected Asian mega-cities; and
3. support for the implementation of the Kitakyushu Initiative Network.

Each of these issues involves complex analyses cutting across sectors and domains. Hence, in order to achieve greater depth in analysis and meaningful conclusions, these themes were further broken down into the issues listed below while they were examined by the group of IGES-UE researchers in collaboration with outside expert teams and collaborators. Research and programme results are then presented according to this segregated set of issues:

a. integration of urban planning, spatial, regional industrial, and urban policies to minimise the negative impact of rapid urbanisation;
b. public-private partnership in improving the intangibility of urban environmental infrastructure;
c. examination of energy consumption patterns and emission patterns from mega-cites in Asia, and integration of energy-related policies;
d. development of indicators for the evaluation of urban environmental polices and review of existing indicators; and
e. documentation and analysis of best practices of different cities in Asia and the Pacific and capacity enhancement for local environmental management under the Kitakyushu Initiative.

1.3. Research methodology and approach

The set objectives of this project were achieved by means of a number of case studies and cross-cutting synthesis to formulate the broader framework. The UE Project identified a team of international researchers from various representative cities in Asia to carry out the case studies, which covered various cities. The accomplishment of the case studies was centred around a common framework developed by the in-house IGES-UE team of researchers. Collaborators came from various domains—universities, academic institutions, non-governmental organisations (NGOs), and government departments—and the selection depended, in part, on their familiarity with local conditions, including the prominent environmental problems and their characteristics.

In-house UE Project researchers were responsible for carrying out specific research tasks, as well as synthesising the research carried out by collaborators under their instructions, in order to draw up policy implications and recommendations, and to provide coordination for the activities undertaken by the case study teams. All the major findings from the specific case studies and cross-cutting synthesis were analysed and compiled into a comprehensive strategic report.

Fulfilling the objectives of this project required active dialogue between multi-stakeholders and capacity-building activities. As an attempt to achieve the strategic targets set out for the project, various capacity-building activities, information outreach, and multi-stakeholder dialogues were conducted throughout the project by organising international seminars and workshops, training programmes, and thematic seminars, whose details are presented in Table 1 at the end of this report.

This report presents in a comprehensive way the issues addressed by the UE Project and the key observations made at the end of the study.

1.4. Major findings

This section presents the major research findings and observations made, based on the activities carried out under this phase of the project (2001–2003).

1.4.1. Integration of urban planning and special regional industrial and urban policies to minimise the negative impacts of rapid urbanisation

This part of the UE Project focused on examining the environmental implications embedded in the recent spatial expansion (or sprawling) of Asian mega-cities, as well as exploring the role of planning practices in addressing urban environmental problems. Through sharing experiences and lessons of urban environmental management across Asia, the IGES-Korea Environment Institute (KEI) workshops were held in Seoul, Korea, with the aim of facilitating a cross-country analysis on the changing nature of urban environmental problems and to explore possible solutions from planning practices guiding sustainable urban development in Asia.

Expansion of city boundaries is a common phenomenon noticed in Asia for the last few decades. Several Asian mega-cities continue to expand their spatial boundaries to suburbs, peripheries, and even to peri-urban areas in order to cater to high population growth rates as well as migration. In Bangkok, one of Southeast Asia's mega-cities, along with a rapid growth of the urban population, the city's built-up area mushroomed from 67 square kilometers in the late 1950s to 426 square kilometers in the early 1990s. After the introduction of an open-door policy, the Chinese capital city, Beijing, more than tripled in size, growing from more than four million people in 1958 to nine million by the early 1980s, and then to nearly 14 million today. To accommodate the influx of population, the city continued to expand its geographical boundary, along with the construction of transport infrastructure. The government continued to build concentric beltways that radiate out from the city centre. In addition to the existing second, third, and fourth ring roads, the city plans next year to complete a fifth one, a 95-kilometer (km) asphalt ribbon. In 2005, engineers intend to complete a sixth ring road, measuring 189 km around, and there are already plans for a seventh ring road. Such is the lightning-speed pace of change in Beijing in social, economic, and political terms.

The driving forces underlying such land-consuming sprawl in metropolitan areas in Asia vary from city to city. In the Seoul Metropolitan Region (SMR), the sustained primacy of socio-economic and political activity has contributed greatly to such spatial expansion at the metropolitan scale, while in China rapid economic growth based on the market economy is regarded as the major underlying force. The spatial configuration of the extended periphery of the Bangkok Metropolitan Region (BMR), where affluent residential subdivisions for urban middle-class and foreign executives and labour-intensive manufacturing industries reside, was significantly affected by foreign direct investment (FDI) and a property boom in the early 1990s.

Regardless of the nature of the driving forces underlying such spatial expansions of Asian mega-cities, the peripheries of these metropolitan areas are being rapidly filled with newly built residential towns, industrial estates, and other facilities. Although the reckless expansion of these mega-cities has been considered unavoidable under strong developmental pressures, such as the lack of housing and other urban facilities, it induced unintended spill-over of environmental degradation across metropolitan areas.

As a consequence, these Asian "extended metropolises" impose a greater environmental burden on their periphery as well as their city core by exposing their inhabitants to traffic congestion, extended commuting distances, uncontrolled expansion of urban fringes, and great loss of greenery and natural habitats. In addition, the polluting industries relocated from the inner core are widely blamed for being the stationary source of air and water pollution. Furthermore, uncontrolled land development and intense pressure from square settlements on open spaces in the periphery are increasingly becoming apparent. Facing the sprawling growth of urban and suburban areas throughout Asian mega-cities, the primary measures of urban environmental management are sector-specific approaches such as air pollution control, water treatment, and waste management. These conventional measures, using sector-specific approaches, appeared somewhat effective in the short-term in mitigating urban environmental problems, but they revealed their own limitations in the long-term. In reality, several conventional sector-specific approaches merely comply with the minimal level of urban environmental demand due to poor financial capacity. In addition, the majority of municipal governments responding to these urban environmental problems are primarily dependent on conventional measures (command-and-control framework, reactive measures, and demand-following policy) due to several constraints that the Asian cities are encountering so far.

Because of the interdependent interaction of urban environmental load between core and periphery, it is increasingly becoming apparent that the remedy of these environmental problems should be explored at the metropolitan scale, not by singling out administrative or municipal boundaries.

The failure of the city government in controlling the water quality of the river running through the core of Seoul, in spite of its continued efforts, explains the need to take the "metropolitan" approach to environmental management of cities. Until recently, it was widely assumed that the core city or a few urban centers were in better environmental condition at the expense of environmental degradation in their peripheries. But this example proves this to be the opposite.

Owing to the dominance of socio-economic and political powers, it was often witnessed that polluting industries in the city core were forced to move beyond the boundary of Seoul. While the core of the SMR enjoyed to a greater extent an improvement in air quality, especially the level of stationary pollutants, including sulfur dioxide (SO_2), it turned out to be a short-sighted prospect, because these relocated industries were consequently blamed for contaminating not only the fringes but also the core of the metropolitan region. According to a recent survey by the Ministry of Environment in Korea, seventeen towns neighboring the city of Seoul recorded much higher concentrations of SO_2 and ozone compared to the SMR core, and these airborne pollutants had adverse effects on air quality in the core.

The lessons drawn so far from these changing landscapes of urban environment embedded in Asian metropolitan areas include recognition of the legitimate and urgent need to take the "metropolitan" approach to the environmental management of cities, and also that the municipalities need to find more sound approaches that not only prevent environmental distresses but also create environmentally sound urban structure. In other words, from the perspective of sustainable urban environmental management, the key matter should be not only accommodating the rapidly growing demand of urban environmental services but also creating or inducing environmentally-sound urban spatial structure that restrains potential environmental loads (for instance, air pollution due to traffic congestion) in the long-term.

The potential cost-effectiveness and relevance of a wide array of planning practices (including growth management, urban inclusive guidance, environmental zoning, and transportation demand management, etc.) should capture the intensive attention of policy-makers, planners, and practitioners. In fact, in the last few decades, the role of planning practices has expanded from more narrow considerations of land use and zoning to a broader set of concerns with an emphasis on "growth management." Such a shift assists planners in examining the causes and impacts of urban growth more systematically, ultimately adopting more comprehensive approaches and strategies for managing or controlling spatial growth.

1.4.2. Public-private partnership in improving the intangibility of urban environmental infrastructure (UEI)

Development of urban environmental infrastructure (UEI) plays an important role in improving the performance of certain environmental services like water supply, sanitation, and solid waste management. Though public-private partnership (PPP) could be effectively used in certain sectors, like transportation, its adaptation to basic environmental service sectors like wastewater and sanitation systems has been very poor. This section attempts to examine the possible application of PPP in strengthening UEI in Asian cities and various mechanisms guiding PPP in developing UEI. Case studies, personal visits to sites, documentation of successful practices, and personal interviews were used to compile the existing information on the application of PPP to basic environmental services in the cities of Asia. This includes case studies and successful experiences covering seven cities and consultations with organisations including the Asian Development Bank (ADB), Organisation for Economic Cooperation and Development (OECD), and the Japan Bank for International Cooperation (JBIC). Along with the China Council for International Cooperation on Environment and Development (CCICED), IGES has tried to identify key problems being faced in the field of environmental investment and financing in China, in order to create innovative approaches to solve these problems, address environmental protection priorities, and make policy recommendations to the government of China.

In some large and medium cities in Asia, PPP has already been implemented, mostly for water supply projects in the form of build-operate-transfer (BOT) schemes or concession contracts. In those cities, serious considerations of expanding PPP to environmental infrastructure projects, including sewer and waste treatment, have also started. Funding such projects will not only improve the environment but will also contribute considerably to economic growth. PPP could be considered an effective policy solution and would help Asian countries to achieve the targets of the World Summit on Sustainable Development (WSSD) and the Millennium Development Goals (MDGs) of the United Nations (UN). It was widely agreed that development of UEI cannot be achieved based solely on public financing and that PPP is expected to play a crucial role and make significant contributions.

With optimal role-sharing between public and private sectors, PPP can be applied to many developing countries and cities. It is easier to introduce it into such countries and cities that are poor in financing capabilities and tools, which have improved initiatives for private sector participation, are in stable political and financial condition, and are in the stages of UEI development. For cities with weak economic power, policies for better resource reallocation and incentives to private funding from the central government are required. In poor areas, small-scale, community-based PPP projects would prove effective.

Lack of experience in the preparation of relevant regulations and implementation schemes is the major bottleneck for PPP projects in Asian cities. This leads to various risks such as management risk concerning project profitability and stability and possible conflict between project profits and the public interest of environmental protection.

To implement more PPP projects, it is necessary to enhance operational capacities such as institutional framework, funding, and risk preventive measures. Careful design and implementation of PPP projects could only guarantee to meet these objectives over the long term. The following are the key components critical for successful implementation of PPP-based UEI:

- Appropriate role sharing between actors, i.e., the private sector and the government.
- The treatment of wastewater and solid waste infrastructure as a “quasi-public good” and their privatisation should be to provide the quasi-public goods through the private sector but not the commercial sector.
- There is an essential need for an independent regulatory body to ensure proper regulation enforcement before attempting privatisation in order to protect the interests of consumers as well as the private sector. This body needs to frame appropriate regulations to address critical issues, including subsidies,

debt and equity ratio, local and foreign investment ratio, financial inflow and outflow of investment, and the holistic management concept, as well as the rules of entering and leaving the market.

- Regressive policies may have adverse impacts on poor households whose family size is larger. Hence, progressive tariffs are widely recommended. The two most important and sometimes competing objectives for tariff policy should be the provision of the public good at an affordable price as well as the incentive to conserve.
- There is a need for a combined tariff structure for collecting tariffs in one bill.
- The type of contract is an important element in PPP. Depending on the targets and the relevant socio-economic characteristics, the most suitable type of PPP should be implemented. Full-utility concession may be an advanced level and may suit only some of the cities for services like water and transport, but for other cities it is better to start with management contracts. For solid waste, management contracting may be a good starting point.
- The public sector should hire the best team to negotiate with the private sector to allocate the risks among various partners.
- As different cities may have a different socio-economic status within the country, policy-makers should take care of these imbalances while setting the type of PPP or tariffs.
- Donor agencies have to provide various types of support, including assisting governments in contract management and negotiations, as some governments may not have the expertise to match their private sector counterparts with their international backing.
- Big cities require huge investments, and the local private sector may not be able to contribute substantially; thus, FDI is vital for this purpose as it is already contributing towards other public services like telecommunications, power, and transport.
- International cooperation can play a vital role for creating an enabling environment for private sector participation (PSP) and FDI, but cooperation within various departments of international agencies and with the other international agencies is important for optimising the impact of the efforts.

Commercialisation does not in itself ensure success unless there is a successful combination of competent and qualified concessionaire, capital, local knowledge, appropriate technology and expertise, and regulatory framework, including tariff regulations. As PPP is played out between various actors, there is a wide scope for risk, and political and legal risks could be dealt with at the national level through legislation or commitments. Social, economic, and environmental risks could be better dealt with at the local level. The financial, technical, and managerial risks could be mitigated with a good combination of joint-venture companies, so the risks can be allocated to those companies, which can mitigate them best. It is also necessary to encourage strong domestic banks and companies to take a leading role in the PPP-based initiatives.

In the joint venture between IGES and the Policy Research Center of State Environmental Protection Administration (SEPA) in making policy suggestions to the government of China for enhancing the application of PPP for UEI, it was found that the issues of insufficient investment and low efficiency are prominent, and the following recommendations were made to develop more effective and efficient financial mechanisms through the CCICED for UEI improvement:

- Improve relevant policies to make full use of multiple channels of commercial banking (bonds, trust investment funds, and loans) to raise funds from the market.
- While making full use of various commercial financing channels to raise funds from the market, the government of China should seriously consider introducing municipal bonds to serve as a new and important channel for financing UEI.
- The government should play a lead role in the construction of UEI, but market-based approaches should be applied to the operation and maintenance of municipal wastewater treatment facilities, as well as to the collection and transportation of municipal solid waste.
- Unify existing policies and establish new policies to promote market-based approaches to urban wastewater treatment and municipal solid waste management.

1.4.3. Examination of energy consumption patterns and emission patterns from mega-cities in Asia

This sub-theme has been developed into a project that was launched in April 2001 by the IGES Urban Environmental Management Project with additional financial support from the Asia Pacific Network for Global Change Research (APN), the Global Change System for Analysis, Research and Training (START), and others. It focuses on the dynamics of industrial transformation that is taking place in Asian cities and its environmental implications with regard to energy consumption and emissions of greenhouse gases (GHG). The study aims to measure the GHG budget of selected mega-cities in Asia, understand the nature and dynamics of driving factors, present future scenarios for GHG emissions of the cities, and provide the perspectives on what cities should do to clean their air. An inventory of various associated short-lived gases like carbon monoxide (CO), nitrogen oxide (NOx), sulfur oxide (SOx), and particulate matter was attempted in addition to the GHG budget. Key sectors considered were residential and commercial sectors, the urban transportation sector, municipal solid waste management sector, and indirect energy consumption by industry. Both direct emissions and embodied emissions were considered. Major metropolitan cities of Asia—Tokyo, Seoul, Beijing, Shanghai, Manila, Bangkok, Delhi, and Calcutta—along with their surrounding urban areas, were considered, depending upon the availability of data.

IGES developed the necessary methodologies and implemented them in different case study cities with the help of respective collaborators. Methodologies were also developed to account for embodied emissions. One of the major tasks was the quality assurance/quality control (QA/QC) of data and their inter-comparison and inter-calibration.

Cities under consideration share the common characteristic of having "high economic growth rates." The GHG emission rates were compared to economic growth rates (gross regional product), as they have a good correlation. The emission of carbon dioxide (CO_2) by sector and fuel type suggests that CO_2 emissions in Tokyo have increased by more than twice in the last three decades, with a 2.5 percent annual average growth rate (1970–98), during which the annual average economic growth rate was 6.87 percent. Beijing and Shanghai's emission growth rates were 3.9 percent and 12.3 percent, respectively, for 1985–98, while the economic growth rate was about 15 percent for both cities. In the 1990s, the CO_2 growth rates were as low as 5 percent in spite of maintaining the same level of economic growth. In terms of emission volumes, Beijing and Shanghai are well above Tokyo and Seoul. The income effect was found to be responsible for major CO_2 emissions in Tokyo and Seoul during the high-growth period, during which fuel quality effects and energy intensity effects (means, energy use per unit economic activity, this shows the direction of technological changes) were responsible for restraining CO_2 emissions. CO_2 emissions have continued to rise even after that "growth period," which could be attributed to the intensity effect. In Chinese cities, income was found to correlate to the increase in emissions, and the intensity effect lead to decreasing emissions.

Vehicular stock is a major driver for CO_2 emissions. Most vehicles in Chinese cities have very poor fuel economy. In terms of its total vehicular stock, which is one-tenth of Tokyo's, fuel consumption in cities in China is one-third of Tokyo's. Chinese cities need to improve their fuel efficiency, especially that of their large-scale public transport vehicles. They further need to strengthen their in-use vehicle fuel performance. The former would depend on the development of sufficient urban transport systems and infrastructure.

Though the amount of energy consumption per GRP of tertiary industry is on a decreasing trend in Beijing and Shanghai, the study results showed that their commercial energy consumption would exceed Tokyo's by 2010. Energy consumption is moving more towards the use of electricity in most of these cities and is expected to continue further. Estimated future CO_2 emissions from commercial and residential sectors in Chinese cities are expected to be above those of Tokyo and Seoul.

Tokyo and Seoul have dominant indirect emissions compared to their direct emissions. This trend is the reverse in Chinese cities. Tokyo has indirect CO_2 emissions 2.5 times higher than the direct emissions. Shanghai reduced

its indirect emissions from 1.9 times to 0.9 times that of direct emissions during 1992–97. Sectoral contributions show that secondary industries should take the major responsibility for indirect CO_2 emissions from all the cities.

There is a need to increase the recycling/re-use rate of municipal solid waste (MSW) and to develop effective policies and strategies to reduce food waste generation. Learning can be mutual in this sector; Tokyo can possibly learn from Seoul about landfill gas utilisation and Seoul can take lessons from Japanese incineration practices, while Chinese cities still need to develop the necessary institutions.

The GHG budgets are expressed in an inventory form using both top-down and bottom-up approaches. The format followed was that of the national inventory of GHG emissions and removals, as adopted for communication under the United Nations Framework Convention on Climate Change (UNFCCC) and based on the Intergovernmental Panel on Climate Change (IPCC) methodology. But a more appropriate format was worked out that is simpler than the national inventory, considering the limited data available at the municipal level and the feasibility of data collection. The time periods considered were 1970, 1980, 1990, 1995, and 2000, which permits an understanding of growth patterns. The research project also collected information on various policies, intervention measures, institutional arrangements, and policy instruments in Tokyo, Seoul, Beijing, and Shanghai, and it recommended potential areas for intervention, such as emissions from in-use vehicles control in Beijing and Shanghai, adopting fleet-based emissions and energy standards from private cars in Tokyo, and providing due attention to CO_2 emission issues, while controlling diesel vehicles in an effort to control NOx and suspended particulate matter (SPM).

This research was also endorsed as a core project of the Industrial Transformation Project of the International Human Dimensions Programme on Global Change Research, and was successful in providing important contributions to the international global change scientific community. Since no strategic research is complete without translating it into actual practice, the UE Project organised three international workshops (two in Japan and one at the East West Centre in Hawaii). These activities strengthened the network of researchers, shared research outcomes from other researchers working in similar fields, and promoted policy dialogues with city governments, national governments, and international institutions and initiatives. The UE Project developed informal but robust networks with key players in the region and beyond, such as the Asian Development Bank, Clean Air Initiative for Asian Cities, World Resources Institute, The International Council for Local Environmental Initiatives, World Bank, and various policy-oriented institutions in Asia. It also collaborated on research with a number of institutions in Japan, Korea, and China. Apart from these achievements, the UE Project also emphasised the need for an integrated approach in energy-emission interventions that involved air pollution and GHG emissions in order to create some interest in GHG mitigation among local governments and to address priority concerns at the same time.

1.4.4. Development of indicators to evaluate urban environmental polices and review of existing indicators

The Kitakyushu Initiative for a Clean Environment was adopted at the Fourth Ministerial Conference on Environment and Development in Asia and the Pacific, organised by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in September 2000. With a mandate to improve the urban environment in Asia and the Pacific, the Kitakyushu Initiative is a mechanism designed to share experiences in environmental improvement and to promote inter-city cooperation, as well as to strengthen actions taken at the local level. IGES, in its role of supporting the implementation of the Kitakyushu Initiative programme at the request of ESCAP and the Government of Japan, provided professional support to contribute substantively to carrying out the project.

As a means to achieving improvement in the current environmental status of many cities in the Asia-Pacific region, quantitative targets in several areas must be set, and policy decisions aimed at achieving the targets must be made, as well as starting and promoting activities to solicit the participation of a wide spectrum of interested

parties. At various stages of policy decision-making and implementation for the improvement of the urban environment, the introduction of quantitative indicators is recommended, as they make it easier to define goals and measure the effectiveness and degree of success of policies, along with undertaking regular surveys and adjustments, as well as promoting the sharing of ideas and raising awareness. These also help in the transfer of successful policy experiences, as recommended by the Kitakyushu Initiative.

A set of quantitative indicators were proposed under the Kitakyushu Initiative, and a review of existing indicators and indicator systems was carried out in the beginning of the UE Project, which proved very useful in providing an understanding of major issues, approaches, and usage of indicators to identify potential areas and methodologies for overcoming barriers. A commissioned report was submitted to the Ministry of Environment of Japan, regarding these issues. Appropriate indicators were proposed based on the research conducted and the results of analyses on policy case studies in this phase of the project. The following are the categories of indicators that can be used for urban environmental management:

a. Driving force indicators: demographics, urbanisation, lifestyle, economic situation, poverty, and local government.
b. Pressure indicators: SOx emissions per square kilometer (km^2), NOx emissions/km^2, total suspended particulate matter (TSP)/SPM emissions/km^2, CO emissions/km^2, hydrocarbons (HC)/volatile organic compounds (VOC) emissions/km^2, and CO_2 emissions/km^2.
c. State indicators: SOx concentration, NOx concentration, particulate matter, CO concentration, HC/VOCs concentration, and percentage of days that SOx, NOx, particulates, CO, HC/VOC concentrations met standard.
d. Response measures and indicators: SOx emissions control, dust control, vehicle emissions control, air pollution impact minimisation, and local response to global problems.

Undoubtedly, the lack of data availability is the biggest hindrance for such an indicator system in the local context. The most contentious issue is how to motivate cities to present their successful experiences and information, since the UE Project cannot have pilot projects in all member cities.

The Kitakyushu Initiative also includes the encouragement of public participation and partnership as an important element. Therefore, a set of indicators is required that enables self-assessment of progress and weaknesses in participation and partnership formation, and provides the project body with encouragement for the implementation of policies.

It was identified that, given the mandate of the Kitakyushu Initiative to not only improve the system but also produce direct environmental impacts, the social system indicators, such as system improvement and partnership building, should not be used alone. It is essential for them to be used in combination with practical environmental indicators such as air or water quality and waste generation/disposal volumes.

In a case study of Bangkok, where attempts were made to codify the environmental management capacity as low, medium, and high, it was observed that air quality management capacity has been improving due to various strategies. These include capacity building for monitoring by incorporating new technology and providing appropriate human resources. Similarly, various means, including the launch of a mass transit system, setting and enforcement of standards, private sector participation, better technology for vehicles and their inspection, and improved social capacity and public participation, have contributed towards the improved response capacity. The tangible improvements in air quality in Bangkok are evidence of the enhanced capacity in urban air quality management. Nevertheless, there is still a lot of room for improvement in terms of capacity as well as in terms of tangible improvements in air quality, mainly in reductions of particulate matter like PM10 and PM2.5.

Another set of case studies was carried out to assess the capacity of cities in environmental management at different levels. The city of Jakarta (Indonesia) is close to the central government and is rich in various aspects of capacity such as human resources, finance, and technology. Being a big city, it provides a much wider scope for

NGO activities, which are a key component of awareness and capacity development. Pelangi, one of the major NGO-actors in environmental management in Jakarta, is not only an international cooperation organisation in charge of lobbying and education, but it is also a research institute that can back-up its activities with logical reasoning. In particular, their research on transportation has resulted in proposing drastic measures for implementing an innovative bus system in Jakarta. The role of the non-governmental sector in Jakarta is found to be strong in contrast to many other cities in urban environmental management.

Although Surabaya is the second largest city in Indonesia, its environmental management section was only just established in 2001, and the precursor of the environmental department was not as active as that in Jakarta. Compared to Jakarta, Surabaya is not as well informed of recent technologies or other information, being located far from central research institutes such as the Agency for the Assessment and Application of Technology/Environmental Technology Centre (BPPT/ETC). Tunas Hijau is a local NGO that is active internationally, and being dominant with young members, it is expected to be the future environmental governance leader in Surabaya. There are around 20 environmental NGOs in Surabaya, and around ten of them regularly attend meetings at city hall. In both cases, improving institutional capacity requires additional study and investigation. Regulations are very obvious in both cities, but their effectiveness may need to be looked at on the basis of a time series study. Financial mechanisms are not clearly assessed in both cases due to the fact that the environment departments in Indonesia's local governments are still very new and they have not determined the details of spending on the environment.

1.4.5. Documentation and analysis of best practices from different Asia-Pacific cities and capacity enhancement for local environmental management under the Kitakyushu Initiative

The Kitakyushu Initiative for a Clean Environment, an ESCAP initiative, has four interrelated means to achieving tangible improvements in the urban environment: (1) networking within member cities and with outside agencies, (2) compilation and analysis of successful experiences to identify the elements that can be transferred to other cities, (3) implementation of pilot activities to demonstrate the applicability of new ideas for managing the urban environment, and (4) organisation of thematic seminars and training for capacity building.

This section presents the outcome of the documentation and analysis of successful practices prepared under the Kitakyushu Initiative Network. Under the Kitakyushu Initiative, five thematic seminars were organised on various topics (details given at the end of the report) with the aim of introducing the effective implementation of practical policies and technologies, as well as increasing the capacity of policy-makers through the exchange of information and policy discussions by cities with experience in these areas, along with representatives of donor organisations and experts. Analyses are being carried out on the case studies presented at the Network meetings and thematic seminars as well as the case studies of best practices collected from the members of the Kitakyushu Initiative Network, including Bangladesh, China, Indonesia, Japan, Korea, Nepal, Pakistan, the Philippines, and Thailand, which are expected to be of practical use for cities as a reference tool. Figure 1, at the end of this report, presents a graphical view of the urban environmental management concept.

The presentation of successful experiences covers most of the major challenges for urban environmental management (details are presented in Table 2 at the end of the report). The physical environmental challenges cover water supply and wastewater treatment, air quality, solid waste, and overall urban environment. The managerial challenges cover urban planning and infrastructure development capacity, regulatory and institutional capacity, financial capacity, appropriate technology, and social capacity (which includes stakeholder participation). Many of the successful experiences, however, overlap and cover more than one challenge. Criteria for the selection of successful practices included effectiveness, innovation, efficiency, relevance, and sustainability. The cities were encouraged to document the successful practices with the help of local researchers from local academia and NGOs and researchers from IGES. The analysis of successful practices was undertaken in cooperation with policy-makers, academia, and other stakeholders.

The following conclusions can be made based on the compilation of good practices:

- Bangkok's case is a good example of integrating various air quality challenges, including leaded gasoline, public transport, regulations, monitoring, public awareness, and involvement of various stakeholders to plan and implement various actions.
- In countries like Thailand and Vietnam, political will and sustained economic growth have led to the phasing out of leaded gasoline, while SOx pollution increased with industrialisation and public transport using diesel. Kitakyushu (Japan) and Chongqing (China) used different approaches to address the same challenge of SO_2 pollution management. The experiences of Kitakyushu, which faced a similar situation in the 1960s, and the experiences of Chongqing could help the cities in the region to formulate policies on SOx control.
- Case studies of Kathmandu (Nepal), a developing city, and Singapore, a developed city, focus on improvements in their transportation systems in terms of environmental considerations.
- A United Kingdom study focused on the role of local governments in formulating action plans to address local air quality issues.
- Case studies from China focused on urban planning and infrastructure development. Prediction of future demand for urban water and wastewater services and the relevant investment decisions are also the focal areas in later studies.
- The Nonthaburi (Thailand) study is focused on the promotion of recycling through separation at source with the help of political will and public awareness.
- Surabaya (Indonesia) presented a case where community empowerment was used to improve basic environmental services like sanitation in *kampungs* (poorly-serviced settlements). The important lesson learned from this programme and the *Kampung* Improvement Program (KIP) is that the community-based mobilisation of resources and implementation activities is very effective in dealing with low-income group problems.
- The Dhaka (Bangladesh) study focused on integrating composting activity with national fertilizer production and marketing.
- In practices addressing overall urban environmental management, the focus is on the cleaning and restoration of polluted waters, relocation of polluting industries, and integrated approaches to create win-win situations for the environment and economy. Two case studies from China focus on institutional structure and information disclosure.

The case studies show that political will and public awareness are the most crucial elements in the development and implementation of policies related to urban environmental management. Hard decisions to improve the situation are unavoidable. Those decisions could involve implementing command-and-control (regulatory) measures or market-based instruments (in terms of pricing of environmental goods and services). Regulations on pollution sources may create some temporary hardships, but these are compensated for by future health-related and socio-economic benefits. Additionally, pricing helps generate resources for protecting the environment and providing environmental services. It also contributes to changing attitudes towards valuing environmental resources.

Public awareness, as one can gauge from the successful practices, helps reduce the impact of socio-economic backlash against hard political decisions. Furthermore, public awareness helps in improving the understanding of all stakeholders in sharing responsibilities and becoming part of the process. It is also evident that public awareness campaigns work well if they are initiated or actively backed by the government. Likewise, the active involvement of stakeholders builds trust among the government, the private sector, and the community, which leads to stronger partnerships for urban environmental management. It is evident from the case studies that communities can put enormous pressure on local government to prioritise environmental issues. Women play a major role in helping to manage various environmental services such as solid waste management.

The case studies on zoning and infrastructure development policies indicated that proper zoning for various urban activities and living standards is important to optimising infrastructure development, and enhancement of

public-private partnerships is becoming a well-established process to overcome lack of investment. Regulations and institutions constitute the essential elements in providing solutions to urban environmental problems. A mix of command-and-control and economic instruments is more effective than solely applying pure command-and-control regulations or purely depending on economic instruments. As new technology may require the enhancement of local capacity to operate and maintain equipment, the use of older techniques is advised, especially where the slum population is high.

Replication of successful experiences in other cities presents a real challenge for planners. Some practices may be transferred without too much modification; one such case is the phasing-out of leaded gasoline, as it has been established that it does not have any major socio-economic or technical implications. An integrated approach involving various polluters and actors is the best way to accelerate the pace of improving urban air quality. The most viable transferable element for water and wastewater services is involvement of the private sector. If the city is somewhat developed then the concession model employing the private sector's role for even retail services can work well. For less developed cities, at least operation and maintenance of services can be conducted by the private sector to improve efficiency. For solid waste management, the most transferable cases are the separation of solid waste at source for recycling, as in Nonthaburi, while the other is composting of solid waste and its integration into overall solid waste management strategies.

The first limitation of these cases is transferability. The second limitation is the lack of experience of the local partners in considering appropriate modifications. One of the ways to overcome this problem is to promote city-to-city cooperation through inter-city visits and "twinning" of cities. The second way could be to bring together the cities with similar type of challenges, along with other experts and donors, to a forum where free dialogue on the replication of successful practices could take place.

1.5. Capacity building and pilot project implementation

The implementation of activities/projects was closely monitored to gauge the effectiveness of specific approaches and to develop models to enable their transfer to other cities in the region. Pilot activities essentially involved: (1) actions aimed at tangible improvements in environmental quality and human health and other co-benefits, (2) quantitatively monitoring of progress using appropriate indicators, (3) enhanced participation of local stakeholders, and (4) encouraging a replication approach. In some cases the objective was to develop a demonstration project that could be transformed later into a large investment project. Demonstration projects/pilot activities are currently in operation in five cities in the region with partial financial sponsorship by ESCAP. In addition, five pilot activities are in operation with funding from other sources.

Pilot activities/demonstration projects are under implementation in the areas of solid waste management, urban water conservation, urban air quality management, industrial pollution control, and promotion of information/communication tools (ICT) in urban environmental management. Major pilot projects implemented under the Kitakyushu Initiative are solid waste management in Nonthaburi (Thailand), public-private partnership in wastewater management in Weihai (China), air quality management in Puerto Princesa (the Philippines), urban air quality management in Chongqing (China), solid waste management in Dhaka (Bangladesh), urban wastewater management in Korat (Thailand), industrial relocation in Ho Chi Minh City (Vietnam), pollution control in Cebu (Philippines), urban air quality management in Surabaya (Indonesia), urban air quality management in Ulaanbaatar (Mongolia), and water pollution control in Semarang (Indonesia). These cases have been analysed for their potential and adaptability using a set of quantitative indicators.

2. Self-evaluation

2.1. Originality and evaluation of achievements

The second phase of the UE Project essentially covers most of the debated issues with regard to the major domains of the urban environment, viz. water and wastewater, air and solid waste management. Its attempt to cover a range of cities with diverse backgrounds, both economically as well as environmentally, makes it a unique effort with a nicely balanced selection of cases, and it provides a wider scope for a comprehensive analysis of the whole situation in the region. Second, it developed and adopted a common analytical framework, in addition to collecting actual data from case studies of selected cities. Addressing cross-sector issues was attempted by adopting the common analytical framework. It identified topics among diverse urban environmental issues that were most relevant to the implementation of actual urban environmental policies. It focused on strategic issues, including the methods and policies to finance the development of improving urban environmental infrastructure so as to handle basic environmental services. It developed a common framework for indicators to assess the individual policies aimed at improving urban environmental management, compiled the best environmental practices, and attempted to demonstrate them as pilot projects under the Kitakyushu Initiative.

2.2. Evaluation of project management

The second phase of the UE Project involved both data analysis and extensive networking, as it tried to integrate analysis and action plans by means of case studies and pilot projects. It provided a good opportunity for the project to develop an international network of researchers and expand the IGES research network in general. Coordination of many thematic workshops and conferences not only broadened the scope for future IGES activities but also provided IGES researchers with an excellent exposure to the burning research issues in the Asian region. This project, by its nature, has created a huge amount of information, which needs to be carefully utilised. A system of database management is an essential component for maximising the research benefits of this project and the information collected in the long term.

3. Conclusion

The second phase of the Urban Environmental Management Project tried to study the process of environmental change in various cities of Asia, analyse the drivers of the change, and provide policies to provide a better environment and improve certain basic environmental services. It examined the possible mechanisms that can be applied to different types of environmental problems and the necessary conditions to develop suitable polices. The UE Project, along with the Kitakyushu Initiative, has attempted to assess individual environmental policies by using quantitative indicators and to compile the best environmental practices for their possible replication. The major findings of this project provide several policy options for sustainable urban development in Asian cities. Below are a few of the major issues.

A number of Asian cities are expanding their spatial boundaries to suburbs, peripheries, and even to peri-urban areas in response to various driving forces, such as the sustained primacy of socio-economic and political activity in the Seoul Metropolitan Region, and the rapid economic growth based on a market economy in China, as well as FDI and the early 1990s property boom in the Bangkok Metropolitan Region. Regardless of the nature of driving forces underlying such spatial expansions, they have all resulted in unintended spill-over of environmental degradation across the metropolitan areas of these Asian mega-cities.

Conventional measures, equipped with sector-specific approaches, appeared somewhat effective in the short-term in mitigating urban environmental problems, but revealed their own limitations in the long-term. Hence, city environmental management should adopt the “metropolitan” nature, with provisions for not only accommodating the rapidly growing demand for urban environmental services but also creating or inducing environmentally sound urban spatial structure that restrains potential environmental loads.

Insufficient investment and low efficiency were identified as prominent issues in providing the required urban environmental infrastructure in Asian cities. In some large and medium cities in Asia, PPP has already been implemented, mostly for water supply projects in the form of BOT or concession contracts. In those cities, serious considerations about the possibility of expanding PPP to environmental infrastructure projects, including sewer and waste treatment, are under scrutiny. PPP could be considered as the most effective policy solution and would help Asian countries to achieve the targets of the WSSD and UN MDGs. It was agreed widely that development of UEI cannot be achieved based only on public finance, and PPP is expected to play a crucial role and provide significant input, but there are vital issues to be considered before PPP can be successfully employed in UEI. These include proper role-sharing between actors, proper and independent regulatory institutions to design and control tariffs and subsidies, design of appropriate contracts, controlling guarantees, and actively deriving support from FDIs and donor agencies.

Economic growth brought about a rise in CO_2 emissions in the mega-cities of Asia, viz. Tokyo, Seoul, Beijing, and Shanghai; however, in the case of Tokyo, the recession in the economy did not reduce the emissions. Rapid industrialisation was found to be responsible for a rise in CO_2 emissions in Chinese cities, although the energy intensity effect contributed to restrain emissions. In terms of volume of emissions, those in Chinese cities are higher than those in Tokyo and Seoul. Fuel economy is very low in Chinese cities compared to Tokyo and Seoul, pointing to the necessity for development of large-scale public transport and improved efficiency of in-use vehicles.

Though the amount of energy consumption per GRP of tertiary industry is decreasing in Beijing and Shanghai, the results showed that their commercial energy consumption would exceed the amount in Tokyo by 2010. Tokyo and Seoul dominate in indirect emissions, where as Beijing and Shanghai have more direct CO_2 emissions. In the case of waste management, these mega-cities have to learn from each other's experiences in conserving energy. There is a need for increasing recycling/re-use rates. The overall results endorsed the need to employ an integrated approach in cities where local air pollution benefits and global GHG reduction targets can be simultaneously addressed, pointing out the need to carry out further research along these lines.

Under the Kitakyushu Initiative, IGES analysed various environmental policies and practices. In attempts to find ways to improve environmental management at the city level, involvement of the private sector was found to be the most viable transferable element that could work well for developed cities. For less developed cities, at least the operation and maintenance of services can be conducted by the private sector to improve efficiency. The first limitation of adapting the best practices in other cities is transferability. The second limitation is the lack of experience of local partners in considering appropriate modifications. Through the Kitakyushu Initiative, IGES compiled successful experiences in Asia and the Pacific, carried out demonstrations, and attempted to transfer those policies and methodologies to other cities as a way to improve urban environmental management.

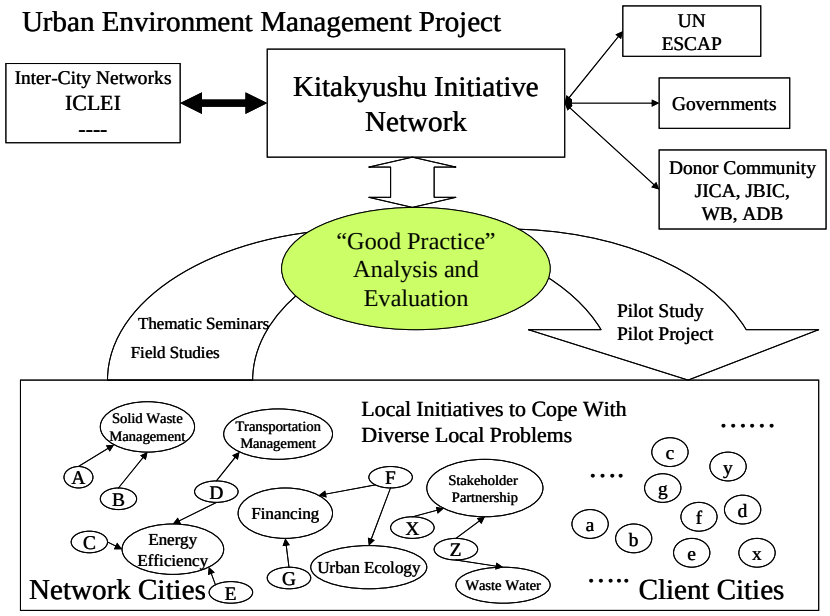


Figure 1. Urban Environmental Management Project concept.

Table 1. List of activities undertaken under the UEM Project (Phase II).

1	International Workshop on Policy Integration towards Sustainable Energy Use for Asian Cities: Integrating Local Air Pollution and Greenhouse Gas Emissions Concerns (28–30 January 2004, Hayama, Japan). Organized by IGES (partly sponsored by Asahi Glass Foundation). <http://www.iges.or.jp/kitakyushu/megacity_workshop/index.htm>
2	International Workshop on the Role of Planning Practices towards Sustainable Development in Asia (March 2003, Seoul). Organized by IGES and Korea Environment Institute. <http://www.iges.or.jp/en/ue/activity/iges-kei/index.html>
3	International Workshop on Policy Integration towards Sustainable Energy Use for Cities in Asia (4–5 February 2003, Hawaii). Organised by IGES, hosted by East West Center, Hawaii, U.S.A (sponsored by APN, AEON Foundation, and Asahi Glass Foundation). <http://www.iges.or.jp/en/ue/pdf/megacity03/HTML/index.html>
4	International Seminar on Financial Mechanisms for Environmental Protection (5–6 November 2002, Beijing). Organised by IGES, Japan Bank for International Development, and Secretariat of CCICED, co-organised by Ministry of Environment Japan, State Environmental Protection Administration China.
5	International Workshop on Policy Integration and Industrial Transformation towards Sustainable Urban Energy Use for Cities in Asia; International Symposium on Sustainable Urban Development in Asia, Japan (23–25 January 2002, Kitakyushu, Japan). Organised by IGES (sponsored by APN, AEON Foundation, and Asahi Glass Foundation). <http://www.iges.or.jp/en/ue/pdf/megacity02/index.html>
6	First Meeting of the Kitakyushu Initiative Network (November 2001). Organised by ESCAP, Ministry of Environment Japan, and IGES.
7	1st Thematic Seminar: Kitakyushu Initiative Seminar on Solid Waste Management (September 2002). Organised by ESCAP, Ministry of Environment Japan, and IGES.
8	2nd Thematic Seminar: Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment (November 2002). Organised by ESCAP, Ministry of Environment Japan, and IGES.
9	3rd Thematic Seminar: Kitakyushu Initiative Seminar on Urban Air Quality Management (February 2003). Organised by ESCAP, Ministry of Environment Japan, and IGES.
10	4th Thematic Seminar: Kitakyushu Initiative Seminar on Industrial Relocation (August 2003). Organised by ESCAP, Ministry of Environment Japan, and IGES.
11	Second Meeting of the Kitakyushu Initiative Network (September/October 2003). Organised by ESCAP, Ministry of Environment Japan, and IGES.
12	5th Thematic Seminar: Kitakyushu Initiative Seminar on Public Participation (January 2004). Organised by ESCAP, Ministry of Environment Japan, and IGES.

Table 2. Successful practices in urban environmental management.

City/Country	Area covered
Air quality management	
Bangkok (Thailand)	Integrated urban air quality management
Kathmandu (Nepal)	Role of government, private sector, and civic society in promoting battery-operated electric three-wheelers in Kathmandu, Nepal
Kitakyushu (Japan)	Coexistence of industry and community
Singapore	De-coupling of urban mobility needs from environmental degradation in Singapore
Singapore	Successful experiences in containing environmental problems from transportation
Chongqing (China)	SO_2 pollution control
Guiyang (China)	Strategies for air pollution control
Lanzhou (China)	Special programme on air pollution
United Kingdom	Local air quality management
Urban water and wastewater management	
Cartagena (Colombia)	Public-private partnerships in water and sanitation
Cordoba (Argentina)	Public-private partnerships in urban water (concession contracts)
Johor Bahru (Malaysia)	Public-private partnerships in bulk water supply
Manila (Philippines)	Public-private partnerships in water supply and wastewater treatment
Macao (China)	Public-private partnerships in water supply and wastewater treatment
Weihai (China)	Wastewater management
Rongcheng (China)	Water management models
Shenzhen (China)	Construction and operation of environmental infrastructure
Solid waste management	
Nonthaburi (Thailand)	Community awareness in recycling and solid waste management
Dhaka (Bangladesh)	Innovation in community-driven composting
Surabaya (Indonesia)	Integrated sustainable approach to waste management
Overall urban environmental management	
Jeju (Korea)	Restoration of severely polluted and damaged streams
Daegu (Korea)	Tearing-Down-Walls campaign
Dalian (China)	Removal and modification of polluting industries
Ho Chi Minh (Vietnam)	Promotion of cleaner production
Jiangyin (China)	Structural adjustment in urban environmental management
Ningbo (China)	Integrated urban environmental policies
Surabaya (Indonesia)	Comprehensive Kampung Improvement (model for community participation)
Taiyuan (China)	Cleaner production
Yantai (China)	National Model City for Environmental Protection
Zhang Jiagang (China)	Integrating environment and economy (Three First System)
Zhenjiang (China)	Environmental information disclosure system

Forest Conservation Project

Makoto Inoue
Project Leader

1. Overview

1.1. Background, objectives, and approach

1.1.1. Background

In its first phase, from fiscal years 1998 to 2000, the IGES Forest Conservation Project aimed to identify principles or elements of sustainable forest management, based on experiences in the Asia-Pacific region, which account for an important portion of the strategy for forest conservation. The research was carried out by four interrelated sub-teams: (1) the sub-team on structural analysis of forest destruction (ST sub-team), to provide basic information to other sub-teams; (2) the sub-team on participatory forest management policy (PM sub-team), to make recommendations covering local and national levels; (3) the sub-team on timber trade policy (TT sub-team), to make recommendations covering national and international levels; and (4) the sub-team on legal/administrative measures for forest conservation (LA sub-team), to elaborate principles/elements for sustainable forest management as a final outcome of the project. Target countries were Indonesia, Thailand, the Philippines, Lao P.D.R., Vietnam, China, Russia, and other Asia-Pacific countries.

The ST sub-team reconfirmed such leading root causes of forest destruction as “an insufficient base of local participation and community rights” and the “impacts of market forces,” as well as a “forest development paradigm with an industrial emphasis” and “economic/political challenges.” The PM sub-team analysed and compared existing participatory forest management systems in Southeast Asian countries, aiming to clarify their characteristics, and categorised them into several types based on their main actors, legal status of forest land, and activities. Then the sub-team made policy recommendations through an examination of internal and external constraints on participation. The TT sub-team mainly conducted time-series economic analyses (TEA) of the timber trade in both export and import countries in the Asian region as well as data collection for space equivalent analysis (SEA) of the timber trade. The LA sub-team focused on international legal measures related to forest conservation, international processes of policy dialogue on forest issues, and domestic legal/administrative measures related to participatory forest management. The sub-team elaborated the principles and elements for sustainable forest management in cooperation with the other sub-teams.

In its first phase, the project successfully constructed a valuable network with researchers, non-governmental organisations (NGOs), local people, and government officials in the Asia-Pacific region. These interpersonal relations with project members were utilised and evolved into inter-organisational relations with IGES in the second phase.

As a logical consequence of the fact that the major outcome of the project was a set of principles or elements of sustainable forest management, the main target groups in the first phase were governmental authorities. However, although we invited governmental officials to a series of regional workshops held in Jakarta, Vientiane, and Khabarovsk to discuss and examine our draft strategies, including policy recommendations, it did not seem to be enough for the project to have an influence on the national forest policies of each country.

Regarding the broad coverage of the project plan in the first phase, the IGES Boards of Directors and Trustees, the members of Research Advisory Committee (RAC), and outside experts suggested that the FC Project should

limit its theme to the participation of local people, focus on a few countries, and integrate the approaches in the second phase (FY2001–2003).

1.1.2. Objectives

The goal of the Forest Conservation Project was to develop strategies for forest conservation and sustainable forest management. Although many approaches should be taken into consideration to achieve the goal, we aimed to develop the following guidelines and recommendations to promote the participation of local people in forest management, an approach expected to achieve both poverty alleviation and sustainable forest management at the same time:

- Village action guidelines (VAG) for villagers and other stakeholders at the village level.
- Local policy guidelines (LPG) for local (provincial or district) governments and other stakeholders at the local level.
- National policy recommendations (NPR) to ensure the effective application of international treaties on local participation in forest management at the national level. Local government and stakeholders at local and national levels can make full use of these recommendations in order to promote the process of decentralisation.

1.1.3. Approaches and methodologies

The research was carried out using two interrelated approaches (Figure 1). One is the "local approach," used to elaborate village action guidelines (VAG), in which the analysis starts at the village level and then the perspective expands to the local and national government levels. We applied a methodology called participatory action research (PAR), which is a process of inquiry through which the local people work together on issues they consider relevant in order to bring about an improvement. Putting on a series of small workshops at the village and district level is also an important method to use. The other approach employed was the "international approach" used to elaborate national policy recommendations (NPR), in which the analysis starts at the international level and then considers the national and local government levels. These two approaches were combined and synthesised in discussions at the local government level, especially in the process of elaborating local policy guidelines (LPG).

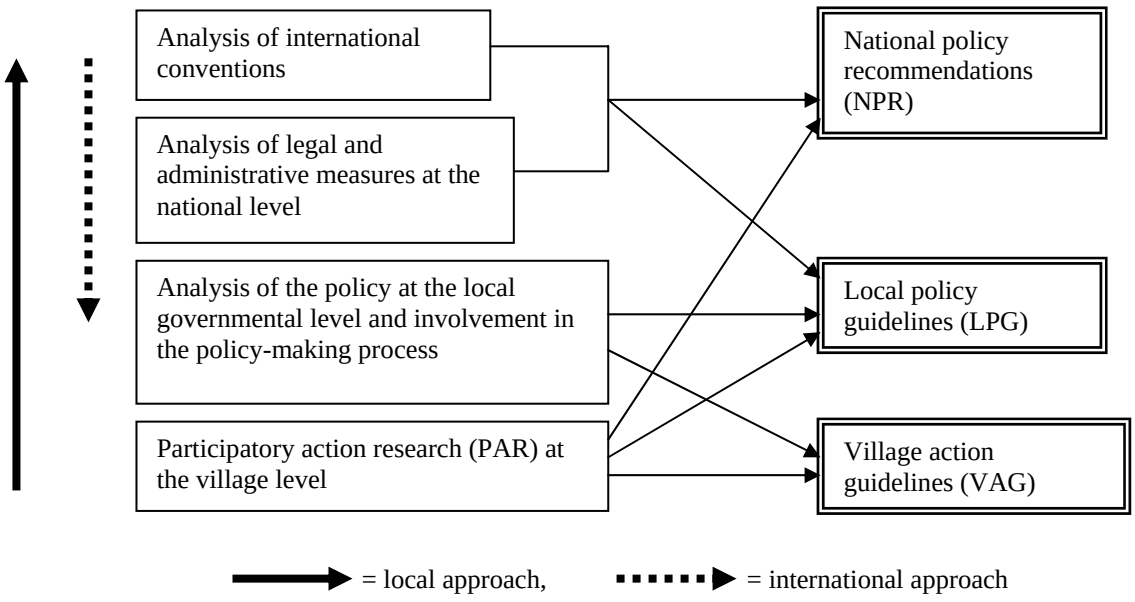


Figure 1. Overall process to develop the three outputs of the FC Project.

The activities of local forest management and local policy-making processes will be improved by applying the village action guidelines (VAG) and local policy guidelines (LPG) because of the advantage of the methodologies applied. There is every possibility for the local people and local governments to apply the guidelines, because the local people, local NGOs, and local government, as well as local researchers, would be considerably involved in the research process from the beginning.

1.1.4. Target countries

In the second phase the study targeted three countries: Indonesia, Laos, and Far East Russia. The significance of the strategic policy studies for the three countries lies in the political characteristics of each country and the actual state of their forests and forest management. And there appears to be a relatively high possibility for our research outputs to be applied in these three countries.

Indonesia is a country in transition to democracy as well as one of the most important countries in the world in terms of biodiversity conservation. Specific features concerning the forestry sector are (1) reforms of forest policy in accordance with the concepts of participation and decentralisation, (2) chaos as a result of drastic decentralisation, and (3) rapid deforestation and degradation of the forest due to various factors such as forest fires, large-scale plantations, logging, and slash-and-burn agriculture.

Laos is a country in transition to a market economy. Specific features concerning the forestry sector are (1) insufficient measures/mechanisms to implement new forest law, and (2) the recent reaction to and trend of efforts to transfer the responsibility of forest management to local people.

Russia has undergone some reforms in national policy, but this country is also in transition to a market economy. Moreover, the Russian boreal forest offers a unique approach compared with the tropical forests of Indonesia and Laos in the mode of participation. Specific features concerning the forestry sector are (1) dynamic reform of forest policy, (2) the strong impact of Asian countries on the management of local forests, and (3) changes in local forest management along with changes in the national economic system.

1.1.5. Target groups

We categorised various target stakeholders into two groups: main target groups and supporting target groups. “Main target groups” are the groups targeted by the guidelines and the expected main users of the guidelines. These are policy-makers as well as local communities. Their roles are indispensable to the success of forest management.

“Supporting target groups” may use or support the use of the guidelines, but are less likely to be involved in their direct implementation. These are local NGOs, people’s organisations, small business corporations, and universities at the local level; large NGOs and large business corporations at the national level; and the United Nations Forum on Forests (UNFF), Environment Congress for Asia and the Pacific (ECO ASIA), etc., at the international level.

1.1.6. Collaborative organisations

In order to have certain policy impacts, mentioned above, we collaborated closely with the relevant organisations, listed below, by concluding a memorandum of understanding (MOU) with each of them in order to strengthen inter-organisational relations.

a. Indonesia

- The Center for Social Forestry of Mulawarman University (CSF) in Samarinda, East Kalimantan, is a member of the forum on national forestry reform and a member of the working group of local forest policy in West Kutai District. It has access to influence policy formation at the local and national levels. We can collaborate with local NGOs, local governments, and local people through the good offices of the CSF.
- The Indonesian Institute of Sciences (LIPI) in Jakarta is a national government-run science institute and has been very influential in the country. Collaborating with LIPI may bring about influence on decision-makers and the public.
- West Kutai District (and its local forestry service) is one of the leading local governments in Indonesia that has tried to manage its forest resources in a sustainable way by means of employing the multi-stakeholder approach. We expect that our guidelines will be applied in the district.

b. Laos

- The Faculty of Forestry of the National University of Lao PDR (NUOL) in Vientiane is run by the government of Lao P.D.R., and considerable influence can be expected from it. We can collaborate with other research institutes, local governments, NGOs, and local people through the good offices of NUOL.
- Relevant district agricultural and forestry offices (DAFO) and provincial agricultural and forestry offices (PAFO).
- The Department of Forestry and foreign donors including the Japan International Cooperation Agency (JICA), Food and Agriculture Organization of the United Nations (FAO), and the Swedish International Development Cooperation Agency (SIDA).

c. Far East Russia

- The Economic Research Institute (ERI) of the Far Eastern Division of the Russian Academy of Sciences in Khabarovsk is capable of influencing decision-makers in Far East Russia because of its outstanding position. We can collaborate with provincial and district governments, other organisations, and local people through the good offices of ERI.
- The territorial office of the Ministry of Natural Resources, Lazo District government, heads of communities, and NGOs.

1.2. Review of achievements

1.2.1. Guidelines for Indonesia

a. Village action guidelines (VAG)

The guidelines were drafted to overcome issues of local forest management in five East Kalimantan villages: Muara Jawa', Tanjung Jaan, Engkuni-Pasek, Batu Majang, and dan Mataliba'. These VAGs are aimed at helping village communities to develop and enhance their role in the management of the local forest in each community.

These guidelines are useful for village decision-makers to develop village policies, programmes, and action plans. They can be used by a district government to develop policy and programmes, such as drafting technical guidelines, to support the participation of local people in forest management. For supporting groups such as NGOs, research organisations, universities, and private companies, the guidelines offer useful references to develop collaboration and facilitation plans.

The VAGs describe the village situation socially, ecologically, and economically, and elaborate problems related to the management of local forest. They also draw the direction and necessary measures to deal with the problems. The guidelines do not provide a detailed action plan, which, ideally, should be developed by each village community themselves.

The substance of the VAGs was developed from the actual situation in the research sites. The following are the four main issues in local forest management:

- forest and land
- forest-related village economy
- village institution
- government policy

Any efforts to improve local forest management (LFM) should deal with these issues. Otherwise, they will not be successful.

In the guidelines, several "problems" in each issue area were listed, and in order to tackle them "proposed measures" and "expected actors," consisting of main actors and supporting actors, were proposed. Some examples of VAGs are listed below.

Village institutions

- Problems:
  - Contested customary laws due to changes in ecological and socio-economic conditions: in some cases people cannot rely on customary law, while new village rules do not exist.
  - Lack of organised activities: many village authorities do not have the capacity to organise their people.
  - Lack of participation of women in community decision-making.
- Suggested measures:
  - Review the customary law and develop new rules if necessary.
  - Organise the community and improve village leadership and management capability.
  - Develop a mechanism for settling internal village conflicts.
  - Coordinate with neighboring villagers.

Government policy

- Problems:
  - Restriction of villagers' access to forest due to concessions for companies.
  - No formal recognition of the existing customary forest management practices.
  - Rapid and frequent change in policy on small-scale logging that caused confusion among villagers.
  - Lack of facilitation from the administration to solve boundary disputes among villages.
  - Lack of information dissemination of government policy.
- Suggested measures:
  - Propose that the concessionaires give the local people land-use access within the concession area.
  - Propose that the people become pro-active in communicating with the government.
  - Make a proposal to the government to give recognition of the customary forest management.
  - Improve the village information system.

b. District policy guidelines (DPG)

The DPGs were developed as a support system to implement the VAGs. In particular, they have aided the government of West Kutai District, especially the district's forestry service, in developing policies and implementation programmes that support the activities of the community at the basic level, in this case, the villagers. These guidelines are also a supporting product for implementing the District Regulation on Community Forestry.

The DPGs are also intended to help the district government, who has the authority to carry out the coordinative function, to supervise the third parties, for example, business enterprises, NGOs, or academics, in supporting the village forest management activities.

The ultimate goal of forest management is forest sustainability and supporting the improvement of the economy of the community members, both those whose lives are directly related to the forest (the forest community) and the general public. The development vision of West Kutai formulated this matter as "sustainable forest management, acknowledging the rights of the local community for the prosperity of all West Kutai communities."

For this purpose, West Kutai District launched the following seven strategic forestry programmes:

1. Management and preservation forests
2. Policy development
3. Human resources quality improvement
4. Education and training infrastructure
5. Development of institutions for forest governance
6. Law enforcement
7. Customary rights acknowledgement and empowerment

By referring to the strategic programmes, it was agreed that seven important issues were to be tackled by the district government in its efforts to support community participation at the village level. The issues, elaborated in the DPGs in order to support the participation of villagers in forest management, are as follows:

1. recognition of customary rights and culture
2. social capital and community organising
3. community access to information
4. value and critical education
5. social control and law enforcement
6. conflict prevention and resolution
7. village economy empowerment

In the guidelines several "problems" in each issue were listed, and "proposed measures" and expected "actors," consisting of main actors and supporting actors, were proposed in order to tackle the problems. Some examples of DPGs are listed below.

Recognition of customary rights and culture

- Problems:
  - Insecure access, control, and ownership of the villagers of forest resources, especially in the potential conflict areas such as in areas rich in coal mines and potential areas for plantation.
  - The commonly-held view among government officials and other parties that local people are ignorant and backward, and need to be taught and developed.
- Suggested measures:
  - Find the way to secure people's access and ownership of forest under the district ordinance, involve them in decisions that will have impacts on them, and mediate for them in negotiating with the central government.
  - Strengthen peoples' rights to forest in any ordinance issued by the district.

Village economy empowerment

- Problems:
  - Unequal benefits from timber: particular groups in the community (individual traders and loggers) get more, while most of the community members only get a little.
  - A tendency that the community members become more exploitative in the use of forest resources, focusing more on economic profits rather than forest resources conservation.

  - The community has not overcome the dilemma between the immediate need for subsistence and the demand for long-term reforestation.
  - Forest management is not seen as a major economic activity (except for those involved in exploitative logging activities) because most of the community members earn their living from farming and plantations.
- Suggested measures:
  - Formulate regulations to allow equal opportunities for all villagers to benefit from forest products and resources.
  - Introduce incentives in the form of sufficient long-term funding for replanting and reforestation activities to villages that are institutionally capable to manage the funds in a responsible way.
  - Find the ways to exercise inexpensive replanting and reforestation activities, manageable by the community members, without having to wait for external funds.
  - Promote efforts to increase the use of non-timber forest products.
  - Support the integration of farming activities and forest management.
  - Secure the long-term rights of the community to forest and community land, particularly the assurance that a particular right will not be spoiled by other economic activities, such as overlapping land allocation to a certain large enterprise.

1.2.2. Guidelines for Laos

a. Village action guidelines (VAG)

We selected three villages in the Phou Xang Hae Protected Area in Savannakhet Province (south part of Laos) and four villages in a degraded forest area in Oudomxay Province (north part of Laos), because the guidelines for a rich forest area might be different from those for a degraded forest area.

The main objective of the VAGs is to support the village authority in enhancing their role regarding forest management at the village level, and they are also useful to decision-makers at the village level for improving the implementation of forest-related activities. VAGs can be applied by the district agricultural and forestry office (DAFO), which intends to improve the policy to support the participation of local people in forest management. VAGs are also useful for supporting organisations such as foreign donors and NGOs to develop collaboration.

The substance of the village action guidelines was developed from the actual situation in research sites, and in doing so found that there are four main issues in local forest management, as follows:

1. land category and demarcation
2. livelihood
3. institutions (regulation, management system, decision-making)
4. human relations (or social capital)

Any efforts to improve local forest management (LFM) should deal with these issues; otherwise they will not be successful.

In the guidelines, several issues consisting of specific problems and good examples of each issue were listed. The internal and external factors that caused the issues were identified; principles, as fundamental rules for accelerating sustainable forest management by the local people, were clarified; and actions to overcome the issues, based on the principles and local reality, were proposed. Some examples of VAGs are listed below.

Land category and demarcation

- Issues (problems and good examples):
  - Villagers designated their spirit forest and protected forests spontaneously even before the establishment of the government-designated conservation area.
- Principle:
  - Customary rules for the use of spiritual forest are kept by the local people, and the forests are protected.
- Actions:
  - Transform the religious events to village regulations in statutory form to enable the local people to restrict the use of the spiritual forest.
  - Recognise the concept of forest conservation through the events related to the spiritual forests.

Human relations (or social capital)

- Issues (problems and good examples):
  - Only rich villagers or village élites were able to participate in the programmes supported by external donors and governments.
  - Ethnic groups living in the protected areas are classified as midland Lao, a minority group in Laos. They have customs of forest spirit worship and follow a unique lifestyle and culture different from the lowland Lao, the majority of people in Laos.
- Principle:
  - All ethnic groups and all villagers have rights to receive administrative service impartially.
- Actions:
  - Inform the local people of the detailed project plan, especially poor villagers and villages where minorities reside.
  - Build good relationships and mutual trust between villagers and DAFO staff.

b. Local policy guidelines (LPG)

The main objective of the LPGs is to support the local authorities in conducting sustainable forest management using the participatory method. LPGs are useful for local government decision-makers in developing local governance. In addition, they can be applied by the district agricultural and forestry office (DAFO) to implement policy to support the participation of local people in forest management.

The same items as in the village action guidelines were identified and proposed in the LPGs. Some examples of LPGs are listed below.

Livelihood

- Issue (problems and good examples):
  - Regardless of the village territory, the local people are allowed to collect non-timber forest products (NTFPs) for household consumption, while cross-border collection of NTFPs for sale is prohibited.
- Principle:
  - Customary rules for the use of marketable forest products are upheld.
- Actions:
  - Make an agreement on forest management among relevant villages, as well as support the local people's customs.
  - Integrate the agreement into the land-use plan in each village.

Institutions

- Issues:
  - Villagers established customary rules and taboos to avoid disturbing forest spirits. These rules included regulations on the use of forest resources such as a ban on felling rattan stems, burning for swidden agriculture, and logging large trees. These rules are applied to the rainy season, when plants and trees grow the most.
- Principle:
  - Management and collection of forest products in accordance with the local custom during the rainy season is maintained.
- Action:
  - Recognise the customary use of forest products in the rainy season, and approve its use as a useful forest management system.

1.2.3. Guidelines for Far East Russia

In the case of Far East Russia, comprehensive guidelines were drafted instead of village action guidelines and local policy guidelines, because village action guidelines were regarded as ineffective for changing and improving the state of participatory forest management under the present socio-political situation and the long-standing traditions of forest management in Russia.

The structure of the guidelines includes the following:

- an introduction (issue formulation)
- the socio-economic situation related to forest use in the research sites
- population classification in the southern part of Khabarovskiy krai according to the opportunity for its involvement in forest management
- obstacles to the local population's involvement in forest management
- links with *krai* (provincial) laws, official, and public programmes
- recommended measures for involving the local population in forest management
- conclusion

The working hypothesis of the guidelines is based on the recognition that local residents best know and understand the state of their own forest ecosystem and its reaction to anthropogenic pressures. They are directly interested in sustainable forest resource use, so they are able and willing to support correct decisions, or oppose wrong ones. Therefore, their involvement in forest management could promote the transition to sustainable forest use.

Research sites were chosen in three levels: (1) Khabarovskiy krai as a whole, (2) Lazo raion (district), and (3) two rural municipal formations (RMF) of the *raion*—Sita as a depressive case and Sukpai as a progressive case. An indigenous Udege village was also used as a case at the lowest level.

Classification of population

The guidelines contain two types of classification of population: demographic and social.

Demographic classification based on three population sets

- The first set, residents of large and average towns with populations over 50,000 people, is typified by the following characteristics:
  - professionals working directly in the forest sector
  - scientific workers researching forests and the forest sector (can be activated for participatory approach)
  - universities, schools teachers, and students (prospective for participatory approach)

  - members of ecological and partially ecological NGOs (prospective for participatory approach)
  - residents using the forest for recreation (prospective for participatory approach)
  - the rest of the population, which is practically inert from the point of view of the participatory approach

- The second set, residents of small towns and large settlements with populations from 5,000 to 50,000, includes practically the same target groups as the first set.
- The third set, residents of settlements and villages with populations of 5,000 and less, consists of residents of settlements that have a number of the following characteristics:
  - located on the banks of big rivers or sea-side, based on fishing and servicing water transport;
  - at small industrial units;
  - near a railway, mainly transport workers;
  - in agricultural areas;
  - have dead or dying forest industry activities, are surrounded by depleted forests, live in depressive settlements (prospective for participatory approach);
  - have active and even developing forest industry activities, surrounded by prospective forests (prospective for participatory approach);
  - have a high share of aboriginals (prospective for participatory approach); and/or
  - predominantly work using intangible forest benefits especially recreation and tourism (prospective for participatory approach).

Social classification of population

This classification, developed for the third set as the main target for the guidelines, is divided by the following nine types of community people based on their readiness to participate in forest management:

- forest workers (not high)
- business people (medium)
- managers (high)
- office workers (not high)
- retired people (medium)
- housewives (not high)
- students of universities and colleges (not high)
- school children (medium)
- unemployed (not high)

Obstacles to involvement of the local population in forest management

- Legal aspects: lack of legal basis for participation of the local population in forest management
- Institutional aspects: lack of rights at the municipal level, lack of specific mechanisms, alienation of people, loss of control, discrepancy of methods, and market, etc.
- Financial aspects: lack of finance on the municipal level, lack of financing of the participatory approach
- Communication aspects: undeveloped road network, lack of communication means
- Information aspects: insufficient and distorted information
- Social aspects: public passiveness, social dependence, outdated thinking, lack of feeling of ownership, low priority of forestry, antagonism between stakeholders, loss of aboriginal skills

We should note that a number of *krai* laws as well as official and public *krai* programmes envisage, directly or indirectly, involvement of the local population in forest management.

Recommended measures

Recommended measures for involving local populations in forest management are described by the parameters of the target type of population, executor, term of execution, and financing source. They form the following groups:

- legal (3 measures)
- institutional (2 measures)
- financial-economic (2 measures)
- informational (2 measures)
- social (9 measures)
- raising educational level (6 measures)

The proposed measures are distributed according to the competence level of their executors in the following way: *krai* (province) level; *raion* (district) level; level of rural municipal formation; level of parties, other NGOs, enterprises, and institutions.

Some examples of the comprehensive guidelines are listed below.

- Social obstacles:
  - public passiveness of the population, which is caused first of all by loss of trust in authorities;
  - preserving of outdated thinking under new socio-economic and ecological conditions;
  - population alienation from forest management over many years caused people to not consider forest resources as their own; and
  - complicated relations among forest users and forest holders, among big and small firms, as well as among firms and the population.
- Measures:
  - Develop special programmes to involve the population in forest management, including forming constant activities for the local population and city-dwellers to participate in forest management.
  - Organise public hearings on projects related to the use of forest resources and control the public hearings conducted.
  - Carry out public environmental assessment of developed projects with the purpose of using the results for the state assessment.
  - Conclude “agreements of social responsibility” with forest firms and associations with municipal administrations simultaneously with permitting the use of local forest resources.
  - Establish local population working groups and organise their dialogue with forest users, the krai, and federal forestry officials.

The conclusion states that the recommendations cannot be implemented only within the framework of the forest sector. Implementation depends on the level of the population’s public-political activity, change of natural resources property rights, the degree of democracy, maintenance of law and order, etc. Citizens should be assured that their efforts for sustainable forest management will be worthwhile. Only in this case will the population’s participation in forest management become active and permanent.

1.2.4. National policy recommendations (NPR) for three countries

Considering the measures suggested in the results of the first phase of research, in particular those related to ensuring the participation of local people, in the second phase we developed national policy recommendations for each target country.

The research identified several elements that need to be ensured:

- access to information
- the opportunity to make comments, opinions, and objections
- equitable sharing of benefits, in particular local people
- prior informed consent

These elements can be realised by employing supporting measures, which are classified into legislative measures, administrative measures, judicial measures, and others. Legislative measures provide a basis of participation by stipulating elements as rights or a duty of the government, while administrative measures develop policies, provide support to local people, and disseminate information for the purpose of ensuring the rights authorised by the legislative measures. Then the rights of participation need a judicial mechanism for protection from violation of the rights. Research on the target countries clarified the necessity of elaboration for effective implementation of the system related to participation, because people most often don't use their rights to participate, even though, these rights are ensured by law.

The results of the second phase indicated nineteen detailed measures for ensuring the participation of local people, such as authorisation of local people's rights to forest and use of an environmental impact assessment (EIA) system. Moreover, the results indicated the necessity of coordination among relevant ministries and departments to ensure public participation, and they also pointed out the importance of making and showing clear instructions or directions for the process of participation. Finally, they emphasised the importance of having a dispute settlement mechanism for ensuring the rights of local people.

1.2.5. Other outputs

The FC Project published a series of policy trend reports (PTR), which contained reports written by individual collaborators from a number of Asian countries including Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Mongolia, Nepal, the Philippines, Sri Lanka, Thailand, and Vietnam. These also contained an analysis of UNFF discussions and standards from the International Organization for Standardization (ISO) in the field of forest management and related industries.

The FC Project also published country reports that contain our main research reports on the three target countries (Indonesia, Laos, and Far East Russia).

Two commercial books were also published in the second phase:

- Makoto Inoue and Hiroji Isozaki, eds. 2003. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan.* Kluwer Academic Publishers, 358pp.
- Makoto Inoue, ed. 2003. *Deforestation and Forest Conservation in Asia* (in Japanese). Chuuouhouki Publishers, 324pp.

Project staff participated in the first and the second substantive meeting of the UNFF in New York in June 2001 and March 2002, and in COP6 meetings of the Convention on Biodiversity at The Hague in April 2002. One of the staff was dispatched to the First Conference on Public Participation of the Asia–Europe Meeting (ASEM) in June 2002 to make a presentation based on the results of our second phase of research.

1.3. Degree of attainment of the objectives

1.3.1. Modifications of the outputs

In the first half of FY2002, we decided to modify the planned final outputs, as described below.

- **Village level:** In the initial plan, we were going to develop "local guidelines." We changed the name to "village action guidelines" (VAG) in order to make the scale of the target clearer.

- **National level:** In the initial plan, we were going to develop "policy recommendations." We changed the name to "national policy recommendations" (NPR) in order to make the scale of the target clearer. But it is very important that local governments as well as stakeholders at the local and national levels can make full use of these recommendations in order to promote the process of decentralisation.
- **Local government level:** In the initial plan, we were going to develop "national guidelines" as an integration of the local guidelines and policy recommendations. We noticed, however, that it was more reasonable for us to develop the guidelines at the local government level rather than the national level in order to be more relevant in the context of dynamic changes in the state of participatory forest management that are occurring so far as a result of decentralisation policies. Thus, we shifted our focus from the national to the local governments to develop the "local policy guidelines" (LPG).

1.3.2. Attainment of research outputs

As shown in Section 1.2, we developed village action guidelines (VAG) and district policy guidelines (DPG) for West Kutai District in Indonesia, village action guidelines (VAG) and local policy guidelines (LPG) for both Savannakhet Province and Oudomxay Province in Laos, and comprehensive guidelines for Khabarovskiy Krai in Far East Russia. We also developed national policy recommendations (NPR) for the three countries. In this sense, almost all objectives were successfully attained after modification of the concrete outputs mentioned above.

1.3.3. Remarkable attainment of expected outcomes/impacts in Indonesia

a. The importance of West Kutai District, East Kalimantan Province, Indonesia

It is important to recognise the strategic significance of the district of West Kutai in East Kalimantan, because the area is covered with the largest and tallest forest in the Asia-Pacific region. West Kutai District is located in the upstream region of the Mahakam River, and the provincial capital city, Samarinda, is located downstream. It is important to conserve forests in the upper Mahakam watershed in order to maintain a good environment and water for the city. In this context, as many other cities share similar concerns about forests and water supplies, West Kutai should not be regarded merely for its significance as an Indonesian district, but also as a valuable area to learn more about sustainable forest policies in Asia.

b. Contribution and involvement in the process of policy reformation

West Kutai District, East Kalimantan, has actively established milestones in managing the forest since its establishment in 1999. Some of the milestones, among others, are the formation of the Working Group for the District Forestry Programs (*Kelompok Kerja Program Kehutanan Daerah*, or *KK-PKD*), issuing the "Portrait of West Kutai Forestry" and developing the Programs for West Kutai Forestry, developing the District Regulations for the District Forestry and for the Implementation of Community Forestry Programs, and preparing the District Forestry Database.

Most notably, the Forest Conservation Project (FC Project) made substantial contributions to the process of revising a local ordinance, Implementation of Community Forestry Programs, by offering comments on the draft of the ordinance, which was issued in June 2003.

Also, as a part of the forestry reform process, the FC Project—together with the Center for Social Forestry at Mulawarman University (CSF-UNMUL), the Indonesian Institute of Science (LIPI), Jakarta, and the West Kutai District Forestry Service—added two new milestones to support community participation in managing forests: the village action guidelines (Guidelines for Forest Management in the Village) and the district policy guidelines (Guidelines for Community Participation in Forest Management at the District Level) outlined above in Section 1.2. The West Kutai District Forestry Service indicated its intention to carry out pilot implementation of the guidelines in cooperation with the IGES-FC Project.

2. Self-evaluation of the project

2.1. Evaluation of achievements

2.1.1. Positive aspects

- Research activities that employed participatory action research (PAR) methods were timely for the main target stakeholders of our project, including the local people and local governments. They needed direct facilitation, support, and collaboration from outsiders, including development specialists, academics, NGOs, and international organisations, in the face of decentralisation policies. Poverty eradication of the local people was a very important issue to be tackled in cooperation with other stakeholders. Our research focus on local participation was very timely in this regard.
- Research activities of the international approach were also useful for the local people and local governments, in that these helped them understand the international obligations that their national governments should undertake. The interpretation of international and national policies to local governments and the local people is important, because they have only limited access to information in the international arena and often lack the capacity to properly analyse the implications of international conventions.
- The positioning of the guidelines, our outputs, was distinctive compared with the guidelines developed by the International Tropical Timber Organization (ITTO). The ITTO guidelines are a kind of international benchmark developed by scientists that cover various aspects such as natural forest management, conservation of biological diversity, planted forest management, and fire management. In contrast, the characteristic features of our guidelines include the facts that (1) the aim was mainly the promotion of local participation and (2) that the guidelines would be elaborated by researchers in cooperation with the local people through a bottom-up approach.
- As mentioned in Section 1.3, we had a significant influence on the process of policy reformation in West Kutai District in Indonesia.
- There is a strong possibility that the local stakeholders in the three target countries will make use of the guidelines, because they were directly involved in the process of drafting them, were engaged in the participatory action research, and attended the workshop series at the village and local government level.
- As mentioned in Section 1.3, West Kutai District is eager to launch a pilot implementation of the guidelines in cooperation with the IGES-FC Project.
- Fortunately, Mekong Watch, a Japanese non-governmental organisation (NGO) that cooperated on the FC Project's research in the second phase, has just started preparing follow-up activities of the guidelines in Laos. Mekong Watch will carry out pilot implementation of the guidelines and revise them in cooperation with the IGES-FC Project.
- We disseminated valuable information on forest policy by publishing policy trend reports, country reports, etc.
- We took part in the meeting of the Convention on Biological Diversity (CBD), made an intervention to input our research results into the international arena at the beginning of FY2002, and distributed a paper at the United Nations Forum on Forests (UNFF) and the World Summit on Sustainable Development (WSSD).

2.1.2. Negative aspects

- It was often suggested that we should generalise the guidelines. It was, however, very difficult to do so because they were basically specific to each research site, although we were able to examine the applicability of the guidelines in other places. Actually, from the beginning, we did not intend to generalise the guidelines because we thought that it was more important to examine the applicability of the guidelines than to generalise them. We were concerned that the originality of our guidelines would be decreased, compared to the ITTO guidelines, if they were generalised.
- We also often received the criticism that our activities were too focused on the local level to make our presence felt in the international arena. It is true that we did not produce enough contributions in the international arena as desired. But actually, contributing to international negotiations on world forest issues

was given secondary importance in the second phase from the beginning because we followed the suggestions of the IGES Board of Directors and Trustees in the first phase.

2.2. Evaluation of project management

2.2.1. Positive aspects

- Job allocation and collaboration among the project leader and full-time staff, which included a project manager, visiting researchers, and collaborators, was effectively carried out. The cooperative spirit and cohesiveness of FC Project members was very strong, which resulted in good teamwork.
- The budget was allocated to the activities carried out by full-time staff, collaborative organisations with whom we concluded memorandums of understanding (MOU) for cooperation in the three target countries, and individual collaborators whom we commissioned for research. The budget allocated was utilised very efficiently in order to produce the guidelines, recommendations, policy trend reports, and country reports.
- Full-time staff as well as the project leader contributed to procure external competitive research funds from organisations such as the Japan Society for the Promotion of Science (JSPS), Foundation for Advanced Studies on International Development (FASID), Sumitomo Foundation Grant for Environmental Research Project, and the Aeon Foundation.
- We always met the deadlines for the submission of documents requested by the IGES Secretariat.

2.2.2. Negative aspects

- During the second phase, IGES Directors and Trustees often asked FC Project staff the reason why we focused on local participation and its significance. We were confused and puzzled how to handle the question, because our focus on local participation was accepted by the Board of Directors and Trustees in the first phase—it was even suggested by the Board members. We have been struggling with this situation for almost two years. The opportunity cost on this matter was too much.
- A full-time staff member in charge of the international approach took a long-term sick leave due to the sick-building syndrome. We made great efforts to attain the objectives, achieved by the international approach, by asking visiting researchers to supplement it.
- A research secretary who also suffered from the sick-building syndrome took a long-term sick leave, and we experienced difficulties in employing a few research secretaries on short-term contracts.

3. Conclusion

The support and assistance kindly provided to the second phase of the Forest Conservation Project are greatly appreciated. The negative aspects of our research achievements in the second phase led to a request to design a third phase of the research project in order to effectively bridge the gap between our field experiences and global issues. The members of the third phase FC Project will make the utmost efforts to produce excellent research results.

References

Commercial publications

Makoto Inoue and Hiroji Isozaki (eds.) 2003. *People and forest: policy and local reality in Southeast Asia, the Russian Far East, and Japan*. Kluwer Academic Publishers, 358pp.

Makoto Inoue (eds.) 2003. *Deforestation and forest conservation in Asia* (in Japanese). Chuuouhouki Publishers, 324pp.

Other publications

IGES Forest Conservation Project. 2002. *Policy trend report 2001*. IGES, 104pp.

IGES Forest Conservation Project. 2002. *Russia country report 2001*. IGES, 103pp.

IGES Forest Conservation Project. 2002. *Report to the Ministry of Environment: Scale and mechanism of illegal logging* (in Japanese). IGES, 80pp.

IGES Forest Conservation Project. 2003. *Policy trend report 2001/2002*. IGES, 149pp.

IGES Forest Conservation Project. 2003. *Russia country report 2002/2003*. IGES, 134pp.

Forest Conservation Project. 2004. *Indonesian country report 2003: The locals and the politics of participation in forest management.* IGES, 200pp. (in press).

IGES Forest Conservation Project. 2004. *Towards participatory forest management in Laos—Laos country report 2003*. IGES (in press).

IGES Forest Conservation Project. 2004. *Policy trend report 2003*. IGES (in preparation).

Economic Research Institute (Far Eastern Division, Russian Academy of Sciences) and IGES Forest Conservation Project. 2004. *Comprehensive guidelines for local population participation in forest management in the southern part of Khabarovskiy Krai* (in Russian). ERI and IGES (in press).

IGES Forest Conservation Project, Center for Social Forestry and West Kutai District Forest Service. 2004. *West Kutai District: Guidelines for enhancing community participation in forest management* (in Indonesian). 80pp. (in press).

IGES Forest Conservation Project and Faculty of Forestry, National University of Laos. 2004. *Guidelines for local forest management in Savannakhet and Oudomxay Provinces, Laos* (in Lao). IGES (planned).

IGES Forest Conservation. 2004. *Guidelines and recommendations for sustainable and participatory forest use and management.* IGES (planned).

Environmental Education Project

Osamu Abe
Project Leader

1. Overview

1.1. Background, objectives, and approach

1.1.1. Background

Burning problems such as inappropriate development, poverty, bulging populations, unsustainable production and consumption patterns, human rights, and gender discrimination have been recognised as being linked to environmental deterioration. The gravity of the deterioration cannot be lessened without effective use of environmental education. This was first recognised at the 1992 United Nations Conference on Environment and Development (UNCED) and then reinforced at the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg. Environmental education has been identified as the key factor for reversing this deterioration. The recently developed concept of education, i.e., education for sustainable development (ESD), maintains that environmental education (EE) is, in fact, the predecessor of ESD. And only by broadening the scope of environmental education, can we realise the goal of a "sustainable society." In the true sense, it can be said that the problem concerned with unsustainable environmental management cannot be tackled at all without promoting environmental education.

The issue of environmental degradation is complex and transboundary in nature and requires holistic education that deals with the environment, the economy, and social equity.

EE is the process of transferring wisdom, knowledge, and best practices to a learner so that the learner is able to modify his/her overall behavior towards the realisation of a sustainable society. The exact method of delivery depends on the needs and abilities of the learner, the learning environment, inputs, teaching/learning methods, and so forth.

The EE Project reviewed the situation of environmental education in the Asia-Pacific region in its first phase of research. The findings suggest that it is saddled with a multitude of problems, such as lack of national policy, nationally controlled curricula, lack of trained manpower, inadequate data, information, and so forth. Nevertheless, many countries have initiated innovative educational activities. Some have been quite successful, while others are mediocre. Still others are not even up to the mark. Indeed, successful activities are not making any significant impact because they are confined to isolated places and go largely unrecorded. Analysis also suggests that many countries share some common points, which includes the concerns to develop the process of transition to a sustainable future, producing qualified manpower, developing appropriate educational materials, and so forth. The common points can be promoted at the regional level, if they are brought together under the common framework of regional cooperation, which needs to be developed urgently, or the scope of the existing mechanism of cooperation should be broadened specifically to include environmental education, so that the process of putting these commonalities on the agenda can be accelerated for improving the quality of the environment. Environmental problems are often intricate, and the efforts of a single country alone are not sufficient. This can never be solved; in order for change to occur, there needs to be support and mutual cooperation at all levels, from all quarters, and at all times.

With a view to putting the process of regional cooperation on track, the EE Project formulated a comprehensive strategy for promoting environmental education in the region. This was carried out in close partnership with collaborators and partners. While the strategy is increasingly important in improving the overall status of environmental education, the strategy alone is nothing if it is not implemented simultaneously by all those concerned. Our experiences also indicate that actions should be facilitated to put both findings and strategies into practice in order to make a real difference on the ground.

Activities in the first phase were ambitious but preliminary in nature from a global perspective. They lacked practical application and action to meet the challenges, and there was a large gap between perceptions and reality. Also, the United Nation agencies, international non-governmental organisations (NGOs), and other partners have been urging IGES to play a major role in accelerating the process of environmental education and lead initiatives in the region, as there has been no one organisation dealing comprehensively with the problem of environmental education in the region.

Under these considerations, the mission of the EE Project was redefined as follows: *"To provide leadership in promoting and fostering citizens to work towards achieving a sustainable future."* This theme was later developed further to identify the appropriate mode of disseminating environmental information, knowledge, wisdom, and best practices in the Asia-Pacific region. In other words, its purpose was to promote environmental education through action research, i.e., identifying the problem, then finding solutions and applying them through participatory techniques.

It is hoped and believed that practical actions by the EE Project will encourage its partners and stakeholders to formulate policy proposals on environmental education and help build up the framework of IGES as the hub of environmental education for the region.

1.1.2. Objectives

In view of the theme identified above, the EE Project set forth the following objectives (tasks):

1. Develop appropriate educational materials to promote sustainable management of the environment.
2. Organise training programmes for developing the capacity of human resources to deal with environmental issues in the region.
3. Develop an innovative model of education for community-based eco-tourism.

1.1.3. Approach

The methodological approach was primarily based on the philosophy of action research, with an emphasis on adapting the plans and schemes that were based on field application and input received from real users. An inter-disciplinary framework, such as the combination of development economics, policy studies, or other subjects, was employed in each activity so that it did not become biased and skewed.

Different tools of participatory rural appraisal (PRA) were employed in collecting and analysing information, formulating specific programmes, pilot-testing them, and molding them for adaptation to different situations. In other words, the EE Project employed the cycle of "identifying the issue" to "planning" to "implementing" to "revising" in an active, participatory manner. Specific tools of PRA that were used in these activities ranged from documentation of pioneering examples to literature review, from field studies to interactive meetings and training, from commissioned reports to roundtable dialogues, and from strategic exercises to problem-solving methods. More than one tool was used for each task, depending on its nature and importance, and sometimes a cluster of techniques was used to address a particular problem.

The EE Project also collaborated with the Japan International Cooperation Agency (JICA) to continue its learner-centered and activities-based training programme for NGO staff from Indonesia. The sequence of methods included the following:

1. existing information was reviewed and consolidated to scope out the ranking of priorities;
2. problems were assessed and appraised through discussion and dialogue with stakeholders—sort of a "rapid reconnaissance" technique;
3. different forms of strategic exercises were employed to formulate the programme to deal with the issue;
4. each programme underwent the process of pilot-application, particularly in collaboration with our stakeholders in the region, to determine its usefulness, applicability, relevancy, and points that are adaptable to different situations; and
5. the inputs hence received were incorporated to regenerate the new programme for wider application and dissemination.

1.2. Review of achievements

1.2.1. Developing materials for raising environmental awareness

Educational materials developed under this task are summarised below.

- *Environmental Education in the Asia-Pacific Region: Status, Issues and Practices* - This book is the compilation of 36 status reports (34 countries and two special areas) from the Asia-Pacific region. It provides a bird's-eye view of the overall status, constraints, and opportunities of environmental education, and looks at how education is moving towards education for sustainability. It also makes recommendations to promote regional cooperation, capacity building, and mobilisation of resources.

- *Regional Strategy on Educational Education in the Asia-Pacific* - This document was prepared in collaboration with educators, facilitators, and parishioners from the Asia-Pacific region. It identifies five action agendas with suggested activities at the regional, sub-regional, and national levels: strengthening stakeholders and their capacity, developing partnerships, reviewing curricula, improving governance, and mobilising resources.

- *The Path to Success: Some Pioneering Examples of Environmental Education* - This book identifies good examples of environmental education from 18 countries and shows how they are exemplary. The examples are called "pioneering examples" to mean innovations in the field of environmental education. These are not necessarily the best in their field, but they are certainly worthy of merit. The book presents 69 such cases, including some failed education programmes, from 15 countries of the Asia-Pacific, two countries from Africa, and one from Central America.

- *Making Sense of Climate Change* - This booklet aims at raising the awareness of secondary school students about climate change and its impacts on different ecosystems, and attempts to enhance their understanding of global efforts and responses. Because the language of the book is simple and easy to understand, high school students were the primary targets for this booklet; however, the general public can also benefit from it.

- *Package of community-based educational materials* - The EE Project prepared a package of educational materials for the conservation and wise use of wetlands, which was developed on the assumption that environmental problems are collectively the responsibility of the community and that their solution requires collective understanding. The package consists of four modules, each designed for a different target group in the community. The modules are written in the framework of the LEAP

method, which represents the first letter of each sequence of the "learn, experience and evaluate, adapt, and promote" approach. In other words, the learner should (**L**) learn about the issue thoroughly, (**E**) experience and evaluate the knowledge, (**A**) adapt the knowledge to their community, and (**P**) promote the knowledge. The modules were pilot-tested in Bangladesh, Nepal, and India. Following an intensive discussion in a regional workshop, they were revised, and the following were published in booklet form: *Let us Keep our Wetland Healthy* (for high school teachers), *What is Happening to Our Freshwater Resources* (for high school students), *Developing Objective-oriented Programs* (for NGOs and community organisations), and *Participatory Rural Appraisal* (for teachers, NGO representatives, researchers, and practitioners). The topic on the wise use of wetlands was chosen because wetland degradation is a serious concern that requires the collective efforts of the whole community to address. This means that no one single educational material would be sufficient to raise the awareness of the diverse groups in a community, because their concerns, interests, and knowledge about the issue vary greatly. This necessitated the preparation of this package for the entire community. It was discussed in the workshop, "Communication, Education, Public Awareness (CEPA)," at the 17th Global Biodiversity Forum, held in Valencia (Spain) in November 2002, where the material was acclaimed for being simple, timely, and systematically organised. The entire package was also discussed in an international workshop of wetland educators, planners, and managers in Thailand in January 2003. Then it was pre-tested in Bangladesh, Nepal, and India, and has now already been translated and adapted in India and Thailand.

- *Doing Education at Wetland Sites* - This book is the product of a regional workshop on the evaluation of educational materials held in 2003. It consists of 14 good examples of wetland education, and describes how they became successful in the conservation and wise use of wetland resources. It also contains a first-draft version of the modules of the community-based educational materials.

- *Education of Sustainable Development: Views and Vision* - This was produced as the report of a workshop on ESD in Nepal. It is the first of its kind on ESD in the Asia-Pacific, in general, and in Nepal, in particular. It consists of 22 papers written by renowned Nepali scholars and experts on the subject. It was also included in the United Nations Department of Economic and Social Development (UNDESD) Framework for a Draft International Implementation Scheme for enhancing general understanding about ESD and illustrating how the collaborative process has been moving ahead under the leadership of UNESCO.

- *Globalism and Education of Sustainable Development: Some Viewpoints* - This book contains a compilation of papers presented at the first pioneering symposium on globalism and education for sustainable development, organised by the EE Project in collaboration with Rikkyo University in mid-2003. Some 20 participants attended the symposium and presented papers on ESD, including topics such as environmental education, development education, citizenship education, and so forth.

- *Education of Sustainable Development: Putting Research Knowledge into Action* - IGES was one of the co-organisers of one session, "ESD for Implication for Wetland Conservation," chaired by the project leader of the EE Project (the author), at the Symposium on Mangroves in Brunei. Some 13 papers were presented in the session, and all of them are included in this book, which was published by the Ramsar Center Japan together with IGES. It deals with how ESD has been applied in the conservation and wise use of mangroves in Southeast Asia. This publication is a good example of productive collaboration between organisations.

- *Mangroves in Southeast Asia: Status, Issues and Challenges* - This book is also an outgrowth of the above-mentioned symposium held in Brunei. It contains many papers on mangrove conservation from the sub-region. Like the previous one, this book was also published by the Ramsar Center Japan together with IGES.

1.2.2. Organisation of a training programme for NGO capacity building

The EE Project continued to run its training programme, "Environmental Education Training," for NGO staff from Indonesia, which was first organised in 1999 in collaboration with the Japan International Cooperation Agency (JICA). Since then, the EE Project has continued running it annually. In the second phase, the EE Project organised two training programmes, in 2001 and 2002, respectively, in collaboration with JICA, with the objectives of (1) deepening the understanding and knowledge of the environment and environmental education, (2) improving the management capabilities of NGOs, (3) building a network of relevant NGOs in Japan and Indonesia, and (4) obtaining information and know-how about practical activities on environmental education by visiting actual sites in Japan and conducting interactions with related organisations. By employing various methods of teaching, such as lectures, hands-on activities, observations, and discussions, the programme provided an opportunity for participants to understand the need for improved international cooperation between Japan and Indonesia in the field of environmental education.

1.2.3. Developing innovative educational materials for eco-tourism

The EE Project also conducted research on eco-tourism education that took into account socio-economic conditions, including local income generation, community participation, and equity. Data and information from various sites were collected. Among the note-worthy activities was the case study of Tonle Sap Lake in Cambodia, where an in-depth socio-economic study was conducted using participant-observation and PRA techniques. In order to obtain pragmatic information, a trial eco-tour (with eight participants) was organised in the area, in cooperation with Cambodia's Ministry of the Environment, travel agencies, and local communities. The tour was useful for raising the concern of the local communities about the importance of eco-tourism as a way towards achieving sustainable development in the region. It also enhanced a closer relationship among the various stakeholders.

1.2.4. Other activities

1. The EE Project continued its research in support of the activities of the Tripartite Environmental Education Network (TEEN), made up of China, Japan, and Korea, in collaboration with the Japan Environmental Education Forum (JEEF).
2. A mini-study was conducted on how monks have been greening their curriculum for monk education and promoting the cause of the importance of nature in Buddhism. A small report is under preparation.
3. The network of environmental education has been expanding and has served as the most important platform for sharing new experiences and improving knowledge and best practices on environmental education in the region.

1.3. Degree of attainment of the objectives

While dealing with attainment of the objectives as stipulated in the research plan, two things need to be taken into consideration. One is the quantitative aspect and the other is the qualitative aspect. From the quantitative viewpoint, it can be said that the EE Project has, despite its resource constraints, been successful in achieving its major objectives. Qualitatively, however, it is difficult to pinpoint its achievements, but based on discussions with our collaborators, it can be said with a fair degree of confidence that the EE Project has been successful in influencing policy-makers in the region. The reports produced provide hands-on information to policy-makers; however, an in-depth analysis of critical issues is still required in order to convince them about the gravity of the issues in question. The EE Project also produced an impressive record of hosting workshops and meetings with an impressive participation of collaborators. These were useful in sharing experiences and expertise among collaborators, securing their participation, and making them feel that something was actually happening in the region. The EE Project has shown its effectiveness in reaching out to a large audience in the region in a cost-effective manner using methods such as networking, partnerships, workshops, case studies, and collaborative works.

2. Self-evaluation

2.1. Evaluation of achievements

2.1.1 Influence on policy-making processes

As described earlier, the EE Project is striving to have a positive influence on policy-making processes in the field of environmental education. The project leader, who is a member of the Steering Committee of ESD-Japan (Japan Council on the UNDESD for Sustainable Development), has already taken active and productive steps towards the formulation of a draft framework for an international implementation scheme for the Decade of Education for Sustainable Development (DESD) prepared by UNESCO. Another step taken is that its team members have become associated with The World Conservation Union (IUCN)/Commission for Environmental Cooperation (CEC) in the formulation of a regional strategy on the DESD for Asia. The EE Project has already promoted the idea among the policy-makers of Brunei Darussalam and Nepal through its workshop and symposium. Another sign of the EE Project's influence can be seen in the implementation of the regional strategy that it prepared by different countries and its endorsement by international organisations. And one of our researchers has been nominated to the Ramsar's CEPA (Communication, Education and Public Awareness) Specialist Group to integrate the concerns of CEPA into ESD. The EE Project also contributed to the activities of TEEN and JEEF.

2.1.2. Timeliness in terms of stakeholders' needs

The regional strategy prepared by the EE Project was timely, because no plan of action on environmental education for the region existed before its formulation. There were many sub-regional plans, but not one for the whole region. This was a creative and unique thing in the field of environmental education. Similarly, the EE Project's organisation of the ESD workshop in three different places was not only timely in raising the profile of ESD in the region, but it was also the first of its kind. The preparation of the community-based educational package is new and unique in the sense that it takes the holistic approach in raising the environmental awareness of an entire community. The framework, within which different modules have been presented, received acclaim from environmental facilitators, practitioners, and educators. Another example of timeliness can be witnessed in Indonesia, where a young, energetic participant, trained by IGES, has established an environmental education centre, called Kampung PENDING, to cater to the educational needs of the entire community, as well as to provide them with opportunities for self-employment. The establishment of a network of environmental NGOs in Indonesia, called Jaringan Pendidikan Lingkungan (JPL), is another example of successful promotion of environmental education activities in the region.

2.1.3. Uniqueness, originality, and effectiveness

The uniqueness of the EE Project includes the preparation of a status report compiled from 15 separate status reports from the region. This is a single book that summarises the activities of many countries in environmental education, including 69 pioneering examples. The community-based educational package is original in the sense that it attempts to meet the needs of the entire community in raising awareness and that the contents are organised in a systematic manner. All these reveal the originality of the idea and of the project's activities in environmental education. The existing network is equally effective in sharing the improved knowledge, genius, and best practices across the region. The initiatives of organising seminars on ESD have been the most creative, appreciated, and effective means to raise the profile of ESD.

The EE Project's eco-tourism research also contains elements of uniqueness and originality. Conservation was considered to be an instrument or force for realising sustainable development. In order to enhance public awareness of resource conservation and to promote the income generation capacity of local communities, the

case studies and eco-tourism pilot trial, in collaboration with local communities and NGOs, were found to be effective and pragmatic in some selected countries.

The educational materials that the EE Project produced received a good ranking from experts and specialists, and IGES conducted a trial on developing educational materials before their final dissemination. Both experts and specialists were involved in enhancing environmental awareness in the region. Efforts were made to reach out to those specialists and experts to ensure their active cooperation and assistance. It was in this sense that the EE Project is considered to be most unique and creative in its endeavors.

In the first phase, the EE Project did not initiate the application of its findings and recommendations on the ground. To address this, in the second phase more attention was paid to both research and its application. Owing to this new emphasis, the researchers are satisfied with what they accomplished in the second phase, because they were involved in implementing its strategies on the ground and receiving input. Furthermore, the EE Project has worked on translating our research outputs into concrete actions. For example, it produced and disseminated simple, effective, and community-oriented educational materials in the Asia-Pacific region. Similarly, it prepared an eco-tourism education model for the region by involving local communities. All these activities were related to and built upon the research findings of fiscal years 2001 and 2002.

2.2. Evaluation of project management

In terms of project management, basically, the project leader assumed overall responsibility. Taking account of the fact, however, that the post of project leader was a part-time position, a project manager was appointed from amongst the full-time researchers to assist the project leader and handle the daily management and administration of research activities. The project manager coordinated and managed daily activities and attempted to maintain a harmonious environment within the project, among researchers, and between the project and the IGES Secretariat.

The EE Project, despite its budgetary constraints and limited manpower, was successful in undertaking a relatively large amount of work, along with its regular evaluation and monitoring activities.

3. Conclusion

Unlike the activities in the first phase, the second phase activities were concentrated on disseminating environmental knowledge, wisdom, and best practices in the region. Because of the nature of this focus, the EE Project adopted the philosophy of action research, and thus made its activities more specific and practical. These were further enhanced by the United Nations declaration that the ten-year period (2005–2014) will be the Decade on Education for Sustainable Development. The EE Project was successful in organising some brainstorming sessions on ESD and in championing its cause around the region. Indeed, IGES has emerged as the pioneer institute in the advocacy of ESD. Three reports on ESD are testimony of its efforts to raise the profile of ESD. This is the niche that should be taken into consideration by IGES to promote environmental education in the future.

Despite its success, the EE Project has come to end its activities at the end of its second phase. Earnest efforts to merge it with the existing Capacity Building Programme into a new proposed Capacity Building for Sustainability (CBS) Project could not be materialised. The idea was inadvertently aborted in the middle of the process, followed by the decision to close the EE Project for good. This is a most unfortunate event for the research. Nevertheless, the idea and spirit of environmental education has not been eliminated completely, as each IGES project is carrying on its activities in different forms and shapes. This features the indispensability of environmental education in the dissemination of strategic research findings in the future. With this short note we would like to announce the successful termination of the EE Project.

Business and the Environment Project

Katsuhiko Kokubu
Project Leader

1. Overview

1.1. Background, objectives, and methodology

1.1.1. Background

Achieving a balance between ecology and economy is of paramount importance in resolving global environmental problems. Nevertheless, it can be hardly said that effective tools for balancing the two have yet been developed; but some of tools that do exist—public policies—can be categorised into three types: administrative regulations, economic measures, and promotion of voluntary corporate activities.

Numerous studies have been done concerning regulatory tools, such as administrative environmental regulations, and economic measures such as green taxes and levies. On the other hand, a sufficient number of studies have not been conducted to date on public policies for the promotion of voluntary corporate activities for environmental conservation, although their importance is widely recognised. Therefore, there has tended to be a lack of the empirical evidence and theoretical support needed to develop new public policies in this regard. Hence, the Business and the Environment (BE) Project continued research in its second phase on the theory and practices for the promotion of voluntary corporate activities.

For the promotion of voluntary corporate activities for environmental conservation, a mechanism that encourages companies to initiate environmental conservation activities on their own should be constructed. Also, the market and society should duly appreciate and support these companies, because this, in turn, further motivates them to step-up their environmental conservation efforts. In other words, it is very important to create a virtuous cycle, as shown in Figure 1.

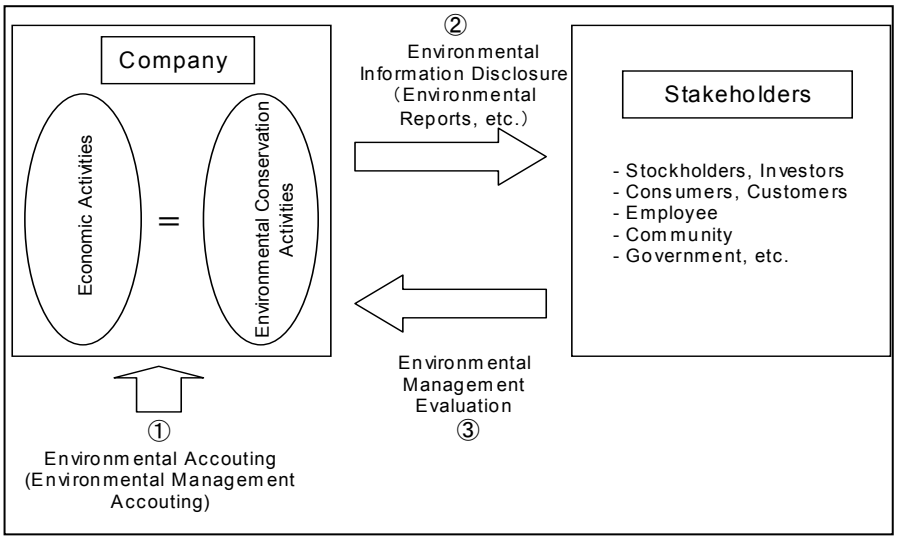


Figure 1. Research area of the BE Project and the interrelationships between research themes.

This cycle consists of three phases: first, a company should link its environmental conservation activities with its economic activities; second, the company should disclose information on its environmental conservation activities to the market and society; and third, the market and society should properly evaluate the eco-conscious activities of the company. The BE Project focuses on *environmental accounting* as a tool to link companies' environmental conservation activities with their economic activities, *environmental information disclosure* (for example, in the form of an environmental report) as a tool to provide environmental information to the market and society, and *environmental management evaluation* as a tool to evaluate the eco-consciousness of companies. The BP Project intends to contribute to the construction of a socio-economic system that promotes voluntary corporate activities for environmental conservation through practical studies of these three approaches.

Since the development of environmental management tools is an important issue for other Asian countries as well, we conducted investigations of the current circumstances of environmental management in the Asia-Pacific region through information collection and sharing.

Specific research objectives and methodologies as well as research findings in the Asia-Pacific region will be discussed below for each of the following four categories: environmental accounting, environmental information disclosure, environmental management evaluation, and environmental management.

1.1.2. Objectives and methodologies of research on environmental accounting

The objectives of the research on environmental accounting are to identify problems through detailed surveys of Japanese companies' environmental accounting practices and then propose what should be done to improve them.

Questionnaire surveys and analyses of environmental accounting information in Japanese companies' environmental reports were conducted to investigate the current state of environmental accounting practices. The surveys and analyses were intended to present a broad overview of Japanese environmental accounting practices and examine the influences of the Environmental Accounting Guidelines provided by Japan's Ministry of the Environment (MOE) in order to look into the effectiveness of the guidelines.

The surveys of the current state of Japanese companies' environmental accounting practices demonstrated that the development of environmental management accounting is an important issue. Therefore, research and development of environmental management accounting tools became the next theme to be addressed. From among various available environmental management accounting tools, the BE Project selected *material flow cost accounting* as the most useful method for business management. We conducted a test-introduction of material flow cost accounting in two Japanese companies with a view to enhancing the method's effectiveness.

Because environmental accounting progresses year by year, in the third year of the BE Project a large-scale questionnaire survey was carried out again on environmental accounting practices for the purpose of clarifying which direction to take in the future.

Considering that the primary objective of environmental accounting is contribution to business management, a study group consisting of researchers of the BE Project and business people was organised, and periodic meetings were held to report research findings and have discussions concerning concrete cases of corporate environmental accounting. We also carried out vigorous efforts to exchange information on environmental accounting methods with other Asian countries in order to strengthen cooperative relations with them.

1.1.3. Objectives and methodologies of research on environmental information disclosure

As in the case of research on environmental accounting, the objectives of research on environmental information disclosure were to identify problems through careful analysis of Japanese companies' practices and propose what

should be done for improvement. This research focused on environmental reports as instruments for environmental information disclosure.

For analyses of current Japanese business practices, we continued a content analysis of environmental reports for three years, interviewed environmental report compilers, and surveyed the needs of stakeholders. The research aimed to come up with policy proposals to encourage companies to publish environmental reports and also to clearly indicate which points should be improved in business practices.

In order to use environmental reports as a tool for environmental management evaluation, it is indispensable to assure comparability and credibility of the information disclosed in them. We decided to conduct separate studies on the two themes of *information comparability* and *information credibility*. For both themes, in-depth analyses were made from the viewpoint of actual environmental reporting practices with the goal of making recommendations for improvement in environmental reporting.

1.1.4. Objectives and methodologies of research on environmental management evaluation

Environmental management evaluation practices are not as popular as those of environmental accounting and environmental information disclosure. The research was designed to collect and analyse best practice samples and produce analysis findings to contribute to future business practices in environmental management evaluation.

One form of environmental management evaluation is external evaluation, or evaluation by the market or society. External evaluation should be reflected in internal evaluation. For this reason, research was done on two aspects: external evaluation and internal evaluation.

As for external environmental management evaluation, we explored what kind of evaluation criteria are used by domestic and overseas eco-funds and environmental rating organisations for their own analyses, and clarified their methodologies in a way to make the findings of the research useful in improving business practices.

In connection with internal environmental management evaluation, researchers interviewed companies that introduced a factor of environmental performance in their business evaluation systems in order to identify the best practices in environmental management evaluation.

There is strong demand that environmental management evaluation should be associated with environmental management indicators, whether external or internal. To meet this demand, it is important to assess environmental conservation effects in terms of monetary values. Regarding environmental management indicators, including eco-efficiency and monetary valuation of environmental conservation effects, best practice analyses used data that were included in environmental reports in order to propose better business practices in environmental management evaluation.

1.1.5. Objectives and methodologies of research on environmental management in the Asia-Pacific region

Environmental management in other Asian countries is a sub-theme of the BE Project. Basic research on the theme was made with the intent of checking to what extent the environmental management techniques of Japanese companies can be applied or be useful in other Asian countries.

In the first year of the project, surveys were conducted in nine countries (China, Taiwan, Korea, India, Indonesia, Malaysia, Thailand, the Philippines, and Vietnam) in order to get the whole picture of the reality of environmental management in these countries.

After the surveys, a study of the status of environmental management in four countries (Japan, Korea, the Philippines, and Indonesia), as well as a comparative study of two countries (Japan and Korea) and of three countries (Japan, China, and Korea), was carried out to distinguish the clear differences in business practices of environmental management between Japan and other Asian countries.

1.2. Review of achievements

1.2.1. Summary of research on environmental accounting

a. Analysis of the current status of environmental accounting information in environmental reports

First, research was carried out on the environmental accounting practices which Japanese companies were actually following. The research consisted of analysis of environmental accounting information disclosures in environmental reports and a questionnaire survey concerning environmental accounting practices.

External environmental accounting disclosures by the Japanese companies listed in the First Section of the Tokyo Stock Exchange were examined and analysed over three years. We requested the listed companies to send us their environmental reports in October of each year and then extracted environmental accounting information from the reports we received. As a result of our analysis, it was found that more than 80% of the companies publishing environmental reports disclosed environmental accounting information, suggesting that environmental accounting disclosures in environmental reporting are gradually spreading.

A detailed analysis of disclosed environmental accounting information was made to find how the companies categorised and measured their environmental conservation costs. The analysis results show that the influence of the MOE's Environmental Accounting Guidelines was very strong in terms of both categorisation and measurement methods (Reference [4]).

In terms of comparability of environmental accounting information, it is possible to compare numerical data among companies publishing environmental reports. But because they did not show the basis of calculation and there were significant differences in money amounts among even companies in one industrial field, we thought it difficult to properly compare the numerical data disclosed in the environmental reports. This problem is attributable to the fact that a standard calculation method for environmental accounting is not clearly defined. It is one of the main factors that seriously limits the external use of environmental accounting information and a major issue for the MOE's guidelines.

According to the MOE's guidelines, not only environmental conservation costs but also the benefits of environmental conservation activities and their economic benefits must be disclosed. The benefits of environmental conservation activities are measured quantitatively. In environmental accounting disclosures, the companies relied on not only the definitions of environmental conservation benefits given in the environmental accounting guidelines but also those in the environmental reporting guidelines and the environmental performance indicator guidelines. On the other hand, the economic benefits of environmental conservation activities are defined only in the environmental accounting guidelines.

The MOE's guidelines narrowly interpret the economic benefits of environmental conservation activities by limiting them to actual benefits such as energy cost savings and recycling revenues. Therefore, when the economic benefits versus environmental conservation costs are calculated in accordance with the MOE's guidelines, the calculated benefits appear small and do not adequately reflect the actual benefits of environmental conservation activities.

Despite this problem, some ambitious environmental accounting disclosures include both estimations of economic benefits and monetary valuation of the benefits of environmental conservation activities. In this respect,

best practice analysis was conducted to pursue future business practices of environmental accounting (Reference [1], Chapter 9).

b. Analysis of the actual status of Japanese companies' environmental accounting practices and problems

In order to illustrate the characteristics of Japanese companies' environmental accounting practices and shed light on their limitations, in October 2001 we carried out a questionnaire survey of 216 companies that had disclosed environmental accounting information in their environmental reports. This survey revealed various aspects of their environmental accounting practices. Especially, the following three findings brought about considerable influences on the subsequent stages of the BE Project (Reference [1] Chapter 8, [8] and [20]).

1. Regarding the objective of environmental accounting, the number of companies that placed priority on external disclosure (42.8%) was much larger than the number of companies that emphasised internal management (18.9%). Among the companies surveyed, 35.8% responded that they expected environmental accounting to be useful for both external disclosure and internal management.
2. Regarding the actual effects of environmental accounting, only 35.8% responded that it was useful for internal management. This implies that the effectiveness of environmental accounting for internal management is limited.
3. For the purpose of internal management, a majority of the companies surveyed used either an original form of publicised environmental accounting information (42.1%) or a modified form of publicised environmental accounting information (28.9%), while only 5.7% used environmental accounting information different from the publicised environmental accounting information.

It has been found that Japanese environmental accounting is mostly intended for external disclosure but is not effective for internal management.

The MOE expected their environmental accounting guidelines to be useful for both external disclosure and internal management. Nevertheless, it has become obvious that environmental accounting information intended for external disclosure has limitations in terms of effectiveness for internal management.

Considering that the MOE's guidelines are primarily designed for external disclosure, we thought that the limitations are unavoidable and that this problem can't be resolved by revising the guidelines. In external disclosure, comparability among companies is important, and it is thus necessary to standardise the method of measuring and calculating environmental conservation costs. On the other hand, environmental accounting for use in internal management should be designed depending on the purpose of decision-making.

As a consequence, we reached the conclusion that it is necessary to develop a new environmental accounting method (environmental management accounting) for internal management in order to overcome the above limitations. At present, there are various environmental management accounting tools; for example, the *Workbook of Environmental Management Accounting* (2002), published by Japan's Ministry of Economy, Trade and Industry (METI), describes six methods of environmental management accounting. Among these methods, we focused our research efforts on elaborating *material flow cost accounting*, which is thought to be the most effective for business management. The research is detailed below.

c. Research and development of environmental management accounting methods: test-introduction of material flow cost accounting

In material flow cost accounting, materials (flows of raw materials) are traced in terms of both physical units and monetary units, and the monetary value of material loss (waste) is accurately measured. While the value of waste was so far expressed only in physical units, in this method its value is also expressed in monetary units, permitting more rational selection of a waste reduction method.

Material flow cost accounting is based on an original concept developed by the IMU (Institut für Management und Umwelt). METI introduced the material flow cost accounting method into four Japanese companies on an experimental basis under an environmental management accounting project and demonstrated its effectiveness. Material flow cost accounting, however, is still in its growth stage and there is much to be improved. The proper way of introducing it into actual business management varies depending on the type of business or industrial field. Thus, it is important to carry out many case studies to get an accumulation of data on this method.

With the cooperation of the Nippon Paint Co., Ltd. and Shionogi & Co., Ltd., the BE Project experimentally introduced material flow cost accounting into these two companies (Reference [39]).

The Osaka factory of Nippon Paint paid special attention to energy loss in the experiment. In the context of material flow cost accounting, there are no prior case studies of capture of energy, even in Germany, and energy loss is a subject that attracts global attention. In the case of Nippon Paint, we developed a method of measuring the efficiency of utilisation of the electric power supplied to electrical equipment (this method uses power factor data). We also proposed a plan to improve the ways to reduce energy loss, which is one of the significant achievements of our research.

In the case of Shionogi, a pharmaceutical manufacturer, an attempt to estimate the emissions of carbon dioxide or other substances from chemical reactions in terms of monetary values was made. In the conventional approach of material flow cost accounting, it was impossible to get the result of chemical reactions between substances. In contrast, in Shionogi's case, we presented a solution to this problem. Furthermore, we were able to pave the way to improving their manufacturing process in a specific manner.

In February 2002, an international symposium on environmental accounting that focused on material flow cost accounting, titled "International Symposium on Environmental Accounting 2003: Cutting Edge of Environmental Accounting for Corporate Management and Environmental Conservation—Environmental Accounting in Japanese Corporate Management and Potentialities of Material Flow Cost Accounting," was successfully held with more than 200 participants (Reference [49]). Professor Bernd Wagner (University of Augsburg, Germany), who developed the material flow cost accounting method, was invited. At the symposium, we reported the findings of our research with a focus on the cases of Nippon Paint and Shionogi. When Professor Wagner visited the sites of the two companies, we confirmed the global importance of both case studies and had a discussion about the future of material flow cost accounting.

d. Analysis of future trends of environmental management accounting

We carried out a questionnaire survey about environmental accounting in general of the companies listed on the First Section of the Tokyo Stock Exchange in April 2003. In this survey we investigated how many companies had introduced environmental management accounting and conducted an analysis to identify which factors are important to increasing the effectiveness of environmental accounting for internal management (Reference [25]).

The survey result showed that the primary objective of environmental accounting for most companies was still external disclosure, but compared with the result of the survey of 2001, the recognition of environmental management accounting had increased and the effectiveness of environmental accounting for internal management had also improved.

As for factors that are relevant to the effectiveness of environmental accounting for internal management, we reached some statistically significant conclusions, as follows:

1. The stronger authority the environment department has, the more effective environmental accounting is for internal management.
2. The higher the in-house awareness of environmental accounting, the more effective environmental accounting is for internal management.

3. When a company adopts an environmental accounting system specially designed for internal management, environmental accounting is more effective for internal management.

Since environmental accounting requires the involvement of various departments, in order to introduce environmental accounting into a company, the authority of its environment department should be intensified and the awareness of environmental accounting within the company should be raised. These requirements are also important to increasing the effectiveness of environmental accounting for internal management.

The survey also demonstrated that the adoption of a special environmental accounting tool for internal management enhances its effectiveness for business management. Particularly, it has been proved that when the range of costs covered by environmental accounting is extended to all business costs, including material cost, then environmental accounting is more useful for business management. This implies the importance of material flow cost accounting.

The survey results also illustrated that the recognition and introduction of environmental management accounting are spreading. Specifically, it has become apparent that the introduction of environmentally conscious corporate performance evaluation is significantly correlated with improvement in environmental conservation effects in many aspects and is a contributory factor for the promotion of environmental conservation activities.

e. Constructing domestic and global networking on environmental accounting

We set up and managed the Study Group of Environmental Accounting for Corporate Management to provide opportunities to exchange information and views between environmental accounting researchers and business people. At each meeting of the study group, which focused on one topic at a time, a lecture was given on the latest theory related to the topic by a researcher, and a presentation was made by corporate staff carrying it out in actual practice, followed by a discussion among participating members of the group. This study group continued its activities for two years (first term: September 2001–July 2002; second term: September 2002–July 2003). Based on the outcome of its activities, a book entitled *The Front of Environmental Accounting* was compiled and published by The Energy Conservation Center, Japan, in March 2003 (Reference [1]).

In an effort to get a grip on the global trend of environmental accounting, the BE Project worked to establish the Environmental Management Accounting Network-Asia Pacific (EMAN-AP) under the umbrella of the Environmental Management Accounting Network (EMAN). This regional network intends to upgrade environmental management accounting methodologies and to promote the spread of environmental management accounting within the Asia-Pacific region. The members of this network, who are researchers specialised in environmental management accounting and company employees in charge of environmental management accounting, share information on the actual state of environmental management accounting through presentations of research findings and exchange of views. The BE Project thus helps develop cooperative relations between researchers and environmental accounting personnel in member countries (Reference [43]).

1.2.2. Summary of research on environmental information disclosure

a. Contents analysis of environmental reports

Since a main tool for corporate environmental information disclosure is the environmental report, it is imperative for an environmental report to provide sufficient and adequate information. The BE Project analysed the contents of environmental reports published by Japanese companies listed on the First Section of the Tokyo Stock Exchange for three years and explored the basic requirements for environmental reports to provide sufficient and adequate information (Reference [2] Chapter 2, [18]).

While the number of companies publishing environmental reports is increasing year by year (25% of the companies listed on the First Section of the Tokyo Stock Exchange published environmental reports in 2002), it

has become apparent that the percentage of companies publishing environmental reports varies depending on the industrial category. Thus it is obviously important to devise measures for promoting environmental information disclosure that are tailored to each industrial category. In terms of the items of disclosed information, the amount and quality of disclosed information were found to differ among environmental reports, even with regard to the items on which the MOE's Environmental Reporting Guidelines recommend information disclosure. For example, there were considerable discrepancies in disclosed information among industrial categories regarding such items as regulatory compliance, upstream environmental impact and reduction measures, and environmental impact related to transportation and reduction measures. Few companies disclosed information on cumulative soil contamination and similar environmental risks.

From the viewpoint of company size, it should be noted that in the manufacturing sector, the larger a company is, the more it discloses information on more items. Another point to note is that companies that had previously published environmental reports tend to provide information on more items in their reports than companies that published environmental reports for the first time. This fact tells that it is necessary to prepare guidance carefully designed for small-scale companies and companies inexperienced in environmental reporting.

Although various organisations conduct surveys of information disclosure in environmental reports, the analysis methods that they use are different, and there is some difficulty in using the findings of their surveys as objective evidence. The BE Project compiled a manual on a method of analysing environmental reports and successfully made an objective qualitative analysis of information in environmental reports in accordance with the method (Reference [2] Appendix).

b. Analysis of purposes of environmental reporting

A key factor that determines the purpose of environmental reporting is the intended audience of the environmental report. In Japan, no definite guideline has been given in this respect. Even in the MOE's Environmental Reporting Guidelines, all descriptions are given on the assumption that the readers are all kinds of stakeholders.

It is, however, beyond question that the type and content of environmental reports should be different, depending on whether the audience is either business people, such as investors and shareholders, or ordinary citizens such as end users. Arguments on environmental reports made so far have always concentrated just on whether reports should be either detailed or reader-friendly, without paying attention to this question of who the readers are.

In the BE Project, when the questionnaire survey of environmental accounting was conducted on the companies listed on the First Section of the Tokyo Stock Exchange in April 2003, we also investigated their purposes for publishing environmental reports. When asked which stakeholders were most important as readers of their environmental reports, 30% of the companies surveyed responded "shareholders and investors," 27% said "client companies," and 19% said "consumers" (Reference [2] Chapter 1).

It is possible that some shareholders or investors are non-professionals, while some consumers are professionals. Generally speaking, however, shareholders and investors who are recipients of environmental reports are very likely to be institutional investors or people who regularly attend general meetings of shareholders and read environmental reports with the same interest as asset securities reports. Client companies are supposed to be professional readers of environmental reports as the practice of green procurement continues to spread. By contrast, people that companies (publishers of environmental reports) consider as consumers are usually end users and not experts on environmental issues, though they include advisory specialists for consumers' affairs.

Therefore, it can be said that companies tend to design environmental reports primarily for business use by professional readers. Environmental reports intended for business use are different in nature from those for use by ordinary consumers. In the former type of environmental report, more emphasis is placed on disclosure

comprehensiveness or coverage and accuracy than on reader-friendliness. Needless to say, consumers are also important readers of environmental reports. Thus, it is a good idea to publish a simplified form of environmental reports for them.

In the BE Project, interviews were conducted with people in charge of publication of environmental reports of eleven companies in ten different industrial fields that are among the most environmentally conscious companies, in order to look into the actual practices which they followed in environmental report publication. From this, it has become clear that many people in charge of publication of environmental reports think it a challenge to improve the functionality of environmental reports as a communication tool (Reference [2] Chapter 5).

c. Research on comparability of environmental reports

In Japan, companies decide themselves whether or not to publish environmental reports. The MOE and METI have both published environmental reporting guidelines, but there are no standard methods of measuring various environmental performance indicators that are used in both guidelines. As in financial reports, information provided in environmental reports has to be comparable among companies so that environmental reports function socially as indicators showing the degree of eco-friendliness of business management.

The efforts to make public policies for the promotion of environmental reporting have been concentrated on increasing the number of companies that publish environmental reports. However, now that an increasing number of companies publish environmental reports, comparability of information is a looming issue.

In order to analyse the comparability of currently available environmental reports and develop measures to improve comparability, we selected a few companies from each of the three industries—automobiles (Toyota Motor, Nissan Motor, and Honda Motor), beer breweries (Kirin Brewery, Asahi Breweries, Sapporo Breweries, and Suntory) and chemicals (Sekisui Chemical, Asahi Chemical Industry, Mitsubishi Chemical, and Sumitomo Chemical)—and conducted a three-year trend survey (Reference [2] Chapter 5, [13], [14], [15], and [16]).

From the results of the survey, it was confirmed that many improvements were made in environmental reports published in these industries from 2000 to 2002 and that their comparability has increased. It was also found that the beer brewery industries progressed in comparability more than the other industries, indicating that the degree of improvement in comparability varies from one industry to another.

For the sake of enhanced comparability of environmental reports, their coverage must be clarified. In addition, if a company is engaged in different types of business, it should disclose not only performance data for the whole company but also performance data for each type of business and show the coverage by each department clearly. As an approach to increasing comparability in the manufacturing sector, it is recommended that manufacturers create flow charts showing inputs and outputs of their manufacturing processes and numerical measurement data of environmental impacts.

In addition to standardisation of measurement methods for environmental performance indicators, disclosure methods should be made uniform. However, the MOE's guidelines cannot cope with the need for standard measurement and calculation methods to provide detailed environmental performance information. It seems desirable that industrial associations take the initiative in developing standard methods that suit their different needs.

d. Research on credibility of environmental reports

Since publication of environmental reports is a voluntary corporate action, it is an important challenge to guarantee the credibility of information disclosed there. Credibility of disclosed information is an indispensable prerequisite for economic decision-making (investment and purchase), and this was examined based on an analysis of environmental reports published by companies and evaluation of their eco-consciousness.

Under these circumstances, many companies have taken various measures to improve the credibility of their environmental reports. However, there are no guidelines or regulations pertaining to the credibility of environmental reports, and what kind of approach is effective in addressing this issue is not known yet. With this background, the BE Project collected and analysed all third-party opinions attached to the environmental reports published by the companies listed on the First Section of the Tokyo Stock Exchange from 1998 to 2003 (Reference [2] Chapter 4, and [6]).

The third-party opinions attached to environmental reports were classified by their nature into two types. The first is a third-party's statement that verifies the accuracy and consistency of disclosed information as a result of examination—like a statement of audit attached to a financial report (verification type). The second type is a statement included in the report that includes assessments or comments by people outside the company on its environmental conservation activities, as well as descriptions of the impressions which outsiders had during visits to their factory or store, or outsiders' remarks about the environmental report itself (remarks type).

In general, the first type is an opinion about the correctness of disclosed environmental information from an auditing firm (certified public accountant), which uses financial audit techniques. The second type is usually an evaluation or comment on the company's environmental performance from a non-profit organisation or academic expert. Auditing firms often offer remarks along with verifications.

Taking a look at the change over time, we found that third-party opinions of the verification type initially increased, then the pace of increase slowed down, and third-party opinions of the remarks type or of a combination type began to increase gradually. Probable reasons for this are that professional auditing of environmental reports is as costly as that for financial reports and that remarks from people outside companies are more reader-friendly.

Outsiders' remarks will be meaningful, however, only after the credibility of the disclosed information is guaranteed, which means that verification-type opinions and remarks-type opinions are not interchangeable with each other. Hence, clearly it is desirable that some kind of professional auditing be done on environmental reports, though it need not be as strict as in auditing of financial reports, and then outsiders' comments can be included.

e. Research on stakeholders' needs in environmental reports

One issue to be tackled for environmental reports is response to the information needs of readers.

We conducted a survey of three thousand citizens through the Internet in August 2003 to investigate the information needs of environmental report readers, and then classified their information needs according to the type of stakeholders (consumers, shareholders/investors, employees, researchers/students, etc.) (Reference [2] Chapter 6).

From the survey, it was found that the matters that all types of stakeholders are interested in are, first, products; second, business activities; and third, organisations/systems. Shareholders/investors and researchers/students are more concerned with business activities and organisations/systems than are consumers.

Readers of environmental reports in a specific industry showed special interest in a specific disclosure item; for example, readers in the construction industry have a special interest in waste reduction, and readers in the food industry are very concerned with chemical substances and product safety. For environmental reports published by electric appliance manufacturers, researchers and students are more interested in development of eco-friendly products than are consumers. In short, depending on the industry or the type of readers whom a company intends their environmental report to be read by, disclosure items should be emphasised differently. In social aspects, many readers had a special interest in safety and health protection related to products and services.

Many readers requested that one company's data be comparable with data from other companies in the same industry. In terms of the volume of information, many expected that information for disclosure should be carefully selected to make reports concise in content. There was a strong call for standardisation of report formats. As for attachment of third-party reviews as a means to enhance credibility, those who support verification by auditing firms for accuracy and correctness were on a par with those who are in favour of comments by academic experts, consumers, and/or non-profit organisations.

This outcome of the survey presented an outline of the needs of stakeholders in each industry and provided useful information for compilation of environmental reports that meet the needs of stakeholders.

1.2.3. Research on environmental management evaluation

a. Research on environmental management evaluation practices

Voluntary corporate activities for environmental conservation are most meaningful when they are properly evaluated by the market and society. Environmental information disclosed by companies has a social meaning only when stakeholders make good use of it; namely, when companies energetically work for environmental conservation and disclose their environmental information to the outside, and the market or society properly evaluates and supports their environmental management efforts, then a virtuous cycle which accelerates corporate environmental conservation activities will be established.

To that end, there should be a social mechanism that enables proper evaluation of environmental management. Today, in Japan, academic society and the mass media make assessments of the eco-consciousness of companies, and eco-funds select environmentally conscious companies, but no comparative studies of their evaluation methods have yet been made. With the expansion of the global financial market, not only assessments by domestic organisations but also ones by international organisations are becoming more and more influential on businesses.

In the BE Project, we collected and analysed domestic and overseas samples to see how Japanese companies are evaluated in various aspects, including the environmental aspect, and also to see what kind of considerations are necessary for a virtuous cycle of ecology and economy to be established, with the aim of looking at the situation from a broad perspective. For the collection of sample data, we accessed the Web sites of relevant organisations and companies and interviewed eco-funds and related organisations (Reference [30]).

Our research revealed several issues to be tackled in the future. Concerning corporate environmental evaluation tools, it is essential to develop indicators that integrate internal and external evaluation and for various countries to actively participate in formulating global guidelines. Regarding the evaluation implementing agency, the process for formulating evaluation criteria should be disclosed, and the feedback of evaluation results must be ensured. Socio-economic themes include further promotion of environmentally-conscious activities of the financial industry and fostering of the corporate evaluation industry, including environmental evaluation and non-profit organisation evaluation, which could lead to an appropriate balance between capital, product, and labor markets.

b. Research on the introduction of environmental accounting into corporate performance evaluation

Evaluation of the eco-consciousness of business management should be done both externally and internally. For internal evaluation of environmental management to be effective, it is necessary to introduce environmental performance indicators into corporate performance evaluation systems.

In Japan, the number of companies that introduced environmental performance indicators into divisional performance evaluation systems began to increase around 2000. In the BE Project, we collected and analysed

best practice samples in terms of the environmental consciousness corporate performance evaluation systems in Japanese companies.

In September 2001, we held a special session entitled "The Present Status and Problems of Environmental Management Evaluation" at the 2001 annual meeting of the Society for Environmental Economies and Policy Studies. Ricoh, Sony, The Industrial Bank of Japan, and Yasuda Research Institute made presentations, and participants had discussions to find common ground on methods of environmental consciousness evaluation and external evaluation (Reference [44]).

In 2003, based on the results of the questionnaire surveys on environmental accounting, interviews were conducted with several companies that had introduced an environmental consciousness corporate evaluation/eco-friendly performance assessment system to gain an understanding of the most advanced samples in this area (Reference [31]).

From this investigation, it was demonstrated that most of the environmental consciousness corporate performance evaluation methods used by the companies are limited to environmental performance indicators within the framework of divisional performance evaluation systems, and that they are very different from external evaluation methods designed to comprehensively analyse environmental management. There were some companies, however, trying to create indicators for comprehensive environmental management evaluation, suggesting the possibility in the future of integrating internal and external evaluation methods based on some common environmental management indicators.

There has been a strong demand for the creation of common environmental management indicators from both inside and outside companies, and we have realised again that this is a key research theme.

c. Research on monetary valuation of environmental conservation benefits and environmental management indicators

In a company's decision-making processes, the cost-effectiveness of environmental conservation activities must be considered. But since the cost is expressed in terms of monetary units and the benefits in terms of physical units, it is difficult to compare them. As environmental valuation can be of help to monetary estimation of environmental impacts, we referred to available documents relating to environmental valuation to investigate the applicability of the methods to environmental accounting.

As a consequence of this investigation, there were few samples that seemed useful for environmental accounting and we recognised that the number of samples of environmental assessment should be increased. Therefore, we shifted our focus to analysis of samples of monetary valuations described in environmental reports and selection of best practice samples concerning eco-efficiency indicators.

As an effort in this direction, analysis was made of environmental reports published by the 328 companies listed on the First Section of the Tokyo Stock Exchange in 2002 (Reference [32]). As a result, it was found that among the companies disclosing environmental accounting information, 49 disclosed non-financial effects expressed in monetary units, including contribution of profits, monetary valuation of environmental impact, economic benefits for users, and risk aversion. Many manufacturers of electric appliances showed monetary valuation of environmental impacts, in most cases, carbon dioxide emissions.

Concerning eco-efficiency indicators, it was also found that some companies calculated indicators for evaluation, but they all used ratios for the calculation, and it was difficult to interpret numerical data obtained from the calculation. It has thus become obvious that both relative numerical data and some absolute numerical data are needed for use as indicators for environmental management evaluation.

1.2.4. Outline of research on environmental management in the Asia-Pacific region

a. Basic research on the current state of environmental information disclosure in the Asia-Pacific region

Surveys were conducted in nine countries (China, Taiwan, Korea, India, Indonesia, Malaysia, Thailand, the Philippines, and Vietnam) in order to investigate the current status of environmental accounting and regulations/guidelines for publishing environmental reports. In addition, information sources such as the Web sites of related organisations in respective countries were examined.

The survey was conducted by best utilising the group network of PricewaterhouseCoopers. Interviews with related organisations were successfully done and the necessary information was collected by telephone interview, publication review, and the Internet.

The research revealed the latest situation in Asian countries, including the fact that environmental reporting guidelines were released in May 2002 in Korea and that increasing attention is being paid to publishing environmental reporting guidelines in Taiwan. The study also observed growing concern in China about environmental accounting at the corporate level in addition to environmental accounting at the macro level (Green GDP).

b. Current circumstances and issues of corporate environmental/social activities of Asian companies: comparative study of Korea, the Philippines, and Indonesia

The primary goal of this research was to obtain accurate data and understanding of corporate environmental/social activities practiced by Asian companies. Three countries—Korea, the Philippines, and Indonesia—were selected as research targets for having similar scales of economy and because the BE Project had collaborating researchers in these countries.

As for methodologies, a questionnaire was sent to all the listed companies of the respective countries in October 2002, and then a comparative analysis was conducted between the three countries after rounding up the collected responses in January 2003. In an effort to optimise the comparison with Japan, the questionnaire was scrutinised based on the Environmentally Sound Corporate Activity Survey, which is conducted every year by Japan's Ministry of the Environment (MOE). Some other questions were added in an attempt to cover multinational business relationships and corporate social activities.

The answers were collected from 98 Korean companies (15% of response rate), 15 Philippine companies (6.1% of response rate), and 16 Indonesian companies (5.4% of response rate). The lower response rates of the Philippines and Indonesia suggests that the majority of corporations in these countries still perceive environmental information as confidential and thus are unwilling to disclose such information, but some corporations of these countries that did respond disclosed their pioneering efforts related to environmental and social activities (Reference [3]).

c. Comparative study of Japanese and Korean corporate environmental management

Of the above-mentioned results of the questionnaire survey of Korea, the Philippines, and Indonesia, the data from Korea was selected for comparison to Japanese data collected from an MOE survey on environmentally sound corporate activities. This study was conducted in collaboration with a Korean researcher.

Economic relations between Japan and Korea have been rapidly strengthened in recent years in an effort to conclude a free trade agreement (FTA). Under these circumstances, there is an emerging need of deepening understanding of the corporate environmental protection activities of other countries, and then strive to create best corporate practices by sharing the good practices of each nation. To this end, this research was targeted at identifying the differences and similarities between Japanese and Korean corporate environmental protection

activities in terms of actual practice and institutional framework. In spite of some similarities between the two, there seems to be considerable difference with regard to environmental policies and corporate management stance, as symbolised by the different keywords used. While Japanese companies often used the keyword *sustainability management*, companies in Korea used the keyword *environmental industry*.

For this reason, first of all, basic information on the environmental policy of each national government was collected and organised, including (1) the history of environmental administration, (2) the framework for environmental administration, and (3) the basic structure of environmental policies. After making a comparative analysis of the industrial trend in each country, careful analysis was made based on the survey results regarding corporate activities such as environmental policy, environmental management (e.g., environmental information disclosure and environmental accounting), environmental performance, business-to-business relationships, and relations with NGOs/the community (Reference [27] and [28]).

The study revealed that while more Korean companies perceived environment as "regulation," more Japanese companies set environmental policies with concrete targets and are engaged in environmental industries. This may indicate that while Japanese companies have a view of more advanced environmental activities beyond pollution control, Korean companies are still in the process of industrialising antipollution measures. Also, the study shows the tendency of Korean companies to attach more importance to their relationship with the community and to disclose corporate information to particular parties. The research also discovered that many Japanese companies, which characteristically have corporate groups, provide some sort of guidance to affiliated companies regarding environment-conscious action in business activities. On the contrary, in Korea, this practice is not widely exercised, owing to the predominant *chaebol* business structure (family-owned business enterprises).

d. Comparative study on corporate sustainability management between China, Korea, and Japan

A comparative analysis of environmentally-conscious activities was made based on a questionnaire survey conducted from November through December 2003 in collaboration with researchers in China and Korea, with the intention of conducting comparative data analysis between China and Japan/Korea while comparing present Korean data to that of past years.

The questionnaire survey was sent to all the listed companies on the Shanghai and Shenzhen stock exchanges in China and the Seoul stock exchange in Korea. The questions asked in the survey were based on the Environmentally Sound Corporate Activity Survey, conducted by Japan's Ministry of the Environment (MOE), in an effort to facilitate the comparison with the Japanese case.

Research findings will be delivered in both English and Japanese in the form of a data report. (We are presently in the process of collecting responses.)

1.3. Degree of attainment of the objectives

1.3.1. Final results of the research on environmental accounting

The objectives of the BE Project's research on environmental accounting were to identify problems through detailed surveys of the environmental accounting practices of companies in Japan and to propose what should be done to improve their practices.

The BE Project's analysis of corporate environmental reports and the results of two questionnaire surveys revealed that Japanese environmental accounting practices are biased towards external reporting, leaving a significant issue to be tackled with regard to internal management. It also clarified the direction of prospective revisions of the Environmental Accounting Guidelines issued by the Ministry of the Environment.

In addition, we conducted a test-introduction of material flow cost accounting into two Japanese companies with the aim of improving the effectiveness of environmental accounting for internal management, which has drawn global attention in terms of the development of a new tool for environmental management accounting.

All of these outcomes helped substantially to achieve our initial goals, particularly that of material flow cost accounting, which was remarkably effective beyond our expectations.

Still, there are some challenges left for future study, including developing other potential tools for environmental management accounting besides material flow cost accounting and conducting a feasibility study on the integration of corporate financial accounting and environmental accounting.

1.3.2. Final results of the research on environmental information disclosure

As in the case of research on environmental accounting, the objectives of our research on environmental accounting were to identify problems through careful analysis of Japanese companies' environmental information disclosure practices and propose what should be done for improvement.

The BE Project successfully came up with policy proposals for improving the business practice of publishing environmental reports, as a result of a three-year content analysis of environmental reports published by listed companies on the First Section of the Tokyo Stock Exchange. We were also able to present concrete ways to assure the comparability and credibility of environmental reports. All of these research outcomes fully achieved our initial objectives.

Furthermore, as a result of the survey on the needs of stakeholders, which is a rather new research area, we were successful in detailing a concrete direction for environmental reporting to move that meets the needs of information users.

Still, there are some issues left for future study, including developing other potential tools for environmental information disclosure, besides environmental reporting, and deeper examination of sustainability reports, which contain corporate social activities and have become more common to corporations.

1.3.3. Final results of the research on environmental management evaluation

As for our research on environmental management evaluation, we sufficiently accomplished our initial target, which was to clarify the latest trend of environmental management practices at Japanese corporations by performing a best practice analysis. The results obtained from this analysis will be of great significance for corporations to improve their environmental management evaluation.

The research was also successful in holding productive discussions with business people and in discovering prospective directions in the relationship between internal and external evaluation of environmental management systems.

Still, there are several issues to be tackled in future research. For instance, environmental management evaluation methods and environmental management indicators should be set in more concrete terms; we believe this requires present business practices to grow in maturity rather than simply being a matter of research methodologies.

1.3.4. Final results of the research on environmental management in the Asia-Pacific region

Research on environmental management in the Asia-Pacific region was conducted as a complementary research theme of the BE Project for the purpose of obtaining some basic information. The research results partly revealed

the present situation of environmental management in other Asian countries, very few of which have been unveiled through research so far, and to this extent we obtained the desired results.

Comparative study between Japan and other Asian countries was especially noteworthy, revealing Japan as the leading nation in Asia in every aspect of environmental management. These research results provide basic information and will be of great significance in examining possible contributions to other Asia countries.

Yet it still remains as a future issue to propose concrete measures regarding the application of Japanese companies' environmental management techniques to companies in other countries of Asia.

2. Self-evaluation

2.1. Evaluation of achievements

As the final results of respective research themes were discussed in the previous section, overall performance evaluation is to be made here from the viewpoint of the whole project.

The objectives of the BE Project were to develop practical tools for the promotion of voluntary corporate activities for environmental conservation and to propose future directions for such activities. To this end, the BE Project conducted research in three main fields—environmental accounting, environmental information disclosure, and environmental management evaluation—and it was able achieve concrete results in each research field, including the development of practical tools in an effort to encourage corporate environmental management. With regard to environmental accounting and environmental information disclosure, we were particularly successful in publishing two books, mainly for business people—a fact that holds great significance in terms of research dissemination.

As for environmental accounting, the most notable achievement was our substantial contribution to the development of environmental management accounting with a central focus on material flow cost accounting. Also, the research result wiped out the preconceived idea in Japanese corporations that environmental accounting is a tool used only for external disclosure. For corporations that want to promote their environmental conservation activities, such activities must lead to profit the company in some way, and material flow cost accounting is a very effective tool in this regard. Concerning environmental management accounting, the research results contributed to changing the biased impression in Japanese corporations that environmental conservation activities are just money consuming. Armed with our concrete research findings, it has been proven that environmental management accounting is an effective tool for initiating environmental conservation activities in corporations.

As far as environmental information disclosure is concerned, our research achieved substantial results in terms of both the dissemination of environmental reports as a policy issue and assuring the comparability and credibility of environmental reports as a practical matter. This holds great significance in terms of both increasing the volume and improving the quality of environmental reports. Unlike past discussion on environmental reports, which used to be mostly biased toward an objective normative idea without any grounds, the research findings of this project were quite effective in making concrete proposals based on empirical evidence. The BE Project made its most remarkable contribution in indicating future development and improvement of environmental reports for the purpose of improving business practices.

Concerning environmental management evaluation, the research didn't go far enough in developing a concrete evaluation method, but the project successfully clarified the latest trend of practices in Japanese corporations by performing collective analysis of best practices. This will provide an effective guideline for companies to improve their environmental management evaluations. The research also revealed that environmental

management evaluation is able to serve as an interface between the internal and external evaluation of environmental management systems, which is a significant finding in forming an environmentally-sound economic system in the future.

In this way, the BE Project has accomplished substantial research results in terms of developing practical tools for environmental corporate management. The project not only came up with individual tools but also demonstrated the role of the respective tools played in business practices and society—the most significant point of which lies in the analysis of the interrelation between these factors. In this regard, the BE Project deserves high credit for elaborating various tools for environmental corporate management and for achieving concrete results by performing research activities effectively, with the aim of forming a loop between the three research areas of environmental accounting, environmental information disclosure, and environmental management evaluation.

Still, since encouraging voluntary corporate activities for environmental conservation involves a wide range of issues, there are some others still to be tackled in the future. Similarly, many other environmental management tools need to be studied besides those we covered in this phase. The research achievements would have been even greater if more tools were studied, since the scheme of the BE Project was designed to be able to incorporate additional tools.

As well, some research areas, such as environmental evaluation, did not go far enough in coming up with concrete tools, since many aspects of environmental management are still in the process of being developed in practical terms. Due to our limited financial resources and research personnel, we were compelled to give up trying to develop concrete methods for such research areas as a main target. This is one of the issues to be tackled in the next phase.

2.2. Evaluation of project management

The BE Project was conducted over three years by three full-time researchers and eight visiting researchers from related companies and audit corporations of the Kansai Research Center. In addition, the project actively cultivated personnel exchanges with foreign research institutions and accepted two visiting researchers, namely, Mr. Jan-Dirk Seiler-Hausmann, of the Wuppertal Institute for Climate, Environment and Energy (Germany), for three months in FY2001 (December 2001–February 2002), and Dr. Mark Stoughton from the Tellus Institute (USA), for six months in FY2003 (October 2003–April 2004). Also, Mr. Yasuhiro Kanda, a research fellow from the Kansai Research Center, was sent to the Wuppertal Institute for three months in FY2002 (October 2002–December 2002). Furthermore, the project accepted two foreign interns: a German graduate student from Universiteit Maastricht (Netherlands) and a Chinese graduate student from Kyoto University.

In terms of the BE Project's research framework, the three full-time researchers were responsible for the three respective research themes, while the visiting researchers supported each full-time researcher. The research was performed in the most efficient order: first, by investigating current status, identifying the problem, and then making proposals for improvement. As a result, the project was able to achieve far more successful results than its initial goals, owing to the dedication and endeavors of each researcher. The main target of the project was to develop practical tools for environmental corporate management. It should be noted that the visiting researchers, participating companies, and auditing firms all played extremely important roles, especially considering that the close relationships with corporations were indispensable in attaining this goal.

Meanwhile, there are still some future issues left concerning the administration of the project. For one, while it is quite understandable that all research activities should be conducted within the allocated financial resources, future funding needs to be considered in order to conduct research on improving business practices. In addition, during this phase, study meetings on environmental accounting were held on a regular basis with the participation of business people, and such efforts should be systematically encouraged in future research efforts.

Concerning the personnel exchanges with foreign research institutions and accepting interns from domestic and foreign universities, this proved quite effective not only in the research activities of the project but also in obtaining international insights and trends and expanding our international network. In some cases, however, it took considerable effort in making preparations and providing guidance and support during this period; a more effective system needs to be established to avoid such unnecessary efforts.

With regard to the dissemination of research results, they have been published in various forms such as academic papers, reports, academic journals, and the BE Project's own discussion papers. Most notably, two books were published on business practices. In addition to the publications, an international workshop titled "Business and the Environment" was held in FY2001, and an international symposium, "Business and the Environment," was held in FY2002 and FY2003. Other academic events such as symposiums, workshops, and study meetings were held on a regular basis for business people, related organisations, and the general public. With the participation of foreign and domestic experts and business people, the latest trends and future issues were actively discussed. All of these events were highly appreciated. Furthermore, the project organised the 2nd Tripartite Roundtable on Environmental Industries (China, Korea, and Japan) in FY2002 as a commission from Japan's Ministry of the Environment. Through this effort, we were able to contribute to formulating environmental policy by utilising our research achievements.

3. Conclusion

As stated in the summary, in order for corporations to promote voluntary activities for environmental conservation, it is indispensable that a mechanism that facilitates corporate environmental initiatives is formulated. In addition, the market and society need to provide proper evaluation and support to those companies engaged in environmental conservation activities. Then the proper evaluation given to these companies should likewise encourage further corporate environmental conservation activities—creating a virtuous cycle.

The research findings explored in this project in environmental accounting, environmental information disclosure, and environmental management evaluation are key measures for realising this goal. In order to further develop these tools, technological advance will be a prerequisite; however, the understanding and active involvement of top management for introducing and improving these environmental management tools is also an essential factor. According to our research results on environmental accounting, the more actively top management are involved in environmental accounting, the more effective results the company gets.

The development of environmental corporate management techniques has only a short history, and for the most part is still in the early stages of progress. It may turn out, however, to be not overly useful for improving business practices if only methodologies are highly elaborated. Environmental corporate management never improves without the active involvement of the whole company, including top management, and close relationships with stakeholders. Attaching great importance to these points, the BE Project has proposed a prospective direction for the improvement of environmental management tools. It is our sincere hope that our research achievements will be utilised and of assistance to as many relevant people and organisations as possible.

References: IGES Kansai Research Center (BE Project) outputs

1. Books

[1] Kokubu, K. and Nashioka, E. (2003), *Environmental Accounting in the Process of Updating*, The Energy Conservation Center, Japan (in Japanese).
[2] Kokubu, K. and Hirayama, K. (2004), *Environmental Reporting in Japan*, The Energy Conservation Center, Japan (in Japanese).

2. Academic papers (* reviewed by referee)

[3] Kanda, Y. and Nakaso, Y. (2002), "Current Status and Agenda on the Environmental and Social Aspects of Asia Companies–Comparative Study on Korean, Philippine and Indonesian Companies," *An annual report of granted researches, Hyogo Research Organization for Human Care 2003*, Hyogo Research Organization for Human Care.
[4] * Kokubu, K. and Nashioka, E. (2002), "Current Analysis of Environmental Accounting Information of Japanese Companies," *Accounting Progress* 2002, No.3, Japan Accounting Association (in Japanese).
[5] Nashioka, E. (2003), "Current Status of Environmental Verification—Third-Party Verification for Environmental Reports," *Audit Research* (in Japanese).
[6] Nashioka, E. and Kokubu, K. (2003) "A Study on the Verification of Environmental Reports," *Auditing* (in Japanese).
[7] Hirayama, K. (2001), "Positive influence of corporate environmental disclosure on environmental education and consumer education: How to make a greater number of ordinary consumers understand the content of environmental reports," *An annual report of granted researches, Hyogo Research Organization for Human Care 2002*, Hyogo Research Organization for Human Care (in Japanese).
[8] * Kokubu, K., Nashioka, E., Saio, K., and Imai, S. (2003) "Two Governmental Initiatives on Environmental Management Accounting and Corporate Practices in Japan" *in* Bennett, M., Rikhardsson, P., and Schaltegger, S. *Environmental Management Accounting: Purpose and Progress*, Dordrecht, Kluwer Academic Publishers.

3. Discussion papers

[9] Kokubu, K. and Nashioka, E. (2001) "Environmental Accounting Practices of Listed Companies in Japan," *IGES Kansai Discussion Paper*, 2001-No.1 (in Japanese).
[10] Kokubu, K. and Nashioka, E. (2001), "Two Governmental Initiatives on Environmental Management Accounting and Corporate Practices in Japan," *IGES Kansai Research Center Discussion Paper*, 2002-No.2.
[11] Hirayama, K. (2002) "Positive influences of corporate environmental disclosure on environmental education and consumer education and related issues to be tackled: How to make a greater number of ordinary consumers understand the content of environmental reports," *IGES Kansai Research Center Discussion Paper*, 2002-No.4 (in Japanese).
[12] Hirayama, K. (2002) "Positive influences of corporate environmental disclosure on environmental education and consumer education and related issues to be tackled: How to make a greater number of ordinary consumers understand the content of environmental reports," *IGES Kansai Research Center Discussion Paper*, 2002-No.5.
[13] Hirayama, K. (2002) "Comparative Analysis on Environmental Reports of Auto Industry in 2000," *IGES Kansai Research Center Discussion Paper*, 2002-No.6.
[14] Kitamura, M. (2002) "Comparative Analysis on Environmental Reports of Chemical Industry in 2000," *IGES Kansai Research Center Discussion Paper*, 2002-No.7.
[15] Kanda, Y. (2002) "Comparative Analysis on Environmental Reports of Beer Industry in 2000," *IGES Kansai Research Center Discussion Paper*, 2002-No.8.
[16] Kitamura, M., Kanda, Y., Hirayama, K., and Kokubu, K. (2002) "A Study on the Comparability of Environmental Reports: Mainly of the Automobile, Beer, and Chemical Industries," *IGES Kansai Research Center Discussion Paper*, 2002-No.9 (in Japanese).
[17] Kitamura, M., Kanda, Y., Hirayama, K., and Kokubu, K. (2002) "A Study on the Comparability of Environmental Reports: Mainly of the Automobile, Beer, and Chemical Industries," *IGES Kansai Research Center Discussion Paper*, 2002-No.9E.

[18] Hirayama, K., Kokubu, K., Kanda, Y., Shinabe, T., Higashida, A., Kawahara, C., Kitamura, M., and Nakaso, Y. (2002) "Present State and Problems of Environmental Reports by Japanese Companies—Analysis of Environmental Reports by Companies Listed on the First Section of the Tokyo Stock Exchange," *IGES Kansai Research Center Discussion Paper*, 2002-No.10 (in Japanese).

[19] Hirayama, K., Kokubu, K., Kanda, Y., Shinabe, T., Higashida, A., Kawahara, C., Kitamura, M., and Nakaso, Y. (2002) "Present State and Problems of Environmental Reports by Japanese Companies—Analysis of Environmental Reports by Companies Listed on the First Section of the Tokyo Stock Exchange," *IGES Kansai Research Center Discussion Paper*, 2002-No.10E.

[20] Saio, K., Kokubu, K., Nashioka, E., and Imai, S. (2002) "Environmental Accounting Practices of Listed Companies in Japan," *IGES Kansai Research Center Discussion Paper*, 2002-No.11.

[21] Nashioka, E. and Kokubu, K. (2002) "Functions of Third Party Verifications of Environmental Reports," *IGES Kansai Research Center Discussion Paper*, 2002-No.12 (in Japanese).

[22] Nashioka, E. and Kokubu, K. (2002) "Functions of Third Party Verifications of Environmental Reports," *IGES Kansai Research Center Discussion Paper*, 2002-No.12E.

[23] Seiler-Hausmann, Jan-Dirk, "Innovation & Sustainable Development—Guiding business innovation towards sustainable development—Innovation management in Japan and Germany," *IGES Kansai Research Center Discussion Paper*, 2002-No.13.

[24] Kanda, Y. (2002) "Report of a Visiting Researcher at the Wuppertal Institute," *IGES Kansai Research Center Discussion Paper*, 2002-No.14 (in Japanese).

[25] Kokubu, K., Nashioka, E., Murei, E., and Saio, K. (2003) "Environmental Accounting Practices of Japanese Companies," *IGES Kansai Research Center Discussion Paper*, 2003-No.1 (in Japanese).

[26] Hoffmann, Eva, (2003) "Environmental Reporting and Sustainability Reporting in Europe," *IGES Kansai Research Center Discussion Paper*, 2003-No.2.

[27] Kanda, Y. and Byung-Wook Lee (2003) "Japanese and Korean Corporate Sustainability Management—A Comparative Study Based on Questionnaire Survey Results," *IGES Kansai Research Center Discussion Paper*, 2003-No.3 (in Japanese).

[28] Kanda, Y. and Byung-Wook Lee (2003) "Japanese and Korean Corporate Sustainability Management—A Comparative Study Based on Questionnaire Survey Results," *IGES Kansai Research Center Discussion Paper*, 2003-No.3E.

[29] Hirayama, K. (2003) "An Analysis of Stakeholders' Needs on Environmental Reporting," *IGES Kansai Research Center Discussion Paper*, 2003-No.4 (in Japanese).

[30] Kanda, Y., Imai, S., and Nakagami, Y. (2004) "Current Status and Issues on the Evaluation of Corporate Sustainability Management," *IGES Kansai Research Center Discussion Paper*, 2003-No.5 (in press) (in Japanese).

[31] Kokubu, K., Ando, T., and Nashioka, E. (2004) "Current Status of Introducing Environmental Management Accounting at Japanese Corporations—Based on the interviews with practitioners" (tentative title), *IGES Kansai Research Center Discussion Paper* 2003-No.6 (in press) (in Japanese).

[32] Kokubu, K., Nashioka, E., and Shinabe, T. (2004) "Monetary Evaluation and Environmental Management Index of Environmental Conservation Effects," *IGES Kansai Research Center Discussion Paper* 2003-No.7 (in press) (in Japanese).

4. Reports at academic conferences

[33] Hirayama, K., Kokubu, K., Kanda, Y., Shinabe, T., Higashida, A., Kawahara, C., Kitamura, M., and Nakaso, Y. "An Analysis of Environmental Reporting in Japan," Society for Environmental Economics and Policy Studies. 28 September 2002, Hokkaido University.

[34] Saio, K., Kokubu, K., Nashioka, E., and Imai, S. "Environmental Accounting Practices of Listed Companies in Japan," Society for Environmental Economics and Policy Studies, 28 September 2003, Hokkaido University.

[35] Kitamura, M., Kanda,Y., Hirayama, K., and Kokubu, K. "A Study on the Comparability of Environmental Reports: Mainly of the Automobile, Beer, and Chemical Industries," Society for Environmental Economics and Policy Studies, 28 September 2003, Hokkaido University.

[36] Kokubu, K., Nashioka, E., and Hirayama, K. "Current Analysis of Environmental Reports and Environmental Accounting in Japan," The Sixth International Conference on EcoBalance, 8 November 2002, EPOCHAL Tsukuba.

[37] Kokubu, K. and Nashioka, E. “Information Disclosure of Environmental Accounting in Japan—Aging Analysis and New Trends,” Society for Corporate Social Accounting Research, 5 July 2003, Kobe University.
[38] Nashioka, M. and Kokubu, K. “A Study on the Verification of Environmental Reports,” The National Conference of the Japanese Institute of Certified Public Accountants 2003, 23 July 2003.
[39] Nakajima, M., Nashioka, E., and Kokubu, K. “Development of Material Flow Cost Accounting in Japanese Companies: Case Study in Nippon Paint and Shionogi,” Japan Accounting Association, 12 September 2003, Kinki University.
[40] Hirayama, K. “An Analysis of Stakeholders’ Needs on Environmental Reporting,” Society for Environmental Economics and Policy Studies, 7 September 2003, Tokyo University.
[41] Nashioka, E., Nakajima, M., and Kokubu, K. “Development of Material Flow Cost Accounting in Japanese Companies: Case Study in Nippon Paint and Shionogi,” Society for Economics and Policy Studies, 28 September 2003, Tokyo University.

5. Reports on symposiums, workshops, and seminars

[42] “Global Trends of Sustainable Management,” International Symposium on Sustainable Management, 26 September 2001, Shin Kobe Oriental Hotel.
[43] “Inauguration of Environmental Management Accounting Network - Asia Pacific (EMAN-AP),” International Workshop on Environmental Accounting, 27 September 2001, Shin Kobe Oriental Hotel.
[44] “The Current Situation and Challenge of the Environmental Corporate Evaluation: Contact Point of Internal and External Evaluation,” 30 September 2001, Kyoto International Conference Hall.
[45] “Seminar on Countermeasures against Global Warming: COP7 and the Future of Business Activities,” 24 January 2002, Hankyu Grand Building.
[46] “Environmental Reporting Seminar: Possible Influence of GRI Guidelines that is in the Revision Process,” 4 March 2002, JA Building (Tokyo); 8 March 2002, IHD Building (Kobe).
[47] “The 2nd Tripartite Roundtable on Environmental Industries (China, Korea, and Japan),” 23–24 July 2002, Awaji Yumebutai International Conference Center.
[48] “International Symposium 2002 “Business and the Environment,” 25 July 2002, Kobe International Convention Hall.
[49] “International Symposium on Environmental Accounting 2003: Cutting Edge of Environmental Accounting for Corporate Management and Environmental Conservation—Environmental Accounting in Japanese Corporate Management and Potentialities of Material Flow Cost Accounting,” 31 January 2003, Osaka International Convention Center.
[50] “Issues and Potentialities of Environmental Report,” The 5th Round Seminar for Affiliate Members of IGES, 3 March 2003, Forum Yokohama.
[51] “Development of Environmental Management Accounting and Green Supply Chain Management,” International Symposium on Business and the Environment, 5 March 2004, Kobe International Convention Hall.
[52] Morishima, A., Amano, A., and Kanda, Y. (2003) “An Overview of Energy Policy in Japan, Governance of Markets for Sustainability,” Japanese-Government Center Berlin (Edi), 13–14 October 2003.

6. Others

[53] Hirayama, K. (2001) “The Study of ‘Environmental Information Disclosure’ at IGES Kansai Research Center,” E-alert No.005, 2001. IGES.
[54] Hirayama, K. (2003) “Corporate Management and the Environment Communication,” *Tax Payment Monthly Report*, Tax Payment Associate, February 2002 (in Japanese).
[55] Hirayama, K (2002) “Recommendation of Utilization of Environmental Reports from Companies,” *Newsletter of National Institute on Consumer Education*, December 2002 (in Japanese).
[56] Nashioka, E. (2002) “Environmental Accounting,” *Aozora*, March 2002 (in Japanese).
[57] Nashioka, E. (2003) “Report on the International Symposium of Environmental Accounting 2003,” E-alert No.12, 2003.
[58] Hirayama, K. (2003) “Report on the 5th Round Seminar for Affiliate Members of IGES: Issues and Potentialities of Environmental Report,” E-alert No.013, 2003.

[59] Kanda, Y. (2004) “Questionnaire Survey Results on Corporate Sustainability Management of Chinese, Japanese, and Korean Companies,” http://www.iges.or.jp/en/be/
[60] Kanda, Y. (2004) “Corporate Sustainability Management,” *IGES White Paper 2003*, IGES.

Long-Term Perspective and Policy Integration Project

Hideyuki Mori
Project Leader

1. Overview

1.1. Background, objectives, and approach

The objective of the Long-Term Perspective and Policy Integration Project (LTP) is to conduct research on how to cope with the environmental issues of the twenty-first century by taking a long-term and cross-sectoral approach and to propose innovative policies to policy-makers and others. It focused on the following policy analysis objectives in cooperation with other IGES projects and relevant organisations:

1. Cross-sectoral policy analysis with a long-term perspective
2. Policy analysis that will contribute to international dialogue on sustainable development in the Asia-Pacific region
3. Policy analysis on pressing problems commonly observed in the region

In carrying out its first objective in the second phase, the LTP conducted the following research activities:

- publication of the "Environmental White Paper for Sustainable Development in the Asia-Pacific Region" (tentative title), which describes an analysis of the current state of the environment in the Asia-Pacific region, along with an evaluation and prognostication of future directions;
- finalisation of the ECO ASIA Long-Term Perspective Project (LTPP);
- launch and implementation of the Asia-Pacific Environmental Innovation Strategy Project (APEIS), which is proposed as a successor project of the LTPP; and
- preparation of a sub-regional priority paper on Northeast Asia as a background paper for the Tripartite Environment Ministers Meeting (TEMM) ministerial consultations in 2003.

Under objective 2, the LTP carried out the following research activities:

- conducted research to support the Asia-Pacific Forum for Environment and Development (APFED);
- facilitated the Manila Policy Dialogue on transport and the environment in Asia; and
- the Japan–U.S. Task Force for Achieving Harmony in Trade and the Environment.

Under objective 3, the LTP carried out the following research activities:

- research on the information technology revolution and the environment;
- review of research components needed to launch the Freshwater Resources Management Project;
- comprehensive assessment of the implementation of Agenda 21 in Northeast Asia; and
- preparation of a priority paper on sustainable development in Northeast Asia.

In addition, the LTP carried out the following activity to support promotion of environmental communication led by private sectors:

- facilitation of the Toyota Stakeholder Dialogue.

In the process of conducting these research activities, the LTP actively collaborated with research institutes in the region and relevant international organisations, such as the Asian Development Bank (ADB), United Nations Environment Programme (UNEP), and the United Nations Economic and Social Commission for Asia and the

Pacific (ESCAP). Through the APFED process, the LTP organised points for timely discussions and developed policy proposals towards the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg.

1.2. Review of achievements

1.2.1. Asia-Pacific Environmental Innovative Strategic Project (APEIS) and Research on Innovative and Strategic Policy Options (RISPO)

a. Background, objectives, and approach

1. Background

APEIS is composed of three sub-projects—Integrated Environmental Monitoring (IEM), Integrated Environmental Assessment (IEA), and Research on Innovative and Strategic Policy Options (RISPO)—with the aim of providing a scientific basis for decision-making and to establish on-going communication in the Asia-Pacific region. The Long-Term Perspective and Policy Integration Project (LTP) is responsible for the implementation of RISPO, and in order to do that required coordinating cooperation throughout IGES and organising research teams with research institutes and researchers in the Asia-Pacific region. Meetings were held on possible collaboration among various research institutes in the Asia-Pacific Region for APEIS/RISPO in September 2001 at the United Nations University's Institute of Advanced Studies in Tokyo. Subsequently, the plan for collaborative research was created by the participants from the signatory organisations of IGES within the Asia-Pacific region, and the project was at last approved by the Tenth Environment Congress for Asia and the Pacific (ECO ASIA) in October 2001 and prepared for official launch from fiscal year (FY) 2002.

At the first Research Coordination Committee meeting, held in March 2002 at the National Institute for Environmental Studies in Tsukuba, the master plan on the linkages with the other two APEIS sub-projects (IEM and IEA) was developed with the participation of all APEIS sub-projects. At the first meeting of the ECO ASIA Panel, held in July 2002 at IGES in Hayama, the overall implementation plan for APEIS, as well as the research plans for each sub-project, were endorsed by the governments of the countries in the Asia-Pacific region. The projects commenced in FY2002.

2. Objectives

The RISPO project aims to develop knowledge-based reference tools, such as the Good Practices Inventory, and to propose strategic policy options in order to help policy-makers who are seeking better solutions to the sustainable development challenges that they face. The project also places significant emphasis on applying these research findings to actual attempts to promote sustainable development, instead of leaving them simply as a database or policy recommendations. Thus, providing policy-makers with capacity-building opportunities is an important aspect of RISPO's activities. At the same time, the intent of the project is to examine the workability of its recommendations by implementing pilot projects.

3. Approach

With environmental innovation as the overarching theme of the three sub-projects, they each address urgent sustainable development issues in the Asia-Pacific region, taking different approaches that complement each other. Although the Integrated Environmental Monitoring sub-project (IEM) and the Integrated Environmental Assessment sub-project (IEA) take bird's-eye-view approaches by adopting research methodologies such as satellite monitoring and computer simulation, RISPO places significant emphasis on ground-based field studies. Through these practices, the intention is that a sound understanding will be developed of the factors promoting or hindering sustainable development in various settings, and that the lessons learned will be shared among policy-makers and wider audiences.

The final objective of APEIS/RISPO is by March 2005 to propose innovative policy options for environmental innovation in the Asia-Pacific region and to provide a good practices inventory of various examples and cases

aimed at sustainable development. In order to realise this objective, strategic research on eight sub-themes (see Table 1) is being collaboratively implemented with research institutes and key international organisations in the environment field in the Asia-Pacific region. It is also expected that dialogues with policy-makers, such as the ECO ASIA Panel, will be maintained throughout and beyond the project's duration.

Table 1. APEIS/RISPO sub-themes.

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

b. Review of achievements

The Good Practices Inventory and Strategic Policy Options are two major expected outcomes of the RISPO project. The achievements to date are compiled in the following reports:

- Technical Report
- Technical Summary
- Progress Report
- Commissioned Report (Research on Innovative and Strategic Policy Options) by the Ministry of Environment

1. Good Practices Inventory

In order to involve a wide range of potential users and to reflect their needs in the process of developing the Good Practices Inventory, a questionnaire survey was conducted from 24 January to 5 February 2003. In the inquiry sent to 89 relevant stakeholders was a listing of the Web site where two sample cases on innovative financing and urban transportation were presented in the Good Practices Inventory, and they were asked for their opinions and feedback.

Based on the feedback from the questionnaire survey, some modifications to the interface were made, and as a result the Good Practices Inventory became an easily searchable database on the RISPO Web site, consisting of a number of examples of good practices that are rich in lessons and potential for replication or application. The latest format and guidelines are available at <http://www.iges.or.jp/APEIS/RISPO>.

Good (or unsuccessful) practices that were identified and analysed, based upon literature reviews and field studies conducted by each research team, have now been compiled in the Good Practices Inventory. Information on each good practice includes the critical and innovative instruments that make it successful, the lessons learned, and its potential for application according to the format and guidelines. As a prototype version, 47 cases of good practices collected through the research activities in FY2003 were made available on the RISPO Web site in June 2003.

2. Strategic Policy Options

In order to share the progress of research activities among the researchers and policy-makers participating in RISPO, and to clarify the direction of the research in developing the Strategic Policy Options, plenary workshops and research team meetings were held. At the research team meeting, held at Bangkok in November 2003, the main framework of the Strategic Policy Options was discussed substantially, and, as a result, the provisional frameworks for each sub-theme of the RISPO research areas were developed with the participation of experts.

The Strategic Policy Options is a set of proposals—clues for maturing sustainable development policy—primarily targeting policy-makers at local, national, and/or regional or international levels. Through a close look at the critical and innovative instruments extracted from the good practices, the political implications of further promoting actions toward sustainable development will be examined. Furthermore, taking into account the diverse social, cultural, and economic backgrounds in the Asia-Pacific region, the policy measures that are necessary to put each strategy into practice will be described.

c. Achievement of objectives

In regard to APEIS/RISPO, much time was spent in FY2001 preparing for the launch of this project and creating frameworks. FY2002 was spent identifying research themes, seeking cooperation within IGES, and formulating a collaborative research team with other research institutes and researchers in the Asia-Pacific region. In FY2003 the project proceeded with research, making the best use of these collaborations and ensuring the outcomes of the research—i.e., the proposals of the Strategic Policy Options and the Good Practices Inventory, which were developed through frequent contact with researchers and policy-makers in the region. The achievements of the last phase contributed to formulation of a basis to develop and enrich the research outcomes.

Along with the preliminary research plan proposal for FY2003, some of the RISPO research sub-themes include a pilot project and a capacity-building programme for policy-makers; however, the pilot projects met with some difficulties in terms of time and budget for evaluating the policy impacts of the proposed policy options. As a result, only capacity-building opportunities for policy-makers in the Asia-Pacific region will be implemented in workshops or in other forms during FY2004.

1.2.2. Asia-Pacific Forum for Environment and Development (APFED)

a. Background, objectives, and approach

The Asia-Pacific Forum for Environment and Development (APFED) is a forum of twenty-six eminent persons, mostly from the region. It was officially launched at ECO ASIA 2001 in October 2001 with a mandate to define a new model for an equitable and environmentally sustainable society and then present it to policy-makers and other persons of influence throughout the world. The main output of APFED is its final report, which is to be finalised by December 2004. IGES was appointed as the secretariat of APFED to support smooth deliberation and formulation of the forum's outputs, and the LTP was put in charge of the task.

As the APFED Secretariat, the LTP provided logistical as well as substantive support to the forum meetings. Such support included overall planning of the forum's deliberation schedule, preparation of meeting documents, and implementation of the commitments that APFED pledged in its Message to the World Summit on Sustainable Development (WSSD) in 2002. With reference to the actual APFED meetings, these are meetings of experts based on the fields identified as issues for APFED deliberations, and there are multi-stakeholder meetings to hear opinions and feedback on APFED activities from various groups such as nations, local governments, private sectors, NGOs, women, and youth.

The APFED members are as follows (as of January 2004):

- Vinya S. Ariyaratne, Executive Director, Sarvodaya Shramadana Movement, Sri Lanka
- Neth Barom, Vice-Rector, Royal University of Phnom Penh, Cambodia
- James Cecil Cocker, Minister of the Environment, Department of Environment, Tonga
- Nambaryn Enkhbayar, Prime Minister of Mongolia
- Cielito F. Habito, Professor, Department of Economics, Ateneo de Manila University, the Philippines
- Barbara R. Hardy, Former Commissioner of The Australian Heritage Commission
- Ryutaro Hashimoto, Former Prime Minister of Japan
- Parvez Hassan, Former Chairman of The World Conservation Union (IUCN) Law Commission, Pakistan
- Yolanda Kakabadse, President, The World Conservation Union (IUCN)
- Martin Khor, Director, Third World Network, Malaysia
- Kim Jin-Hyun, Senior Research Advisor, Korea International Trade Association
- Reza Maknoon, Deputy Chairman, National Committee SD, Iran
- Nakamura Kuniwo, Former President, Republic of Palau
- Wadan Lal Narsey, Associate Professor, Economics Department, The University of the South Pacific, Fiji
- Olga Ponizova, Executive Director, Eco-Accord Centre on Environment & Development, Russia
- Qu Geping, Chairman, Commission for Environment Protection & Resource Conservation, National People's Congress, People's Republic of China
- Emil Salim, Chairman of the Board of Trustees, Indonesian Biodiversity Foundation
- Maurice F. Strong, Chairman of Earth Council, Rector of United Nations University of Peace
- Simon S. C. Tay, Chairman of the Singapore Institute of International Affairs, Singapore
- Tongroj Onchan, President, The Mekong Environment and Resource Institute, Thailand
- Bulat Yessekin, Executive Director, The Regional Environmental Centre for Central Asia, Kazakhstan
- Tadao Chino, President, Asian Development Bank (ADB)
- Hans van Ginkel, Rector, United Nations University (UNU)
- Klaus Töpfer, Executive Director, United Nations Environment Programme (UNEP)
- Kim Hak-Su, Executive Secretary, Economic and Social Commission for Asia and the Pacific (ESCAP)
- Akio Morishima, Chair of the Board of Directors, Institute for Global Environmental Strategies (IGES), Japan

b. Major activities and achievements

The activities of APFED can be categorised into three stages, namely, the preparation stage (April–October 2001), the interim deliberation stage to formulate (November 2001–September 2002), and the final deliberation stage to create the APFED Final Report (October 2002–December 2004).

1. Preparatory stage of APFED deliberations (April–October 2001)

In this stage, the overall framework of APFED deliberations was decided by the APFED members during a preparatory meeting (27 September 2001, Tokyo, Japan) and an organisational meeting (14 October 2001, Tokyo, Japan). The LTP prepared documents to facilitate the deliberations at the meetings, including terms of reference (TOR), time schedule, and an issue paper on future perspectives of sustainable development in the Asia-Pacific region. At the organisational meeting, APFED members decided to present the recommendations to the WSSD as an interim output. They also agreed that these should be concentrated on some priority issues that APFED had identified, including freshwater resources, renewable energy, trade, and finance.

2. Interim deliberation stage: Formulation of the APFED Message to the WSSD (November 2001–September 2002)

As agreed at the organisational meeting, APFED concentrated its first work on the development of recommendations to the WSSD. Two substantive meetings and their associated meetings were held to develop recommendations (see Table 2). The outcome of the deliberations was compiled into the APFED Message to the WSSD, which was adopted at APFED's Second Substantive Meeting in May 2002. The APFED Message was composed of recommendations on five sectoral issues (freshwater resources, renewable energy, trade, finance, and urbanisation), two cross-cutting issues (governance and capacity building), as well as three APFED commitments, namely, collection of best policy practices (BPP), creation of an inventory of capacity-building programmes (CBP), and establishment of the Network of Researchers and Research Institutes (NetRes). The APFED Message was sent to leaders of countries all over the world under the name of the APFED chairperson, Mr. Ryutaro Hashimoto. It was also presented on the occasion of the APEIS/APFED Side-Event at the Fourth Preparatory Committee for the WSSD (PrepCom IV) on 3 June 2002 in Bali, Indonesia, as well as at the APFED Parallel-Event at the WSSD, at the Japan Pavilion in Ubuntu Village, Johannesburg, South Africa, on 28 August 2002. Over 100 participants of the respective events welcomed the APFED Message and expressed interest in the APFED's future work. As well, the APFED Commitments (BPP, CBP, and NetRes) in the APFED Message were registered as one of the commitments of Type II outcomes of the WSSD.

Throughout the interim stage, the LTP provided logistical and substantial support to APFED in the formulation and distribution of the APFED Message, e.g., through preparation of all meeting documents and identification of experts and stakeholders to provide input to APFED. As well, overview papers on the four priority issues identified by APFED (freshwater resources, renewable energy, trade, and finance) were prepared by the LTP, and these helped the members at the First Substantive Meeting of APFED to identify the possible elements to be included in the APFED Message. A draft of the APFED Message to the WSSD was also prepared by the LTP researchers. Through its development process, the LTP was able to tap into networks of experts and relevant stakeholders.

3. Final deliberation stage: Development of the APFED Final Report (October 2002–December 2004)

In its final deliberation stage, APFED is active in preparation of its final report and implementation of the three commitments made in the APFED Message. The work of APFED will continue until the end of 2004, beyond the Second Strategic Research Phase of IGES. By February 2004, two substantive meetings and a series of meetings to support APFED activities had been held, as shown in Table 1.

The LTP extended its expertise in formulation of the APFED Final Draft. The Zero Draft of the report was prepared and presented by the LTP for discussion at the Fourth Substantive Meeting (APFED4) in August 2003 in Mongolia. Having received comments from APFED members, the LTP is now preparing the first draft, in collaboration with the United Nations University (UNU) and the United Nations Environment Programme (UNEP), and it will be submitted to the Fifth Substantive Meeting (APFED5) in May 2004. In preparation, two expert meetings were held in the Philippines and Palau, respectively, to incorporate the views of the experts. A multi-stakeholder meeting is scheduled in March 2004 in Sri Lanka for further elaboration.

The LTP is also actively engaged in implementation of the APFED Commitments, in particular the collection of best policy practices (BPP) and development of an inventory of capacity building programmes (CBP). Regarding the BPP, more than eighty practices have been collected to date with the cooperation of APFED members, and the BPP database has also been under development for interim evaluation at APFED5. For intensive discussion on BPP criteria and future utilisation, a workshop was held at the IGES headquarters in December 2003 with the participation of seven experts nominated by APFED members. Information on CBPs is also currently being collected based on information provided by APFED members. The BPP and CBP databases will be developed for finalisation at the Sixth Substantive Meeting (APFED6).

c. Degree of attainment of the objective

As APFED Secretariat, the LTP was expected to play an active role in facilitating APFED discussions. Four substantive meetings of APFED as well as related meetings (expert meetings and multi-stakeholder meetings) have been successfully completed so far. In the course of AFFED deliberations, the LTP succeeded in drafting key outputs, such as the APFED Message and the draft of the Final Report. APFED is a forum of eminent persons from the region, and its outputs are drawing the attention of policy-makers in the region. Its final output, the APFED Final Report, will be presented at the Ministerial Conference on Environment and Development (MCED) and Eco Asia in 2005. In that sense, the expertise accumulated by the LTP through its research works have contributed or will contribute to regional policy-making process through APFED's outputs.

Table 2. List of APFED and its related meetings in the Second Strategic Research Phase (FY2001–FY2003).

Stage	Meeting title	Date	Venue	Chairperson	Main objective(s)
Preparatory stage	Preparatory Meeting	27 Sept. 2001	Tokyo, Japan	Mr. Ryutaro Hashimoto	Discussion on the framework of APFED activities
	Organisational Meeting	14 Oct. 2001	Tokyo, Japan	Mr. Ryutaro Hashimoto	
Interim deliberation stage	First Substantive Meeting (APFED1)	12–13 Jan. 2002	Bangkok, Thailand		Elements to be included in the APFED Message
	Multi-Stakeholder Meeting for APFED1	10 Jan. 2002	Bangkok, Thailand	Dr. Tongroj Onchan, APFED member from Thailand	Expectations of the APFED Message
	Expert Meeting for APFED 1	11 Jan. 2002	Bangkok, Thailand	Dr. Phaichitr Uathavikul, Chair of the Board of Directors of the Thailand Environment Institute	Elements to be included in the APFED Message, in particular regarding freshwater resources, renewable energy, and trade and the environment.
	Second Substantive Meeting (APFED 2)	4–5 May 2002	Jakarta, Indonesia	Prof. Morishima chaired the meeting on behalf of Mr. Hashimoto	Finalisation and adoption of the APFED Message
	Expert meetings for APFED2				
	On freshwater resources	29 Mar. 2003	Tokyo, Japan	Dr. Apichart Anukularmphai, Chairperson of GWP South East Asia-TAC	Elaborate the preliminary draft of the APFED Message
	On trade and finance	1 Apr. 2003	Tokyo, Japan	Dr. Ryokichi Hirono, Professor Emeritus, Seikei University (session on finance); Mr. Nirmal Andrews, Regional Director and Representative, UNEP/ROAP (session on trade and development)	
	On renewable energy	2 Apr. 2002	New Delhi, India	Chaired by Dr. R. K. Pachauri, Director-General, TERI	
	Multi-Stakeholder Meeting for APFED	3 May 2002	Jakarta, Indonesia	Chaired by Professor Akio Morishima on behalf of Dr. Emil Salim, APFED member of Indonesia	Provision of multi-stakeholders' views on the draft of the APFED Message

Table 2 continued

Stage	Meeting title	Date	Venue	Chairperson	Main objective(s)
Final Deliberation Stage	Third Substantive Meeting of the APFED (APFED3)	25–26 Jan. 2003	Guilin, People's Republic of China (P.R.C.)	Mr. Ryutato Hashimoto, Chair of APFED	Outline of APFED Final Report and work plan for APFED Commitments
	Expert Meeting on an Integrated Approach to Managing Urbanization with Particular Emphasis on Sustainable Land Use	23 Jan. 2003	Guilin, P.R.C.	Dr. Qu Geping, APFED Member of PRC	Inputs to APFED on the subject
	Multi-Stakeholder Meeting	24 Jan. 2003	Guilin, P.R.C.	Dr. Qu Geping, APFED Member of P.R.C.	Provision of multi-stakeholders' views on elements to be included in the Final Report
	The Fourth Substantive Meeting (APFED4)	23–24 Aug. 2003	Ulaanbaatar, Mongolia	Mr. Ryutato Hashimoto, Chair of APFED	Consideration of the Zero Draft of the Final Report and progress of implementation of APFED Commitments
	Best Policy Practice Workshop	11–12 Dec. 2003	Kanagawa, Japan	Mr. Hideyuki Mori, LTP Project Leader	Consideration of criteria and utilisation of BPPs
	Manila Expert Meeting	16–17 Dec. 2003	Manila, the Philippines	Dr. Cecilito Habito, APFED member of the Philippines	Elaboration of the preliminary version of the First Draft
	Palau Expert Meeting	16–17 Jan. 2004	Koror, Palau	Mr. Kwnio Nakamura, APFED member of Palau	
	Sri Lanka Multi-Stakeholder Meeting	20–21 Mar. 2004	Colombo, Sri Lanka	Dr. Vinya Ariyaratne, APFED member of Sri Lanka	

1.2.3. Environmental White Paper for Sustainable Development in the Asia-Pacific Region (tentative title)

a. Background, objectives, and approach

It is considered that the Asia-Pacific region will have a great impact on the global environment in the twenty-first century due to its expected economic development and population growth. To provide and disseminate innovative policy recommendations to cope with the situation, at the Board of Directors Meeting in February 2001, it was decided to launch a new IGES-wide initiative—publication of the IGES Environmental White Paper for Sustainable Development in the Asia-Pacific Region (IGES White Paper).

The White Paper is intended to bring forward innovative policy options and strategies for further actions towards sustainable development in the region by cross-cutting and integrating research activities at IGES.

As an IGES-wide project, the White Paper Project has involved all IGES research projects, as well as the IGES Secretariat, in its activities, with the LTP playing a coordinating role. A series of study sessions was conducted in the beginning of the second phase in a plenary manner. Then, a task force composed of representatives of each project, the IGES Secretariat, and external collaborators was set up to take the initiative in terms of the planning process and identification of key elements to be included in the White Paper. The discussion of the task force

was followed by the setting up of a core team consisting of one visiting researcher (Dr Yohei Harashima, Takushoku University) and two full-time LTP staff. The team drafted a few chapters on the overarching theme of the White Paper, while the rest of the chapters were written by the representatives of each IGES research project. Together with the LTP project leader, the team was also in charge of the management of the White Paper project, including communication with authors, other full-time researchers, consultants, and the IGES Secretariat. It also hosted meetings with authors to improve and coordinate chapters as well as to formulate the concluding chapter. Through such a process, the White Paper is a product of IGES-wide efforts.

b. Review of achievements

Papers to be included in the White Paper have already been prepared through several processes, including peer-review, although final editorial work on the publication is still to be completed. The contents of the White Paper are as follows (as of 21 January 2004):

- Chapter 1 From a Consolidated to a Fragmented World: Changes in the Developmental State in Asia
- Chapter 2 Emerging Landscape of Environmental Problems
- Chapter 3 Emerging Landscape of Environmental Actors and Processes: Towards Polycentric Governance
- Chapter 4 Communities and Forests: What Makes Participation Work?
- Chapter 5 Water Resources: Promoting an Integrated Approach
- Chapter 6 Waste: Transboundary Market for Recyclables
- Chapter 7 Business and the Environment: Corporate Sustainability Management
- Chapter 8 Urban Environment: Integrating International and Local Responses
- Chapter 9 Education for Sustainable Development: From Dream to Reality
- Chapter 10 Climate Change: (title to be decided)
- Chapter 11 Alternative Direction of Environmental Strategies

c. Degree of attainment of the objectives

Although not yet published, this sub-project has achieved its original purpose of preparing all the chapters with innovative policy options through cross-cutting and integrating research activities at IGES.

1.2.4. The IT revolution and the environment

a. Background, objectives, and approach

There has been a growing concern about the impacts of the information technology (IT) revolution on the environment in recent years. Some have pointed out that further proliferation of IT would bring an increase in electricity consumption and e-waste with an accompanying negative impact on the environment. At the same time, others claim that IT could be an effective tool to reduce the use of natural resources and energy so that it has a positive impact on the environment. To date, however, there has not been sufficient discussion about the pros and cons of the IT revolution. Based on this gap, research has been conducted with three objectives in mind: collection of good practices of the utilisation of IT for the environment, an examination of the pros and cons of the IT revolution in terms of its impacts on the environment, and the formulation of policy recommendations towards promoting the utilisation of IT for the environment. To meet these objectives, study meetings were regularly held to discuss the potential of IT for reducing stress on the environment and on researching the utilisation of IT for sustainable development through participation in the regional UNEP/ROAP initiative, Information and Communication Technologies for the Environment in Asia and the Pacific (ICTEAP).

b. Review of achievements

Study meetings on the IT revolution and the environment were held monthly, on average, from December 2000 through to August 2002 in collaboration with Nikkei Business Publications, Inc. At the study meetings,

discussions were held with members, of which eleven were experts from universities, and people from IT-related companies, research institutes, NGOs, and staff of IGES and Nikkei Business Publications, Inc., about how the IT revolution is affecting economic activities, individual lifestyles, and social systems as a whole, and about how to make the best use of IT to reduce resource and energy consumption. A book was published commercially as one of the fruits of the study meetings.

Under the framework of the above-mentioned ICTEAP, which started in August 2001, good practices in the utilisation of information and communication technologies (ICT) for environmental management in the region were collected. In addition, research on two topics (the utilisation of ICT to reduce greenhouse gas emissions and the creation of an industrial-waste exchange using ICT) was conducted, and the resulting proposal of two pilot projects was presented to UNEP/ROAP.

As part of the efforts to diffuse the research outcomes to the public, e-learning material on IT and the environment (ICT and the Environment) was developed in collaboration with IGES's Capacity Building Programme. This course helps users gain a basic understanding of the issues surrounding IT and the environment.

c. Degree of attainment of the objective

The outcomes of this research were disclosed as a report, a commercially published book, e-learning material, and through presentations made at the ICTEAP International Workshop (May 2002, New Delhi, India) and the International Symposium on IT and the Environment (September 2002, United Nations University). It is not yet known, however, to what extent the outcomes of the research have impacted on the formulation of policy in promoting the utilisation of IT for the environment, which is one of the three objectives. Communicating and recommending the research outcomes effectively should be set as a challenge in the future.

References

IGES. 2003. E-learning material on ICT and the environment, <http://cmp.iges.net/learn/faculties/courses/ ?courseid=279>.

IGES and Nikkei Business Publications, Inc. 2003a. Report of the study meetings on IT revolution and the environment (March).

———. 2003b. Report of the study meetings on IT revolution and the environment. Separate volume: Record of discussions (March).

Mitsuhashi, Tadahiro and Institute for Global Environmental Studies (IGES), eds. 2003. Kankyo Saisei to Joho Gijutsu:Chikyu Shinjidai no Giho (September).

1.2.5. Freshwater Resources Management Project

a. Background, objectives, and approaches

The issues related to freshwater resources are critical for sustainable development of the world and are causing considerable concern among the international community. In Asia and the Pacific, issues such as severe water shortage and water pollution are forecast to become more serious because of continuous population growth and economic expansion. Considering the importance of freshwater for sustainable development in the region, IGES decided to establish a new project. The basic studies on the issue were initiated under the LTP to identify possible research topics and methodologies.

The activities included conducting a basic survey of the issues and existing trends of freshwater resources management, both in the region and the world, and the identification of IGES's research topics on freshwater issues. These were done together with international and regional networking during the preparation process for the Third World Water Forum (WWF3), which was held in Kyoto in March 2003. Furthermore, the issues in the Asia-Pacific region were closely examined in response to the decision, and a formal request was made at the Asia-Pacific Forum for Environment and Development (APFED) to consider making the solving of water resources problems a priority regional challenge.

b. Major activities and achievements

For FY2001, as a part of the basic study on freshwater resources management issues, IGES organised a preparatory session for the WWF3, participated in the International Conference on the Conservation and Management of the Lakes, and conducted research on international dialogue on freshwater resources management. The outcomes of these activities were compiled in the *Study Report on Issues on International Freshwater Resources*, which was commissioned by the Ministry of the Environment of Japan, and into an overview paper submitted to the APFED First Substantive Meeting (APFED1). Furthermore, the project wrote the part related to freshwater resources in the APFED Message to the WSSD, which, after going through a series of discussions at the APFED meetings, was disseminated to the international community.

During FY2002, studies of international trends and issues were continued, and at the same time, the Study Group on Freshwater Resource Management in Asia, chaired by Dr. Shinichiro Ohgaki, Director of the Research Center for Water Environment Technology at the University of Tokyo, was set up. The study group re-identified the issues related to freshwater resources in the Asia-Pacific region, and examined possible research topics for IGES to tackle. An interim report of the study was distributed widely at the WWF3, and IGES's activities, based on this report, were presented at the Integrated Water Resources Management session at the WWF3.

In relation to the WWF3, a session called "Water Monitoring and Modeling: The Present Situation and Partnership for the Future" was co-organised with the Ministry of the Environment of Japan, the Japan Society on Water Environment, and United Nations University (UNU), and its pre-session was also co-organised in October 2002 at the UNU. The outcome of the session was included in the session report, and it is registered as one of the outcomes of the WWF3.

For FY2003, the Study Group on Freshwater Resource Management in Asia continued its discussions, and the implementation plan of a new initiative, Water Environment Partnership in Asia (WEPA), proposed by the Ministry of the Environment of Japan, was examined. In relation to WEPA, an expert group (chaired by Dr. Mitsumasa Okada, Hiroshima University) was founded to prepare for the official commencement of the project, and the group examined issues such as the contents of the databases planned to be developed under WEPA. In March 2004, an inception workshop will be held in Indonesia with invited policy-makers of the relevant Asian countries, where the implementation plan will be further examined.

In addition, based on the results of studies to date, a strategic research proposal for the Third Phase was drawn up, and to put the proposal into effect, the Freshwater Resources Project was launched, with Dr. Shinichiro Ohgaki, the Director of Research Center for Water Environment Technology at the University of Tokyo, as project leader.

c. Degree of attainment of the objectives

The initial target was met by drawing up the Third Phase Strategic Research proposal, which is based on the previous basic studies, and by setting up the Freshwater Resources Management Project as an independent project. A network was established among the specialists from within and outside Japan through the basic research activities and through participation in the WWF3. Furthermore, knowledge attained through the basic research also contributed to the APFED Message and reports. In this regard, it could be said that the preparation process not only contributed to the launching of the project but also to the policy recommendations for the Asia-Pacific region.

1.2.6. ECO ASIA Long-Term Perspective Project

a. Background, objectives, and approach

The Environment Congress for Asia and the Pacific (ECO ASIA) was established in 1991 upon the initiative of the Ministry of the Environment of Japan (MOEJ), formerly the Environmental Agency, as a forum for high-

level government officials, including ministers and representatives from international organisations, to discuss environmental policy in Asia and the Pacific. The ECO ASIA Long-Term Perspective Project (LTPP) was conducted from 1993 to 2001 under the framework of ECO ASIA. It was expected that the LTPP would provide scientific information on the state of the environment in the region, as well as recommendations and policy options for solving problems faced, which contributed to a series of ministerial-level discussions at ECO ASIA. Being commissioned by the MOEJ, IGES played a key role in conducting the LTPP research on a wide variety of environmental issues in collaboration with a number of research institutes in the region from 1999 and 2001. IGES's New Development Patterns Project played the key role in conducting research activities and delivering their outcomes to ECO ASIA in 1999 and 2000, as did the LTP in 2001.

b. Review of achievements

The LTP completed the final report of the LTPP, *Towards a Sustainable Asia and the Pacific: Report of ECO ASIA Long-Term Perspective Project Phase II*, in 2001, which is available in the following formats:

- Full report <http://www.iges.or.jp/jp/ltp/pdf/ECOASI~1.PDF>
- Summary for policy-makers (included in the Full Report)
- Digest <http://www.iges.or.jp/jp/ltp/pdf/ECOASI~2.PDF>

The report addressed issues such as climate change, urban environment, biodiversity, forest conservation, freshwater resources, and environmental education in the Asia-Pacific region, and their respective status was analysed from four viewpoints, namely, eco-consciousness, eco-partnership, eco-technology and investment, and eco-policy linkage, which are the basic concepts of the LTPP. An analysis of the causes of environmental changes, the current status of the environment, and their future perspectives were included, as well as recommendations for policy-making to promote sustainable development in the region.

The report was presented at the tenth ECO ASIA, held in Tokyo in October 2001, and it was endorsed by the participants. With their approval, it was distributed at the WSSD Regional PrepCom for Asia and the Pacific held in Phnom Penh, Cambodia, in November 2001. The report was also distributed at the Fourth WSSD PrepCom (ministerial level), held in Bali, Indonesia, in May and June 2002, as well as at the WSSD, held in Johannesburg, South Africa in August and September 2002.

c. Degree of attainment of the objectives

The targets of the project were well accomplished by preparing the final report for the tenth ECO ASIA. The report summarised the research outcomes of ECO ASIA, and the LTPP operated from 1993 to 2001, providing ECO ASIA with scientific information on the state of the environment in Asia and the Pacific as well as policy recommendations for further addressing regional environmental issues. It also delivered information on the current development of strategic research on the environment in the Asia-Pacific region to policy-makers in the field of environment and development from all over the world at the WSSD and its preparatory process.

1.2.7. Japan-U.S. Task Force for Achieving Harmony in Trade and Environment

a. Background, objectives, and approach

It was a great step towards harmonising trade expansion and environmental protection when the Doha Declaration was adopted at the Fourth World Trade Organization (WTO) Ministerial Meeting (in Doha, Qatar) and it was agreed by member states that the issue of the environment was to be included in the negotiation agenda at the WTO. Therefore, there was an expectation that a substantial discussion to harmonise trade and the environment would start at the Fifth WTO Ministerial Meeting at Cancun, Mexico, in September 2003 (Cancun Meeting). With this expectation, a group of U.S. researchers from the Global Environment & Trade Study (GETS) launched the Japan–U.S. Task Force for Harmonizing Trade and Environment in order to contribute to the discussions at the WTO. Then, GETS requested IGES to join the Task Force. Its members include four

organisations—the Global Industrial and Social Progress Research Institute (GISPRI), the Fair Trade Center of Japan, GETS, and IGES—and professors of Japanese universities (the total number of members is fifteen). The Task Force selected major issues in trade and the environment and is conducting research on these selected issues. (The Japan Foundation provides the funding for the activities of the Task Force.)

b. Review of achievements

Individual organisations or members of the Task Force are conducting research on the individually selected topics, which are categorised into three groups: the WTO and the Doha Agenda, multilateral environmental agreements (MEAS) and the global trade regime, and global environmental governance. IGES is in charge of the topic titled "The Relationship between the WTO and Regional Trade Agreements and Institutions on Trade and Environment in Asia," which falls under the classification of global environmental governance. Its interim research outcomes were presented at the Workshop on Achieving Harmony in Trade and Environment, which was organised by the Task Force as a side event of the Cancun Meeting. This project lasts until the end of 2004. Policy recommendations for achieving harmony in trade and environment as final outputs will be presented at a symposium to be held in November 2004.

c. Degree of attainment of the objectives

Members of the Task Force made presentations on their interim research outcomes at the workshop held by the Task Force at the Cancun Meeting, but since the main discussion at the Cancun Meeting was focused on agricultural issues and there was no substantial discussion about the issues in trade and environment, the impact of a range of side events on trade and environment appeared to be diminished. The Task Force expects, however, that its policy recommendations could influence the discussion on trade and the environment hereafter through the publication of a book as a final output and a symposium to be held in Tokyo in November 2004.

Reference

Global Environment and Trade Study (GETS). 2003. *Achieving harmony in trade and environment* (on CD). Minneapolis: GETS. The text is available at <http://www.gets.org/pages/harmony/>.

1.2.8. Comprehensive Assessment of the Implementation of Agenda 21 in the North-East Asian Sub-region

a. Background, objectives, and approach

In the run-up to the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, in August and September 2002, IGES was commissioned by the Task Force for the Preparation of WSSD in Asia and the Pacific, consisting of the Asian Development Bank (ADB), the United National Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP), to prepare a sub-regional report assessing the implementation of Agenda 21 for the Northeast Asian sub-region, which is comprised of the Democratic People's Republic of Korea, Japan, Mongolia, the People's Republic of China, the Republic of Korea, and the Russian Federation.

b. Review of achievements

The report, prepared by the LTP project, assessed the progress made in the implementation of Agenda 21 in Northeast Asia since the 1992 United Nations Conference on Environment and Development (UNCED), identified key issues and challenges for reporting to the WSSD, presented mechanisms to ensure cooperation on the sub-regional level, and formulated project proposals to deal with the major sustainable development issues in the sub-region.

c. Degree of attainment of the objectives

The first draft of the report was presented and reviewed at the Stakeholders' Meeting and the Intergovernmental Meeting for Northeast Asia in Preparation for the WSSD, held in Beijing, China, on 26 and 28 July 2001, respectively. Furthermore, the preparation process involved consultations with sub-regional and national lead agencies preparing for the WSSD, as well as planning, financial, and environment agencies at the national and sub-regional levels in the countries concerned. Completed in September 2001, the report on Northeast Asia was compiled in a synthesis version and distributed at the high-level regional meeting for the WSSD in Phnom Penh, Cambodia, on 27–29 November 2001. Along with other sub-regional reports, the Northeast Asia report served as a basis for formulating the Phnom Penh Regional Platform on Sustainable Development in Asia and the Pacific, which was the official document from Asia and the Pacific to the WSSD.

1.2.9. Priority Paper on Sustainable Development for Northeast Asia

a. Background, objectives, and approach

The UNEP Asia-Pacific Resource Centre for Asia and the Pacific (UNEP RRC.AP) drew up priority papers on sustainable development in 2003 and 2004 for five sub-regions in the Asia-Pacific region, namely, Northeast Asia, Southeast Asia, South Asia, Central Asia, and the Pacific. It aimed to review responses gathered during and after the WSSD preparatory process to promote sustainable development in the region and issues relevant to their implementation. Upon being commissioned by the UNEP RRC.AP, IGES prepared a draft of the Priority Paper on Sustainable Development for Northeast Asia. The LTP conducted a literature review and interviewed experts, focusing on priority issues in the sub-region, including atmospheric pollution, water quality, degradation of the marine environment, land degradation and desertification, deforestation and biodiversity loss, energy, poverty, population and urbanisation, food security, and sustainable production and consumption. The LTP completed the draft in a collaborative manner with the support and provision of the latest information on the above-mentioned issues by each of the IGES research projects, governments, research institutes, and NGOs in the sub-region, as well as international organisations.

b. Review of achievements

UNEP plans to publish the priority paper, along with a collection of priority papers for Southeast Asia, South Asia, Central Asia, and the Pacific, under the title "Priority Paper on Sustainable Development in Asia and the Pacific" (tentative title, as of February 2004). IGES' collaboration with governments, research institutes, and NGOs in the sub-region, as well as with international organisations, was also further strengthened through the preparation of the draft.

c. Degree of attainment of the objectives

The LTP successfully responded to the request of the UNEP RRC.AP by providing the latest information on a wide variety of responses gathered and an analysis on future challenges to promote sustainable development in Northeast Asia.

1.2.10. State of the Environment in Northeast Asia 2005

a. Background, objectives, and approach

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) hosts the Ministerial Conference on Environment and Development (MCED) every five years. The next MCED, the fifth, will be held in Korea in March 2005, and ESCAP is preparing publication of its "State of the Environment in Asia and the Pacific 2005" (SOE 2005) for the conference. Being commissioned by ESCAP, IGES is currently drafting one of its chapters on Northeast Asia. The chapter addresses particularly important environmental issues in Northeast Asia, namely, land degradation, biodiversity loss, freshwater resource degradation, industrialisation and pollution,

cleaner production and energy, and marine degradation, and it provides information on their causes, current status, and responses taken or to be taken. Preparation for the SOE 2005 is in progress, and the LTP is currently drafting the chapter by fully utilising its expertise and experience in incorporating information provided by researchers both within and outside of IGES, by government officials in relevant countries, as well as international organisations, etc.

b. Review of achievements

A draft outline of the SOE 2005 and major contents of each chapter were agreed upon among participants at the Expert Group Workshop for SOE 2005 organised by ESCAP (Bangkok, September 2003). Based on this agreement, the LTP conducted a review and analysis of the important selected environmental issues in Northeast Asia and wrote the first draft. Beyond March 2004, the draft will be submitted to a series of experts for review and further elaboration, and then finalised by the end of 2004.

c. Degree of attainment of the objectives

Review and analysis on selected issues, establishment of a relevant network, and preparation of the first draft are completed so far, although the preparation of the chapters is still in progress. The draft will be updated in due course, for example, by reflecting comments from the expert's review and incorporating the latest information, and will be finalised by the end of 2004, as mentioned above.

1.2.11. Support for the Manila Policy Dialogue on Environment and Transport in the Asian Region

a. Background, objectives, and approach

The Manila Policy Dialogue (MPD) was initiated and organised by the Ministry of the Environment, Japan, and the Department of Transport and Communications, the Philippines, in following up on the outcomes of the International Conference on Environmentally Sustainable Transport in the Asian Region, held in March 2003 in Nagoya, and by taking into account various on-going initiatives in the field of the environment and transport.

The objectives of the meeting were as follows:

- Overview the regional situation on transport and environment and discuss the need for strategic planning for environmentally sustainable transport with both a long-term vision and short-term/long-term actions.
- Discuss specific priority topics in Asia, including roadside air quality monitoring and assessment, emission control for in-use vehicles with special attention to inspection and maintenance, cleaner fuel for vehicles, and environmentally friendly public transport planning.
- Develop recommendations towards the establishment of environmentally sustainable transport in Asia in the form of a policy statement.

The MPD was held on 16 and 17 January 2004 in Manila, the Philippines, and 47 delegates from 13 countries and 11 international organisations participated. Sessions were held to discuss the following specific priority topics: (1) strategic planning for promoting environmentally sustainable transport (EST) in Asia with both a long-term vision and short-term actions, (2) roadside air quality monitoring and assessment, (3) emission control for in-use vehicles with special attention to inspection and maintenance, (4) cleaner fuel for vehicles, and (5) environmentally friendly public transport planning. Following the discussions, the Manila Statement was adopted as an agreement of the participants of the Policy Dialogue.

The LTP supported the MPD by participating in the preparatory committees, providing an issue paper on environmentally friendly public transport planning, and making a presentation at the relevant session.

b. Review of achievements

The major achievements of the MPD were the active information sharing and discussion on the primary topics and adoption of the Manila Statement. The main points of the Manila Statement include agreement on the need for establishing a regional forum and subsidiary expert groups, a welcome for the initiatives of the United Nations Center for Regional Development (UNCRD) in extending assistance in preparing national strategies and action plans to promote EST, and a request for the UNCRD to follow-up on overall progress on transport and environment related issues in Asia.[1]

c. Degree of attainment of the objectives

The MOEJ described its view on the MPD with the following statement: "This Policy Dialogue was meaningful in that it assembled the policy-makers in the field of environment and transport from the Asian countries, advanced sharing of information and views to realise the EST considering the backgrounds and characteristics of the participating countries, and identified the issues for the specific actions."[2]

It can be concluded that the MPD has generally achieved the objectives, listed above in Section 1, and achieved and initiated the basis for further activities for EST in the Asia-Pacific region.

1.2.12. Support for the Third Toyota Stakeholder Dialogue

a. Background, objectives, and approach

The Toyota Stakeholder Dialogue (TSD) has been hosted annually by the Toyota Motor Corporation since 2001, with the aim of having dialogues with multiple sectors, including NGOs, as part of the efforts to encourage environmentally sound business practices. Toyota contracted out the operation of the stakeholder dialogue to secure free discussions among all the stakeholders, and IGES' Research Supporting Section was commissioned as the secretariat since the first TSD. The theme of the third TSD in 2003 was "Environmentally Sustainable Transport (EST)." Since the LTP has conducted research in the area of EST, it supported the TSD by assisting with the selection of relevant participants, examining the approaches for participatory workshops, providing information on the international and national practices on environmentally sustainable transport at the pre-symposium, and participating in the TSD as one of the stakeholders.

A stakeholder dialogue is one form of participatory workshop, and it aims to identify the points at issue, to identify and understand the common and different viewpoints among the participants, as well as the background of commonality and differences, and to reach agreement as much as possible by convening the stakeholders and facilitating the discussion based on some set rules. The third TSD was held on 28 and 29 November 2003 at IGES' headquarters with the participation of 32 stakeholders from various sectors including government, business, civil groups, academics, and the media. On the first day, group discussions among each sector and a plenary meeting were held to identify the basic components and barriers of EST. Based on the discussions of the first day, three themes were identified, and those themes were discussed at the group sessions attended by people from multiple sectors. The results of the multiple-sector group discussions were reported to the plenary meeting. For the group discussions by each sector and by the multiple sectors, the KJ method[3] and the applied mapping method were used to effectively facilitate the discussion and organise the results. In order to share the information and raise issues prior to the TSD, an open symposium, Environmentally Sustainable Transport, was held on 17 November at the Plaza Hall in the Kasumigaseki Building.

1 The Statement can be found at <http://www.env.go.jp/press/file_view.php3?serial=5249&hou_id=4645>.

2 MOEJ press release (in Japanese) is available at <http://www.env.go.jp/press.php3?serial=4645>.

3 The KJ method, named after its inventor, Prof. Jiro Kawakita, is a technique of creative development or creative problem solving. This technique uses small pieces of cards to fill in the information and groups the cards with similar concepts together to identify the linkages of the factors related to the issue.

b. Review of achievements

The discussion at the TSD clarified the views of each sector on "the factors for EST society" and "the barriers of EST." The views of three multiple-sector subgroups were also put together on the following three themes: (1) the commonalities and differences of the visions of EST among the sectors, (2) the approaches to share the vision of EST that Japan should seek for under the diversity of the views, and (3) the policies and measures to be promoted to realise EST. Those results and analyses are to be put together in *The Report on the Third Toyota Stakeholder Dialogue*.

c. Degree of attainment of the objectives

The TSD achieved participation from various sectors related to transport and the environment, and it facilitated very active discussions. Some participants evaluated the discussions among the sectors as fruitful and more in-depth than the previous TSDs. The improvement was brought about by the introduction of smaller group discussions using the KJ method and the applied mapping method in reference to the preceding examples of participatory workshops. On the other hand, it was pointed out that this theme is very area-specific and that the discussions at the TSD focusing on national levels could not distinguish the conflicting views that would have been clearer with a focus on some specific locations.

2. Self-evaluation

2.1. Evaluation of achievements

2.1.1. An aspect of influence on the policy-making process

a. APEIS/RISPO

1. APEIS aims to develop scientific, knowledge-based tools to promote informed decision-making on the environment and development.
2. The outcomes of RISPO (Strategic Policy Options and the Good Practices Inventory) will be proposed at ECO ASIA and other international policy dialogues for sustainable development.
3. The outcomes of RISPO (Strategic Policy Options and the Good Practices Inventory) will be made available to the public on the Internet, which will enable policy-makers, researchers, and other stakeholders to search for data on their field of interest.
4. Capacity building of policy-makers and other stakeholders is planned, utilising the outcomes of RISPO.

b. APFED

1. Since the APFED Message was registered as a Type II partnership/initiative document for the WSSD, it has the potential to become an influential document for policy-making.
2. Since the Message was written with input from various stakeholders, the APFED Commitments made in the Message are unique and have the potential to be effective should they be implemented with additional support and cooperation from the various stakeholders and international organisations.
3. As of March 2004, the APFED Final Paper on the APFED recommendations is in the process of preparation. In this process, expert meetings and multi-stakeholder meetings were organised in the Philippines, Palau, and Sri Lanka, and various opinions were collected based on the consideration for environmental policies specific to each region. Through discussions at these meetings, the APFED recommendations have become more substantive and practical enough to meet policy needs. At the same time, the meetings provided national policy-makers with an opportunity to review policy issues from wide and strategic viewpoints. Similar meetings are planned in some regions towards the adoption of the APFED Final Paper in December 2004.
4. One of the commitments of APFED is to develop the Good Practices Inventory, which is expected to serve as a common asset for policy-makers in the Asia-Pacific region. As of March 2004, a number of

good practices have been collected with the cooperation of APFED members, and a prototype of the database system has been developed for on-line searching. The database system will be improved further in consultation with APFED members and will be completed in December 2004.

c. ECO ASIA Long-Term Perspective Project (LTPP)

1. The final report was submitted to the ECO ASIA 2001 conference held in Tokyo and disseminated at the WSSD Regional PrepCom for Asia and the Pacific, held in Phnom Penh, Cambodia, which made an appeal targeting policy-makers from the Asia-Pacific region, including those at the ministerial level.
2. The final report was also disseminated to environment ministries and agencies in the Asia-Pacific countries through the Ministry of the Environment of Japan.
3. In addition, the final report was disseminated at the Fourth WSSD PrepCom (ministerial level) held in Bali, Indonesia, as well as at the WSSD, held in Johannesburg, South Africa.
4. Various stakeholders, such as government officials, researchers, and business people from China, Indonesia, Japan, Malaysia, South Korea, and Thailand, participated in the review process of the draft final report. The report received varied feedback, and various information exchanges occurred between the reviewers and the editorial team at the same time.

d. Comprehensive Assessment of the Implementation of Agenda 21 in the North-East Asian Sub-region

As a document distributed at the high-level Asia and the Pacific meeting for the WSSD, this output had the potential to be of major influence to policy-makers.

e. Priority Paper on Sustainable Development for Northeast Asia

The first draft of the Priority Paper was shared as a background information paper among the participants of the UNEP Asia-Pacific Civil Society Consultation Meeting (Bangkok, November 2003)—a part of the preparatory process for the Eighth Special Session of the UNEP Governing Council/Global Ministerial Environment Forum (Jeju, March 2003)—and utilised well to facilitate their discussion on the priority issues in the region. It is also quite likely that the paper published by UNEP, combined with priority papers for other sub-regions, namely, Southeast Asia, South Asia, Central Asia, and the Pacific, would provide wider potential audiences with impartial information on the responses taken, as well as insights for responses to be taken, to promote sustainable development in the region.

f. State of the Environment in Northeast Asia 2005

Preparation of this paper is in progress as a part of *State of the Environment in Asia and the Pacific 2005*, one of the flagship publications of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) released every five years. The report will be published in 2005 to coincide with the Fifth ESCAP Ministerial Conference on Environment and Development. By providing information on the state of the environment and responses taken or to be taken to address major issues of concern in the region, the report is expected to bring about significant impacts for its potential readers, including policy-makers, researchers, and NGOs.

g. Contribution to the Manila Policy Dialogue on Transport and the Environment

At the Manila Policy Dialogue, national policy-makers in charge of transport and the environment in Asian countries discussed the actions necessary to be taken to realise environmentally sustainable transport and an agenda for implementation. IGES prepared an issue paper for the discussions and made presentations. The outcomes of the discussions were adopted as the Manila Statement, which is expected to bring about significant impacts on transport and environmental policies in Asian countries.

h. The Fresh Water Management Project

The process of establishing the Fresh Water Management Project included the preparation of the APFED recommendations to the WSSD, participation in the WWF3, and building a network with experts within and outside Japan. These activities are regarded as contributions to the development of policy recommendations for Asia and the Pacific region. The project will continue carrying out these activities with the aim of having further impacts on policy-making in the region.

2.1.2. Timeliness in terms of stakeholders' needs

a. APEIS/RISPO

In the Asia-Pacific region, where the economy is growing rapidly, it is important to provide information on successful cases to cope with various environmental problems by using a win-win approach, which overcomes the trade-offs between the economy and the environment (i.e., the Good Practices Inventory). In choosing a research theme, the needs of the Asia-Pacific region are considered through ESCAP's Regional Action Programme and the Phnom Penh Regional Platform, and requests from policy-makers in the region are also collected in hearings on the process or through research, utilising discussions at the ECO ASIA Panel.

b. IT Revolution and the Environment

Under today's diffusion of information technologies, in order to change the lifestyles as well as the economic and social systems in Asia and the Pacific, research on IT and its impact on the environment and IT applications for sustainable development are urgently needed. Outputs from the LTP's research on the IT revolution and the environment must meet the needs of stakeholders in a timely fashion.

c. ECO ASIA Long-Term Perspective Project (LTPP)

It was quite timely to publish the final report in the world-wide momentum of the WSSD preparatory process, which includes ECO ASIA 2001 and the WSSD Regional PrepCom for Asia and the Pacific.

d. Japan–U.S. Task Force for Harmonisation of Trade and the Environment

As trade is rapidly expanding worldwide, harmonisation of trade and environmental protection is becoming a significant agenda. In parallel to this situation, the Japan–U.S. Task Force organised a side event on trade and the environment at the Fifth WTO Ministerial Conference, held in Cancun in September 2003, and presented a mid-term progress report of the research.

e. Fresh Water Management Project

The issue of fresh water is currently a worldwide concern, and it will be a much more important topic, particularly in the Asia-Pacific region where population and economic development continue to grow. In view of this situation, IGES initiated the Fresh Water Management Project in November 2003. In the process of establishing it, the LTP conducted a basic survey on fresh water issues and contributed to policy recommendations for APFED and the WWF3.

2.1.3. An aspect of uniqueness, originality, and effectiveness

a. APEIS/RISPO

1. The key word of APEIS and RISPO is *environmental innovation*.

2. To achieve policy-making towards sustainable development, RISPO includes the following innovative aspects:

- it promotes dialogues between scientists and policy-makers at international policy forums, such as ECO ASIA;
- develops the basis of scientific research as a common regional asset;
- proposes strategic policy options;
- maximises participation and collaboration with researchers and policy-makers in the Asia-Pacific region; and
- promotes capacity building.

b. APFED

The APFED Message submitted to the WSSD includes not only the recommendations for sustainable development but also three commitments of the APFED members towards actual implementation (listed below). These were registered as a Type II partnership initiative of the WSSD, and IGES, as the APFED secretariat, is facilitating their implementation.

1. Collect good policy practices, develop an inventory, and make it a common asset for decision-makers.
2. Develop an inventory for a capacity-building programme and provide useful information to those who are interested.
3. Build a network among researchers and research organisations through APFED activities, and develop policy proposals toward implementation of APFED recommendations.

c. Freshwater Resources Management Project

This project, in the process of being launched, established a network between IGES and experts within and outside Japan. This network is a unique asset of IGES, and it will serve as a basis for carrying out the project's activities. The network will also be a basis for exploring further cooperation in the future.

d. ECO ASIA Long-Term Perspective Project (LTPP)

1. The LTPP and its final report preparation was an IGES-wide project.
2. It was quite unique in its approach towards critical environmental issues in the Asia-Pacific region, such as climate change, urban environment, fresh water resources, forest, and biodiversity, by discussing the importance and effectiveness of four concepts/measures, namely, eco-consciousness, eco-partnership, eco-technology/eco-investment, and eco-policy linkage.

2.2. Evaluation of project management

2.2.1. Project management

The Long-Term Perspective and Policy Integration Project (LTP) is an amalgamation of two highly successful projects from the first research phase (April 1998–March 2001): the Environmental Governance Project and the New Development Patterns Project. The aims of this project are to conduct long-term and cross-cutting research for sustainable development in Asia and the Pacific in collaboration with other IGES projects and to deliver policy recommendations in an effective manner.

The LTP, as a new project, increased its research staff as necessary and strengthened its overall structure. It increased its capacity to achieve its expected roles in having an impact on policy-making through implementation of APFED and RISPO. Through these projects, the LTP built a network with researchers and decision-makers within and outside Japan. This network will serve as a strong basis for the LTP, and IGES as a whole, in proceeding with activities in the future.

While achieving these major outcomes, the LTP has developed its overall management through trial and error, taking into consideration its expected roles that are slightly different from other projects within IGES. A large

portion of the LTP's activities consists of commissioned work from the Ministry of the Environment and international organisations. Thus, a major objective of the LTP was to carry out efficient project management in coordination with other projects within IGES and with external organisations.

2.2.2. Efficiency in budget use

Major sub-projects of the LTP were carried out by efficiently using external funds. The main source of funding was Japan's Ministry of the Environment (MOE) and international organisations. Funds from the MOE include those for the Asia-Pacific Environmental Innovation Strategy Project (APEIS) and Research on Innovative and Strategic Policy Options (RISPO), the Asia-Pacific Forum for Environment and Development (APFED), the ECO ASIA Long-Term Perspective Project (LTPP), the Manila Policy Dialogue on Environment and Transport, and others. Projects funded by international organisations included a comprehensive analysis of the implementation status of Agenda 21 in Northeast Asia and the preparation of a sub-regional environmental priority paper on Northeast Asia, both of which are funded by UNEP, and preparation of the *State of Environment (SOE) 2005 Report for Asian and Pacific Region*, funded by ESCAP.

APFED and RISPO have a relatively large budget, and the total allocation of the two projects is almost equal to the total budget of the LTP. In the process of preparing the APFED Final Report, more expert/multi-stakeholder meetings were held than originally expected, but the costs did not exceed the allocated budget, thanks to efficient management. Under RISPO, the LTP conducted joint research and organised international workshops in collaboration with research partners under eight sub-themes. All of these activities were also carried out within the budget. In this respect, it is fair to say that the efficiency of the LTP in its budget use was generally appropriate.

3. Conclusion

As stated above, the LTP is different from other projects within IGES, and it was set up as a test project that is expected to employ an interdisciplinary approach and collaborate with external organisations and other projects within IGES. Thus, it is important for the LTP to continue exploring and identifying the most effective form of its roles and functions as it carries out its activities. Members of the LTP should keep this in mind as they work on their research activities.

In the second phase, the LTP strengthened its overall structure, accumulated international experience, and developed the capacity of researchers and the project as a whole through implementation of various projects. On the other hand, since the concept of sustainable development covers elements such as environmental protection, social justice, and economic development, the LTP came to understand that policy research in its area requires analysis from a cross-sectoral perspective, as well as integration and strategising based on the analysis. In this respect, the LTP has gone through the process of developing an in-depth understanding of policy research during the second phase.

Taking all these things into account, the LTP will strive in the third phase to conduct policy research by employing a cross-sectoral approach, identify strategies and policies for sustainable development based on research results, and present the strategies at international policy dialogues and meetings. The LTP will carry out these activities in collaboration with other projects within IGES and external organisations with the aim of creating synergistic effects on the outcomes.

Environmental Industry Project

Ryokichi Hirono
Project Leader

1. Overview

1.1. Background, overview, and approach

Asian countries have experienced a high rate of economic growth—with the exception of the 1997/98 monetary crisis—over a period spanning more than 30 years from the 1960s until today. Among these countries, China has steadily enhanced its role as a world industrial hub since the introduction of a market economy in 1978. During this period, however, care for the environment has been neglected in the rush for economic growth in these countries. Taking this current situation into consideration, the Environment Industry (EI) Project investigated the current status of the development of the environmental industry, essential for the realisation of sustainable development in these countries, and makes specific recommendations for the future.

It was the intention of the EI Project to provide an overview of the specific policy measures adopted by the governments of a few selected developing countries in the Asia-Pacific region (China, India, Indonesia, and the Republic of Korea) that have helped develop and accelerate their environmental technology, management know-how, and environmental hardware industry. These countries were chosen in order to illustrate the different stages of development that exist in the Asia-Pacific region, analyse the different structures and packages of government policies observed among the four countries, and assess the effectiveness of these specific policy measures. The project also offers some recommendations for the accelerated development of the environmental industry.

As part of the EI Project the development of the following specific issues over the last few decades in each target country were examined:

- the current status of, and major issues facing, environmental industry development;
- major government policy measures for promoting environmental industry development;
- the contributions, both positive and negative, of foreign multinational corporations to environmental industry development; and
- the contributions, if any, of foreign bilateral and multilateral donors to environmental industry development.

The Environmental Industry Project organised a study group and an advisory group to research the development of environmental industry in Asian countries, and to review the author's recommendations to central governments in the target countries, donors, and domestic and foreign private sectors.

Environmental experts from industry and academia were invited to the study group meetings to exchange information on environmental industry development in China, India, Indonesia, and the Republic of Korea. The EI Project also held a number of international workshops at the IGES headquarters. These resulted in a report, written by study group members and foreign research collaborators, with the aim of influencing the future development of the environmental industry.

1.1.1. Study group members of the Environmental Industry Development Project

- Prof. Ryokichi Hirono, Professor Emeritus, Seikei University/IGES-EI Project Leader
- Mr. Yoshiaki Nakaune, General Manager, International Management Association of Japan (IMAJ), Inc./IGES-EI Project Visiting Research Fellow
- Ms. Taeko Takahashi, IGES-LTP Research Associate/IGES-EI Project Observer
- Dr. Kozo Kido, Environmental Cooperation Advisor, Environmental Cooperation Center on International Environmental Cooperation, Kitakyushu
- Dr. Michael M. Gucovsky, Partner, Sustainable Development Advisor, and former Deputy Assistant Administrator, United Nations Development Programme (UNDP), and Senior Advisor, UNDP/World Bank-managed Global Environment Facility (GEF)
- Dr. Taek-Whan Han, Professor, Seo Kyeong University
- Mr. Harpreet Singh Kandra, Research Associate, Tata Energy Research Institute
- Dr. R. T. M. Sutamihardja, Senior Advisor, Minister of Environment, Government of Indonesia/IGES Trustee
- Dr. Lin Yan, Belfer Center for Science and International Affairs, Harvard University and Researcher, China Research Center on Environment and Development, Beijing
- Ms. Tomoe Karasawa, IGES-EI Project Research Secretary
- Ms. Eiko Kitamura, IGES-EI Project Research Secretary

1.1.2. Advisors to the study group

- Mr. Akinori Ogawa, Director, Environmental Cooperation Office, Global Environmental Bureau, Ministry of the Environment
- Mr. Tadahiro Mitsuhashi, Professor, Chiba University of Commerce Faculty of Policy Informatics/IGES Board Member
- Mr. Hiroshi Ohta, Professor, Aoyama Gakuin University School of International Politics, Economics and Business (SIPEB)
- Mr. Kazumasa Katou, Department of The Japan Fund for Global Environment, Japan Environment Corporation

1.2. Major activities and achievements

1.2.1. Study group meetings

Study group meetings were held eight times, and outside lecturers were invited from such areas as private sector corporations, consulting organisations, development institutions, and government banks. Each lecturer was an expert in the selected field and shared their rich practical experiences and knowledge for improving the planning and implementation of the current project. Study group members and advisory group members participated in the study group's discussions and contributed their own perspectives. The following is a list of the meetings, topics, and lecturers:

- 27 May 2002 — Selection of lecture themes and scheduling of lecturers
- 5 June 2002 — Industries for environmental monitoring in China
  Lecturer: Mr. Manabu Tani, Director, Green-Blue Co. Ltd.
- 16 July 2002 — Environmental industries in China
  Lecturer: Mr. Senro Imai, Senior Advisor, Institute for International Cooperation, Japan International Cooperation Agency
- 22 August 2002 — Contribution and challenges of the private sector toward the environmental industry
  Lecturer: Mr. Hiroyuki Fujimura, Director/President, Ebara Corporation
- 18 September 2002 — Measures undertaken by Matsushita Electric Industrial Co. Ltd. in its overseas subsidiaries

Lecturer: Mr. Shinichi Imai, Matsushita Electric Industrial Co., Ltd., Corporate Environmental Affairs Division/IGES Visiting Senior Research Fellow

- 31 October 2002 — Eco-financing
  Lecturer: Mr. Takayuki Yamamoto, Director, Environmentally Sustainable Development Group, Development Bank of Japan
- 22 April 2003 — Environmental industries in China
  Lecturer: Prof. Ryokichi Hirono, Professor Emeritus, Seikei University/IGES-EI Project Leader)
- 30 May 2003 — Contribution of The Japan Fund for Global Environment for Environmental Industry Development
  Lecturer: Mr. Kazumasa Katou, The Japan Fund for Global Environment, Japan Environment Corporation

1.2.2. Workshops on environmental industry

a. First workshop: 14–15 December 2002

At the first workshop the researchers assigned to each of the target countries and the Japanese researchers began by giving an overview of the current situation of the environmental industry in each country, the contribution of the governments at that time to environmental industry development, and the contribution of the donor organisations of developed countries and multinational companies. The following is a list of participants:

- Prof. Ryokichi Hirono, Professor Emeritus, Seikei University/IGES-EI Project Leader
- Mr. Yoshiaki Nakaune, General Manager, International Management Association of Japan (IMAJ), Inc./IGES-EI Project Visiting Research Fellow
- Ms. Taeko Takahashi, IGES-LTP Research Associate/IGES-EI Project Observer
- Dr. Kozo Kido, Environmental Cooperation Advisor, Environmental Cooperation Center on International Environmental Cooperation, Kitakyushu
- Mr. Yoshihiro Muto, Office for International Environmental Cooperation, Environment Bureau, City of Kitakyushu
- Dr. Taek-Whan Han, Professor, Seo Kyeong University
- Mr. Harpreet Singh Kandra, Research Associate, Tata Energy Research Institute
- Dr. R. T. M. Sutamihardja, Senior Advisor, Minister of Environment, Government of Indonesia/IGES Trustee
- Ms. Tomoe Karasawa, IGES-EI Project Research Secretary

b. Second workshop: 14–15 June 2003

Further discussions at the second workshop, which included a researcher from the United States, took place concerning how and to what extent international organisations, multinational companies, and cooperation between cities had contributed to environmental industry development in China, India, Indonesia, and the Republic of Korea, with particular emphasis on producing recommendations for these countries. The following is a list of participants:

- Prof. Ryokichi Hirono, Professor Emeritus, Seikei University/IGES-EI Project Leader
- Mr. Yoshiaki Nakaune, General Manager, International Management Association of Japan (IMAJ), Inc./IGES-EI Project Visiting Research Fellow
- Ms. Taeko Takahashi, IGES-LTP Research Associate/IGES-EI Project Observer
- Dr. Kozo Kido, Environmental Cooperation Advisor, Environmental Cooperation Center on International Environmental Cooperation, Kitakyushu
- Mr. Yoshihiro Muto, Office for International Environmental Cooperation, Environment Bureau, City of Kitakyushu

- Dr. Michael M. Gucovsky, Partner, Sustainable Development Advisor and former Deputy Assistant Administrator, UNDP, and Senior Advisor, UNDP/World Bank-managed Global Environment Facility (GEF)
- Dr. Taek-Whan Han, Professor, Seo Kyeong University
- Mr. Harpreet Singh Kandra, Research Associate, Tata Energy Research Institute
- Dr. R. T. M. Sutamihardja, Senior Advisor, Minister of Environment, Government of Indonesia/IGES Trustee
- Mr. Kazumasa Katou, Department of The Japan Fund for Global Environment, Japan Environment Corporation
- Ms. Eiko Kitamura, IGES-EI Project Research Secretary
- Ms. Tomoko Ishikawa, Research Supporting Section, IGES

1.2.3. Field studies conducted by Prof. Hirono, EI Project Leader

• 11–14 September 2002	Beijing and Seoul, for discussion with paper authors and associates
• 26–28 January 2003	Shanghai, for meetings with Shanghai Environment Bureau and Mitsubishi Corporation, Shanghai Branch
• 16–19 March 2003	Beijing, for participation and paper presentation at an international workshop on China's environmental industry organised by China Association of Environment Protection Industry
• 18–20 July 2003	Paris, for meeting with Environment Directorate, OECD
• 1–3 August 2003	Bangkok, for discussion with academics, corporate staff, and NGO representatives on environmental issues and industry development in the Kingdom of Thailand

1.2.4. Report publication: *Environmental Industry Development in Selected Asian Developing Countries: China, India, Indonesia, and Republic of Korea*

Part I: Introduction and Summary of the Findings and Recommendations, by Prof. Ryokichi Hirono and Dr. Mike Gucovsky

Part II: Country Studies

- Environmental Industry Development in China: Major Policies, Issues and Prospects, by Prof. Ryokichi Hirono, assisted by Dr. Lin Yan
- Environmental Industry Development in Developing Asian Countries—Case of India, by Mr. Harpreet Singh Kandra
- Promoting Technology and Business Partnership for Sustainable Development through Environmental Industry: Indonesia Case, by Dr. RTM Sutamihardja
- Environmental Industry in Korea—Current State, Prospects and International Cooperation Potentials, by Dr. Taek-Whan Han
- Small and Medium-Sized Enterprises (SMEs) for Sustainable Development, by Ms. Taeko Takahashi

Part III: Role of External Factors in Environmental Industry Development

- The Major Contributions of Japan's ODA and Japanese Multinational Corporations to Environmental Industry Development, by Mr. Yoshiaki Nakaune
- International Environmental Cooperation between Kitakyushu and Asian Cities—Fostering Environmental Industries, by Mr. Kozo Kido
- Drivers of Environmental Industry in Asia: Bilateral and Multilateral Cooperation and Multinational Corporations, by Dr. Michael M. Gucovsky

1.3. Major achievements

The EI Project organised the study group, the advisory group for the study group, and foreign research collaborators by first selecting the most appropriate person for each project. At the eight study meetings, project members discussed the current state and problems of the environmental industry in Asian developing countries, especially in China, India, Indonesia, and the Republic of Korea. The discussions in the study group meetings were found to be quite essential in enhancing the quality and perspectives of the outcome of the EI Project.

The EI Project held two international workshops, one in 2002 and the other in 2003. The discussion at the first international workshop, with the participation of research collaborators from India, Indonesia, the Republic of Korea, and Kitakyushu, was quite useful in improving the understanding of the study group members regarding the current state and major issues of promoting environmental industry in each of the target countries, as well as to come to a consensus on what and how to revise their first drafts. The first workshop also contributed to identifying the commonality of policies and issues on the development and acceleration of environmental industry among the target countries.

At the second international workshop, further discussions (that included a researcher from the United States) took place concerning how and to what extent international organisations, multinational companies, and cooperation between cities had contributed to environmental industry development in China, India, Indonesia, and the Republic of Korea, with particular emphasis on recommendations for these countries. The comments at the workshop were also very useful for members in the revision of their drafts.

The EI Project published a report, titled *Environmental Industry Development in Selected Asian Developing Countries: China, India, Indonesia, and Republic of Korea*, as a proposal for the future development of environmental industry in Asian developing countries, especially in China, India, Indonesia, and the Republic of Korea, as a result of research activities and discussion of study group meetings and international workshops.

In the original project plan, research collaborators from Germany and the United Nations Development Programme (UNDP) were expected to join the research project and attend the international workshops, but the plan was revised thanks to the participation of Dr. Gucovsky, former UNDP Deputy Assistant Administrator, who accepted the project leader's request to write a paper on the contribution of both developed countries (multinational corporations and official development assistance) and international organisations to the development of environmental industry in Asian countries. There were other changes to the original project plan, but the final EI Project report was able to achieve the same purpose through the cooperation of research collaborators. And the EI Project also had the good fortune of receiving a paper from China's research collaborator.

2. Self-evaluation

2.1. Evaluation of achievements

The published report will serve as an important source for investigating what policies are fostering the environmental industry and whether they are promoting its development in the target countries of China, India, Indonesia, and the Republic of Korea. The knowledge contained in this report will help them in their autonomous development and promotion of their own environmental industry through the developing countries' promotion of the development of human resources and the abilities of their organisations. It will also serve as the basis for specific policy proposals that will make further assistance from the international community possible. Hopefully, it will also contribute to the diversification of environmental technology and the coexistence of economic growth compatible with the environment in developing countries.

2.2. Evaluation of project management

The EI Project was mainly carried out by visiting researchers and research collaborators from outside of IGES. Even though the project members were not familiar with IGES' project management system, it was carried out satisfactorily with the full support and cooperation of IGES staff, especially with the support of the research secretaries. The research secretary system proved to be very useful for carrying out research projects by outside researchers.

3. Conclusion

The harmonisation of development and the environment is one of the most important issues in the world, especially in developing countries. In some countries, the environment has been neglected in the rush for economic growth. We are happy if the fruits of the EI Project provide opportunities to the autonomous development and promotion of the environmental industry through the development of human resources and the abilities of organisations in developing countries.

Capacity Building Programme

Andrea Deri
Programme Manager
Masahisa Sato
Research Associate
Reiko Koyama
eLearning Project Coordinator

1. Overview

1.1. Background, objectives, and approach

1.1.1. Background

IGES' research projects are focused on conducting strategic policy research. Besides this activity, all of them are also engaged in multi-stakeholder dialogue, information outreach, and capacity building. To strengthen this wide range of capacity-building initiatives and to enhance the organisation's effectiveness, IGES established the Capacity Building Programme (CBP) in 1999. Consequently, the strategic research activities of the CBP are not policy but *implementation*-oriented; they focus on the development of innovative learning and training tools to support IGES' efforts in closing the knowledge-action gap.

1.1.2. Objectives and targets

The Capacity Building Programme connects policy research with policy-making by providing innovative training for decision-makers to formulate research-based policies. Based on Agenda 21 principles and IGES' mission, the CBP's own mission is to support learning for sustainable development through the following objectives:

1. Encourage innovative policy development by making IGES research results easily accessible to policy-makers and policy implementers.
2. Provide a large number of key decision-makers with quality learning through
   - adopting an integrated capacity-development approach,
   - promoting the wise use of eLearning (for narrowing the digital divide), and
   - offering a needs-based combination of eLearning with face-to-face methodologies.

1.1.3. Who needs capacity building?

In view of the above, the beneficiaries of the CBP's activities are the same as IGES' other research projects: policy-makers; decision-makers; leaders and managers who have high impact, broad outreach, and who are stakeholders of sustainable development; governments; businesses; schools and universities; non-governmental organisations (NGOs); and those whose activities have special focus on Asia-Pacific countries.

1.2. Review of achievements

In the second phase of IGES' strategic research, the CBP focused on eLearning (Internet-based learning) as the primary tool of implementation, and combining eLearning with face-to-face training workshops with a

commitment to narrowing the digital divide. The content of training materials was built on IGES' strategic research results, as well as the intellectual capital of the CBP's large international network of organisations involved in policy change for sustainable development.

The following is a list of activities conducted and achievements in the second phase of research:

- **eLearning:** Developed 40 eCourses (tutorial-like, non-academic, practical, short, self-study courses) that promoted the research results of IGES and its partners and strengthened leadership skills for their implementation. The number of eCourses created since the first phase totaled 47 (35 in English, 12 in Japanese), and as of February 2004, more than 4,700 registered users have benefited from the IGES eLearning system, compared with 137 by March 2001 at the end of the first phase (Figure 1).
- **Training material development:** Developed training and learning resource materials for both on-line and off-line use.
- **Training workshop implementation:** Designed and implemented nine face-to-face training workshops in Japan (22 training days, 140 participants from 18 countries).
- Leadership training through internship: Provided three- to six-month-long research internships for four LEAD[1] Fellows, providing them with the opportunity to strengthen their leadership abilities and exchange ideas with IGES researchers. A new internship programme with the International Institute for Sustainable Development (IISD), Canada, began and welcomed one intern in February 2004.
- **Network development:** Strengthened the networks of capacity development providers committed to sustainable development.
- **Research:** Conducted research on the impacts of eLearning. The research involved 1,600 staff members of the Kanagawa Prefectural Government, Japan, who took a self-study, asynchronous eCourse on ISO14001. The eCourse was developed based on the existing resources owned by Kanagawa Prefecture.

Table 1. Activities and results can be seen at the following Web sites.

Web site	URL
eLearning (English)	http://iges.net/
eLearning (Japanese)	http://iges-japan.net/
Capacity Building Programme (English)	http://www.iges.or.jp/en/cb/index.html
Capacity Building Programme (Japanese)	http://www.iges.or.jp/jp/cb/index.html

1.3. Degree of attainment of the objectives

1.3.1. IGES eLearning system

The CBP provided a reliable Web-based learning environment and eLearning tools to enhance self-paced, asynchronous, and interactive capacity development activities, which included the following:

1. **Software:** Improved the reliability and user-friendliness of IGES' software (Course Maker, Course Manager Pro) with regular upgrades by incorporating requests from users. Ensured that IGES eCourses became available in CD-ROM format, not just on-line. Based on comprehensive comparative cost-benefit and risk analysis, ranging from short to long term, the CBP began to also use commercial software (Macromedia Flash) to author eCourses, in order to expand interactive learning opportunities, provide courses in other languages, and to make sure IGES' eLearning system is compatible with other eLearning software and platforms. To support the above development, a new eCourse management system was researched, designed, and piloted.

1 LEAD: Leadership for Environment and Development <http://www.lead.org/>

2. **Learner support:** Provided 4,700 registered users (policy-makers, decision-makers) with content and technical and training design support. Designed and started issuing certificates to acknowledge successful and cooperative learning achievements.
3. **Web sites:** Updated and harmonised the CBP's Japanese and English Web sites, resulting in 16,000 Web site visits per month (as of October 2003). A new bilingual Web site was designed and piloted in order to better support IGES' third phase activities.
4. **Strategic alliance of providers:** Developed and further strengthened strategic alliances with like-minded initiatives of eLearning for sustainable development (e.g., LEAD, UNU,[2] UNEP-IETC,[3] eWorld) to leverage resources and enhance the quality of on-line capacity development.

1.3.2. IGES online eCourses

As of 30 January 2004, a total of 4,736 registered learners had used the IGES eLearning system to develop their capacity to implement sustainable development by taking eCourses, authoring their own eCourses, and utilising on-line resources. The CBP now has 47 eCourses available publicly (35 in English, 12 in Japanese). An additional 1,845 learners are using the IGES eLearning system to study their own courses (not available to the public) within a large-scale eLearning project with the government office of Kanagawa Prefecture, and 140 leaders were trained in nine face-to-face training workshops.

Initially, the CBP focused on individual capacity development (leadership, human resources). The first real opportunity for organisational development commenced with a long-term, large-scale eLearning project with Kanagawa Prefecture, which is using the eLearning system to increase environmental awareness among all of its 4,000 government employees in the Kanagawa Prefectural office, with the ultimate goal of improving the environmental performance of the organisation and eventually other agencies in the prefecture. These collaborative training projects can be used by IGES to reach out to the desired amount of targeted leaders.

"A la carte" or "just-in-case" training (i.e., self-motivated individuals registering on the IGES system, three to nine per day on average) provided a steady increase, but the real impact can only be achieved with institutionally required participation. (See Figure 1 and Figure 2, below, for the contribution of the eLearning project with Kanagawa Prefecture to the total number of users. See Figure 3 for a sample screen shot of two eCourses.)

2 UNU: United Nations University

3 UNEP-IETC: United Nations Environment Programme International Environmental Technology Centre

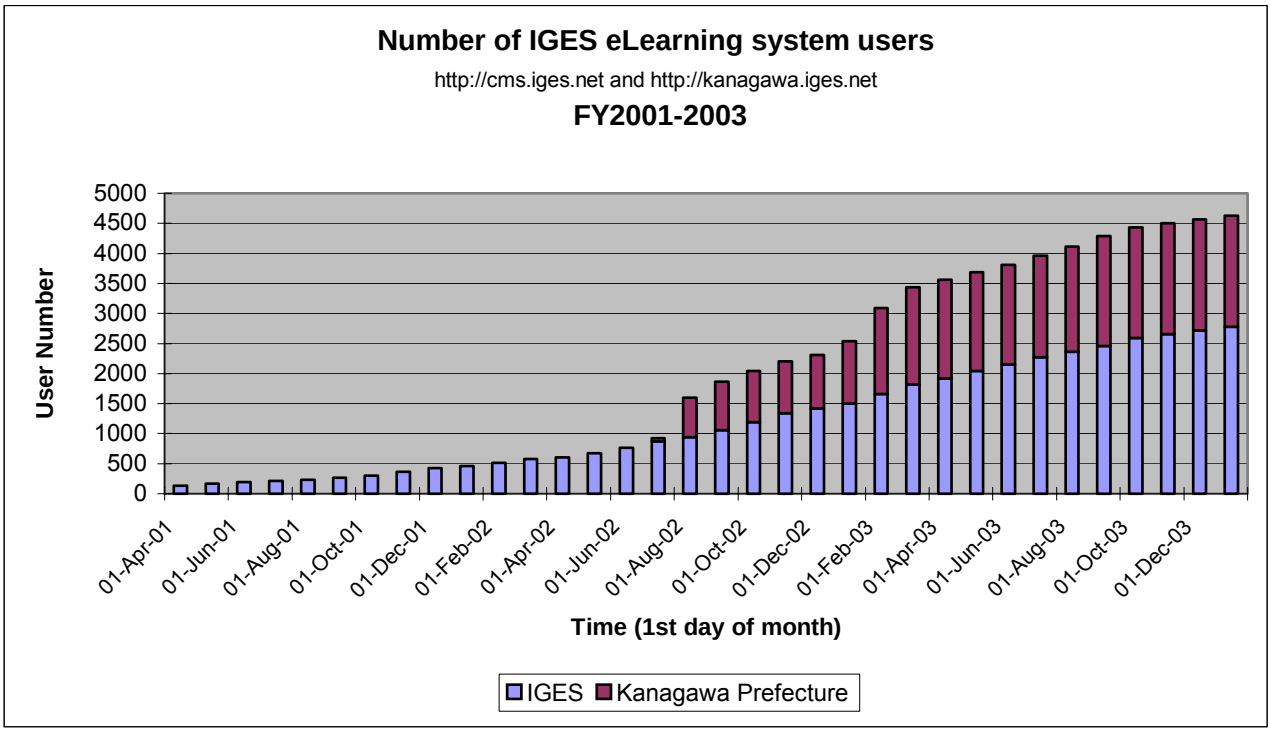


Figure 1. The number of users registered on the IGES eLearning System from 1 April 2001–1 January 2004 (as of 1 January 2004). Total number: 4,736.

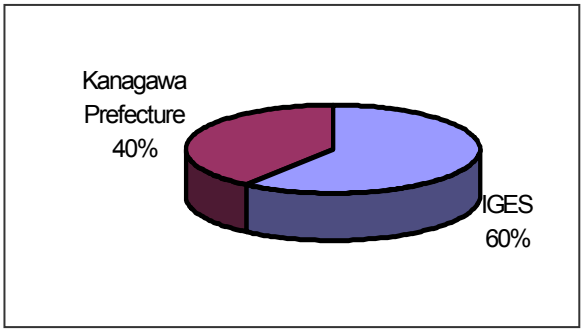


Figure 2. Composition of users registered on the IGES eLearning system (as of 1 January 2004).

Note in the figure above that individually registered users comprise 60 percent of the total, while the rest are learners required to participate in the eLearning project by their employer, the Kanagawa Prefecture (IGES' largest project). To reach and impact a larger number of critical decision-makers, it is recommended that IGES should offer its eLearning services within the framework of organisationally supported—and required—capacity development.

The eCourses developed during the first phase applied a relatively simple "page-turner" approach, where the user's interaction with the course material was limited to clicking and "turning pages" on the computer to read texts. This approach, consistent with eLearning trends of those early years, allowed IGES to develop a high number of courses in a short time—courses that were, in fact, well-structured Powerpoint presentations, along with a few quizzes. In the second phase, however, the CBP started developing scenario-based eCourses and simulations with higher levels of interactivity, where users were engaged more in critical thinking, making

judgments, and eventually making decisions (higher-order thinking skills). This transition was made possible by applying additional commercial software (Macromedia Flash), embedding the interactive components in IGES' own software (Course Maker), and/or using stand-alone Flash simulations. This approach took more advantage of using computers, but as it required a more complex development process (multidisciplinary team), it allowed development of fewer courses. A full list of published and updated courses is available at <http://www.iges.net/ecourses.htm>.

In addition to experimenting with new approaches and developing new courses, the CBP also designed and implemented a comprehensive course management scheme; popular courses were updated once or twice a year by technical experts to provide users with up-to-date information. Feedback forms allowed the programme to have more effective communication with end-users and answer their questions.

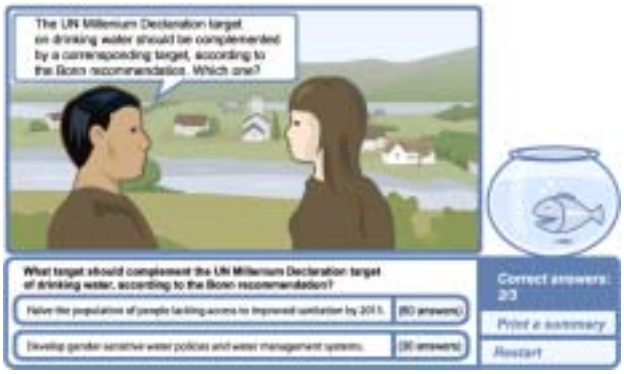
	Sample screen-shot of the eCourse "Urban Environmental Management Systems (EMS)" developed jointly with UNEP-IETC (IGES partner organisation). This eCourse is designed for city managers and political leaders in developing countries and countries with economies in transition. This introductory course raises awareness and demonstrates the importance of environmental management systems (EMS) for improving urban environments. Time required: about 90 minutes
	Sample screen-shot of the online simulation "Freshwater Actions." This 15-minute simulation supports the users' decision-making on fresh water issues by introducing 21 priority actions for fresh water based on the Bonn Recommendations in 2001. The user, either as policy-maker, educator, or others, will have an opportunity to review the priority actions and consider which one would be the most important action for their own community/region.

Figure 3. Two examples of IGES eCourses developed in the second phase.

1.3.3. Face-to-face training workshops

Face-to-face training workshops were conducted in cooperation with and for organisations representing the sectors of academia, business, industry, NGOs, media, and government. These workshops were designed with a blended approach (combining face-to-face with on-line training). The following workshops were provided by the CBP in cooperation with IGES partner organisations:

- LEAD 4th National Training Session for Cohort 8, at Shonan Village Centre and Keio University, 16–20 April 2001. Organised by IGES and LEAD Japan.

- Kanagawa Prefecture-IGES eLearning Project (ISO14001 staff training), on-line, Kanagawa Prefectural Governmental Office, April to March in fiscal year (FY) 2002. Organised by IGES and Kanagawa Prefecture.
- Environmental Education Training for NGO Staff in Indonesia, at IGES, Hayama, Japan, 3–4 July 2002 (FY2002). Organised by IGES and Japan International Cooperation Agency (JICA).
- LEAD-Japan 4th National Training Session for Cohort 9, at IGES, Hayama, Japan, 8–12 July 2002. Organised by IGES and LEAD Japan.
- Environmental Education Course Focused on Aquatic Environment, at UNU-IAS, Tokyo, Japan, 9 October 2002 (FY2002). Organised by Japan International Cooperation Agency (JICA) and the International Lake Environment Committee Foundation (ILEC).
- International Symposium on Environmental Education 2002, "Supports for School Environmental Education," at Sendai International Centre and Izumity 21, 3–5 December 2002. Organised by Miyagi University of Education.
- LEAD-Japan 4th National Training Session for Cohort 10, at IGES, Hayama, Japan, 15–18 July 2003. Organised by IGES and LEAD Japan.
- Environmental Education Course Focused on Aquatic Environment, at UNU-IAS, Tokyo, Japan, 1 October 2003 (JFY2003). Organised by Japan International Cooperation Agency (JICA) and the International Lake Environment Committee Foundation (ILEC).
- eWorld Meeting IV, at United Nations University (UNU), Shibuya, Tokyo, Japan, 14 November 2003. Organised by UNU/IGES/UNEP-IETC.

1.3.4.a. LEAD internships

Four LEAD Research Fellows from four countries (Hungary, Russia, China, and India) contributed a total of 18 months of research to the CBP and other IGES research projects (Climate Policy, Forest Conservation, Environmental Education, Long-Term Perspectives and Policy Integration), as well as the Intergovernmental Panel on Climate Change/Technical Support Unit activities. The result of their work includes two published eCourses (*Community-based Learning for Sustainable Development* and *Carbon Budget Mode)*, two draft eCourses (*Eco-Tourism* and *Environmental Education in Nagaland, India*), a research book on a carbon budget model (in Russian), and new networks to link IGES activities.

1.3.4.b. IISD internship

The CBP initiated a new internship scheme with the International Institute for Sustainable Development (IISD), Canada. The first intern arrived in March 2004 and started research activities to contribute to eCourse development.

1.3.5. Research

In cooperation with the Kanagawa Prefectural government, the CBP conducted research on the impact of eLearning in FY2002–2003. Based on 281 valid respondents (out of 436 takers of our eCourses), the research confirmed the following: (1) the eCourse significantly increased the learners' knowledge of ISO14001; (2) learners' perception of ISO14001 became more comprehensive by taking the eCourse, growing from a simplistic view of general environmental issues to a multi-faceted view of environmental management, including both process and content issues; and (3) taking an eCourse increases the willingness to act, but it does not necessarily close the knowledge-action gap.

1.3.6. Communication

The CBP contributed to the following events with presentations and publications:

- LEAD Training for the Trainers Workshop, London, U.K., November 2001

- Asia-Pacific Climate Change Symposium, Bangkok, July 2002
- 18th Annual Conference on Distance Teaching and Learning, Wisconsin, U.S., August 2002
- EnTA (Environmental Technology Assessment) Workshop, UNEP-IETC, September 2002
- International Symposium on Environmental Education 2002, "Supports for School Environmental Education," Sendai, 3–5 December 2002
- APFED 3rd Substantial Meeting, China, 23–26 January 2003
- Integrated Capacity Development in ASEAN, preparatory workshop, Tokyo, 20–21 January 2003
- The 6th UNESCO/Japan Seminar on Environmental Education in the Asian-Pacific Region, Tokyo, Japan, February 2003
- Third Workshop on Public Awareness for Acid Deposition Problems, at the Acid Deposition and Oxidant Research Center, Niigata, Japan, 20–21 February 2003
- World Water Forum 3, Kyoto, Japan, March 2003
- Integrated Capacity Development in ASEAN region, Kuala Lumpur, March 2003
- Research on Innovative and Strategic Policy Options (RISPO) of the Asia-Pacific Environmental Innovation Strategy (APEIS), First Plenary Workshop, Bangkok, March 2003
- Asia-Pacific Environmental Innovation Strategy (APEIS), Second Meeting of Research Coordination Committee, Bangkok, March 2003
- LEAD International Cohort 10 training, Mexico, April/May 2003
- eWorld Meeting, Osaka, Japan, May 2003
- UNFCCC, SBSTA, Bonn, Germany, June 2003
- Production Workshop on PLANET 3 "Waste Management," Ahmedabad, India, August 2003
- eWorld Meeting, Tokyo, Japan, November 2003
- United Nations Framework Convention on Climate Change, Conference of the Parties, at its ninth session, Milan, Italy, 1–12 December 2003
- The Fourth Workshop on Public Awareness for Acid Deposition Problems, Niigata, Japan, 19–20 December 2003
- 2nd Conference on Improvement and Dissemination of Environmental Information, Tsukuba, Ibaraki Prefecture, Japan, 5–6 February 2004
- The 7th UNESCO/Japan Seminar on Environmental Education in the Asia-Pacific Region, Kesennuma, Miyagi Prefecture, Japan, 11–14th February 2004

2. Self-evaluation

Overall, the Capacity Building Programme in its second phase was conducted by a productive, creative, and dedicated team that collaborated with an excellent network of strategic partners. The CBP's major achievements sprung from its clear vision and innovative capacity development approach, which resulted in the creation and management of a functioning bilingual eLearning system that offers 47 courses and free, downloadable courseware, a high and exponentially increasing number of users (4,736 as of 1 January 2004), which all strengthened the CBP's performance in supporting and communicating IGES research projects in the Asia-Pacific region and worldwide.

2.1. Evaluation of achievements

The CBP was successful in increasing both the intellectual and social capital of leaders in the Asia-Pacific region. It developed a noteworthy number of high-quality capacity development materials (available on- and off-line), trained a significant number of high-impact leaders (on- and off-line), and strengthened the network of sustainable development practitioners to help close the knowledge-action gap. The following sections detail some of the aspects used to evaluate the CBP's achievements.

2.1.1. Influence on policy-making processes

The CBP first started with setting up a comprehensive evaluation and monitoring system (with appropriate and sensitive indicators) in FY2002 in order to assess the direct and indirect aspects of its efforts on policy-making. Preliminary data, anecdotal records (feedback from the users of IGES eCourses), and participant assessments gathered from end-of-workshop evaluation forms suggest that learners highly valued IGES eCourses for their research-based content, practical approach, and relevance. It is recommended that closely monitored, regular, and long-term contact is needed with learners to objectively assess the direct influence on policy-making of the CBP's activities, and indirectly—through the content—of the activities of the other IGES research projects.

2.1.2. Timeliness in terms of stakeholders' needs

The increasing number of registered users on IGES' eLearning system suggests that the tools created by the CBP, especially the eLearning courses, are sought by stakeholders to meet their capacity development needs on demand. The topics of the IGES eCourses reflect current and important issues of sustainable development. They were designed with busy decision-makers in mind—the courses are short (30 minutes per lesson), self-directed (offering maximum flexibility), and can be accessed any time on-line (24 hours a day, 7 days a week). The availability, and therefore the impact, could be further improved by offering the eCourses off-line on CD-ROM.

2.1.3. Uniqueness and originality

The CBP took a unique approach to serve decision-makers in their efforts to implement sustainable development measures. This strategic approach was originally built on the CBP's three assets (see below): eCourses, IGES' own courseware, and a large international network of knowledge providers. The combination of these three assets gave the CBP comparative advantage in narrowing the digital divide. IGES' CBP was one of a relatively few groups—if not the only one—that offers this special combination of eLearning tools for sustainable development free-of-charge.

1. **eCourses:** IGES' short, self-paced, practical, non-academic, self-study, and asynchronous eCourses provided structured learning, based on clear learning objectives and embedded assessment that made learning more effective, applicable, and superior to simple information-transfer methods such as news media or tutorials. Well-designed eCourses give learners the comfort of covering the most essential issues of the topics (unlike browsing through even well-structured Web sites) with ample resources provided for follow-up.
2. **Software:** IGES offered free-of-charge computer software for both authoring eCourses (Course Maker) and managing eLearning (Course Manager Pro). Most other like-minded organisations offer "only" content eCourses. The CBP wanted to do more, i.e., empower its learners not only with knowledge and strategic skills but also with both perspectives of course participant and course developer. Authoring an eCourse can spark new ideas, new models. Moreover, learning by doing—in this case, eCourse authoring—was also the best way to develop a critical use of eLearning. Developing and offering IGES' own software for partners in need was an excellent idea. However, upgrading software became a significant challenge over time, because IGES' small team (without in-house programming expertise) could not compete with aggressive, cutting-edge commercial software development enterprises. A transition strategy was developed that recommended using commercial software for course development and maintaining IGES software only to the level absolutely necessary to support existing on-line courses. The transition strategy did not support investing in IGES software in the long run.
3. **Network of unique knowledge providers:** The experience and reputation of IGES researchers and its board of directors, trustees, advisors, and strategic partner organisations (e.g., UNEP, UNDP, UNU, LEAD) offered the CBP a niche of special knowledge, both local and global, with varied cultural and developmental backgrounds. Using this knowledge as content (with appropriate instructional design and special eLearning tools) created an increasing demand for IGES eCourses that help reach the critical mass for decision-making in sustainable development.

2.1.4. Effectiveness and efficiency

Preliminary data collected in FY2002 imply that there is a significant positive change in learners' attitudes towards the discussed environmental issues immediately after completing IGES eCourses. Feedback from learners also suggested that the use of flexible (self-study, asynchronous) and short eCourses were effectively supporting busy, high-mobility decision-makers who would not be able to participate in courses several weeks long.

Although developing and maintaining an eLearning system was a major investment on IGES' part, using eCourses produced major savings on the side of learners and stakeholders. The major savings include travel costs, time, and intangibles such as flexibility. In this respect, the IGES eLearning system significantly contributed to the desired development processes.

2.2. Evaluation of project management

2.2.1. Project management

The CBP was one of the two IGES projects with a full-time project leader, and it had an interesting project management history during the reporting period. Glen Paoletto, who founded the CBP, returned to his residence in Australia on 1 April 2002 and continued managing the project (on-line) from there as a consultant, in close cooperation with the IGES Secretariat, through to 31 January 2002. Andrea Deri, who visited IGES and stayed with the CBP for three months in 2001 as a LEAD Fellow, re-joined it as programme manager on 1 February 2002 (until 27 January 2004). The programme was managed by Reiko Koyama, eLearning Project Coordinator, for the last two months of FY2003.

2.2.2. Cooperation with other IGES projects and external organisations

The CBP, by design, relies on trustworthy cooperation to produce good-quality training materials. Cooperation with the other IGES research projects was good, reliable, and its quality is steadily improving. As always, cooperation depends on the attitudes, enthusiasm, and dedication of individual researchers; however, project leaders can also be provided significant support.

The CBP maintained similarly good, productive, creative, reliable, and high-trust cooperation with external organisations. The impressive number of collaborative projects (see below) demonstrates the width and breadth of the CBP's network, both in Japan and internationally.

2.2.3. Fund-raising

The CBP was successful in securing joint-project funding with UNEP-IETC and UNFCCC[4] (for joint eCourse development and other capacity building activities), and even more successful in negotiating major in-kind contributions from the following organisations:

1. Acid Deposition and Oxidant Research Centre (ADORC): joint eCourse development on acid rain monitoring
2. Griffith University, Australia: provided feedback on IGES eCourses (reviewing IGES eCourses was an assignment of the Griffith University's Masters Course on Environmental Education)
3. Hayama Town Hall, Japan: joint training workshop for LEAD-Japan Cohort 9
4. International Lake Environment Committee (ILEC): joint training workshop for young university teachers from all over the world
5. Japan International Cooperation Agency (JICA): joint training workshop for Indonesian environmental education leaders from NGOs

4 UNFCCC: United Nations Framework Convention on Climate Change

6. Kanagawa Foundation for Academic and Cultural Exchange (K-FACE): joint training workshop for citizens of Kanagawa Prefecture
7. Kanagawa Prefecture Government, Japan: large-scale joint eLearning project for government officials by using IGES eLearning system and know-how
8. LEAD-International (Leadership on Environment and Development): LEAD-IGES research internship programme
9. LEAD-Japan: joint training workshop for Cohort 9 and Cohort 10 Associates
10. LEAD-Pakistan: provided feedback on IGES eCourses; joint on-line training delivery for LEAD Associates and Fellows
11. United Nations Environment Programme International Environmental Technology Centre (UNEP-IETC): joint eCourse development for the 2002 World Summit on Sustainable Development, titled "Urban Environmental Management Systems"
12. United Nations University Institute of Advanced Studies (UNU/IAS): joint workshops, sharing software
13. Miyagi University of Education, Sendai, Japan: joint organisation of an international environmental education conference

3. Conclusion

Through the second phase activities, the CBP identified that the following organisational model and culture can provide it with the best way forward in the next phase:

1. Better identify IGES' eLearning niche within the growing community of on-line capacity development providers for implementing sustainable development.
2. Develop more eCourses to communicate the significant outputs of IGES research projects through closer cooperation with those projects.
3. Graduate from one-time capacity development interventions that target individual capacity development to more long-term organisational and/or institutional development perspectives.
4. Develop long-term memorandums of understanding (MoU) with a few strategic partner organisations to make sure that the IGES eLearning system is used by the desired target audience (quality and quantity), and that the CBP is making the desired impact on policy innovation. Continue to secure joint-funding or leveraging resources to contribute significantly to the CBP's budget.
5. Explore the potential of forming an alliance of like-minded on-line capacity development providers—e.g., UNU-IAS, UNEP-IETC, LearnSD, etc.—to innovate the currently available tools for on-line learning.
6. Consider working with new software development companies to increase reliability, stability, compatibility, productivity, and learning impact, and to improve IGES software and eLearning activities. Also consider using commercial software.
7. Improve teamwork, communication, and cooperation among the CBP's team members.
8. Better utilise existing research on eLearning and capacity development in order to improve the quality of the CBP's overall activities.
9. Establish an easily-maintained evaluation and monitoring system for IGES eLearning activities.
10. Improve the CBP's Web site with a new, user-friendly design, and update it regularly.

List of Achievements (April 2001 – March 2004)

Books

Forest Conservation Project (FC)

Makoto Inoue (ed.) (2003) *Forest Degradation and Conservation in Asia*. Tokyo: Chuohoki Publisher. 324pp. (in Japanese)

Hiroji Isozaki and Makoto Inoue (eds.) (2003) *People and Forest:Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*. Dordrecht, The Netherlands: Kluwer Academic Publishers. 358pp.

INOUE Makoto et al. (ed) (2003) *An encyclopedia of forest*. Tokyo: Asakura-shoten. 739pp.. (in Japanese)

Makoto Inoue (2004) *Looking for the tought of commons: thinking in the forest of Kalimantan*. Tokyo: Iwanami-shotenn. 162pp. (in Japanese)

Hiroaki Kakizawa et al. (2002) *Watershed Conservation*. Tokyo: Asakura Publisher. 133pp. (in Japanese)

Hiroaki Kakizawa and Masanobu Yamane (eds.) (2003) *Forest resources policy and industry of Russia*. Tokyo: Japan Forest Investigative Cooperation. 237pp. (in Japanese)

Kakizawa Hiroaki et al. (2003) *Volunteer for forest management*. Tokyo: Japan Forest Investigative Cooperation. 345pp. (in Japanese)

Kakizawa Hiroaki et al. (2003) *Forest Planning*. Tokyo: Asakura Publisher. 228pp. (in Japanese)

Environmental Education Project (EE)

IGES (2001) *Media and the Environment*. (IGES Series 3) Tokyo: Chuohoki Publisher. 308pp. (in Japanese)

Business and the Environment Project (BE)

Katsuhiko Kokubu, Eriko Nashioka (eds.) (2003) *Environmental Accounting in the process of updating*. Tokyo: The Energy Conservation Center, Japan. 307pp. (in Japanese)

Katsuhiko Kokubu, Kenjiro Hirayama (eds.) (2004) *Environmental Reporting in Japan*. Tokyo: The Energy Conservation Center, Japan. (in Japanese, To be published)

Long-term Perspective and Policy Integration Project (LTP)

Tadahiro Mitsuhashi and IGES（eds.） (2003) *Kankyo Saisei to Joho Gijutsu: Chikyu Shinjidai no Giho*. Tokyo: Toyokeizai Shinposha. 199pp. (written mainly by the members of the Study Group on IT Revolution and Environment)

Reports and other Publications

Climate Policy Project (CP)

Climate Policy Dialogue in Asia October 2001 (2001) 18pp.

Developing Countries Support in Environment Related Treaties : FCCC as a main theme (2001) 140pp. (Report for commissioned work for Ministry of Foreign Affairs)

A Proposal on Domestic Climate Policies and Measures in Japan : Strategic Design for Japanese Companies to be a Winner in the Climate Businesses (2002) 171pp. (in Japanese)

A Proposal on Domestic Climate Policies and Measures in Japan : Strategic Design for Japanese Companies to be a Winner in the Climate Businesses (2002) 167pp. (in Japanese)

Clean Development Mechanism (2002) 29pp. (Japanese translation of Clean Development Mechanism published by UNEP-RISO)

Climate Policy Dialogue in Asia August 2002 (2002) 30pp.

Climate Policy Project Activities (2002) CD-ROM

Implications of Baltic Environmental Policies for East Asia (2002) 260pp. (Report for commissioned work for Ministry of Enviroment)

Policy Design of Climate Change Collaboration in Northern Asia : Possible Options and Constraints for Cooperative Effort between Russia, Japan, China and Korea (2002) 315pp.

Post-COP8 Seminar (2002) 194pp.

Proceedings of IGES Workshop on Climate Policy in Asia, Dec. 17-18, Shinagawa Prince Hotel, Tokyo, Japan (2002) 404pp.

PROCEEDINGS OF THE TRAINING WORKSHOP ON CLIMATE CHANGE ISSUES 5-6 December 2002 Phnom Penh, Cambodia (2002) 183pp.

Workshop Proceedings Policy Design of Climate Change Collaboration in Northern Asia : Possible Options and Constraints for Cooperative Effort between Russia, Japan, China and Korea (2002) 218pp.

Climate Regime Beyond 2012: Incentives for Global Participation (2003) 42pp.

Report on BKP-related Side-events at COP9 (2003) 16pp. (in Japanese)

Report of the Second Phase Strategic Research (April 2001–March 2004):
List of Achievements

Urban Environmental Management Project (UE)

1st Thematic Seminar : Kitakyushu Initiative Seminar on Solid Waste Management (2003) 228pp.

2nd Thematic Seminar : Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment (2003) 148pp.

3rd Thematic Seminar : Kitakyushu Initiative Seminar on Urban Air Quality Management (2003) 317pp.

Financial Strategies for Urban Environmental Infrastructure in Asia – Public – Private Partnerships Development: Development of Financial Mechanisms for Water Industry and its International Experience (2003) (by Miao Chang, Mushtaq Ahmed Memon and Hidefumi Imura)

Meeting Proceedings : International Seminar on Financial Mechanisms for Environmental Protection (2003) 140pp. (in Japanese)

Policy Integration towards Sustainable Urban Energy Use for Cities in Asia: Proceedings of IGES/APN International Workshop (2003) 290pp. (Sponsored by APN, AEON)

Report on International Seminar on Financial Mechanisms for Environmental Protection / China Council for International Cooperation on Environment and Development : The First Task Force Meeting for Financial Mechanisms for Environmental Protection (2003) 686pp. (in English/Chinese)

The Budget of GHGs, Urban Air Pollutants and their Future Emissions Scenarios in Selected Mega-cities in Asia: Final report of IGES/APN Project (2003) 118pp. (Submitted to Asia Pacific Network for Global Change Research)

Forest Conservation Project (FC)

Research Report on Scale and Mechanism of Illegal Logging (2001) 79pp. (in Japanese)

Policy Trend Report 2001 (2002) 104pp.

Russia Country Report 2001 (2002) 103pp.

Policy Trend Report 2001/2002 (2003) 149pp.

Russia Country Report 2002/2003 (2003) 134pp.

Laos Country Report 2002 : Towards the participatory forest management in Laos (2004) (to be published in Mar. 2004)

Indonesian Country Report 2002 (2004) (to be published in Mar. 2004)

Policy Trend Report 2003 (2004) (to be published in Mar. 2004)

Environmental Education Project (EE)

Environmental Education in the Asia-Pacific Region : Status, Issue and Practices (2001) 583pp.

Making Sense of Climate Change (2002) 78pp. (consultancy)

The Path to Success : Some Pioneering Examples of Environmental Education (2002) 312pp.

Interim Report FY2001 (2002) 82pp.

What is Happening to our Freshwater Resources : Module 2 Draft for Discussion (2002) 32pp.

Education for Sustainable development in Nepal : views and visions (2003) 280pp

Globalism and Education for Sustainable Development : some viewpoint (2004) 136pp

Education for Sustainable Development : Putting Research knowledge into Action (2004) 146pp

Mangroves in Southeast Asia : Status, Issues and Challenges (2004) 266pp

Business and the Environment Project (BE)

International Symposium on "Sustainable Management" : Global Trends of Sustainable Management (2001) 98pp. (International Forum 2001on "Business and the Environment")

International Workshop on "Environmental Accounting" : Inauguration of Environmental Management Accounting Network-Asia Pacific(EMAN-AP) (2001) 154pp. (International Forum 2001on "Business and the Environment")

The current situation and challenge of the environmental corporate evaluation : Contact Point of internal and external evaluation (2001) 87pp. (The special session in the Society for Environmental Economics and Policy Studies. in Japanese)

COP7 and the Future of Business Activities (2002) 123pp. (Seminar on Countermeasures against Global Warming. in Japanese)

International Symposium 2002 "Business and the Environment" (2002) (International Symposium 2002 "Business and the Environment". in Japanese)

Possible Influence of GRI Guidelines that is in the revision process (2002) (Environmental Reporting Seminar. in Japanese)

Proceedings of The 2nd Tripatite Roundtable on Enviromental Industries (China, Korea and Japan) (2002) 266pp. (The 2nd Tripatite Roundtable on Environmental Industries (China, Korea and Japan). in Japanese)

Development of Environmental Management Accounting and Green Supply Chain Management (2003) (International Symposium on "Business and the Environment")

International Symposium of Environmental Accounting 2003 : Cutting Edge of Environmental Accounting for Corporate Management and Environemtnal Conservation -Environemntal Accounting in Japanese Corporate Management and Potentialities of Material Flow Cost (2003) 117pp. (International Symposium 2003 on "Environmental Accounting")

The 5th Round Seminar for Affiliate Members of IGES : Issues and Potentialities of Corporate Environmental Reporting (2003) (The 5th Round Seminar for Affiliate Members of IGES. in Japanese)

Long-Term Perspective and Policy Integration Project (LTP)

Towards a Sustainable Asia and the Pacific : Report of ECO ASIA Long-term Perspective Project Phase II (Digest) (2001) 6pp.

Towards a Sustainable Asia and the Pacific : Report of ECO ASIA Long-term Perspective Project Phase II (Summary for Policy Makers) (2001) 25pp. (in Japanese)

Towards a Sustainable Asia and the Pacific: Report of ECO ASIA Long-term Perspective Project Phase II (2001) 152pp. (Full Report)

APFED Commissioned Report on Eminent Persons' Forum (2002) 80pp. (commissioned report for MOEJ)

Closing the Knowledge - Action Gap: Strategic Research for Sustainability in Asia and the Pacific (2002) 23pp. (IGES White Paper Project report to the WSSD, August 2002. Submission to the WSSD)

Environmental Policy of Japan and the GEF (2002) 52pp. (Report on the Side Event by the Government of Japan, in collaboration with IGES, Second GEF Assembly, Beijing, China 16 - 18 October 2002. in Japanese)

Report on Asia-Pacific Region Research on Innovative Strategy Option (2002) 300pp. (commissioned report for MOEJ. in Japanese)

Study Report on Issues on Freshwater Resources and International Response (2002) 120pp. (commissioned report for MOEJ. in Japanese)

APFED Comissioned Report on new social development model for Asia and the Pacific (2003) (commissioned report for MOEJ)

APFED Report : Zero Draft (For discussion) (2003) 46pp. (commissioned report for MOEJ. in English/Japanese)

Asia-Pacific Environmental Innovation Strategy Project (APEIS)/Research on Innovative and Strategic Policy Options (RISPO) : Technical Summary June 2003 (2003) 15pp. (commissioned report for MOEJ)

Asia-Pacific Environmental Innovation Strategy Project (APEIS)/Research on Innovative and Strategic Policy Options (RISPO): First Progress Report, March 2003 (2003) 412pp. (commissioned report for MOEJ. in English/Japanese. CR Rom attached)

Asia-Pacific Innovation for the Environment: First Progress Summary of the Asia-Pacific Environmental Innovation Strategy Project (APEIS) (2003) 19pp. (commissioned report for MOEJ. in English/Japanese)

Commission Report on Asia-Pacific Forum

for Environment and Development (APFED) and Associated Meetings: Fiscal Year 2002 (2003) 129pp. (commissioned report for MOEJ. in English/Japanese)

Report on the Study Meetings on IT Revolution and the Environment. / Report of the Study Meetings on IT Revolution and the Environment-Separate Volume: Record of Discussions. (2003) 354pp. / 284pp.(Separate Volume)

The Preliminary version of the APFED First Draft (2003) 135pp. (commissioned report for MOEJ)

Academic Papers

Climate Policy Project (CP)

Tae Yong Jung, Sungwhan Jo and Se Young Kim (2001) Efficiency Analysis of Major Steel Companies in the World : The Application of Data Envelopment Analysis(DEA). 9. Seoul: The Review of Industrial Organization. pp.165-186

Tae Yong Jung and Choon-Geol Moon (2001) Recent Modeling Activities of IGES: The Case of Korea (GEMA-K). *4th China-Korea-U.S. Economic and Environmental Modeling Workshop*. Beijing: Energy Research Institute, China.

Tae Yong Jung, Dong Kun Lee and Sung Woo Jeon (2002) Application of AIM/endues Model to Korea. Chapter in *Climate Policy Assessment (Asia-Pacific Integrated Modeling)*, edited by M. Kainuma, Y. Matsuoka and T. Morita . Tokyo: Springer.

Norichika Kanie (2002) Johannesburg Summit and Governance for Sustainable Development. *Enveironmental Research*. Hitachi Environment Foundation. (to be published)

Aki Maruyama (2001) Financial Assistance. Part 3 : Activities of International Institutes. In *Environmental Management Handbook*, edited by Yoichi Kaya. Vol.8. Tokyo: Japan Environmental Management Association for Industry.

Aki Maruyama (2001) Financial Assistance to Developing Countries under Multilateral Environmental Agreements. (Commissioned work by Ministry of Foreign Affairs)

Aki Maruyama (2001) International Environmental Co-operation for Technology Transfer in Chinese Power Generation Sector and its related Issues : from the perspective of climate change mitigation. *International Developmet Research*. Vol. 11. The Society for International Development. pp.53-68

Aki Maruyama (2001) Japanese Institutional Arrangement for Assisting GHG Reduction in China and Korea. *Policy Design of Climate Change Collaboration in Northern Asia : possible options for constraints for cooperative effort between Russia, Japan, China and Korea*. Hayama: IGES. pp.166-190 (Funded by APN)

Aki Maruyama (2001) Possibility and Barriers of Collaboration between Japan and Russia. *Policy Design of Climate Change Collaboration in Northern Asia : possible options for constraints for cooperative effort between Russia,*

Japan, China and Korea. Hayama: IGES. pp.138-165 (Funded by APN)

Z. Zhong Xiang and Aki Maruyama (2001) Towards a private-public synergy in financing climate change mitigation projects. *Energy Policy*. 28/15. pp.1363-1377

Naoki Matsuo and Ken Yamaguchi (2001) Climate Change Mitigation in Japan. Chapter in *Climate Change : Science, Strategies & Solutions*, edited by Eileen Claussen et al. Pew Center.

Yasushi Ninomiya (2002) An anayasis of energy demand in Japan and the UK using the structural time series model. *Proceedings of the 2002 Conference of the Society for Environmental Economic and Policy Studies, Sapporo, Japan.* The Society for Environmental Economics and Policy Studies. pp.190-191.

Yasushi Ninomiya (2002) The Underlying Energy Demand Trend and Seasonality: An application of the structural time series model to Energy Demand in the UK and Japan. *A Thesis Submitted to the University of Surrey (UK) for the Degree of Doctor of Philosphy in Economics*. (Ph.D. Thesis)

Yasushi Ninomiya (2003) Energy Demand in Japan: Econometric Analysis over the Past 100 years and Future Prospect. *Proceedings of the 2003 Conference of the Society for Environmental Economic and Policy Studies, Tokyo, Japan* The Society for Environmental Economics and Policy Studies. pp.218-219

Yasushi Ninomiya (2003) GHG Emissions Trading: Current and Future. *Kigyouchou Dayori*. Vol. 187. Kanagawa Prefecture. pp.30-33 (in Japanese)

L. Hunt, G. Judge and Yasushi Ninomiya (2003) Modelling underlying energy demand trends. *Energy in a Competitive Market: Essays in Honour of Colin Robinson*, edited by L.Hunt . UK: Edward Elgar. pp.140-174

L. Hunt, G. Judge and Yasushi Ninomiya (2003) Underlying Trends and Seasonality in UK Energy Demand: A Sectoral Analysis. *Energy Economics*. Vol.25 (1). Elsevier. pp.93-118

L. Hunt.and Yasushi Ninomiya (2003) Unravelling Trends and Seasonality: A Structural Time Series Analysis of Transport Oil Demand in the UK and Japan. *Energy Journal*. Vol.24 (3). International Association for Energy Economics. pp. 63–96

Ancha Srinivasan (2002) Integrating Indigenous Knowledge in Climate Change Adaptation Strategies in Asia and the Pacific: Issues and Options. *Proceedings of the 12th Asia-Pacific Seminar on Climate Change*. Bangkok: ESCAP. (to be published)

Ancha Srinivasan (2002) Precision Agriculture, Modelling and Land Use Planning. *Deutscher Tropentag 2002: International Research on Food Security, Natural Resource Management and Rural Development*, edited by Andreas Deininger. Wizenhausen, Germany: University of Kassel. pp.111-112. (Keynote Speech)

Wakana Takahashi and Jusen Asuka (2001) Barriers to environmental cooperation in Northeast Asia : Institutional Perspective. *Proceedings of the 9th World Clean Air and Environment Convention, Seoul, Korea, August 2001.* Seoul: IUAPPA.

Wakana Takahashi and Jusen Asuka (2001) The Politics of Regional Cooperation on Acid Rain Control in East Asia. *Water, Air, and Soil Pollution*. 130. Dordrecht: Kluwer Academic Publishers. pp.1837-1842

Kentaro Tamura (2003) A Regulator's Dilemma and Two-level Games: Japan in the Politics of Internaitonal Banking Regulation. *Social Sciene Japan Journal*. vol. 6(2). Institute of Social Science, University of Tokyo/Oxford University Press. pp. 221-240

Mineo Kato and Kentaro Tamura (2004) The United States of America. *Global Warming Law and Policy*, edited by Tadashi Otsuka . Showa-do.

Rie Watanabe (2001) Voluntary Approaches on Energy Policy - A Comparative Analysis among European 4 countries and Implications for Japanese case. *Approach to measures for combating global warming*, edited by Academic Society of Environmental Law and Policy 5. Tokyo: shojihomu kenkyu kai. PP.133-152

Rie Watanabe (2002) Voluntary Approaches. *Environmental Management Handbook*, edited by Yoichi Kaya and Hisashi Ishitani . Tokyo: Sangho kanri Kyokai. pp.942-947

Hidefumi Imura, Rie Watanabe (2002) Voluntary Approaches -Two Japanese cases : Pollution Control Agreements in Yokohama city and Kitakyushu city. Env/EPOC/WPNEP(2002)12. Paris: OECD.

So Won Yoon (2002) A Study on the Environmental and Economic Value of Green Spaces : the Case of Seoul Metropolitan City. *Journal of the Korean Society for Environmrntal Restoration and Revegetation Technology*. The Korea society for Environmental and Revegetation Technology. (To be published)

So Won Yoon and Dong Kun Lee (2002) A study on the Construction of the Assessment Model and it's Application for Sustainable Development in East Asia Cities. *Korean Planning Association*. 37. Korea Planners Association. pp.7-25

So Won Yoon and Dong Kun Lee (2002) The Development of the Evaluation Model of Climate Changes and Air Pollution for Sustainability of Cities in Korea. *Landscape and Urban Planning*. Elsevier. (to be published)

So Won Yoon and Tae Yong Jung (2002) Energy Demand Project and its Environmental Implication on the Transport Sector in Korea : An Application of LEAP Model. *Climate Policy*. Elsevier.

Urban Environmental Management Project (UE)

Miao Chang and Hidefumi Imura (2001) Financing Urban Environmental Infrastructure in China : Current Situation and Challenges. *Proceedings of the 12th Annual Conference, The Japan Society for International Development*. Hiroshima: The Japan Society for International Development (JASID). pp.434-439

Miao Chang, Y. Ren and Hidefumi Imura (2001) Financing Urban Environmental Infrastructure in East Asia : Current Situation, Challenges, and Strategies. *International Review for Environmental Strategies*. Vol. 2, No. 1. Hayama: IGES. pp.79-106 (Peer reviewed)

Miao Chang, Y. Ren and Hidefumi Imura (2001) Strategies for Promoting Urban Environmental Infrastructure in East Asia. *World Environment*, edited by Wang Jinghao. Beijing: State Environmental Protection Administration

(SEPA) & United Nations Environment Programme (UNEP). pp.29-32 (in Chinese)

Miao Chang and Hidefumi Imura (2002) A Study on Foreign Direct Investment for Urban Environmental Infrastructure of Asia. *Society for Environmental Economics and Policy Studies 2002 Year Meeting*. Hokkaido: Society for Environmental Economics and Policy Studies (SEEPS). pp.180-181

Miao Chang and Hidefumi Imura (2002) Developing Private Finance Initiatives (PFI)/Public-Private Partnerships (PPP) for Urban Environmental Infrastructure in Asia. *Environmental System Research*, edited by JSCE Vol.30. Yamanashi: Committee on Environmental Systems, Japan Society of Civil Engineers. pp.143-151 (Peer reviewed)

K. M. Zhang, Miao Chang and B. Du (2002) Environmental Protection Policies and Environmental Governance in Chinese Cities. *Economic Development and Environmental Conservation in Asia*, edited by Yoshioka Kanji, Kojima Tomoyuki Volume 4. Tokyo: Institute for Economic and Industry Studies (Keio Economic Observatory). pp.71-95

Miao Chang and Hidefumi Imura (2002) Financing Urban Environmental Infrastructure in China : Current Situation and Challenges. *Journal of International Development Studies*, edited by Hiroshi Osada Vol. 11, No. 1. Nagoya: JASID. pp.1-20 (Peer reviewed)

Miao Chang and Hidefumi Imura (2003) The New Role of International Development Organisations and ODA for Urban Environmental Infrastructure in Asia. *Journal of International Development Studies*. Vol.12, No.2. Kobei: The Japan Society for International Development. pp.29-44 (Novermber 2003)

Miao Chang and Hidefumi Imura (2003) Developing Private Finance Initiatives (PFI)/Public-Private Partnerships (PPP) for Urban Environmental Infrastructure in Asia. *Proceedings from the First Task Force Meeting on Financial Mechanisms for Environmental Protection*. Beijing: China Council for International Cooperation on Environment and Development (CCICED). pp.318-340 (5-6 November 2002)

Miao Chang (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Chongqing, China) : SO2 Pollution Control. IGES. (Collection of successful practices, to be published)

Miao Chang (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Dalian, China) : Removal and modification of polluting enterprises. IGES. (Collection of successful practices, to be published)

Miao Chang (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Ningbo, China) : Efficient application of integrated policies for the urban environment. IGES. (Collection of successful practices, to be published)

Miao Chang (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Weihai, China) : Water Pollution Control. IGES. (Collection of successful practices, to be published)

Miao Chang and Hidefumi Imura (2003) The Strategies for Developing Urban Environmental Infrastructure in Asia: the Role Sharing and Cooperation between Public Sector and Private Sector. Chapter in *The Yearbook of the Society of Environmental Economics and Policy Studies (SEEPS) (8th)*, edited by SEEPS . Tokyo: TOYO KEIZAI INC. pp.205-220 (25 Dec. 2003)

Miao Chang, Mushtaq Ahmed Memon and Hidefumi Imura (2004) Public-Private Partnerships for Urban Environmental Infrastructure:Learning from International Experiences and its Application to China. Chapter in *Financial Mechanises for Environmental Proetction of China*. Beijing: China Environmental Science Publisher. (To be Published)

Miao Chang (2004) Urban Environmental Protection in China and the Correspondences from Japan- Shift from Industrial Pollution toUrban and Life Pollution. Chapter in *21centry of China and Esat Asia*. Tokyo: Ichigeisya. pp.65-84 (1 Sep. 2003)

Shobhakar Dhakal (2001) Financing the Adaptation to the Climate Change : Issues and Controversies. *Environment: A Journal of Environment*. Vol. 6, No. 7. Kathmandu: Ministry of Environment and Population, His Majesty's Government, Nepal. pp.23-33 (Peer reviewed)

Shobhakar Dhakal and Shinji Kaneko (2002) Urban Energy Use in Asian Mega-Cities : Is Tokyo a Desirable Model?. *Proceedings for the Workshop of IGES/APN Mega-City Project on Policy Integration of Energy Related Issues in Asian Cities*. Hawaii: IGES. pp.173-185 (Peer reviewed)

Shobhakar Dhakal, Shinji Kaneko and Hidefumi Imura (2002) An analyses on driving factors for CO2 emissions from energy use in Tokyo and Seoul by Factor Decomposition Method. *Environmental Systems Research*. Volume 30. Japan Society of Civil Engineers (JSCE). pp.295-303 (Peer reviewed)

Shobhakar Dhakal (2003) Implications of transportation policies on energy and environment in Kathmandu Valley, Nepal. *Energy Policy*. Volume 31, Number 14. Elsevier Sciences. pp.1493-1507 (Peer reviewed)

Shobhakar Dhakal, Shinji Kaneko, and Hidefumi Imura (2003) CO2 Emissions from Energy Use in East-Asian Mega-Cities : Driving factors and their contributions. *Environmental Systems Research*. Volume 31. Japan Society of Civil Engineers. (Submitted for publication, Peer reviewed)

Shobhakar Dhakal and Hidefumi Imura (2003) Policy based indicator systems : Emerging debates and lessons. *Local Environment*. Volume 8, Number 1. Carfax Publishing/Francis and Taylor. pp.113-119 (Peer reviewed)

Shobhakar Dhakal and Garrick W. Norman (2003) Transitions in Urban Energy and Environment : Perspectives from the South-Asian Conference. *Proceedings of South Asian Regional Conference on Transition towards Sustainable Development*. New Delhi:

Shobhakar Dhakal, Shinji Kaneko and Hidefumi Imura (2003) CO2 emissions from energy use in East Asian mega-cities : Driving factors, challenges and strategies. *Proceedings of IGES/APN International Workshop on Policy Integration towards Sustainable Energy Use for Cities in Asia*. Hawaii:

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Ho Chi Minh, Vietnam) : Promotion of Clean Production. IGES. (Collection of successful practices, to be published)

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Singapore) : De-coupling of urban mobility need from environmental degradation (Successful experience of Singapore). IGES.

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Singapore) : Successful experiences in containing environmental problems from transportation sector. IGES. (Collection of successful practices, to be published)

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Surabaya, Indonesia) : Comprehensive Kampung Improvement as Model of Community Participation. IGES. (Collection of successful practices, to be published)

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Kathmandu, Nepal) : Role of Government, Private Sector and Civil Society in replacing polluting diesel three-wheelers by electric vehicles. IGES. (Collection of successful practices, to be published)

Shobhakar Dhakal (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Kitakyushu, Japan) : Successful practice of Kitakyushu controlling SOx emissions. IGES. (Collection of successful practices, to be published)

Noriko Kono (2003) Experience of Yokkaichi City: Forerunner of air quality management in Japan. *BAQ2003*. IGES.

I. Kochi, S. Matsuoka, Mushtaq Ahmed Memon, H. Shirakawa (2002) Cost Benefit Analysis of the Sulfur Dioxide Emissions Control Policy in Japan. *Journal of Environmental Economic and Policy Studies*, edited by E. Hosoda. Vol. 4, No. 4. Tokyo: Springer-Verlag. pp.219-233 (Peer reviewed)

Mushtaq Ahmed Memon and S. Matsuoka (2002) Validity of contingent valuation estimates from developing countries : scope sensitivity analysis. *Journal of Environmental Economic and Policy Studies*, edited by E. Hosoda Vol. 5, No. 1. Tokyo: Springer-Verlag. pp.39-61 (Peer reviewed)

Mushtaq Ahmed Memon, Shobhakar Dhakal, Miao Chang, Hidefumi Imura (2002) Kitakyushu Initiative for a Clean Environment : Moving towards "Sustainable Cities" in Developing Countries. *The Proceedings of the 3rd Special Study Meeting : The Japan Society for International Development (JASID-SSM3)*. Nagoya: JASID. pp.73-79

Mushtaq Ahmed Memon, Shobhakar Dhakal, Miao Chang, Hidefumi Imura (2002) Kitakyushu Initiative for a Clean Environment in Developing Countries : Public-Private Partnerships for Sustainable Urban Environmental Management. *Proceedings from annual conference*. Sapporo: SEEPS. pp.212-215 (28-29 September 2002)

Mushtaq Ahmed Memon, Shobhakar Dhakal, Miao Chang, Hidefumi Imura (2002) Kitakyushu Initiative for a Clean Environment : Monitoring and Evaluation (M&E) System for Urban Environmental Management. *Proceedings of the 13th Annual Conference : The Japan Society for International Development*. Tokyo: JASID. pp.455-460

Mushtaq Ahmed Memon, Shobhakar Dhakal, Miao Chang, Hidefumi Imura (2002) Kitakyushu Initiative for a Clean Environment. *Environmental Governance for Sustainable Development in Asia and the Pacific*, edited by United Nations Economic and Social Commission for Asia and the Pacific, United Nations Development Programme . New York: United Nations. pp.101-111 (Input provided to report regarding the Kitakyushu Initiative, in particular to Section V. "Environmental governance : spatial issues", pp.101-111)

Mushtaq Ahmed Memon (2003) Public-Private Partnerships for Urban Water Supply and Wastewater Treatment : An overview of the concept of PPP and its applications for Urban Water. *2nd Thematic Seminar : Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment*. Kitakyushu: IGES. pp.3-27 (4 Nov. 2002)

Mushtaq Ahmed Memon (2003) Public-Private Partnerships for Urban Water Supply and Wastewater Treatment : Case study of Metro Waterworks and Sewerage System (MWSS). *2nd Thematic Seminar : Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment*. Kitakyushu: IGES. (4 Nov. 2002)

Mushtaq Ahmed Memon (2003) Public-Private Partnerships for Urban Water Supply and Wastewater Treatment : International experiences in PPP for urban water. *2nd Thematic Seminar : Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment*. Kitakyushu: IGES. (4 Nov. 2002)

Mushtaq Ahmed Memon (2003) Public-Private Partnerships (PPP) for Urban Water : A review of international experiences. *Proceedings from the First Task Force Meeting on Financial Mechanisms for Environmental Protection*. Beijing: CCICED. (5-6 Nov. 2002)

Mushtaq Ahmed Memon (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Kitakyushu, Japan) : Coexistance of Industry and Community. (Collection of successful practices, to be published)

Mushtaq Ahmed Memon (2003) Kitakyushu Initiative for a Clean Environment : Successful and Transferable Practices (Dhaka, Bangladesh) : Innovation in Community-driven Composting. (Collection of successful practices, to be published)

Mushtaq Ahmed Memon (2003) Capacity Building for Urban Air Quality Management. *3rd Thematic Seminar : Kitakyushu Initiative Seminar on Urban Air Quality Management*. Kitakyushu: IGES. pp.4-33 (20-21 Feb. 2003)

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : Local Air Quality Management in UK and Congestion Charges in Central London.
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Air/UK%20(LAQM).doc

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : Integrated Urban Air Quality Management in Bangkok, Thailand.
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Air/UAQM%20in%20Bangkok.doc

Mushtaq Ahmed Memon (2003) Successful Practice Analysis : Coexistence of Industry and Community : Air

Pollution Management in Kitakyushu.
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Air/Kitakyushu%20Air.doc

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : Public-Private Partnerships (PPP) in Water and Sanitation in Cartagena (Colombia).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Water/Colombia%20PPP.pdf

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : PPP in Urban Water (Concession Contracts) in Cordoba (Argentina).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Water/Argentina%20PPP.pdf

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : Public-Private Partnerships in Bulk Water Supply in Johor Bahru (Malaysia).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Water/Johor%20Bahru.pdf

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : PPP in Water Supply and Wastewater Treatment in Manila (Philippines).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Water/Manila%20PPP.pdf

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : PPP in Water Supply and Wastewater Treatment in Macao (China).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Water/PPP%20Macao.doc

Mushtaq Ahmed Memon (2003) Successful Practices Analysis : Community Awareness in Recycling and SWM in Nonthaburi (Thailand).
http://www.iges.or.jp/kitakyushu/Successful%20Practices/SP%20(Analyzed)/Solid%20Waste/Nonthaburi%20SWM.pdf

Mara Regina Mendes (2004) Public Participation and Municipal Solid Waste Management in Selected Asian Cities. *Proceedings of Kitakyushu Initiative Seminar on Public Participation*. Kitakyushu: IGES. (20-21 Jan. 2004)

Forest Conservation Project (FC)

Kazuhiro Harada (2003) A Framework for Conflict Management of Natural Resources in the Protected Area between Government and Local People. *Journal of Forest Economics*. 49(2). Tokyo: The Japanese Forest Economic Society. pp.35-43

Kazuhiro Harada (2003) Attitudes of Local People towards Conservation and Gunung Halimun National Park in West Java, Indonesia. *Journal of Forest Research*. 8(4). Tokyo: The Japan Forestry Association. pp.271-282

Kazuhiro Harada (2003) Local Aspect for the Management of Protected Areas. *The State of the Environment in Asia 2003/2004*, edited by Japan Environmental Council . Tokyo: Toyo Keizai. pp.334-339

Kazuhiro Harada (2003) Policy of Protected Areas and Local Use of Forest Resources in Indonesia: a Case Study of a National Park in West Java. *People and Forest in Southeast Asia, Fareast Russia, and Japan : Forest Policy and Local Reality*, edited by Inoue Makoto. Tokyo: Kluwer Academic Publishers. pp.231-247

Kazuhiro Harada (2003) The Role of Protected Areas: Can Protected Areas be a New Paradigm to Prevent Environmental Destruction?. *Forest Economy*. 56(1). Tokyo: Forest Economic Research Institute. pp.15-25

Kimihiko Hyakumura (2001) Issues of Conservation Forest Management Policy in Lao P.D.R.. *Forest Economy*. 54(12). Tokyo: Forest Economic Research Institute. pp.22-33 (in Japanese)

Kimihiko Hyakumura (2002) Forest use in south part of Laos : Emergency plants and taboo on Forest. *Forestry Science*. No.36. Tokyo: Japan Forestry Society. pp.76-78

Kimihiko Hyakumura (2002) The Present Condition and Issues of Land and Forest Allocation Program : Case Study on Savannakhet Province. *The Proceeding of the 113th Japanese Forestry Society Conference*. Tokyo: Japanese Forestry Society. p.140 (in Japanese)

Kimihiko Hyakumura (2003) Forest Management on Protected Area: Case Study on Savannakhet Province of Laos. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.219-236 (in Japanese)

Takashi Masuno, Kimihiko Hyakumura and Kenichi Abe (2003) Forestry Research in Laos : The result of literature review and further issue. *The proceedings of the 114th Japan Forestry Society Committee*. Tokyo: Japan Forestry Society. p.40

Kimihiko Hyakumura, T. Khotphathoum (2003) Local Forest Management of National Bio-diversity Conservation Areas in Laos. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.261-274

Takashi Morimoto, Kimihiko Hyakumura and Makoto Inoue (2003) The livelihood strategy of local people under the stabilization of shifting cultivation policy : Case study on Pakbeng District, Oudomxay Province, North part of Laos. *the Japanese Forestry Economic Society Conference FY2003*. Tokyo: The Japanese Forest Economic Society.

Kimihiko Hyakumura and Thannanh Kotpathoum (2004) Impact of forest-related policy in local people in pretected area : The case study in Phou Xang He Protected Area, Savannakhet Province, Laos. *Laos Country Report 2003 : Towards the participatory forest management in Laos*. Hayama: IGES.

Makoto Inoue (2001) Commercial Cutting. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.443 (in Japanese)

Makoto Inoue (2001) Commons. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.312 (in Japanese)

Makoto Inoue (2001) Commons as Collective Natural Resources Management Systems. *Sociology of the Commons :*

Collective Management of Forest, River, and the Coast, edited by Makoto Inoue and Taisuke Miyauchi . Tokyo: Shinyou-sha, Publishers. pp.1-28 (in Japanese)

Makoto Inoue (2001) Concession. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.318 (in Japanese)

Makoto Inoue (2001) Deforestation and Degradation of Tropical Forest. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.794-795 (in Japanese)

Makoto Inoue (2001) Forest Certification System. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.506-507 (in Japanese)

Makoto Inoue (2001) Forest Development in Southeast Asia. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.725-726 (in Japanese)

Makoto Inoue (2001) Forest Dweller. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.482-483 (in Japanese)

Makoto Inoue (2001) Forestry of Indochina. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.53-54 (in Japanese)

Makoto Inoue (2001) Forestry of Indonesia. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.54-55 (in Japanese)

Makoto Inoue (2001) Forestry of Southeast Asia. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.726 (in Japanese)

Makoto Inoue (2001) Gender. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.370 (in Japanese)

Makoto Inoue (2001) International Union for Conservation of Nature and Natural Resources (IUCN). Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.289-290 (in Japanese)

Makoto Inoue (2001) Natural Resources Management through Local and Public Participation. *Sociology of the Commons : Collective Management of Forest, River, and the Coast*, edited by Makoto Inoue and Taisuke Miyauchi . Tokyo: Shinyou-sha, Publishers. pp.213-235 (in Japanese)

Makoto Inoue (2001) Non-Governmental Organization (NGO). Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.842-843 (in Japanese)

Makoto Inoue (2001) Participatory Development. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.357 (in Japanese)

Makoto Inoue (2001) Report by Roman Club. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.1113-1114 (in Japanese)

Makoto Inoue (2001) Social Forestry. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.399-400 (in Japanese)

Makoto Inoue (2001) Swidden Agriculture. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.1008-1009 (in Japanese)

Makoto Inoue (2001) Taungya System. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.633 (in Japanese)

Makoto Inoue (2001) The Global 2000 Report to the President-Entering the Twenty-First Century. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.572 (in Japanese)

Makoto Inoue (2001) World Wide Fund for Nature (WWF). Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.572 (in Japanese)

Makoto Inoue (2002) Human network to suport livelihood of the mountain villages. *Research on Environmental Disruption*. 31(4). Tokyo: Iwanami Book Co.. pp.31-38 (in Japanese)

Makoto Inoue and Martinus Nanang (2002) Indonesia. *The State of the Environment in Asia 2002/2003*, edited by Japan Environmental Council . Tokyo: Springer-Verlag. pp.194-197

Makoto Inoue (2002) Possibility of interdisciplinary fieldwork. *Method of Environmental Studies*, edited by Hiroyuki Ishi . Tokyo: University of Tokyo Press. pp.215-257 (in Japanese)

Tetsuya Saito, Makoto Inoue (2003) Coexistence between the local people and tree planting: A case of East Kalimantan, Indonesia. *From destruction to regeneration: thinking at Asia forests*, edited by Ryozo YORIMITSU . Tokyo: Nihonkeizaihyouron-sha. pp.21-66 (in Japanese)

Makoto Inoue (2003) Concept and significance of the commons. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. pp.593-596 (in Japanese)

Makoto Inoue (2003) Conclusion: Sustainable Forest Management through Local Participation: Procedures and Priority Perspectives. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Makoto Inoue and Hiroji Isozaki . Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.337-356

Tetsuya Saito, Makoto Inoue, Yasuhiro Yokota (2003) Dynamism of forest related stakeholdersinr the couse of decentralization : case of West Kutai District, East Kalimantan, Indonesia. *Journal of International Development Studies*. Vol.12, No.1. Tokyo: The Japan Society for International Development. pp.99-113 (in Japanese)

Makoto Inoue (2003) Environmental problems: toward local environmental governance. *New century of Asia: conception*, edited by Tamotsu AOKI et al. Tokyo: Iwanami-shoten. pp.75-82 (in Japanese)

Report of the Second Phase Strategic Research (April 2001–March 2004):
List of Achievements

Makoto Inoue (2003) Forest and human being. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. pp.18-26 (in Japanese)

Makoto Inoue (2003) Forest culture and society. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. p.507 (in Japanese)

Makoto Inoue (2003) From autocratic governance to collaborative governance: toward participatory forest management. *Ronza*. Aug. 03. Tokyo: Asahi-shinbun. pp.46-53 (in Japanese)

Makoto Inoue et al. (2003) Hillside Forest Land as a Safety Net for Local People in a Mountain Village in West Java: An Examination of Differences in the Significance of National and Private Lands. *Journal of Forest Research*. Vol.8, No.2. Singapore: Springer. pp.95-101

Makoto Inoue et al. (2003) Openn the era of collaborative global environmental governance: to ensure justice by applying the principle of involvement. *The state of Asian environment 2003/2004*, edited by Japan Environmental Counci l . Tokyo: Touyoukeizai-shinpou-sha. pp.1-11 (in Japanese)

Makoto Inoue (2003) Participatory forest management in developing coutries. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. pp.625-628 (in Japanese)

Makoto Inoue (2003) Participatory Forest Management Policy in South and Southeast Asia. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Makoto Inoue and Hiroji Isozaki. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.49-71

Makoto Inoue (2003) Problems in tropical forest. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. pp.653-656 (in Japanese)

Makoto Inoue (2003) Significance and perspective of local participation in forest management. *Forest Degradation and Conservation in Asia*, edited by Makoto INOUE. Tokyo: Chuou-houki. pp.309-324 (in Japanese)

Makoto Inoue (2003) Swinging participatory forest management. *Anthropology of global environmental problems*, edited by Kazunobu IKEYA. Kyoto: Sekaishisou-sha. pp.141-170 (in Japanese)

Makoto Inoue (2003) Views on tropical deforestation. *Forest Degradation and Conservation in Asia*, edited by Makoto INOUE. Tokyo: Chuou-houki. pp.1-10 (in Japanese)

Hiroji Isozaki, Masnobu Yamane, Yuriko Nakamura, Makto Inoue (2003) Biodiversity of paddy field and forest: toward integrated management based on local participation. *The state of Asian environment 2003/2004.* Japan Environmental Council . Tokyo: Touyoukeizai-shinpou-sha. pp.123-144 (in Japanese)

Hiroji Isozaki (2003) Introduction : Approaches to Strategic Research on Sustainable Forest Management. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan.* Hiroji Isozaki and Makoto Inoue. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.xi-xiii

Hiroji Isozaki and Kiyoshi Komatsu (2003) Possible Measures and Principles for Forest Conservation in International Treaties. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue. Tokyo: Chuohoki Publisher. pp.258-271 (in Japanese)

Hiroji Isozaki (2003) Sustainable and Participatory Forest Management: Legal and Administrative Supporting Measures, and Final Recommendations. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.73-89

Hiroaki Kakizawa (2002) Development of Institutional Framework of Russian Forest Sector : Focusing on Federal - Local Relationship. *Journal of Forest Economics*. Vol.48 No.1. Tokyo: The Japanese Forest Economic Society. pp.53-60

Hiroaki Kakizawa (2002) Towards Community Based Ecosystem Management. *Municipal Problems*. 93（10）. Tokyo: The Tokyo Institute for Municipal Research. pp.15-28 (in Japanese)

Hiroaki Kakizawa (2002) Illegal Logging Issues in the Russian Federation. *The Tropical Forestry*. 55. Tokyo: Japan International Forestry Promotion and Cooperation Center. pp.21-28 (in Japanese)

Hiroaki Kakizawa (2003) Evaluation of Russian Forest as aCarbon Sink and Russian Program for Kyoto Protocol. *Forest Economy*. 56(8). Tokyo: Forest Economic research Institute. (in Japanese)

Hiroaki Kakizawa (2003) Public participation in the developed countries. Chapter in *An encyclopedia of forest*, edited by Makoto INOUE et al. Tokyo: Asakura-shoten. pp.629-630 (in Japanese)

Hiroaki Kakizawa and Alexander Sheingauz (2003) The Development of Forest Policy in the Russian Federation: With a Focus on Khabarovsk Krai. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp.187-200

Hiroaki Kakizawa (2004) Administrative Study on the Local Forest Policy System Focusing on Municipal Administration Level. *Journal of Forest Economics*. Tokyo: Forest EconomicSociety. (to be published)

Hiroaki Kakizawa (2004) Comparative study on Administrative Organizations for Forest Policy. *Journal of Forest research*. Tokyo: Springer-Verlag. (to be published)

Kiyoshi Komatsu (2001) New International Arrangement on Sustainable Forest Management. *Sanrin*. 1411. Tokyo: The Japan Forestry Association. pp.31-38 (in Japanese)

Kiyoshi Komatsu (2001) Activities toward Sustainable Forest Management in International Society : From IFF to UNFF. *Forest Economy*. 54(12). Tokyo: Forest Economic Research Institute. pp.11-21 (in Japanese)

Kiyoshi Komatsu (2002) Adaptive Management. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. p.12 (in Japanese/English)

Kiyoshi Komatsu (2002) Access to Information. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. p.15 (in

Japanese/English)

Kiyoshi Komatsu (2002) Public Participation in Management Planning, Implementation, and its Review. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. pp.16-18 (in Japanese/English)

Kiyoshi Komatsu (2002) Respect for Cultural Values of Living Resources. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. p.18 (in Japanese/English)

Kiyoshi Komatsu (2002) Respect for Traditional Knowledge and Rights, and Community Stewardship. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. pp.18-19 (in Japanese/English)

Kiyoshi Komatsu (2002) Individual Rights of Access to Justice. *Legal Principles and Guidelines for Conservation and Sustainable Use of Living Resources*. Tokyo: Japan Center of International and Comparative Environmental Law. pp.19-20 (in Japanese/English)

Kiyoshi Komatsu (2002) Coordination among Instruments Related to Forest Conservation. *Summaries of papers of academic conference on 2002*. Tokyo: Academic Association of Environmental Law and policies. pp.48-53 (in Japanese)

Kiyoshi Komatsu (2002) Toward New International Arrangement for Sustainable Forest Management. *Policy Trend Report 2001*. Hayama: IGES. pp.74-80

Satoru Matsumoto (2002) Community Forestry Seen as a Grassroots Movement : Trends and Challenges of NGO activities in Lao PDR. *Policy Trend Report 2001*. Hayama: IGES. pp.24-33

Satoru Matsumoto (2003) Deforestation and its Causes in Mekong Basin Countries. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.132-148 (in Japanese)

Satoru Matsumoto (2003) Potential Roles for NGOs in Community Forestry in Laos: Liaisons Between the Socialist Government and Grassroots People. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue. Dordrecht: Kluwer Academic Publishers. pp.127-138

Shin Nagata (2003) Current Conditions of Forest Resources and Deforestation. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue. Tokyo: Chuohoki Publisher. pp.12-28 (in Japanese)

Shin Nagata and Satoshi Tachibana (2003) Timber Trade Policy to Support Sustainable Forest Management. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue . Dordrecht: Kluwer Academic Publishers. pp.33-47

Shin Nagata and Satoshi Tachibana (2003) Japanese Policy for Asian Forest Issues. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.43-63 (in Japanese)

Martinus Nanang, Hyakumura Kimihiko, Harada Kazuhiro, Inoue Makoto (2003) Forest Policy and Community Participation: Cases from Indonesia and Laos. *the Japanese Forestry Economic Society Conference FY2003*. Tokyo: The Japanese Forest Economic Society.

Martinus Nanang (2003) Rational Choice in Response to Change in Economic Opportunity among People Affected by an Oil Palm Estate. *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.66-80 (in Japanese)

Martinus Nanang (2003) Forest Values and Livelihood Uncertainty in Two Indigenous Communities of Indonesian Borneo. *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue . Dordrecht: Kluwer Academic Publishers. pp.215-229

Martinus Nanang (2003) People and Forest of Three East Kalimantan Villages: Participatory Research Experiences and Results. *Indonesian Country Report 2002*. Hayama: IGES.

Akihiko Nemoto (2003) Farm Tree Planting and the Wood Industry in Indonesia: a Study of Falcataria Plantations and the Falcataria Product Market in Java. *Policy Trend Report 2001/2002*. Hayama: IGES. pp.42-51

Sachie Okamoto (2002) The Movement and Activities of Environmental NGOs in Indonesia. *Policy Trend Report 2001*. Hayama: IGES. pp.13-23

Sachie Okamoto (2003) Illegal Loggings in Indonesia. Chapter in *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.150-168 (in Japanese)

Sachie Okamoto (2003) Problems in Expansion Policy of Oil Palm in Indonesia. Chapter in *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue . Tokyo: Chuohoki Publisher. pp.184-201 (in Japanese)

Satoshi Tachibana et al. (2001) Division 6. Chapter in *Vocabulary of Forest Science*, edited by SilvaVoc/International Union of Forest Research Organizations . Tokyo: SilvaVoc/International Union of Forest Research Organizations.

Satoshi Tachibana (2001) Using the Internet to Gather Forest-related Information. *Research on Environmental Disruption*, edited by Ken'ichi Miyamoto, Masazumi Harada and Takehisa Awaji. 31(2). Tokyo: Iwanami Shoten, Publishers. pp.60-61 (in Japanese)

Satoshi Tachibana (2001) Open Market [of timber trade]. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association. Tokyo: Maruzen Company, Limited. p.375 (in Japanese)

Satoshi Tachibana (2001) Forestry of Malaysia. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association. Tokyo: Maruzen Company, Limited. pp.944-945 (in Japanese)

Satoshi Tachibana (2001) Contract of Timber Trade. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.984-985 (in Japanese)

Satoshi Tachibana (2001) Scaling and Grading for Imported Log. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. pp.1025-1026 (in Japanese)

Yasushi Minowa and Satoshi Tachibana (2001) Sustainable Forest Management in Malaysia : Forest Certification and

Timber Labeling. *The Bulletin of the Kyoto Prefectural University Forests*. 45. Kyoto: The Kyoto Prefectural University Forests. pp.21-26 (in Japanese)

Naoki Yasumura, Satoshi Tachibana and Reika Asai (2001) The Present Condition and Issues of the Housing Contractor Using Local Timber : On the Basis of Questionnaire Survey to the Housing Contractors. *Forest Economy*. 54(11). Tokyo: Forest Economic Research Institute. pp.14-24 (in Japanese)

Satoshi Tachibana (2001) Timber Customs. Chapter in *Encyclopedia of Forest and Forestry*, edited by Japan Forest Technology Association . Tokyo: Maruzen Company, Limited. p.976 (in Japanese)

Satoshi Tachibana (2002) Struggling to Develop National Forest Certification Scheme in Indonesia. *Sanrin*. 1422. Tokyo: The Japan Forestry Association. pp.24-32 (in Japanese)

Satoshi Tachibana (2002) Journey to Sakhalin. *WIDE*. Jun.2002. Tokyo: Japan Wood-Products Information and Research Center.

Satoshi Tachibana (2002) A Study of Forestry Policy on Softwood Log Markets in Japan. *Proceedings of the 2nd Symposium on Forest Resource and Mathematical Modeling*. 2. Tokyo: The University of Tokyo, The Institute of Statistical Mathematics and Japan Forest Planning Society. p.3 (in Japanese)

Satoshi Tachibana (2002) Forest Policy : Toward Effective Use of Recyclable Resources. Chapter in *Environmental Policy Frontier*, edited by Shunichi Teranishi. Sep. 2002. Tokyo: Toyo Keizai.

Satoshi Tachibana (2003) Impacts of Forest industry on Forest Resources in Malaysia. Chapter in *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue. Tokyo: Chuohoki Publisher. pp.202-218 (in Japanese)

Satoshi Tachibana, Akihiko Nemoto and Yasushi Minowa (2003) Forest Certification Scheme: Global Trends and National Scheme in Indonesia and Malaysia. Chapter in *Deforestation and Forest Conservation in Asia*, edited by Makoto Inoue. Tokyo: Chuohoki Publisher. pp.272-291 (in Japanese)

Norihiko Shiraishi and Satoshi Tachibana (2003) Forest Certification Schemes in Japan, Indonesia, and Malaysia: Background and Reality. Chapter in *People and Forest: Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*, edited by Hiroji Isozaki and Makoto Inoue. Dordrecht: Kluwer Academic Publishers. pp.105-112

Environmental Education Project (EE)

Osamu Abe and Masahiro Takahashi (2001) Environmental Education and the Media. Chapter in *Media and the Environment*, edited by IGES. Tokyo: Chuohoki Publisher. pp.44-59 (in Japanese)

Osamu Abe, Masahiro Takahashi, Ko Nomura and Masahisa Sato (2001) Environmental Education in the Asia-Pacific Region : Status, Issues and Practices. *Environmental Education in the Asia-Pacific Region : Status, Issues and Practices*, edited by Bishnu Bhandari and Osamu Abe 2001. Hayama: IGES. pp.348-368

Masahisa Sato, Bishnu Bhandari and Osamu Abe (2001) Cooperation in Environmental Education at the Tertiary Level in the Asia-Pacific Region. *International Journal of Environmental Education and Information*. Volume 20. Salford: University of Salford. pp.287-298

Masahisa Sato, Bishnu Bhandari and Osamu Abe (2001) The Delivery System of Environmental Education at the Tertiary Level in the Asia-Pacific Region. *International Journal of Environmental Education and Information*. Volume 20. Salford: University of Salford. pp.147-158

Bishnu Bhandari and Osamu Abe (2001) Corporate Citizenship and Environmental Education. *International Review for Enviromental Strategies(IRES)*. Volume 2. Hayama: IGES. pp.61-78

Akihiro Nakahata (2001) The Role of Eco-Tourism in the Environmental Education : Eco-tourism and EE in Costa Rica. *Proceeding of the 12th Annual Meeting of the Japanese Society of Environmental Education*. . Fukuoka: Japanese Society of Environmental Education. p.77 (in Japanese)

Masahiro Takahashi and Osamu Abe (2001) Environmental Education in Japan. (Discussion Paper for Symposium on International Experiences in Environmental Education)

Masahiro Takahashi and Osamu Abe (2001) Significance on Period for Integrated Study for Environmental Education. *J. Saitama Univ., Fac. Educ. : Sci. Educ*. 50(2). Saitama: Saitama University. pp.71-79

Osamu Abe (2002) Strategy of the International Cooperation in the Asia-Pacific region. *Journal of the Society, No 26*. Shimane: Japan Science Education Society. pp.185

Masahiro Takahashi, Osamu Abe (2002) Comparative Analysis on the Environmental Education in Japan, Korea, and China. *Proceeding of the 13th Annual Meeting of the Japanese Society of Environmental Education*. Miyagi: Japanese Society of Environmental Education. p.91 (in Japanese)

Masahiro Takahashi (2002) A Decade from UNCED to WSSD : Progresses on the activities for environmental conservation. *Development Education*. No. 46. Miyagi: Development Education Council of JAPAN. pp.4-9 (in Japanese)

Masahiro Takahashi and Osamu Abe (2002) Recent Trend of the Environmental Education in Japan. *Report on the Tripatite Environmental Education Workshop and symposium among Japan, China and Korea*. Tokyo: Japan Education Environmental Forum. pp.21-27, 115-124

Masahiro Takahashi (2003) Education, Public Awareness, and Training. Chapter in *Encyclopedia of Life Support Systems (EOLSS)*. Oxford: Eolss Publishers. http://www.eolss.net

Masahiro Takahashi and Osamu Abe (2003) Differencies of Children's Environmental Awareness. *Proceeding of the 14th Annual Meeting of the Japanese Society of Environmental Education*. Aichi: Japanese Society of Environmental Education. p.101 (in Japanese)

Akihiro Nakahata and Osamu Abe (2003) Trial activity of Eco-tour in Tonle Sap Lake, Cambodia. *Proceeding of the 14th Annual Meeting of the Japanese Society of Environmental Education*. Aichi: Japanese Society of Environmental Education. p.157 (in Japanese)

Bishun B Bandari, Osamu Abe (2003) Education for Sustaiable development : An Emerging Paradigm. *Education for Sustaiable Development in Nepal : Views and Visions*. Hayama: IGES. pp.13-28

Akihiro Nakahata (2003) Sustainable Ecotourism in the Tonle Sap Lake in Cambodia. *Education for Sustaiable Development in Nepal : Views and Visions*. Hayama: IGES. pp.261-268

Masahiro Takahashi (2003) A Glimpse at Environmental Education Activities in Japan. *Education for Sustaiable Development in Nepal : Views and Visions*. Hayama: IGES. pp.269-272

Bishnu B Bhandai (2004) ESD in the Asia-Pacific : From the Eyes of the Environmental Educator. *Globalism and Education for Sustainable Development : Some Viewpoints*. Hayama: IGES. pp.11-20

Business and the Environment Project (BE)

Akihiro Amano (2002) Economic Measures in the Environmental Policy Arsenal. Chapter 3.2. Quest for Resolving Environmental Issues: Instruments. In *The Age of Envionmental Revolution : Introduction to Environment in the Twenty-first Century*, edited by IGES . Tokyo: Tokyo Shoseki. pp.212-222 (in Japanese)

Katsuhiko Kokubu, Eriko Nashioka (2001) Environmental Accounting Practices of Listed Companies in Japan. *IGES Kansai Discussion Paper*. 2001-No.2. Kobe: IGES Kansai Research Center.

Katsuhiko Kokubu (2002) Two Governmental Initiatives on Environmental Management Accounting and Corporate Practices in Japan. *IGES Kansai Discussion Paper*. 2002-No.1. Kobe: IGES Kansai Research Center.

Katsuhiko Kokubu, Eriko Nashioka (2002) Current Analysis of Environmental Accounting Information of Japanese Companies. *Accounting Progress*. March, 2002. Tokyo: Japan Accounting Association. (in Japanese)

Kenjiro Hirayama (2002) Positive influence of corporate environmental disclosure on environmental education and consumer education : How to make a greater number of ordinary consumers understand the content of environmental reports. *IGES Kansai Discussion Paper*. 2002-No.4. Kobe: IGES Kansai Research Center. (in Japanese)

Kenjiro Hirayama (2002) Comparative Analysis on Environmental Reports of Auto Industry in 2000. *IGES Kansai Discussion Paper*. No.6. Kobe: IGES Kansai Research Center. (in Japanese)

Kenjiro Hirayama (2002) Positive influence of corporate environmental disclosure on environmental education and consumer education : How to make a greater number of ordinary consumers understand the content of environmental reports. *IGES Kansai Discussion Paper*. 2002-No.5. Kobe: IGES Kansai Research Center.

Kenjiro Hirayama (2002) Positive influence of corporate environmental disclosure on environmental education and consumer education : How to make a greater number of ordinary consumers understand the content of environmental reports. *An annual report of granted researches, Hyogo Research Organization for Human Care*. Kobe: Hyogo Research Organization for Human Care. (in Japanese)

Masaji Kitamura (2002) Comparative Analysis on Environmental Reports of Chemical Industry in 2000. *IGES Kansai Discussion Paper*. 2002-No.7. Kobe: IGES Kansai Research Center. (in Japanese)

Yasuhiro Kanda (2002) Comparative Analysis on Environmental Reports of Beer Industry in 2000. *IGES Kansai Discussion Paper*. 2002-No.8. Kobe: IGES Kansai Research Center. (in Japanese)

Masaji Kitamura, Yasuhiro Kanda, Kenjiro Hirayama, Katsuhiko Kokubu (2002) A Study on the Comparability of the Environmental Reports : Mainly of the Automobile, Beer, and Chemical Industries. *IGES Kansai Discussion Paper*. 2002-No.9. Kobe: IGES Kansai Research Center. (in Japanese)

Masaji Kitamura, Yasuhiro Kanda, Kenjiro Hirayama, Katsuhiko Kokubu (2002) A Study on the Comparability of the Environmental Reports : Mainly of the Automobile, Beer, and Chemical Industries. *IGES Kansai Discussion Paper*. 2002-No.9E. Kobe: IGES Kansai Research Center.

Kenjiro Hirayama, Katsuhiko Kokubu, Yasuhiro Kanda, Tomomi Shinabe, Akira Higashida, Chiaki Kawahara, Masaji Kitamura, Yasutoshi Nakaso (2002) Present Status of Environmental Reports by Japanese Companies - Analysis of Environmental Reports by Companies Listed on the First Section of the Tokyo Stock Exchange. *IGES Kansai Discussion Paper*. 2002-No.10. Kobe: IGES Kansai Research Center. (in Japanese)

Kenjiro Hirayama, Katsuhiko Kokubu, Yasuhiro Kanda, Tomomi Shinabe, Akira Higashida, Chiaki Kawahara, Masaji Kitamura, Yasutoshi Nakaso (2002) Present Status of Environmental Reports by Japanese Companies - Analysis of Environmental Reports by Companies Listed on the First Section of the Tokyo Stock Exchange. *IGES Kansai Discussion Paper*. 2002-No.10E. Kobe: IGES Kansai Research Center.

Koichiro Saio, Katsuhiko Kokubu, Eriko Nashioka, Shinnichi Imai (2002) Environmental Accounting Practices of Listed Companies in Japan. *IGES Kansai Discussion Paper*. 2002-No.11. Kobe: IGES Kansai Research Center. (in Japanese)

Eriko Nashioka, Katsuhiko Kokubu (2002) A study on the verification of Environmental Reports. *IGES Kansai Discussion Paper*. 2002-No.12. Kobe: IGES Kansai Research Center. (in Japanese)

Eriko Nashioka, Katsuhiko Kokubu (2002) Functions of Third party Verifications of Environmental Reports. *IGES Kansai Discussion Paper*. 2002-No.12E. Kobe: IGES Kansai Research Center.

Jan-Dirk Seiler-Hausmann (2002) Innovation & Sustainable Development -Guiding Business Innovation towards Sustainable Development - Innovation. *IGES Kansai Discussion Paper*. 2002-No.13. Kobe: IGES Kansai Research Center.

Yasuhiro Kanda (2002) Report of a Visiting Researcher at the Wuppertal Institute. *IGES Kansai Discussion Paper*. 2002-No.14. Kobe. (in Japanese)

Eriko Nashioka, Katsuhiko Kokubu (2002) Functions of Third party Verifications of Environmental Reports. *Auditing*. March, 2003. Tokyo. (in Japanese)

Yasuhiro Kanda (2002) Current Status on the Environmental and Social Aspects of Asian Companies : A Comparative Study on Korea, Philippines and Indonesia. *An annual report of granted researches, Hyogo Research*

Organization for Human Care. Kobe: Hyogo Research Organization for Human Care. (in Japanese)

Katsuhiko Kokubu, Eriko Nashioka, Koichiro Saio, Shinnichi Imai (2003) Two Gevernmental Initiatives on Environmental Management Accounting and Corporate Practices. *Environmental Management Accounting : Purpose and Progress Dordrecht*, editec by Martin Bennett, Pall M. Rikhardsson and Stefan Schaltegger. 2003. London: Kluwer Academic Publishers.

Akio Morishima, Akihiro Amano, Yasuhiro Kanda (2004) An Overview of Energy Policy in Japan, Governance of Markets for Sustainability. 2003. Japanese-German Center Berlin.

Katsuhiko Kokubu, Eriko Nashioka, Emiko Murei, Koichiro Saio (2003) Environmental Accounting Practices of Japanese Companies. *IGES Kansai Discussion Paper*. 2003-No.1. Kobe: IGES Kansai Research Center. (in Japanese)

Eva Hoffmann (2003) Environmental Reporting and Sustainability Reporting in Europe. *IGES Kansai Discussion Paper*. 2003-No.2. Kobe: IGES Kansai Research Center.

Yasuhiro Kanda, Byung-Wook Lee (2003) Japanese and Korean Corporate Sustainability Management - A Comparative Study based on Questionnaire Survey Results -. *IGES Kansai Discussion Paper*. 2003-No.3. Kobe: IGES Kansai Research Center. (in Japanese)

Yasuhiro Kanda, Byung-Wook Lee (2003) Japanese and Korean Corporate Sustainability Management - A Comparative Study based on Questionnaire Survey Results -. *IGES Kansai Discussion Paper*. 2003-No.3E. Kobe: IGES Kansai Research Center.

Kenjiro Hirayama (2003) An Analysis of Stakeholders' needs on Environmental Reporting. *IGES Kansai Discussion Paper*. 2003-No.4. Kobe: IGES Kansai Research Center. (in Japanese)

Yasuhiro Kanda, Shinnichi Imai, Yasuhide Nakagami (2004) Current Status and Issues on the Evaluation of Corporate Sustainability Management. *IGES Kansai Discussion Paper*. 2003-No.5. Kobe: IGES Kansai Research Center.

Katsuhiko Kokubu, Takashi Ando, Eriko Nashioka (2004) Current Status of Introducing Environmetnal Management Accounting at Japanese Corporations - Based on the interviews with practioners- (tentative). *IGES Kansai Discussion Paper*. 2003-No.6. Kobe: IGES Kansai Research Center. (To be published)

Katsuhiko Kokubu, Eriko Nashioka, Tomomi Shinabe (2004) Monetary Evaluation and Environmental Management Index of Environmental Conservation Effects. *IGES Kansai Discussion Paper*. 2003-No.7. Kobe: IGES Kansai Research Center. (To be published)

Long-Term Perspective and Policy Integration Project (LTP)

M. Kamal Gueye (2002) Overview Paper on Issues and Challenges in the Financing of Sustainable Development in Asia and the Pacific. (Discussion paper at the APFED first substantial meeting)

Kamal Gueye (2003) Legal Avenues for Monitoring Environmental Compliance in the Foreign Investment Process: NGOs and Environmental Litigation in Indonesia. *Kansai University Review of Law and Politics*. N0. 24, March, 2004. pp. 69-95

Kamal Gueye (2003) Financing Sustainable Development: Trends and Emerging Policy Approached in Asia and the Pacific. *International Review for Environmental Strategies (IRES)*. Vol. 3, No. 1, Summer 2002. Hayama: IGES. pp. 153-163.

Kamal Gueye and Kenichi Imai (2003) The Relationship Between the WTO and Regional Trade Agreements and Institutions on Trade and Environment in Asia. *Achieving Harmony in Trade and Environment*. available in CD. : GETS. (Discussion Paper for the Panel on "Achieving Harmony in Trade and Environment". Sept.2003, Cancun, Mexico)

Kamal Gueye and Kenichi Imai (2004) Harmonising Trade and Environment in Recent Free Trade Agreements in the Asia-Pacific. *International Review for Environmental Strategies (IRES)*. Upcoming Winter 2004. Hayama: IGES.

Akanksha Chaurey, Kamal Gueye, N Yuvaraj Dinesh Babu (2004) Financing Renewable Energy in India: A Review of Mechanisms in Wind and Solar Applications. *International Review for Environmental Strategies (IRES)*. Upcoming Winter 2004. Hayama: IGES.

Lisa Hiwasaki (2003) Tourism in Japan's Parks and Protected Areas: Challenges and Potential for Sustainable Development. *In International Review for Environmental Strategies (IRES)*. Vol 4 issue 1.

Kenichi Imai (2002) Overview Paper on Isues and Future Perspectives in Trade and Sustainable Development in Asia and the Pacific. (Discussion paper at the APFED first substantial meeting)

Kenichi Imai (2003) Issues and Policy Directions for Sustainable Development in Asia through Trade. *Journal of International Development Studies*. Vol.3, No.2, Winter 2002. pp.320-330

Yatsuka Kataoka (2002) Overview Paper on Water for Sustainable Development in Asia and the Pacific. (Discussion paper at the APFED first substantial meeting)

Shuzo Katsumoto (2001) GHG Emission Trends of the Internet : Indications to facilitate research. *Discussion paper at the second policy dialogue between Japan and Germany "International Climate Policy and Information Technology Sector" : Japan & Germany: International Climate Policy & the IT-Sector*. Hayama: IGES. (to be pubulished)

Ko Nomura and Osamu Abe (2001) An Examination of the Growth of Environmental NGOs in Japan with Reference to the Cases in Western Countries. *Journal of Volunteer Studies*. Vol.2. pp.41-60.

Ko Nomura and Osamu Abe (2001) Overseas Assistance to Environmental Education by NGOs -With reference to a project by the Common Agenda Round Table-. *Journal of International Development Studies*. Vol. 10, No. 2, November, 2001. pp.185-199.

Ko Nomura and Osamu Abe (2001) The Role of Networks in Promoting Environmental Education by NGOs in Asia:

From a Viewpoint of International Cooperation. *International Review for Environmental Strategies*. Vol. 2, No. 1, Summer 2001. pp.107-125.

Ko Nomura, Yohei Harashima and Moustapha Kamal Gueye (2004) Environmental Governance in Asia: Results of a Questionnaire Survey concerning the Johannesburg Summit. *Journal of Environmental Information and Science.* Vol.32, No.5.

Hideyuki Mori, Akira Ogihara, Toru Hashi and Takashi Otsuka (2003) Priority Paper on Sustainable Development for Northeast Asia. (Discussion Paper submitted at UNEP Asia-Pacific Civil Society Consultation Meeting (12-13 November 2003 in Bangkok). Commissioned by UNEP RRC.AP.)

James E. Nickum, Midori Aoyagi-Usui and Takashi Otsuka (2003) Environmental Consciousness in Japan. *Southeast Asian Studies*. Vol.41, No.1. Kyoto: CSEAS, Kyoto University. pp. 36-58

Maki Sato (2002) Overview Paper on Renewable Energy for Sustainable Development in Asia and the Pacific. (Discussion paper at the APFED first substantial meeting)

Naoko Matsumoto (2004) Environmentally Friendly Public Transport Planning. (Issue Paper for the Manila Policy Dialogue on Environment and Transport in the Asian Region, 16-17 January, 2004、Manila, Phillipines. Commissioned by OECC)

Taeko Takahashi (2004) Small and Medium-Sized Enterprises (SMEs) in Sustainable Industries. *IGES Environment Industry Project Report*. Hayama: IGES.

Environmental Industry Project (EI)

Ryokichi Hirono (2002) Environment and Business. *Dialogue on Environment and Business*. Kobe: IGES Kansai Research Center. pp.1-16 (Dialogue as a panelist for the International Symposium on Business and Environment (IGES Kansai Research Center) held during Hyogo Environment Business Week (July 22-26, 2002). in Japanese)

Ryokichi Hirono (2002) Environmental Industry Development in Asia and the Pacific Region : Preliminary Findings. *Collected Papers of Environmental Industry Conference*. Beijing: Chinese Association of Environmental Industry, Beijing, China. (Paper presented at Environmental Industry Conference at Beijing on March 18-19, 2003)

Ryokichi Hirono (2002) Environmental Industry in Asia and the Pacific : Now and in the Future. *Proceedings of the Second Tripartite Roundtable on Environmental Industry*. July, 2002. Kobe: IGES Kansai Research Center. pp. 25-35 (Paper presented at the Second Tripartite Roundtable on Environmental Industry, Awajishima on 23 July, 2002 and at International Symposium on Business and Environment, Kobe on 25 July, 2002)

Ryokichi Hirono (2002) Poverty and Environment : A Dimension for the International Environmental Cooperation in the Future. *Report on Strategic Approaches to Environmental Cooperation for Sustainable Development.* March, 2003. Tokyo: Overseas Environmental Cooperation Center. pp. 26-42 (Lecture at Overseas Environmental Cooperation Center on February 21, 2003. in Japanese)

Ryokichi Hirono (2003) Environment Industry Development in Asia and the Pacific : Now and in the Future. *Shinseisaku*. Tokyo: Seisaku Sogo Kenkyujo. pp. 71-77 (in Japanese)

Other Papers

Climate Policy Project (CP)

Tae Yong Jung (2002) Climate Policies in Developing Countries - Lessons from IGES Climate Policy Dialogues. *Proceedings of the Training Workshop on Climate Change Issues*. Phnon Penh.

Aki Maruyama (2001) Climate Policy Dialogue in Asia.

Aki Maruyama (2002) Current Status and Issues related to the Assistance to Developing Countries in the Context of Climate Change Issues : towards effective assistance after Marrakesh. *Kyoto Giteisho kanrenn kenkyuu houkokusho : Report on the studies on Kyoto Protocol and Relevant Issues.* Tsukuba: National Institute for Environmental Studies.

Aki Maruyama (2002) Financing Clean Coal Technologies to China : Policy Recommendation to State Development Planning Commission. Washington DC: World Bank.

Aki Maruyama (2002) Research on effective collaboration with multilateral environmental financial mechanisms including Gloval Environment Facility. (Commissioned work by Ministry of Environment)

Naoki Matsuo (2001) Bonn Agreements as the new business opportunities: How to do businesses in the carbon-constrained future. *Energy Forum*. October.

Naoki Matsuo (2001) How to keep the door open for the US: What kind of incentives are attractive?. (IGES discussion paper)

Naoki Matsuo (2001) Idea and reality of the emissions trading: Environmental regulation or new business opportunities?. *Quality*. Vol. 140. Tokyo: Showa-Shell.

Naoki Matsuo (2001) Issues Beyond Marrakech : Toward Implementation Stage of Kyoto. (IGES Tokyo International Workshop paper)

Naoki Matsuo (2001) Japan's response after COP 7: Strategy design in the implementation stage. *Chemical Economics*. November.

Naoki Matsuo (2001) The US Proposal and the Pronk's new negotiating text: First impression. (IGES discussion paper)

Naoki Matsuo (2002) Analysis on the US new Climate Initiative: How President Bush tries to deal with the climate

change issue. *Energy Forum*. April.

Naoki Matsuo (2002) Implications off the IPCC Third Assessment Reports: Interaction between Science and the Policy. *RITE Now*.

Naoki Matsuo (2002) Issues associated with the climate change mitigation: Japan's problems in the implementation stage. *Industry and Environment*. February.

Naoki Matsuo (2002) Outline of the Rules and Modalities of the Kyoto mechanisms: Focusing on the emissions trading. *Report for the research committee on the accounting and recognition issues in emission reduction.* GISPRI.

Naoki Matsuo (2002) Pathway to the entry into force of the Kyoto Protocol and domestic framework: How to respond to the climate issue?. *Journal of Architectural Institute of Japan*.

Naoki Matsuo (2002) Rules and Modalities of the Kyoto Protocol and their implications for the Japanese firms: Strategy building of the electric utility sector. *Journal of Japan Electric Association*.

Naoki Matsuo and Yasushi Ninomiya (2002) Construction of the national registries under the Kyoto Protocol. (in Japanese)

Naoki Matsuo and Yasushi Ninomiya (2002) On the Safety Valve Approach. (prepared for the Environment Council. in Japanese)

Norichika Kanie (2002) Vertical Linkage between Multilateral Agreement at the Johannesburg Summit and Local Policies: Towards Implementation of Sustainable Develeopment. *Jichitai Kokusaika Forum*. Tokyo: Gyousei. pp.17-19 (to be published)

Yasushi Ninomiya (2001) Energy demand and Economic Development: Japanese Experience over the past 130 years. *Proceedings of the Climate Policy Dialogue in India*. New Delhi.

Yasushi Ninomiya (2001) Rules and modalities under the Article 7-4 of the Kyoto Protocol. *Proceedings of IGES/GISPRI Post COP7 seminar*. Tokyo. (in Japanese)

Yasushi Ninomiya (2001) The US Energy Policy: Comparison between the Bush and the Democrats proposals. (in Japanese)

Yasushi Ninomiya (2002) Energy demand analysis using the Structural Time Series Model. *Proceedings of the International Workshop on Climate Change Energy Modelling*. Kanagawa.

Yasushi Ninomiya (2002) Energy Demand in Japan: An Analysis of the Past Trend. *Proceedings of the Climate Policy Dialogue in Thailand*. Bangkok.

Yasushi Ninomiya (2003) Prospects for Energy Efficiency Improvement through an International Agreement. *Climate Regime Beyond 2012: Incentives for Global Participation*. IGES/NIES. pp.16-19

Ancha Srinivasan (2002) IGES Capacity Building program and its E-Courses on Climate Change. *Proceedings of the Training Workshop on Climate Change Issues*. Phnon Penh.

Ancha Srinivasan (2002) Integrating Traditional Knowledge in Climate Change Adaptation: Policy Options and Priorities. *Presented at the First Working Group Meeting of RISPO Workshop, Bangkok.*

Ancha Srinivasan (2002) Integrating Traditional Knowledge in Climate Change Mitigation and Adaptation Plans: Policy Options and Priorities. *Proceedings of the Training Workshop on Climate Change Issues*. Phnon Penh.

Kentaro Tamura (2003) Combining Climate Protocol and Research and Development Protocol as an Incentive for Global Participation. *Climate Regime Beyond 2012: Incentives for Global Participation*. IGES/NIES. pp. 12-15

Rie Watanabe (2001) Evaluation of Environmental Reports from the third parties. *The report of the study committee of Environmental Reporting Network. Fiscal Year 2000*. Tokyo: Environment Report Network. (in Japanese)

Takehisa Awaji, Hiroaki Iwasaki, Tadashi Otsuka, Mineo Kato, Tadao Shiraishi, Hiroyuki Hashimito, Yumihiko Matsumira, Shinya Murase, Kenichiro Yanagi, Rie Watanabe (eds.) (2001) *The report of the committee of Voluntary Agreements*. Tokyo: Shoji Homu Kenkyu kai. (in Japanese)

Shuang Zheng (2002) CDM Projects and Opportunities for Developing Countries - A Case Study from China. *Proceedings of the Training Workshop on Climate Change Issues*. Phnon Penh.

Urban Environmental Management Project (UE)

Shobhakar Dhakal (2002) Mega-cities in Asia : an (Un)Sustainable Development?. p.5 (Presented at WSSD PrepCom IV side event "International Science Roundtable for the Media" in Bali, Indonesia, June 2002)

Shobhakar Dhakal and Hidefumi Imura (2002) Advancing sustainablility in Asian cities : Reducing greenhouse gas emissions. *Asia ecoBest*. Volume 6, November 2002. Singapore. pp.6-8

Shobhakar Dhakal, Shinji Kaneko, Hidefumi Imura (2002) Sustainability of Asia's Mega-cities. *UPDATE: Newsletter of the International Human Dimensions Programme (IHDP)*. March 2002. Bonn: IHDP. pp.8-10

Shobhakar Dhakal (2003) Scoping Report on Urbanisation and Global Environmental Change. *International Human Dimensions Programme (IHDP)*, edited by Roberto Sanchez. Bonn. p.23

Shobhakar Dhakal and Hidefumi Imura (2003) Transportation and Environment in Mega cities. *the German-Chinese Business Forum*. Nov 2003. Shanghai: Delegation of German Industry and Commerce Shanghai. (On request)

Noriko Kono, Hiroaki Shirakawa, Hidefumi Imura (2003) . *Handbook of Environmental measures in Kitakyushu City: Overcoming environmental pollution toword a sustainable society*. City of Kitakyhu/Jica.

Kwon hangki (2002) New Environmental Acts on the Three Largest Rivers in Korea. *The Top 10 Environmental News in Asia*. Hayama: IGES. p.29

Report of the Second Phase Strategic Research (April 2001–March 2004):
List of Achievements

Forest Conservation Project (FC)

Kimihiko Hyakumura (2002) Forest Use in South Part of Laos : Taboo and Emergency Food Plants. *Forest Science*. 36. Tokyo: Japanese Forestry Society. pp.4-6 (in Japanese)

Hyakumura Kimihiko (2003) Land and forest use in Laos. *News Letter 'The Society of Tropical Ecology'*. 52. Tokyo: The Society of Tropical Ecology. pp.7-9

Hyakumura Kimihiko (2001) Book Review for "Connect With nature (edited by Koji Tanaka)". *IRES*. Vol.2, No.1. Hayama: IGES. pp.181-182

Makoto Inoue (2002) Frequent foresfire because of the development of large scale plantation : Tropical forest detereorating. *Asahi Shimbun, August 24, 2002*. Tokyo: Asahi Shimbun. p.23 (in Japanese)

Makoto Inoue (2002) Power of residents needed in forestry issue : Forests are not protected because of the failures of experts and other mistakes. *International Herald Tribune and the Asahi Shimbun, September 23, 2002*. Tokyo: The New York Times, The Washington Post, and The Asahi Shimbun.

Makoto Inoue (2003) Diverse involvement protects forests : Local people's participation in cooperation with the outsiders. *Asahi Shimbun, March 12, 2003*. Tokyo: Asahi Shimbun. p.18 (in Japanese)

Makoto Inoue (2003) Diverse management of Indonesian forests : A new governor gives locals a greater say in their resources. *International Herald Tribune and the Asahi Shimbun, April 4, 2003*. Tokyo: The New York Times and The Asahi Shimbun.

Makoto Inoue (2003) Toward collaboration by applying the concept of new commons. *Asahi-shinbun*. 30 October 2003. Tokyo: Asahi-shinbun-sha. (in Japanese)

Makoto Inoue (2003) Environmental restoration by applying collaborative governance. *Mainichi-shinbun*. 14 December 2003. Tokyo: Mainichi-shinbun-sha. (in Japanese)

Makoto Inoue (2004) Why are tropical forests being destroyes?. *Asia Pacific Perspective, Japan+*. Vol.1, No.9. Tokyo: Jijigahou-sha. pp.36-39

Kakizawa Hiroaki (2002) Review of Annual Report of Forest. *Journal of Association of Agriculture and Forestry Statistics*. 52(7). Tokyo: Association of Agriculture and Forestry Statistics. pp.24-29

Kakizawa Hiroaki (2002) Review of Annual Report of Forest. *Journal of Association of Agriculture and Forestry Statistics*. 52(8). Tokyo: Association of Agriculture and Forestry Statistics. pp.24-30

Kakizawa Hiroaki (2002) Community Based Forest Conservation. *Monthly Magazine of Postal Life insuarance*. 293. Tokyo: Postal Life Insuarance Association. pp.10-19

Kakizawa Hiroaki (2002) Concept of Wildlife Management. *Nature in Kanagawa*. 65. Yokohama: Knagawa nature conservation Associaition. pp.28-31

Environmental Education Project (EE)

Bishnu Bhandari (2001) Book Review for "Environment, Education and Soceity in the Asia-Pacific". *International Review for Enviromental Strategies : Towards the Earth Summit 2002*. Volume 2. Hayama: IGES. pp.357-360

Bishnu Bhandari (2002) Documentation of Pioneering Examples. *Interim Report FY2001*. Hayama: IGES Environmental Education Project. pp.3-14

Bishnu Bhandari (2002) Preparation of Education Material on Wetlands. *Interim Report FY2001*. Hayama: IGES Environmental Education Project. p.68

Akihiro Nakahata (2002) Ecotourism in Costa Rica. *Interim Report FY 2001*. Hayama: IGES Environmental Education Project. pp.32-35 (in Japanese)

Akihiro Nakahata (2002) Ecotourism in East Malaysia. *Interim Report FY 2001*. Hayama: IGES Environmental Education Project. pp.36-37 (in Japanese)

Masahiro Takahashi (2002) Comparative Analysis of Environmental Education in Northeast Asia. *Interim Report FY 2001*. Hayama: IGES Environmental Education Project. pp.25-31

Masahiro Takahashi (2002) Enforcement of Environmental Education in Business. *New Encyclopedia on Education*, edited by Katsuya Endo. Tokyo: Bensey Publishing Inc.. pp.425-428

Masahiro Takahashi (2002) Environmental Education in School. *New Encyclopedia on Education*, edited by Katsuya Endo. Tokyo: Bensey Publishing Inc.. pp.404-409

Masahiro Takahashi (2002) Experences of Kowgai Education. *Invitation to Environmental Education*edited by Munetsugu Kawashima et al. Minerva Text Library 23. Kyoto: MINERVA SHOBO. pp.17-25

Masahiro Takahashi, Osamu Abe (2002) Japanese Experences and Trend on Environmental Education. *Interim Report FY 2001*. Hayama: IGES Environmental Education Project. pp.15-24

Masahiro Takahashi (2002) Sustainable Development. *Development Education Keywords 51*. Development Education Booklet Series No. 5. Tokyo: Development Education Council Of Japan. pp.58-59

Business and the Environment Project (BE)

Kenjiro Hirayama (2001) The Study of "Environmental Information Disclosure" at IGES Kansai Research Centre. *E-alert*. No. 005. Hayama: IGES. (Mail News distributed by IGES)

Kenjiro Hirayama (2002) Corporate management and the environmental communication. *Tax Payment monthly report*. Feb, 2002. Osaka: Tax Payment Associate. (in Japanese)

Kenjiro Hirayama (2002) Recommendation of Corporate Environmental Reporting for Education. *Newsletter of National Institute on Consumer Education*. Dec, 2002. Tokyo: National Istitute on Consumer Education.

Kenjiro Hirayama (2003) Report on the 5th Round seminar for Affiliate Members of IGES : Issues and Potentialities of Corporate Environmental Reporting. *E-alert*. No.013. Hayama: IGES.

Eriko Nashioka (2002) Environmental Accounting. *Aozora*. 19. Kobe: Hyogo Prefecture. (in Japanese)

Yasuhiro Kanda (2004) Questionnaire Survey Results on Corporate Sustainability Management of Chinese, Japanese and Korean Companies. *IGES Website (coming soon)*. Kobe: IGES.

Eriko Nashioka (2003) Report on the International Symposium of Environmental Accounting 2003. *E-alert*. No.012. Hayama: IGES. (Mail News distributed by IGES)

Long-Term Perspective and Policy Integration Project (LTP)

Kazuo Matsushita, Yoshihiro Natori, Takashi Matsumura, Kenichi Imai, Gueye Kamal, Lisa Hiwasaki (2001) Northeast Asia Subregional Report for the World Summit on Sustainable Development. *Synthesis Report for Asia and the Pacific*. (Distributed at the Asia Pacific Preparatory Meeting in Phnom Penh, November 2001. Commissioned work from the Task Force for the Preparation of WSSD in Asia and the Pacific)

Lisa Hiwasaki (2001) Book Review for "Earth Summit 2002: A New Deal". *International Review for Environmental Strategies (IRES)*. Vol.2 No. 2. Hayama: IGES. pp.354-356

Takashi Otsuka and Kazuo Matsushita (2001) The Regional Preparatory Process for WSSD (Rio+10) : Contributions and Involvement of IGES. *International Review for Environmental Strategies (IRES)*. Vol. 2. No. 1. Hayama: IGES. pp159-172

Naoko Matsumoto (2002) Book Review for "New Structures for Global Environmental Policy". *International Review for Environmental Strategies (IRES)*. Vol3. No.2. Hayama: IGES.

Kamal Gueye, Yohei Harashima, Ko Nomura and Ancha Srinivasan (2004) "Transition in Environmental Governance in Asia – Implications at Local and International Level". *IHDP Update Newsletter*. 04/2003. Bonn: International Human Dimensions Programme on Global Environmental Change.

Report of the Second Phase Strategic Research (April 2001–March 2004):
List of Achievements

eCourses

eCourse title	English	Japanese	Other info
Climate Policy			
Introduction to Climate Change	√		
Analytical Tools for Climate Change Strategy	√		
Climate Change Mitigation	√		
Mitigation Options in Forestry	√		
ISO14001 Implementation for Companies	√	√	
Improving Communication and Facilitating Consensus in Expert Review Teams	√		Collaboration with UNFCCC
Urban Environmental Management			
Urban Environmental Management System (EMS)	√		Collaboration with UNEP/IETC
Environmental Rist Assessment	√		Collaboration with UNEP/IETC
Sustainable Building and Construction	√		Collaboration with UNEP/IETC
Forest Conservation			
Participatory Forest Management in South-East Asian Countries	√	√	Collaboration with FC
Carbon Budget Model of Boreal Forest	√		
Environmental Education			
Community-based Learning for Sustainability	√		
Long Term Perspective and Policy Integration			
ICT and Environment	√		Collaboration with LTP
Freshwater Actions (Resource Package)			Resource Package
Freshwater Actions (Simulation)			Simulation
Business and the Environment			
EMS Auditing	√		
ISO 14001 Staff Training			
ISO 14001 for Local Governments			
ISO 14001 Implementation for Companies			
Skills			
Sustainable Development			
Implementing Sustainable Development	√		
Strategic Planning for Environmental Organization	√	√	
Environmental Leadership	√		
Project Planning and Implementation			
Implementing eLearning Projects	√		
Project Evaluation	√		
Leadership	√	√	
Management	√		
Risk Management	√		
Presentation Skills	√	√	
Conflict Resolution	√	√	
Consensus Building	√	√	
Project Planning and Implementation			
Nine Steps from Authoring to Uploading on eCourse		√	
How to structure Online Course and Lessons	√		
How to Use Course Maker	√		

Workshops and Meetings

Climate Policy Project (CP)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place	other info
Apr. 11, 2001	IGES Brainstorming Forum : Perspective for Kyoto Regime			Nippon Press Center Building (Tokyo)	
Apr. 12-13, 2001	Symposium on Kyoto Mechanism : For Workable and Dependable Emission Trading		Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry, New Energy and Industrial Technology Development Organization, Global Industrial and Social Progress Research Institute	United Nations University International Conference Room (Tokyo)	
May 29, 2001	IGES Open Forum to Address Global Warming 2002	Open		JA Bldg. (Tokyo)	
May 31-Jun. 1, 2001	Climate Policy Dialogue in Korea		Korea Environment Institute, UNEP Collaborating Centre on Energy & Environment	Seoul (Korea)	
Aug. 23, 2001	Post-COP6 Seminar Part II	Open	Global Industrial and Social Progress Research Institute	Tokai Daigaku Koyu Kaikan (Tokyo)	
Sept. 6-7, 2001	Expert Meeting on Climate Change and Sustainable Development		Korea Environment Institute	Seoul (Korea)	
Sept. 10-14, 2001	Work Plan Meeting for APN Project on Policy Design of Climate Change Collaboration in Northern Asia : Possible Options and Constraints for Cooperative Effort between Russia, Japan, China and Korea		Russia Academy of Science	Moscow (Russia)	
Oct. 16, 2001	The 1st Open Forum on Global Warming Part II	Open		Tokai Daigaku Koyu Kaikan (Tokyo)	
Nov. 5, 2001	Climate Policy Dialogue in Asia	Open		Marrakech (Morocco)	
Nov. 22, 2001	The 2nd Open Forum on Global Warming Part II	Open		Fukoku Seimei Building (Tokyo)	
Nov. 26-27, 2001	Climate Policy Dialogue in India : North-South Dialogue on Climate Policy -The Way Forward		TATA Energy Research Institute, UNEP Collaborating Centre on Energy & Environment	New Delhi (India)	
Dec. 3, 2001	Post-COP7 Seminar	Open	Global Industrial and Social Progress Research Institute	Nadao Hall (Tokyo)	
Dec. 17-18, 2001	International Workshop on Climate Policy in Asia			Shinagawa Prince Hotel (Tokyo)	
Jan. 17-18, 2002	IGES/NIES Workshop on GHG Inventories for Asia-Pacific Region		National Institute for Environmental Studies	Shonan Village Center (Hayama)	
Feb. 27-28, 2002	Final Meeting for APN Project on Policy Design of Climate Change Collaboration in Northern Asia : Possible Options and Constraints for Cooperative Effort between Russia, Japan, China and Korea			Cheju (Korea)	
Mar. 25, 2002	Brainstorming Meeting on Domestic Emission Trading Scheme between Japan and Korea			Busan (Korea)	
May 27-28, 2002	Climate Policy Dialogue in Thailand		UNEP Collaborating Centre on Energy & Environment, Denmark, Thailand Environment Institute, Thailand	Bangkok (Thailand)	
May 30-31, 2002	Climate Policy Dialogue in Vietnam/Cambodia: Further International Cooperation for Promoting P & Ms for Climate Change		UNEP Collaborating Centre on Energy & Environment, Denmark, National Environment Agency, Vietnam	Ho Chi Minh City (Vietnam)	

Date	Title of the Workshop	Open / Closed	Co-organizer	Place	other info
July 15-16, 2002	Informal Meeting on Actions against Global Warming: The Kyoto Protocol and Beyond	Closed		Mita Conference Center (Tokyo)	
July 19, 2002	Symposium on Further Actions against Climate Change		Ministry of Foreign Affairs	Mita Conference Center (Tokyo)	
Aug. 22, 2002	Open Forum on a Proposal on Domestic Climate Policies and Measures in Japan	Open		Fukoku Seimei Building (Tokyo)	
Nov. 19-20, 2002	The International Expert Meeting on Climate Change and Sustainable Development		Korea Energy Economics Institute	Seoul (Korea)	
Nov. 28, 2002	Post-COP8 Seminar	Open	Global Industrial and Social Progress Research Institute	Tokai Daigaku Koyu Kaikan (Tokyo)	
Dec. 5-6, 2002	Training Workshop on Climate Change Issues		UNEP Collaborating Centre on Energy & Environment, Denmark	Phnom Penh (Cambodia)	
Dec. 9-10, 2002	International Workshop on Climate Change Energy Modeling			Yokohama Bay Sheraton Hotel (Yokohama)	2002 Consultancy work for Ministry of Education, Science, Sports and Culture
Feb. 12-13, 2004	US Japan Joint Workshop on Climate Policy	Open/Closed	Resources for the Future	Washington, DC (US)	
Oct. 7, 2003	IGES/NIES Open Symposium: International Climate Regime beyond 2012: Issues and Challenges	Open	NIES	Fukoku Seimei Building (Tokyo)	
Oct. 15, 2003	CDM Awareness-raising Workshop in Surabaya	Closed	Yayasan Bina Usaha Lingkungan (YBUL)	Surabaya (Indonesia)	
Dec. 18, 2003	ICS-CDM Project Initiation Workshop	Closed	MOE-Cambodia	Phnom Penh (Cambodia)	
Jan. 21, 2004	Post-COP9 Seminar	Open	GISPRI	Nadao Hall (Tokyo)	
Jan. 26, 2004	CDM seminar for DOE-Philippines	Closed	Mitubishi Security	Manila (Philippines)	

Urban Environmental Management Project (UE)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Jun. 12-15, 2001	The 1st APN Working Group Meeting : Study on Urban Policy Integration for Energy Related Issues in Selected Asian Mega-Cities	Closed		Beijing (China)
Aug. 8, 2001	Thai Workshop on the Implementation of the Kitakyushu Initiative for a Clean Environment	Closed (for local/national government in Thailand)	UNESCAP	Bangkok (Thailand)
Sep. 4-6, 2001	The 2nd APN Working group Meeting : Study on Urban Policy Integration for Energy Related Issues in Selected Asian Mega-Cities	Closed		Seoul (Korea)
Nov. 20-21, 2001	First Meeting of the Kitakyushu Initiative Network : For Implemenation of the Kitakyushu Initiative for a Clean Environment	Closed (for local/national governments of Asia-Pacific, donor community, international initiatives, academia)	UNESCAP	Kitakyushu International Conference Center (KICC), Rihga Royal Hotel Kokura (Kitakyushu)
Jan. 23-24, 2002	Workshop of IGES/APN Mega-City Project : Policy Integration for Energy Related issues in Asian mega-Cities	Closed	APN	Rihga Royal Hotel (Kitakyushu)
Jan. 25, 2002	Symposium on Sustainable Urban Development in Asia : Policy Integration & Industrial Transformation towards Sustainable Urban Energy Use for Cities in Asia	Open	APN	Rihga Royal Hotel (Kitakyushu)
July 4-7, 2002	APN Working Group Meeting	Closed		Beijing (China)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Jul. 9-10, 2002	The International Seminar of Global 500 China Forum	Open	Weihai Municipal Government	Weihai (China)
Aug. 20-23, 2002	APN Project Database construction	Closed		Seoul (Korea)
Sep. 19-20, 2002	1st Thematic Seminar : Kitakyushu Initiative Seminar on Solid Waste Management	Closed (for local governments in Asia-Pacific)	UNESCAP, MoEJ	KICC (Kitakyushu)
Nov. 4, 2002	2nd Thematic Seminar : Kitakyushu Initiative Seminar on Public-Private Partnerships for Urban Water Supply and Wastewater Treatment	Closed (for local governments in Asia-Pacific)	UNESCAP, MoEJ	Beijing (China)
Nov. 5, 2002	International Seminar on Financial Mechanisms for Environmental Protection	Open	Japan Bank for International Cooperation (JBIC), China Council for International Cooperation on Environment and Development (CCICED) Secretariat	Beijing (China)
Nov. 6, 2002	First Task Force Meeting for “Financial Mechanisms for Environmental Protection”	Closed (for task force members)	Co-chair of Task Force	Beijing (China)
Nov. 7, 2002	Core Research Team Meeting for Financial Mechanisms for Environmental Protection	Closed (for core research team)	CCICED	Beijing (China)
Dec. 2-3, 2002	Workshop of IGES/APN Mega-City in Hayama	Closed		IGES (Hayama)
Feb. 4-5, 2003	International Workshop on Policy Integration Towards Sustainable Urban Energy Use for Cities in Asia	Closed	APN	East West Center (Hawaii)
Feb. 20-21, 2003	3rd Thematic Seminar : Kitakyushu Initiative Seminar on Urban Air Quality Management	Closed (for local governments in Asia-Pacific)	UNESCAP	Bangkok (Thailand)
Mar. 11, 2003	The IGES-KEI International Workshop on “The Role of Planning Practices toward Sustainable Urban Environment in Asia”: Environmental Consequences of Metropolitan Expansion in Asia	Closed	KEI	Conference Hall at KEI (Seoul)
Mar. 18-19, 2003	2nd Core Research Team Meeting for Financial Mechanisms for Environmental Protection	Closed (for task force members)	CCICED	Beijing (China)
Aug. 27-28, 2003	4th Thematic Seminar: Kitakyushu Initiative Seminar on Industrial Relocation	Closed	UNESCAP, MoEJ, Ho Chi Minh City	Ho Chi Minh (Vietnam)
Aug. 24-29 2003	Surabaya Air Quality Workshop	Closed	KEI	Surabaya (Indonesia)
Oct. 15-17, 2003	2nd Meeting of the Kitakyushu Initiative Network	Closed	UNESCAP, MoEJ, MoFA; Support by SEPA, Weihai	Weihai (China)
Oct. 28, 2003	World Partnership Conference on Sustainable Development: Local Governments & Community-based activities and partnerships (Japan National Seminar)	Closed	UNESCAP, MoEJ, Kitakyushu City	KICC (Kitakyushu)
Nov. 6, 2003	Local Action and Cooperation: How to work together for urban sustainability for the Asian Region (ICLEI World Congress, 6 November 2003, Athens, Greece)	Closed	ICLEI Japan	Athens (Greece)
Dec. 17-19, 2003	Local Air Quality Management (Better Air Quality 2003)	Open	CAI-Asia	Manila (Philippines)
Jan. 20-21, 2004	5th Thematic Seminar: Kitakyushu Initiative Seminar on Public Participation for Urban Environmental Management	Closed	UNESCAP, MoEJ, Kitakyushu City	KICC (Kitakyushu)
Jan. 28-30, 2004	International Workshop on Policy Integration Towards Sustainable Urban Energy Use for Asian Cities: Interating Local Air Polution and Greenhouse Gas Emissions Concerns	semi-closed	LTP Project	IGES (Hayama)

Forest Conservation Project (FC)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Jun. 2, 2001	1st Internal Workshop on Forest Conservation Project	Closed (FC staff members and collaborators living in Japan)		Faculty of Agriculture, The University of Tokyo (Tokyo)
Jul. 26, 2001	Steering Committee Meeting in Indonesian Studies	Closed (FC members and collaborators in Indonesia as well as Ministry of Forestry and Center for International Forestry Research)	Indonesian Institute of Sciences	Jakarta (Indonesia)
Jul. 31, 2001	Local Workshop in East Kalimantan : Integrating Research and Development -Strategic Planning in Developing People's Participation in Forest Management	Closed (FC member, Center for Social Forestry (collaborator), government officials, military and police officers, villagers, and NGOs).	Center for Social Forestry, Mulawarman University	Sendawar, West Kutai District, East Kalimantan (Indonesia)
Aug. 8, 2001	Steering Committee Meeting in Russian Studies	Closed (FC member, Economic Research Institute (collaborator), government officials, NGOs, Forestry institute and state representative	Economic Research Institute of the Far Eastern Branch of the Russian Academy of Sciences	Khabarovsk (Russia)
Sep. 3, 2001	Coordination Committee Meeting in Laotian Studies	Closed (IGES Researcher and Research Collaborator,Teacher of Faculty of Forestry , National University of Laos,Department of Forestry, Ministry of Agriculture and Forestry)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
Sep. 5, 2001	Local Meeting in Savannakhet	Closed (IGES Researcher and Research Collaborator,Teacher of Faculty of Forestry , National University of Laos,Provincial Agriculture and Forestry Office of Savannakhet Province)	Provincial Agricultural and Forestry Office in Savannakhet	Savannakhet (Laos)
Sep. 25, 2001	Local Meeting in Khabarovsk Krai	Closed (FC member, Economic Research Institute (collaborator), administration officer, villager, forest management organization, forest industry representatives)	Lazo Raion Administration	Lazo Raion (Russia)
Sep. 27, 2001	Local Meeting in Khabarovsk	Closed (FC member, Economic Research Institute (collaborator), government officials, NGOs, Forestry institute)	Economic Research Institute of the Far Eastern Branch of the Russian Academy of Sciences	Khabarovsk (Russia)
Oct. 22, 2001	Local Meeting in Oudomxay	Closed (IGES Researcher and Research Collaborator, Teacher of Faculty of Forestry, National University of Laos, Provincial Agriculture and Forestry Office of Oudomxay Province)	Provincial Agricultural and Forestry Office in Oudomxay	Oudomxay (Laos)
May 22, 2002	Workshop on FoF-IGES Forest Conservation Project FY 2001	Closed (IGES research collaborator, teacher and students of Faculty of Forestry, National University of Laos)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
May 25, 2002	2nd Internal Workshop on Forest Conservation Project	Closed (FC staff members and collaborators living in Japan)		Faculty of Agriculture, The University of Tokyo (Tokyo)
July 14 and 27, 2002	Working Group Meeting on Village Action Guidelines	Closed (IGES and Center for Social Forestry)	Center for Social Forestry, Mulawarman University	Samarinda (Indonesia)
July 30, 2002	Steering Committee Meeting of Indonesian Studies	Closed (participants are only IGES and its collaborators and invited resource person: Participatory Dialogue Committee from Bandung, West Java)	Indonesian Institute of Sciences	Jakarta (Indonesia)
Aug. 15, 2002	Steering Committee Meeting in Russian Studies	Closed (FC member, Economic Research Institute (collaborator), Government Officials, NGOs, Forestry Institute and State Representative)	Economic Research Institute of the Far Eastern Branch of the Russian Academy of Sciences	Khabarovsk (Russia)
Nov. 27, 2002	Village Meeting in Khabarovsk	Open	Cita village	Khabarovsk (Russia)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Dec. 10, 2002	Coordination Committee Meeting in Laotian Studies	Closed (IGES Research Collaborator, Teacher of Faculty of Forestry , National University of Laos)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
Dec. 10, 2002	Working Group Meeting on Village Action Guideline (VAG) and National Policy Recommendation (NPR)	Closed (IGES Research Collaborator, Teacher of Faculty of Forestry , National University of Laos, Department of Forestry, Ministry of Agriculture and Forestry, National Agriculture and Forestry Extension Service, Ministry of Agriculture and Forestry, Provincial Agriculture and Forestry Office of Savannakhet Province,,Provincial Agriculture and Forestry Office of Oudomxay Province)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
Aug. 31, 2003	Local Workshop in Sendawar, Wset Kutai, Indonesia	Closed (FC member, Center for Social Forestry (collaborator), government officials, military and police officers, villagers, and NGOs).	Center for Social Forestry, Mulawarman University, District ForestryService, West Kutai	Sendawar, West Kutai District, East Kalimantan (Indonesia)
Oct.7-9, 2003	International Workshop on Supporting Local Participation in Forest Management	Closed (FC members, Economic Research Institute (Russian colaborator), Center for Social Forestry and Indonesian Institute of Sciences (Indonesian collaborator), Russian NGOs, Far East Forestry Institute and American Project “Forest” Representatives)	Economic Research Institute of the Far Eastern Branch of the Russian Academy of Sciences	Khabarovsk (Russia)
Sept. 1, 2003	Coordination Committee Meeting in Laotian Studies	Closed (IGES Research Collaborator,Teacher of Faculty of Forestry , National University of Laos)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
Sept. 1, 2003	Working Group Meeting on Village Action Guideline (VAG),Local Policy Guidelines and National Policy Recommendation (NPR)	Closed (IGES Research Collaborator, Teacher of Faculty of Forestry, National University of Laos, Department of Forestry, Ministry of Agriculture and Forestry, National Agriculture and Forestry Extension Service, Ministry of Agriculture and Forestry, Provincial Agriculture and Forestry Office of Savannakhet Province, Provincial Agriculture and Forestry Office of Oudomxay Province)	Faculty of Forestry, National University of Laos	Vientiane (Laos)
March. 15 2004	Coordination Committee Meeting in Laotian Studies(For extension fo guidelines)	Closed (IGES Research Collaborator, Teacher of Faculty of Forestry , National University of Laos, Department of Forestry, Ministry of Agriculture and Forestry, National Agriculture and Forestry Extension Service, Ministry of Agriculture and Forestry, Provincial Agriculture and Forestry Office of Savannakhet Province, Provincial Agriculture and Forestry Office of Oudomxay Province)	Faculty of Forestry, National University of Laos	Vientiane (Laos)

Environmental Education Project (EE)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
May 16, 2001	Wise Use of Wetlands and Education		Ramsar Center Japan	Forum 8 (Shibuya)
Jul. 10-Aug. 10, 2001	Environmental Education Training for NGO Staff in Indonesia	Closed (Indonesia NGO Staff only)	JICA	IGES (Hayama) ; JICA Tokyo International Centre (Tokyo)
Aug. 27-30, 2001	Asian Wetlands Symposium		Ramsar Center Japan, University Sains Malaysia	Penang (Malaysia)
Oct. 5, 2001	Global Forum on Education for a Sustainable Development		Organization for Industrial, Spiritual and Cultural Advancement - International	National Olympic Memorial Center (Tokyo)
Nov. 11-16, 2001	9th International Conference on the conservation and Management of Lakes : Partnership for Sustainable Lake in Lake Environment		International Lake Environment Committee, Shiga Prefecture	Biwako Hall (Otsu)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
May 26 2002	Considering Strategies for Environmental Education in the Asia-Pacific Region : Findings of IGES research on environmental education	Closed	Japanese Society of Environmental Education	Miyagi University of Education (Sendai)
July 1-26, 2002	Environmental Education Training for NGO Staff in Indonesia	Closed (Indonesia NGO Staff only)	JICA	IGES (Hayama) ; JICA Tokyo International Centre (Tokyo)
Jan. 7-9 2003	Workshop on the Evaluation of Educational Materials	Closed (IGES, Rumsar Center Japan, Mahidol University only)	Rumsar Center Japan and Mahidol University, Thailand	Kasetsart University (Bangkok)
July 31-Aug 1, 2003	Globalism and 'Education for Sustainable Development' in the Asia and Pacific Resion			Rikkyo University (ikebukuro)
Aug 7-8, 2003	Evaluation & Strengthening Workshop on Environmental Education Training and program in Indonesia	Closed		Indonesia
Aug 25-30 2003	The workshop onEducation for Sustainable Development in Nepal	Closed	SchEMS	Kathmandu (Nepal)
Oct. 6-8 2003	International Workshop on conservationand Wise Use of Mangroves in Southeast Asia , Bhander Seri Begawan, Burunei Darussalum	Closed		Burunei

Business and the Environment Project

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Sep. 26, 2001	International Symposium on “Sustainable Management” : Global Trends of Sustainable Management	Open		Shin Kobe Oriental Hotel (Kobe)
Sep. 27, 2001	International Workshop on “Environmental Accounting” : Inauguration of Environmental Management Accounting Network - Asia Pacific (EMAN-AP)	Open		Shin Kobe Oriental Hotel (Kobe)
Sep. 30, 2001	The Current Situation and Challenge of the Environmental Corporate Evaluation : Contact Point of Internal and External Evaluation	Open	the Society for Environmental Economics and Policy Studies	Kyoto International Conference Hall (Kyoto)
Jan. 24, 2002	Seminar on Countermeasures against global warning : COP7 and Future of Business Activities	Open	Global Environment Forum-KANSAI	Hankyu grand Building (Osaka)
Mar. 8, 2002	Environmental Reporting Seminar : Possible Influence of GRI Guidelines that is in the Revision Process	Open		IHD Building (Kobe)
July.23-24, 2002	The 2nd Tripatite Roundtable on Enviromental Industries (China, Korea, and Japan)	Open	Ministry of the Environment,Hyogo Prefecture	Awaji Yumebutai International Conference Center (Kobe)
July.25, 2002	International Symposium 2002 “Business and the Environment”	Open		PortPia Hotel Kobe (Kobe)
Sep.20, 2002	The 1st study group meeting of environmental accounting for corporate management	Open		Osaka City University Hall (Osaka)
Nov.2002-July 2003	The Study Meeting of Environmental Accounting for Corporate Management	Closed		IHD Building (Kobe)
Jan.31, 2003	International Symposium on Environmental Accounting 2003 : Cutting Edge of Environmental Accounting for Corporate Management and Environmental Conservation -Environmental Accounting in Japanese Corporate Management and Potentialities of Material Flow Cost Accounting-	Open		Osaka International Convention Center (Osaka)
Oct.13-14, 2003	Symposium on Governance of Markets for Sustainability	Open		JDZB-WI (Berlin, Germany)
Mar. 5, 2004	International Symposium on “Business and the Environment” : Development of Environmental Management Accounting and Green Supply Chain Management	Open		Kobe International Convention Hall (Kobe)

Long-Term Perspective and Policy Integration Project (LTP)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place	other info
Sept. 3-4, 2001	World Summit for Sustainable Development International Eminent Persons Meeting on Inter-linkages Bridging Problems and Solutions to Work Towards Sustainable Development		United Nations University, Ministry of Foreign Affairs, Japan, Ministry of the Environment, Japan, GLOBE International	United Nations University (Tokyo)	Supported by UNEP, IGES, Global Environmental Forum
Sept. 6-7, 2001	A Joint Workshop on Asia-Pacific Environmental Innovation Strategy Project (APEIS) and Millennium Ecosystem Assessment (MA)		Ministry of the Environment of Japan, Asia-Pacific Network for Global Change Research (APN), United Nations University Institute of Advanced Studies (UNU/IAS)	United Nations University (Tokyo)	Comissioned for MoEJ, FY2001
Sept. 7, 2001	Consultation Meeting on RISPO Research Collaboration			United Nations University (Tokyo)	Comissioned for MoEJ, FY2001
Sept. 27, 2001	The Preparatory Meeting of Asia-Pacific Forum for Environment and Development (APFED)		Ministry of the Environment of Japan	Capital Tokyu Hotel (Tokyo)	Comissioned for MoEJ, FY2001
Oct. 14, 2001	APFED Organizational Meeting		Ministry of the Environment of Japan	Capital Tokyu Hotel (Tokyo)	Comissioned for MoEJ, FY2001
Oct. 21-23, 2001	Kyoto Environmental Sociology Conference, Workshop 7, Comparison of Environmental Attitude in Asia (Eco-consciousness Workshop)		Research Committee 24 “Environment and Society” of International Sociological Association, Bukkyo University	Bukkyo University (Kyoto)	Comissioned for MoEJ, FY2001
Jan. 10, 2002	The Multistakeholder Meeting for the First Substantive Meeting of APFED		Ministry of Environment of Japan, Economic and Social Commission for Asia and the Pacific (UN ESCAP), United Nations Environment Programme (UNEP), Thailand Environment Institute (TEI)	UN Conference Centre (Bangkok, Thailand)	Comissioned for MoEJ, FY2001
Jan. 11, 2002	Expert Meeting for the First Substantive Meeting of APFED		Ministry of Environment of Japan, UN ESCAP, UNEP, TEI	UN Conference Centre (Bangkok, Thailand)	Comissioned for MoEJ, FY2001
Jan. 12-13, 2002	The First Substantive Meeting of APFED (APFED 1)		UN ESCAP, UNEP, the Royal Thai Government Ministry of Science, Technology and Environment, and the Ministry of the Environment of Japan	UN Conference Centre (Bangkok, Thailand)	Comissioned for MoEJ, FY2001
Mar. 29, 2002	APFED Expert Meeting (Freshwater Resources)			United Nations University (Tokyo)	Comissioned for MoEJ, FY2001
Apr. 1, 2002	APFED Expert Meeting (Trade and Finance)			United Nations University (Tokyo)	Comissioned for MoEJ, FY2002
Apr. 2, 2002	APFED Expert Meeting (Renewable Energy)			India Habitat Centre (New Delhi, India)	Comissioned for MoEJ, FY2002
May. 3. 2002	The Multistakeholder Meeting for the Second Substantive Meeting of Asia Pacific Forum for Environment and Development		Ministry of Environment of Japan, Economic and Social Commission for Asia and the Pacific (UN ESCAP), United Nations Environment Programme (UNEP)	Jakarta (Indonesia)	Comissioned for MoEJ, FY2002
May. 4-5, 2002	The Second Substantive Meeting of APFED (APFED 2)		UN ESCAP, UNEP, the State Ministry of the Environment of Indonesia, and the Ministry of the Environment of Japan	Mandarin Oriental Hotel (Jakarta, Indonesia)	Comissioned for MoEJ, FY2002
Jun. 3, 2002	Side-Event of PrepComIV for WSSD “New partnership initiatives toward Johannesburg and beyond: Creating a new regional network for sustainable development,”		Ministry of the Environment of Japan, UN ESCAP, UNEP, and UNU/IAS	Bali International Conference Centre (Bali, Indonesia)	Comissioned for MoEJ, FY2002

Date	Title of the Workshop	Open / Closed	Co-organizer	Place	other info
Aug. 27, 2002	WSSD Parallel Event “Innovations from the Asia-Pacific toward Sustainable Development: Initiatives on Science & Technology for Improved Environmental Policy”		Ministry of the Environment of Japan	Japan Pavilion in Ubuntu Village (Johannesburg, South Africa)	Comissioned for MoEJ, FY2002
Aug. 28, 2002	WSSD Parallel Event “APFED Recommendations and Commitments: New Partnership Initiatives for Knowledge Network and Capacity Building”		the Ministry of the Environment of Japan, UNEP, UN ESCAP	Japan Pavilion in Ubuntu Village (Johannesburg, South Africa)	Comissioned for MoEJ, FY2002
Oct. 16-17, 2002	The Pre-session for the Third World Water Forum on: " Water Quality Monitoring and Modelling -The Present Situation and Partnership for the Future-"		Ministry of the Environment of Japan, Japan Society on Water Environment, United Nations University	United Nations University (Tokyo)	Comissioned for MoEJ, FY2002
Nov. 4, 2002	Research Team Meeting on RISPO-NGO (Promoting environmental education by NGOs)			University of Indonesia (Jakarta, Indonesia)	Comissioned for MoEJ, FY2002
Nov. 12-13, 2002	The 1st Research Team Meeting on RISPO-CBT (Facilitating community-based tourism in protected areas)	Closed (for members of research team)		IGES Tokyo office (Tokyo)	Comissioned for MoEJ, FY2002
Dec. 7-8, 2002	The 1st Research Team Meeting on RISPO-SME (Improving environmental performance of small and medium-sized enterprises)	Closed (for researchers from TEI and TERI)		IGES Tokyo office (Tokyo)	Comissioned for MoEJ, FY2002
Dec. 9-10, 2002	The 1st Research Team Meeting on RISPO-LINK (Local/Indigenous knowledge–based sustainable resource management)		Mahidol University	Salaya Pavilion, Mahidol University (Bangkok, Thailand)	Comissioned for MoEJ, FY2002
Dec. 15, 2002	The 1st Research Team Meeting on RISPO-Recycle (Creation of inter-boundary market for recyclable materials)			IGES (Hayama)	Comissioned for MoEJ, FY2002
Jan. 22, 2003	The Expert Meeting for the Third Substantive Meeting of APFED		Ministry of the Environment of Japan, State Environment Protection Agency of PRC(tbc)	Guilin (China)	Comissioned for MoEJ, FY2002
Jan. 23, 2003	The Multistakeholder Meeting for the Third Substantive Meeting of APFED		Ministry of the Environment of Japan, State Environment Protection Agency of PRC(tbc)	Guilin (China)	Comissioned for MoEJ, FY2002
Jan. 25-26, 2003	The Third Substantive Meeting of APFED (APFED3)		Ministry of the Environment of Japan, State Enviroment Protection Agency of PRC, UN ESCAP, UNEP	Guilin (China)	Comissioned for MoEJ, FY2002
Jan. 28-29, 2003	The 1st Research Team Meeting on RISPO-Finance (Innovative financing for renewable energy development)		Energy Research Institute (ERI)	Energy Research Institute (ERI) (Beijing, China)	Comissioned for MoEJ, FY2002
Jan. 28-29, 2003	The 1st Research Team Meeting on RISPO-EST (Development of environmentally sustainable transport systems in urban areas)		Energy Research Institute (ERI)	Energy Research Institute (ERI) (Beijing, China)	Comissioned for MoEJ, FY2002
Jan. 30-31, 2003	The 1st Research Team Meeting on RISPO-Biomass (Promotion of biomass energy)			IGES Tokyo office (Tokyo)	Comissioned for MoEJ, FY2002
Mar. 14-15, 2003	The First Meeting of Research Team for RISPO- EE by NGOs(Networking Stakeholders for Action)		RMI-Indonesian Institute for Forest and Environment	University of Indonesia (Jakarta, Indonesia)	Comissioned for MoEJ, FY2002
Mar. 21, 2003	Session at the Third World Water Forum (tbd)		Ministry of the Environment of Japan, Japan Society on Water Environment, United Nations University	Kyoto Takaragaike Prince Hotel (Kyoto)	Comissioned for MoEJ, FY2002

Date	Title of the Workshop	Open / Closed	Co-organizer	Place	other info
Mar. 27-28, 2003	The 1st Plenary Workshop for RISPO			Grand Tower Inn Hotel (Bangkok , Thailand)	Comissioned for MoEJ, FY2002
Mar. 30-31, 2003	The 2nd Meeting of Research Coordination Committee of APEIS		Ministry of the Environment of Japan	Grand Tower Inn Hotel (Bangkok , Thailand)	Comissioned for MoEJ, FY2002
July. 28, 2003	Expert Advisory Meeting on Development of environmentally sustainable transport systems in urgan areas			IGES (Hayama)	Comissioned for MoEJ, FY2003
July 20-28, 2003	The 2nd Research Team Meeting on RISPO-Finance (Innovative financing for renewable energy development)		The Energy and Resources Institute (TERI)	New Delhi (India)	Comissioned for MoEJ, FY2003
Aug. 23-24, 2003	The Fourth Substantive Meeting of APFED (APFED 4)		Ministry of the Environment of Japan UNESCAP, UNEP, The Government of Mongolia	Ulan Bator (Mongolia)	Comissioned for MoEJ, FY2003
Nov. 20-23, 2003	RISPO Research Team Meeting	Closed (for members of research team)		Bangkok (Thailand)	Comissioned for MoEJ, FY2003
Dec. 11-12, 2003	APFED BBP Workshop			IGES (Hayama)	Comissioned for MoEJ, FY2003
Dec. 16-17, 2003	APFED Expert Meeting		Ministry of the Environment of Japan, Earth Council Asia Pacific, Ateneo Center for Economic Research and Development	Manila (Philippines)	Comissioned for MoEJ, FY2003
Dec. 18, 2003	The Second Meeting of Research Team for RISPO- EE by NGOs		RMI-Indonesian Institute for Forest and Environment	University of Indonesia (Jakarta, Indonesia)	Comissioned for MoEJ, FY2003
Jan. 16-17, 2004	APFED Expert Meeting		Ministry of the Environment of Japan,Kuniwo Nakamuar Office	Koror (Palau)	Comissioned for MoEJ, FY2003
Feb. 10-12, 2004	The 2nd Plenary Workshop for RISPO			Shonan Village Center (Hayama)	Comissioned for MoEJ, FY2003
Mar. 8-9, 2004	The 3rd Meeting of Research Coordination Committee of APEIS		Ministry of the Environment of Japan	Beijing (China)	Comissioned for MoEJ, FY2003

Environmental Industry Project (EI)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
May 27, 2002	The 1st Study Group Meeting on Environmental Industry Project : Selection of lecture themes and scheduling of lecturers	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
Jun 25, 2002	The 2nd Study Group Meeting on Environmental Industry Project : Industries for environmental monitoring in China	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
Jul 16, 2002	The 3rd Study Group Meeting on Environmental Industry Project : Environmental industries in China	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
Aug 22, 2002	The 4th Study Group Meeting on Environmental Industry Project : Contribution and challenges of the private sector toward the environmental industry	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)

Date	Title of the Workshop	Open / Closed	Co-organizer	Place
Sep 18, 2002	The 5th Study Group Meeting on Environmental Industry Project : Measures undertaken by Matsushita Electric Industrial Co. Ltd. in its overseas	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
Oct 31, 2002	The 6th Study Group Meeting on Environmental Industry Project : Eco-Financing	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
Dec. 14-15, 2002	1st Internal Workshop on Environmental Industry	Closed (EI members, External Collaborators)		IGES Headquarter (Hayama)
Apr 22, 2003	The 1st Study Group Meeting on Environmental Industry Project : Environmental Industry in China	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
May 30, 2003	The 2nd Study Group Meeting on Environmental Industry Project : Japan Environment Corporation's Contribution to the Development of Environmental Industry	Closed (EI members, Advisor members, Observers)		IGES Tokyo Office (Tokyo)
June 14-15, 2003	2nd Internal Workshop on Environmental Industry	Closed (EI members, External Collaborators)		IGES Headquarter (Hayama)

Capacity Building Programme (CB)

Date	Title of the Workshop	Open / Closed	Co-organizers	Place
Apr.16-20, 2001	LEAD 4th National Training Session for Cohort 8	Closed (for LEAD Japan Cohot 8)	LEAD Japan	Shonan Village Centre (Hayama) ; Keio University (Fujisawa)
Apr.11, 2002	Training on eLearning and eAuthoring	Closed (for IGES CP Researcher)		IGES (Hayama)
Apr.26, 2002	Environmental Seminar for enterprises	Open (for small and medium sized enterprises in Kanagawa)	K-FACE	Kanagawa Small and Medium sized Enterprise Center (Yokohama)
Jul.3-4, 2002	JICA Indonesia Training Course	Closed (for Indonesian NGOs)	IGES Environmental Education Project, JICA	IGES (Hayama)
Jul.8-12, 2002	LEAD 5th National Training Session for Cohort 9	Closed (for LEAD Japan Cohot 9)	LEAD Japan	IGES (Hayama)
Oct.9, 2002	Environmental Education Course Focused on Aquatic Environment JFY2002	Open (for Young Research of Higher Educations)	UNU/IAS	UNU/IAS (Tokyo)
Oct.11, 2002	Instructional Design for eCourse	Closed (for IGES Researcher)	LEARNWAYS	IGES (Hayama)
Nov.14-15, 2002	LEAD National Director Planning Meeting for Long Term	Closed (for LEADJapan, India and Pakistan)	LEAD Japan	IGES (Hayama)
Nov.07, 2002	Community Learning Program:Ogusu Junior High School student experiencing working at IGES	Closed (for Ogusu Junior high school students)		IGES (Hayama)
Jan.23, 2003	Environmental Management Systems: In case of ISO14001 Implementation	Open (for small and medium sized enterprises, Local Government in Kanagawa)	K-FACE	IGES (Hayama)
Jul. 15-18, 2003	LEAD National Training Session for Cohort 10	Closed (for LEAD Japan Cohot 10)	LEAD Japan	IGES (Hayama)

Institute for Global Environmental Strategies (IGES)

Report of the Second Phase Strategic Research

March 2004

Published by Institute for Global Environmental Strategies (IGES)

Institute for Global Environmental Strategies (IGES)

2108-11 Kamiyamaguchi, Hayama, Kanagawa, 240-0115 Japan
Tel: +81-46-855-3700 Fax: +81-46-855-3709 http://www.iges.or.jp/

Tokyo Office
Nippon Press Center Bldg. 8F
2-2-1 Uchisaiwai-cho, Chiyoda-ku,
Tokyo 100-0011 Japan
Tel: +81-3-3595-1082 Fax: +81-3-3595-1098

Kansai Research Centre
International Health Development Center Bldg. 5F
1-5-1 Wakinohamakaigan-Dori, Chuo-Ku, Kobe,
Hyogo 651-0073 Japan
Tel: +81-78-262-6634 Fax: +81-78-262-6635

Kitakyushu Office
Kitakyushu International Conference Center 6F
3-9-30 Asano, Kokurakita-ku, Kitakyushu,
Fukuoka 802-0001 Japan
Tel: +81-93-513-3711 Fax: +81-93-513-3712

Project Office in Bangkok
c/o UNEP RRC.AP
Outreach Bldg, Asian Institute of Technology
P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand
Tel: +66-2-524-6440 Fax: 66-2-516-2125/2-524-6233