

**Report of
the First Phase Strategic Research**

Environmental Education



March 2001

Institute for Global Environmental Strategies

Preface

The Asia-Pacific region faces environmental threats from global warming and climate change, rapid population growth, pollution and forest degradation. A large number of studies have been made on these issues in the past. To mitigate and address these problems, policymakers have been urged to take measures such as using practical policy tools, building regional cooperation, promoting good governance and cooperating with the private sector. In addition, in-depth studies on these issues have also been conducted.

International discussions, such as the Earth Summit that resulted in Agenda 21 in 1992 and the International Conference on Environment and Society that resulted in the Thessaloniki Declaration in 1997, have stressed the importance of environmental education. Research for a sustainable future must be linked with research on environmental education. We are convinced that ensuring environmental education could contribute considerably to restoring the environment locally and globally.

The Institute for Global Environmental Strategies (IGES) was established in 1998 to undertake strategic research on sustainability in the Asia-Pacific region. In its first phase (1998-2001), IGES launched six projects, including the Environmental Education Project. The major aim of the Environmental Education Project was to develop strategies to improve the quality of environmental education and assist the many countries of the Asia-Pacific region in implementing environmental education. The research has focused on the following four sectors: business and industry, non-governmental organizations (NGOs), the media, and school education.

This is a final report that compiles the results of our studies since April 1998. It is hoped that governments and organizations in the Asia-Pacific region will follow up on many of the resulting recommendations. We also wish to encourage further discussion to promote environmental education for a sustainable future at national, sub-regional, and regional levels. We wish to extend our great thanks to all collaborators who have contributed their time and effort for preparing each country's status reports on environmental education. We also deeply appreciate the friends who kindly participated in the workshops, meetings and conferences organized by the IGES Environmental Education Project. This report was made possible thanks to those efforts.

CONTENTS

OUTLINE OF THE PROJECT	1
1. INTRODUCTION	4
1.1 Introduction: background and needs of the Project.....	4
1.2 Objectives and targets.....	4
1.3. Outline of research results.....	5
2. MAJOR RESULTS OF THE PROJECT.....	7
2.1 Overview of 34 country and 2 special area studies.....	7
2.2 Sectoral research.....	24
2.2.1 Business and industry sector and environmental education	24
2.2.2 Network-building for NGOs to promote education and public awareness for sustainability, with special reference to international cooperation	33
2.2.3 Media and environmental education.....	46
2.2.4 Environmental education at the tertiary level in the Asia-Pacific region.....	53
2.3 Regional strategy on environmental education in the Asia-Pacific	61
3. CONCLUSION.....	70
3.1 Conclusion	70
3.2 Remaining issues for future research.....	71
4. EVALUATION AND ACHIEVEMENTS	72
4.1 Assessments of major outputs	72
4.2 Evaluation of the performance of the Project	73
4.3 Evaluation of management of the Project	73
4.4 Economic efficiency of Project management	73
4.5 Suggestions for improving the Project in the second phase	74
5. REFERENCES	76

Appendix: List of Achievements

Outline of the Project

1. **Project name** Environmental Education Project
2. **Project period** April 1998 – March 2001
3. **Project members**

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4. Project Expenses (yen)

Total project cost:	206,009,959	
FY1998:	67,107,144	(actual)
FY1999:	67,761,815	(actual)
FY2000:	71,141,000	(budgeted amount)

5. Summary of the Report

This report summarizes the activities and findings of the Environmental Education Project for the past three years. Divided into four parts, the report describes twin objectives of the Project as formulating a comprehensive strategy of environmental education in the region and developing a mechanism to implement it. Its major activities include (1) assessment of the overall status of environmental education in the region, (2) studies on environmental education through business and industry, NGOs, media and higher education and (3) formulation of a regional strategy. Environmental education in the Asia-Pacific region is characterized by a lack of policy and coordination, conventional curricula, book-based and examination-oriented teaching and shortages of teaching materials. The proposed strategy suggests five action agendas: (1) strengthening capacity, (2) developing partnerships, (3) improving curricula, (4) improving governance and (5) mobilizing assistance. The report emphasizes the need for more action at the grassroots level. The final self-evaluation highlights both the originality of project outputs and the lack of a coherent approach in project management, and recommends learning from failure, capitalizing on strengths and promoting inter-project coordination in the second phase.

6. Keywords

Asia-Pacific region, business and industry, environmental education, higher education, media, NGO, partnership, strategy

1. Introduction

1.1 Introduction: background and needs of the Project

Environmental Education is one of the most effective strategies for increasing the general level of public environmental awareness, developing skills for solving environmental problems and maintaining and improving the quality of life and the environment. Many countries and environmental NGOs have developed active programs of environmental education to achieve these goals. The aim of environmental education has been modified to emphasize “education for sustainability” which has broad implications not only for environmental education but also for development, poverty, population and gender. It is expected that environmental education will promote environmentally sustainable societies throughout the Asia-Pacific region through this “education for sustainability.”

However, some countries still feel the need to focus more on national economic development than on social and ecological sustainability and, unfortunately, environmental NGOs and other progressive organizations within these countries are often not strong enough to support environmental education. Nevertheless, this situation is changing and, in recent years, many governments, NGOs and corporations have been increasingly willing to collaborate in developing a wide range of educational activities which encourage environmental protection and promote sustainable development through a broadened approach to environmental education, known as education for sustainability.

International bodies and programs, such as UNESCO, UNEP and the Japan-U.S Common Agenda and the Environmental Congress for Asia and the Pacific (ECO ASIA) have also been active in supporting environmental education. Despite these initiatives, several issues still need to be addressed.

These include identifying problems and current conditions of environmental education in these regions, developing strategies for effective curricula and professional development, developing appropriate media and technologies for environmental education, and designing and supporting networks. Thus, the primary focus of this project is to enhance awareness and concern for issues of environmental quality through a program of capacity building in environmental education action research and community development for the enhancement of the quality of life and environments in the Asia-Pacific region.

1.2 Objectives and targets

The primary purpose of the Environmental Education Project is to promote and foster eco-consciousness (i.e., good environmental citizenship, developing and adopting good ethics, awareness, empowerment and improved governance) in relation to an environmentally sound and sustainable society, and the wise use of resources in Asia and the Pacific region.

The Environmental Education Project has identified two aims to achieve this purpose: (1) to develop a comprehensive regional strategy on environmental education, and (2) to establish an international network for the implementation of an environmental education strategy in the Asia-Pacific region in order to improve the quality of the environment. The result is expected to contribute to Asian-Pacific perspectives in environmental education. To achieve these aims, the project established the following research objectives.

- To develop and propose proven means for encouraging all countries and areas in the region to implement appropriate environmental education programs.

- To design and support networks which provide generic assistance to countries, areas and NGOs in the region in order to encourage and improve environmental education.
- To propose collaborative projects with other countries in the region to promote the improvement of environmental education.

The methodology of the project is guided by the principles of synergy, partnership and participatory exercises. It had a three-year time framework and its activities were broken down into the following five phases.

Phase 1 (Assessment on the state of environmental education in the region): A preliminary review of environmental education activities was conducted in the region. Based on this assessment, some countries were selected as sites for case studies, if necessary, to gather additional information. Secondary data and participatory techniques were used to undertake case studies.

Phase 2 (Identification of key issues and development of principles and guidelines): Data and information obtained from the country reports and case studies were analyzed to identify key issues in environmental education. This information was used to determine the range of strategies used, understand the context and other factors influencing the relative degree of success of environmental education activities and find out the obstacles faced and mechanisms used to overcome these problems. This analysis was used to develop principles and guidelines for “best practices” in environmental education in each of the four areas: business and industry, non-governmental organizations, media and school.

Phase 3 (Development of a framework for strategy): Workshops and seminars involving regional specialists, experts and national collaborators were organized to review and revise issues, principle and practices obtained in Phase 2 and then a draft framework for a comprehensive regional strategy was prepared.

Phase 4 (Development of a comprehensive strategy): A draft strategy was prepared within the accepted framework of principles and guidelines. The draft strategy was discussed and revised in workshops, with the help of regional experts, specialists and national collaborators.

Phase 5 (Publication and dissemination): The strategy, as a guideline for its realization, was published and information disseminated to agencies responsible for, and concerned with, environmental education in the region.

1.3. Outline of research results

The Environmental Education Project divided the direction of the research into two parts based on the research targets: a comprehensive study of environmental education in the Asia-Pacific region; and sector based research. Moreover, the project adopted three measures in the process of the research: investigation of the status of environmental education in the Asia-Pacific region, implementation of several case studies, and organizing of various meetings. In addition, development of the necessary networks was also considered. Data and information collected through the research during the three years were compiled in the form of proceedings, reports and papers. These materials were incorporated into the “Regional Strategy on Environmental Education in the Asia-Pacific region” (Figure 1).

This final report chiefly refers to the following three points resulting from the outputs of the

Environmental Education Project research activities: (1) overview of thirty-four countries and two special areas studies, (2) sectoral research outcomes, and (3) regional strategy on environmental education in the Asia-Pacific region.

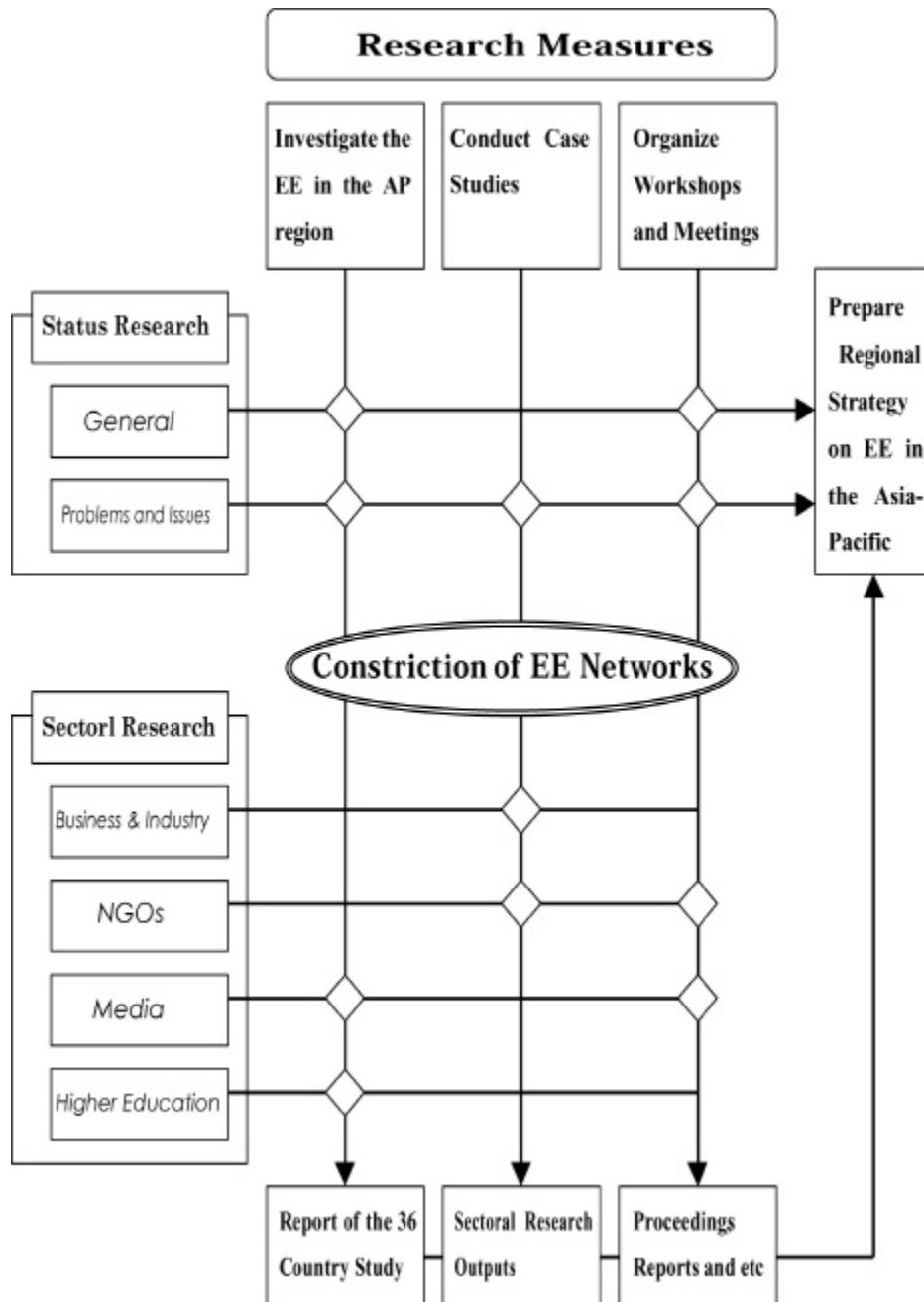


Figure 1. Outline of the Project Activities

2. Major results of the Project

2.1 Overview of 34 country and 2 special area studies

2.1.1 Introduction

This section provides a panoramic view of the overall status of environmental education (EE) in the Asia-Pacific, which is based on status reports received from thirty-six countries of the region. These reports were prepared by national collaborators identified by the Environmental Education Project (EE Project) in consultation with other partner organizations and environmental education experts and facilitators.

The primary aim of preparing these reports was to assess the state of environmental education in the region, particularly focusing on current status, trends, priority and issues, which helped us to identify common grounds for developing mechanisms for regional cooperation in promoting environmental education in the Asia-Pacific region. In order to achieve this goal, the following objectives were established:

- To explore how the key players in the region are thinking about the problems of environmental education
- To identify common grounds for solving these problems
- To determine principal areas for future action in environmental education in the region

Presented below is a synopsis of these thirty-six status reports. Details can be found in the draft report entitled “Environmental Education in the Asia-Pacific: Status, Issues and Problems,” which IGES is preparing for commercial publication.

2.1.2 Approach and methodology

With a view to prepare a comprehensive regional strategy on environmental education for the Asia-Pacific region, the EE Project conducted a preliminary review of environmental education activities in the region. This section briefly summarizes a description of the setting, the methodology and techniques of the study and the framework of analysis adopted by the Project.

The Setting: In order to provide a broad scenario of environmental education activities, the Project decided to survey as many countries and special areas from the region as possible. Forty countries were contacted for this purpose, but only thirty-four countries and two special areas were included in the study. The four countries that were not available for the study were New Zealand, North Korea, the Cook Islands and Tuvalu. The names of these countries and special areas are presented along with their activities in Table 1.

In order to determine how to work closely and collaboratively with the countries in the region, it is necessary to understand the background of this region. For this reason, a brief description of this region is presented below.

The Asia-Pacific region is one of most diverse regions in the world, environmentally, economically and culturally. It is the largest land division in the world and covers about twenty-three percent of the world's total land and a vast expanse of the Pacific and the Indian oceans. The region also contains a diverse range of terrestrial ecosystems including deserts, rain forests and the largest biologically rich forest cover in the world. Over two-thirds of the world's coral reefs and one-third of the mangrove area are also located in the region.

The region is home to fifty-eight percent of the world's population, and seventy percent of the region's population is concentrated in five countries: China, India, Indonesia, Pakistan and Bangladesh. Fifteen of the world's twenty-five cities with populations of over ten million people are in this region (ADB 1997).

Economically, the Asia-Pacific is the fastest growing region in the world. It houses high-income economies such as Japan's, newly industrialized economies (NIEs) and the world's lowest income economies such as Bhutan, Nepal, Bangladesh and Maldives (UN/ESCAP 1995). The region is beset with persistent poverty, growing populations, discrimination and inequity (Abe and Bhandari 1999). Great inequality exists between the rich and the poor, who both depend on the natural environment economically and culturally. And the region's economies range from nomadic and subsistence agricultural to intensive commercial, and from primitive to industrial.

Sharp extremes in the region include the world's most populous and densely populated countries, land-locked and sea-locked countries, highest and deepest points, the world's smallest island countries and many archipelagos. These island countries are made up of volcanic and oceanic islands and atolls. Some countries such as Nepal and Bhutan are mountainous, whereas Tonga has neither river nor mountain (Abe and Bhandari 1999). The Asia-Pacific region houses all the major religions of the world: Hinduism, Buddhism, Christianity and Islam. Politically, India has the world's largest democratic system, while China has a policy of "one country with two systems."

Outline preparation: A topical outline of information required for inclusion in the status report was developed by the Project with the goal and objectives of the Project in consideration. The outline was then sent to some selected experts for their comments and suggestions, which, in turn, were incorporated into the outline. The outline covered six broad areas:

- An overview of national education systems
- Courses and environmental education activities in formal education
- Environmental education in informal as well as "non-formal" (defined below) education programs
- Professional activities (institutions, research works, organization, training and research)
- Ways in which media, NGOs, and business and industry are promoting environmental education
- Major problems and prospects of environmental education

Selection of collaborators: National collaborators were selected on the basis of lists of names received from UNEP, SPREP, JICA, Griffith University, environmental education experts and others. The lists were thoroughly reviewed by the Project. Based on their experience, qualifications and nature of work, one or two potential candidates were chosen for each country and special area. In some countries of the Pacific region, agencies responsible for the overall management of environmental education were contacted, and the persons suggested by them were accepted as the IGES collaborators. These candidates were then contacted and briefed about the plan and objectives of the Project. After receiving their consent, the topical outline was forwarded to them for their review and consideration. The collaborators were then asked to assess the situation of environmental education in their countries and special areas as per the outline. To authenticate their commitment, contracts were signed between the IGES and the collaborators (Bhandari and Abe, 2000).

Techniques of data collection: The collaborators were advised to adopt a process of participatory techniques to collect data and information. They were encouraged to use existing secondary data and information. Some collaborators interviewed experts and educators and carried out wide

consultations while preparing their status reports.

Preparation of status reports: The collaborators were given six months to prepare their status reports. Each was required to submit an interim report. The review of the interim report provided an opportunity for the Project as well as the collaborators to review methods of information collection and to determine where it stood in terms of report preparation. This was further enhanced by constant communication.

Framework for analysis: A framework for analysis was employed to review and analyze the status reports. The results of the analysis and specific environmental education activities for each country and special area are presented in Table 1. The framework for analysis is based on the following questions:

- What are the general patterns and trends of environmental education in the region?
- What are the opportunities for students in extracurricular and co-curricular activities?
- Are there any opportunities or incentives for professional development?
- What are the major environmental education activities at the country level?
- What are the ways and methods that business and industry, NGOs and media use to promote environmental education?
- What are the major issues and problems of environmental education in the region?

2.1.3 Overall status

This section summarizes some exemplary EE activities; pioneering activities of each country and region; trends and patterns; activities initiated by the corporate sector, NGOs and the media; and major issues and problems associated with environmental education.

(1) **Successful Environmental Education Activities**

Using the above-mentioned framework for analysis, data and information were analyzed. The analysis indicated that quite a number of successful examples related to environmental education exist in the region. For example, in Cambodia, the Inter-Ministerial Steering Committee for Environmental Education has been formed to coordinate environmental education at the national level, while in Fiji a Levy Grant Scheme has been in place to fund environmental courses for the employees of private companies at a subsidized rate. China shows how a school promotes environmental education activities among children. For example, under the project “Hand in Hand in the Earth Village,” students with support from the teachers set up an “earth village” to produce recycled products. The proceeds from the sale go to construct primary schools in rural areas. The project is run in collaboration with the daily *China Children Newspaper*.

India provides another example: the Supreme Court ordered the University Grant Commission to include environmental courses in the universities and has set up two centers for excellence in environmental education and awareness. Indonesia’s Ministry of Population and Environment and the Ministry of Education and Culture have jointly established Environmental Study Centers (ESC) in all state universities to implement the Tridharma missions (education and training, research and community service in the field of the living environment). To educate schoolchildren about the environment and conservation, Malaysia’s Department of Wildlife and National Parks holds camping and nature education courses for school children on weekend and holidays, whereas the Ministry of Education provides the schools, students, instructors and facilities for the program.

With a view to promote environmental education among children, the Environment Agency of Japan

(now the Ministry of the Environment) has initiated a nationwide “green” club activity called the Junior Eco Club to carry out environmental activities. Another philosophically important example can be cited from Myanmar, whereby every school student in Myanmar must plant three tree seedlings in the rainy season: the first tree to compensate for the previous use, the second one for present use and the third one for use by future generations. In Pakistan, the government has a pilot project to persuade religious and opinion leaders to develop environment friendly attitudes and behavior and then include environmental themes in their religious teaching and sermons.

In Papua New Guinea, some clans are named after animals or plants, after which the named animals or plants are treated with veneration and conserved. The Philippines provides a good example of forming an institutional partnership for networking important environmental institutions. In Tonga the Ministry of Education coordinates an extra-curricular project called Plant Project for primary school students. The Project emphasizes plant species that are of cultural and traditional importance.

Details can be found in Table 1. These examples can provide role models to other countries to promote environmental education. For the benefit of humanity, initiatives such as these should be continued, strengthened and recognized.

Table 1. Innovative environmental education activities in the region

Country/Region	Responsible Organization(s)	Innovative Practices
1. Bangladesh	Ministry of Education; Ministry of Environment & Forests	<ol style="list-style-type: none"> 1. Grades 3 to 5 have Environmental Studies classes as part of their social studies and science curricula. Teachers' guides have been developed for these courses. 2. The National Environment Policy and National Plans have emphasized the importance of EE. 3. Environmental themes are infused in Grades 1 and 2 and are integrated into Grades 3 to 8. Separate courses have been developed at the tertiary level. 4. Universities offer courses such as Zoology, Botany and Geography with environmental themes. 5. 400 science clubs have been established in schools across the country.
2. Bhutan	Ministry of Health and Education; National Environment Commission	<ol style="list-style-type: none"> 6. Bhutan has developed a new approach to its primary education curriculum (up to Grade 3). This approach is called EVS (Environmental Studies) and emphasizes conservation and sustainable uses. In view of the considerable success in pupil's achievement levels, EVS has been extended to other levels. 7. New courses such as Physical Education, Health and Creative Arts also include environmental themes. 8. Nature Group Centers (<i>Singye Karm</i>) have been established to educate local villagers.
3. India	Ministry of Human Resource Development; Ministry of Environment & Forests	<ol style="list-style-type: none"> 9. A Supreme Court order has required the University Grant Commission to prescribe courses on the environment in higher education. 10. A composite course is given to Grades 1 to 2 and Environmental Studies-I (Social Science) and Environmental Studies-II (Science) to Grades 3 to 5. 11. Grades 1 to 5 emphasize learning in, about and for the environment. 12. A 9-month professional training course on EE is provided to post-graduate students. 13. The <i>Prayavaran Vahini</i> Scheme is underway to create environmental awareness. 14. A National Environmental Awareness Campaign (NEAC) has been initiated for public awareness. 15. Some 3500 eco-clubs are actively run across the country for Grades 6 to 10.
4. Maldives	Ministry of Education; Ministry of Home Affairs, Housing and	<ol style="list-style-type: none"> 16. The 2nd National Environment Action Plan emphasizes environmental awareness. 17. A President's Environmental Award Scheme has been

	Environment	<p>established for schools.</p> <p>18. Grades 1 to 5 have Environmental Studies courses with teacher's guides and reference materials.</p> <p>19. Grades 8 to 10 have a Fisheries Science course.</p> <p>20. Environmental clubs are active in schools.</p>
5. Nepal	Ministry of Education; Ministry of Population & Environment; Environment Protection Council	<p>21. The National Conservation Strategy and the 9th Five Year Plan emphasize environment and EE.</p> <p>22. Grades 1 to 3 have an Environment Around Me course; Grades 4 to 5 have Environmental Science and Health Education; Grades 6 to 8 have Population and Environmental Education; Grades 9 and 10 have Health, Population and Environmental Science and Grade 12 has Environmental Education.</p> <p>23. An EE course for a bachelor's degree program in education has been developed.</p> <p>24. Extracurricular activities include field trips, school visits, outdoor camps, competition and contests, and project work.</p>
6. Pakistan	Federal Ministry of Education; Pakistan Environment Council; Federal Ministry of Environment	<p>25. Pakistan has an Environmental Strategy and Education Sub-strategy for the Balochistan and Sindh provinces.</p> <p>26. Strategies have been developed for Mass Environmental Awareness and Education.</p> <p>27. The country has launched the Coordinated Environmental Education Project (CEEP) for training teachers, governmental officials and decision-makers.</p> <p>28. Special programs are run to "green" opinion leaders and religious leaders.</p> <p>29. The DEEP (Daudpota Environmental Education Program) Prize for outstanding work in EE has been established.</p> <p>30. A 16-week training course spread over a period of two years is run for government, NGOs, business and military personnel under the LEAD program.</p> <p>31. Environmental (nature) clubs have been established in schools nationwide.</p>
7. Sri Lanka	Ministry of Education	<p>32. An Environmental Studies course is offered at the primary level; Science, Social Studies and Health at the secondary level and Zoology, Botany and Geography at the senior secondary level.</p> <p>33. Environmental themes are incorporated into the bachelor's degree courses such as Zoology and Botany.</p> <p>34. The National Education Commission requires schools to contribute to "the evolution of a sustainable pattern of living."</p> <p>35. Environmental topics have been integrated into primary and secondary curricula.</p> <p>36. Environmental Pioneer Brigades and Environmental Clubs have been established in schools.</p>
8. Brunei Darussalam	Ministry of Education	<p>37. Brunei Darussalam has drafted a plan for EE.</p> <p>38. An agency named Collaboration of Action Research in Education (CARE), conducts research on EE.</p> <p>39. Environmental themes are infused in science, geography and civics classes.</p> <p>40. A Field Studies Center has been established for students.</p> <p>41. The Ministry organizes the Annual Science Week, Environmental Camp for scouts and the Green Environment Project for school children and school clubs.</p>
9. Cambodia	Ministry of Education; Youth and Sports (MEYS); IMSCEE (Inter-Ministerial Steering Committee for Environmental Education); Ministry of Cults and Religion	<p>42. EE has been integrated into primary and secondary schools and seminaries.</p> <p>43. A teacher's guide and booklets are developed in Khmer for the primary level.</p> <p>44. A teacher's manual is under preparation for the secondary level.</p> <p>45. A series of workshops has been organized for primary teachers.</p> <p>46. EE has been included in formal as well as in non-formal education for religious monks.</p> <p>47. Religious monks are active in running community-based environmental training programs.</p>
10. Indonesia	Ministry of Education and Culture (MOEC); Ministry of Religious Affairs	<p>48. Environmental Study Centers have been established at all state universities for education and training, research and community services.</p> <p>49. At the primary school level, environmental themes are included in Biology, Physics, Chemistry, Anthropology, History, Geography, Health, Civics (Basic Ideology), Religion, Natural Science and Sports.</p> <p>50. At the secondary level, environmental themes are</p>

		<p>integrated in Biology, Physics, Social Science, Language and Theory.</p> <p>51. Monolithic subjects such as Basic Environmental Science, Environmental Planning and Environmental Protection are also offered.</p> <p>52. Non-formal EE efforts include the Clean River Program, the Blue Sky Program, the One-Million Tree Movement, the Clean City Campaign, and the Zoological Garden.</p> <p>53. Outdoor education on Saturdays, environmental sports activities, and environmental services for school children are carried out.</p>
11. Lao PDR	Ministry of Education	<p>54. In Grades 4 to 6, the World Around Us is taught.</p> <p>55. A teacher's manual for Grades 1 to 3 has been prepared.</p> <p>56. In lower secondary levels, environmental concerns are incorporated into the subjects of natural science.</p> <p>57. The Department of Non-Formal Education runs community centers to provide adult education and literacy. It also offers a class on Environmental Protection (equivalent to Grade 3 level) and has 4,700 mobile libraries.</p> <p>58. Exhibitions and nature clubs have been initiated to prepare volunteers in environmental planning and conservation.</p> <p>59. National Environmental Training Center provides training to youths.</p>
12. Malaysia	Ministry of Education	<p>60. In Grade 4, a course titled Man and the Environment is offered and environmental themes are incorporated in Social Science, Health Education, Civics, History and Geography.</p> <p>61. At the secondary level, Biology, Chemistry, Physics and other courses include environmental themes.</p> <p>62. Competitions such as nature science quiz, essays and natural science camps; environmental weeks; "school in the garden" and EE projects are organized. Recreational environmental projects and debates are also organized</p> <p>63. The Department of Environment organizes environmental awareness camps for schools.</p> <p>64. Environmental Education Clubs also offer a course to the students of the Diploma of Education.</p>
13. Myanmar	Ministry of Education; Ministry of Forestry	<p>65. The National Environment Policy (1994) and Myanmar Forest Policy (1998) deal with public awareness, community participation and development.</p> <p>66. In primary schools, nature and environment are taught in Science, Earth Science (social studies), and Language (poetry, stories, songs, landslides, water cycle and natural environment).</p> <p>67. The Ministry of Forestry provides training for primary and secondary schoolteachers and governmental officers on conservation education.</p> <p>68. Students are involved in greening non-forested areas and planting three trees in a year (one as compensation for previous use, the second for present use, and the third for use by future generations).</p>
14. Philippines	Department of Education, Sports and Culture (DESC); Environmental Management Board (EMB); Commission on Higher Education; and Technical Education and Skill Development Authority	<p>69. The National Minimum Learning Competencies for elementary schools and the Desired Learning Competencies for secondary schools include environmental concepts and skills.</p> <p>70. In basic education, EE is integrated into Science, Social Studies and Home Technology.</p> <p>71. All public schools must have an exhibit room for display of items made from recycled products.</p> <p>72. The Department of Environment and Natural Resources (DENR) has formulated the National Environmental Education Action Plan.</p> <p>73. The EMB recognizes the cleanest, most environmentally sound schools.</p> <p>74. DESC has scholarships for elementary teachers to major in EE.</p> <p>75. Universities offer degree courses in EE as inter-departmental and inter-college courses.</p> <p>76. A network of institutions called PATLEPALM (The Philippine Association of Tertiary Level Education Institutions in Environmental Protection and Management) is active in the Philippines.</p> <p>77. Pedagogy includes a community-based approach, use of "real-life situations", issue-based approaches, case studies and fieldwork.</p>

		78. Competitions and contests are organized for students.
15. Singapore	Ministry of Education	79. The “Keep Singapore Clean” Campaign encourages environmental consciousness and makes Singapore a Model Environmental City by 2000. 80. A “Singapore Green Plan” contains a major thrust on EE. 81. Environmental themes are integrated in Science, Health Education and Social Studies in primary school, and Biology, Chemistry, Geography and Health Education in secondary school. 82. The Ministry has established an Environmental Resource Center. 83. Clean and Green Week and Clean River Campaigns are successful. Girl Scouts and Boy Scouts must plant a second tree. Also, students run projects such as growing pesticide-free vegetables, beautifying schoolyards and operating mini-companies (or cooperatives) to produce vegetables.
16. Thailand	Ministry of Education (primary and secondary); Office of the Prime Minister (special education); Ministry of University Affairs; Ministry of Interior (Education in hinterland); Office of the National Education Commission	84. The Ministry of Education has launched the Master Plan for Environmental Education. 85. Grades 1 to 3 learn to care for houseplants and pets at home and school. Grades 3 to 6 learn the relationships among human beings, animals and plants. 86. In the lower secondary level, environmental issues are integrated in Environmental Science and Social Studies. Also, Social Studies (community development activities) is offered as an elective course that focuses on local environmental problems. In the upper secondary level, environmental themes are integrated into Thai Literature and Culture, Biology, Chemistry and Technology. 87. Universities, Teacher Education Institutes and Rajaphat Institutes offer training and master and doctoral degree in EE. The Environmental Education Center has been established to provide training in EE for teachers. 88. Environmental parks and community resource centers have been planned in each village. 89. Speech competitions and project work at the upper secondary school; three-day field trips and students’ involvement in environmental awareness campaigns are common extracurricular activities.
17. Vietnam	Ministry of Education and Training	90. EE is emphasized in the 1991 National Plan on Environment and Sustainable Development. 91. In primary school, environmental themes are integrated in Nature, Social Studies, Literature, Moral Education and Health Education. 92. In secondary school, environmental themes are included in Biology, Geography, Civics, Agro-technics, Literature, Mathematics, Physics and Chemistry. 93. Several Teacher Training Colleges have developed a compulsory 30-hour special course entitled “Chemistry and Environment” for the chemistry faculty; a 30-hour special course on EE for kindergarten and primary education teachers; and 20-hour “Man and the Environment” and 10-hour “Environment” courses for all faculty. 94. Hanoi Pedagogical University has a master’s degree program on Population and Environmental Education. Universities have started post-graduate and Ph.D. degree programs in EE. 95. Field work, national festivals of growing plants, the garden-pool-stable (VAC) program and garden-pool-stable-forest (VACR) programs are common. Intra-mural, inter-school and inter-provincial school competitions are also organized.
18. China	National Education Commission	96. The “National Action Program for Publicity and Education (1996-2000)” and developed EE as an aspect of literacy and provides training to school teachers, administrators and leaders. 97. Six series of Teacher Training Guides, Teacher’s Manuals and books on EE have been published. 98. Over 250 colleges and institutes offer courses on EE for professionals, and Environmental Studies is offered as an elective for non-professionals. 99. Three EE Teacher Training Centers have been established in Beijing, Shanghai and Choqing. 100. Chaozhou City was named by UNEP as one of the “500 Best Cities in the World” for its achievements in EE.

		101. Biological, geological and environment protection groups are also active in schools.
19. Japan	Ministry of Education, Science and Sports (MESS); Environment Agency	<p>102. MESS believes that if the content of the course of study is put into practice with sincerity, the purpose of EE would be achieved. The Environment Agency of Japan has formed an Environmental Education Committee.</p> <p>103. Ministry of Education prepared three volumes of EE guidance materials for elementary, junior high and high school.</p> <p>104. EE is taken in a 100-school Project, which is utilizing computer as an education tool.</p> <p>105. A course "Life Environmental Studies" is taught in Grades 1 and 2 at primary school.</p> <p>106. EE curriculums at graduate courses are newly given in many universities.</p> <p>107. EE seminar courses are held for teachers.</p> <p>108. Cooperative education projects such as environmental internships are undertaken in tertiary education.</p> <p>109. The newsletter <i>Environmental Education</i> is published biannually.</p> <p>110. Social Education is common to supplement EE in public schools.</p> <p>111. A "Period of Integrated Study" has been proposed to incorporate environmental concerns. This is a cross-curriculum approach in structuring the curriculum.</p> <p>112. Project based research and environmental fairs are organized. These include GLOBE and EIL Net (Environmental Investigation and Learning Network).</p> <p>113. A Junior Eco-Club has been established. The Club supports groups made up of more than three children, conducts national exchange programs and publishes a bimonthly newsletter.</p>
20. Mongolia	Ministry of Enlightenment; Ministry of Nature and Environment	<p>114. Mongolia has developed a Non-formal Education (NFE) National Development Program under the NFE Center and conducts EE and distance learning mode of education for citizens.</p> <p>115. EE is a part of the elementary and secondary program and is taught in Natural Science, Biology, Geology and Geography.</p> <p>116. Mongolia has a strategy plan of "Ecological Education for Everyone."</p> <p>117. In higher education, courses such as Ecology, Forest Ecology, Ecological Management, Ecotourism, Chemistry and Environmental Engineering are offered.</p> <p>118. Master's and Ph.D. degree programs in environmental science are offered.</p>
21. South Korea	Ministry of Education; Ministry of Environment	<p>119. Environmental themes have been integrated into Science and Social Science.</p> <p>120. The Ministry of Education designates Environmental Conservation Model Schools honor schools on EE.</p> <p>121. The government has promulgated the National Statement for Environment Conservation.</p> <p>122. Environment became an independent subject of 34 semester hours in Grades 1 to 3 and 17 hours in Grades 4 to 6. For Grades 3 to 6, environmental issues are integrated into Moral Education, Social Studies and Nature Science. In high schools, an Ecosystem and Environment course is taught as an elective.</p> <p>123. The Department of Environmental Education was established under the Ministry of Environment in 1997.</p> <p>124. South Korea has initiated a "Comprehensive Project for EE Promotion." This project has 20 programs, of which 8 are related to EE for schools, 7 are related to EE for the public and 5 are to promote environmental information and awareness.</p> <p>125. South Korea has a provision to train soldiers and veterans in EE</p> <p>126. Teachers are encouraged to take special training courses on EE during their vacations to become qualified EE teachers.</p> <p>127. Four universities have Departments of EE offering core subjects and electives of 150 credit hours.</p> <p>128. The Green Family Movement Corps (or Green Boys Clubs), Green Korea, Teenager's Movement for EE and others, Nature Conservation Clubs, Environment</p>

		Investigation Clubs and contests are common informal modes of education for students.
22. Australia	Department of Education, Training and Youth Affairs, and Department of the Environment and Heritage	<p>129. Australia has a tradition of school-based curriculum development within the broad framework of syllabi, which encourages local innovation and across-the-curriculum support for EE.</p> <p>130. Australia has a series of state policies and curriculum guidelines and support materials for EE.</p> <p>131. Australia is committed to building capacity among community groups to develop their own solutions to environmental problems.</p> <p>132. The Federal Government has published a discussion paper, <i>Today Shapes Tomorrow</i>, and has recognized the importance of EE by encouraging integration and coordination of EE activities and improving their effectiveness.</p> <p>133. An Environmental Education Database has been established. Airwatch and Waterwatch programs are common.</p>
23. Fiji	Ministry of Education	<p>134. Environmental mini-lessons have been prepared for use in primary and secondary schools.</p> <p>135. Fiji has developed a Basic Science Handbook incorporating environmental themes.</p> <p>136. Environmental issues are infused across the curriculum at primary and secondary levels. Grades 1 to 6 have Elementary Science; Grades 1 to 4 have Basic Science and Grades 5 to 7 have Biology, Physics, Geography, Economics and Accounting.</p> <p>137. Many primary schools have opted for environmental themes in the UN Project called the Associated School Project (ASP).</p> <p>138. The University of the South Pacific (USP) and other institutes offer courses and provide training for primary and secondary school teachers.</p> <p>139. Environmental clubs, outdoor activities, school-based projects and camps have also been established.</p>
24. Kiribati	Ministry of Education and Technology (METT)	<p>140. Primary education has an Environmental Science course; the Grade 4 Social Studies class has geography and environmental content.</p> <p>141. Grades 8 and 9 have Environmental Science courses as well as the Teacher's Guides.</p> <p>142. In junior secondary school (Forms 1 to 3), Social Studies and Science have environmental topics; senior secondary school has environmental contents in Biology, Physics and Chemistry courses.</p> <p>143. At the tertiary level, the Kiribati Teacher College offers pre-service training for primary and junior secondary teachers. Colleges offer Environmental Science courses, and students are required to do research on the environment.</p> <p>144. The University of South Pacific (USP) Kiribati offers EE courses as core subjects and minors. Optional courses include Human Geography, Biogeography, Microeconomics, and Resource Conservation and Management.</p>
25. Marshall Islands	Ministry of Education; Republic of Marshall Islands Environmental Protection Authority (RMIEEPA)	<p>145. Environmental issues are integrated into the curriculum, and an EE Teachers Manual has been developed.</p> <p>146. The Ministry of Education carries out training for elementary and high school teachers on EE.</p> <p>147. A weekly radio program on the environment is run by the RMIEEPA (Republic of Marshall Islands Environmental Protection Authority).</p> <p>148. School visits are conducted by the PYOCR (Pacific Year of Coral Reef) Committee and RMIEEPA.</p> <p>149. The College of Marshall Islands offers courses related to the environment.</p> <p>150. Workshops are conducted for traditional leaders.</p> <p>151. The Pacific Islands Climatic Change Assistance Project (PICCAP) and the El Niño Task Force have carried out various environmental awareness programs.</p>
26. Micronesia	Department of Education; Environmental Protection Agency (EPA)	<p>152. The State EE Specialist of the Environmental Protection Agency is responsible for implementing EE awareness activities and conducting research.</p> <p>153. Secondary schools and the College of Micronesia offer <i>Geography</i> and <i>Earth Science</i>.</p> <p>154. Awareness materials have been developed and curriculum development workshops on EE have been organized.</p>

		<p>155. Hawaii Nature Series and Morriweather EE Booklets are distributed to primary and secondary school students.</p> <p>156. Students are encouraged to take part in physical education and project works.</p>
27. Nauru	Department of Education; Department of Island Development and Industry	<p>157. EE is not a subject of its own, but is integrated at all levels of the science and social science curriculum.</p> <p>158. In primary schools, earth science is included in the Science course, and Resource Conservation is taught in Grade 5.</p> <p>159. Environmental Science is offered in the secondary schools. The Science course includes environmental topics.</p> <p>160. Nauru has conducted an intensive health campaign on the environment.</p> <p>161. Competitions, exhibitions and contests are organized for schoolchildren.</p>
28. Niue	Department of Education; Department of Community Affairs	<p>162. Niue organizes seminars, talks and study tours to conservation areas.</p> <p>163. Resource materials on EE have been developed.</p> <p>164. The Niue Primary School has a conservation awareness program.</p> <p>165. Niue maintains a Database on Environment.</p> <p>166. Field trips, Niue Environmental Week Camps and study tours of the Boys and Girls Brigades are organized.</p>
29. Palau	Ministry of Education; Environmental Quality Protection Board (EQPB)	<p>167. Courses such as Science, Social Studies and Health address environmental conservation and education.</p> <p>168. Palau publishes a quarterly newsletter covering environmental topics.</p> <p>169. Painting of billboards, recycling and bicycle repair programs are common in promoting conservation and literacy.</p> <p>170. A Mock Congress for the high school is organized annually.</p>
30. Papua New Guinea	National Department of Education; Department of Environment and Conservation	<p>171. Papua New Guinea has formulated National Sustainable Development Strategies.</p> <p>172. Grades 3 to 5 are offered Environmental Studies and sustainable teaching/learning modules are published for all primary teachers.</p> <p>173. In high school, environmental themes are integrated. Workshops for head teachers and deputy head teachers are also organized.</p> <p>174. Environmental themes are integrated in Biology at colleges, and the University of Papua New Guinea has a bachelor's degree course in Environmental Science.</p> <p>175. Competitions, project work for students and teachers, minimizing use of chemicals in gardening and planting are organized.</p>
31. Samoa	Ministry of Education; Ministry of Lands, Survey and Environment	<p>176. EE is integrated into the existing courses of Social Science and Environmental Science at the secondary level, and into Geography, Biology and Ecology in senior college.</p> <p>177. Samoa has prepared a draft EE curriculum for primary and secondary schools.</p> <p>178. The Faculty of Education of the University of South Pacific (USP) offers courses on Environment and Environmental Studies.</p> <p>179. Training is organized for teachers on EE.</p> <p>180. Samoa has a library assessment project and a library database on EE.</p> <p>181. Awareness materials and environmental videos are produced for schools</p> <p>182. Field trips to conservation areas, intra-mural competitions and some creative science projects are organized. Also, government officials conduct excursions for students to conservation areas.</p>
32. Solomon Islands	Ministry of Education; Ministry of Forests, Environment and Conservation (MOFEC)	<p>183. The Ministry of Education and Ministry of Forests, Environment and Conservation jointly conducted environmental awareness activities at the provincial and district levels to develop a curriculum for religious seminaries and the training of trainers</p> <p>184. EE activities have involved leaders (traditional and elected), members of religious organizations and NGOs.</p> <p>185. In primary education, environmental topics have been incorporated in Social Studies, Health Science and Agriculture classes.</p> <p>186. In secondary school, environmental topics are included in Science and Social Studies classes. In Science, a students' handbook and teachers' manual have also been developed.</p>

		<p>187. The Solomon Islands College offers short courses on EE for government workers.</p> <p>188. The University of South Pacific (USP) has established an Environmental Education and Information Center in Solomon Islands.</p>
33. Tonga	Ministry of Education; Ministry of Lands, Survey and Natural Resources	<p>189. The Environmental Planning and Conservation Section (EPCS) coordinates mass campaigns through radio, TV announcements, community workshops and public talks.</p> <p>190. In primary and secondary education, Environmental Science is taught.</p> <p>191. In Forms 1 to 5, environmental themes and contents are sequenced. Geography is offered as an optional course in Forms 3 to 5.</p> <p>192. In Forms 6 to 7, environmental themes are incorporated in Geography, Biology, Physics and Chemistry.</p> <p>193. There are environmental teachers' associations such as the Geography Teachers' Association and the Science Teachers' Association.</p> <p>194. Geography and Science courses involve compulsory fieldwork.</p> <p>195. Various contests and competitions are organized to promote EE.</p> <p>196. A project called Plant Project is carried out to plant saplings of economic and cultural importance.</p>
34. Vanuatu	Ministry of Education	<p>197. Environmental Studies in primary education and Social Science in secondary education are offered.</p> <p>198. The EE course has been revised and teaching materials (teachers' guides, supplementary materials and training packages for professionals) have been prepared.</p> <p>199. The University of South Pacific (USP) Extension Center, Elamus Campus, offers environmental courses such as Education and Society, Physical Geography, Human Geography, Human Ecology, Earth Science and Biogeography. The Campus is also offering training to teachers and other professionals.</p> <p>200. Clean Campaign, Rural Road Maintenance, Tree Planting, Nature Clubs, Small Bag Theatre and various contests and competitions are also organized.</p>
35. Taiwan	Ministry of Education	<p>201. The Environmental Protection Committee has established an Environmental Education Committee.</p> <p>202. National Taiwan Normal University has established 12 Environmental Education Centers and publishes a quarterly magazine, "Environmental Education."</p> <p>203. An Environmental Education Society has been established.</p> <p>204. Taiwan has two graduate schools of EE, one at National Normal University and one at National Taichung Teacher College.</p> <p>205. The Ministry of Education runs the Green Program. In this program, a school-based education project covers the whole watershed area. Teachers are given a set of water monitoring kits and textbooks. The Project has been successful in motivating teachers.</p> <p>206. The Roots and Shoots Center also has been established for elementary, junior high and high schools to educate people about the necessity of EE.</p>
36. New Caledonia	Not available	<p>207. EE is integrated into subjects such as Biology, Geography, and Civics. Teachers are free to address environmental issues in the classroom.</p> <p>208. Biology in secondary education has environmental topics, and teachers adopt a holistic approach towards teaching.</p> <p>209. New Caledonia has produced <i>Fiches Nature</i> (nature files), which contain a number of local plants and animal species.</p> <p>210. Field trips, nature hikes and forest fire campaigns are commonly organized.</p>

(2) Trends and patterns identified

This section summarizes information on how environmental education is evolving in the Asia-Pacific region over time and new patterns of development in environmental education.

a. Incorporation into all forms of education

Environmental education is found in all forms of education (formal, non-formal and informal education) in the region. The responsibility of managing environmental education falls under the jurisdiction of the ministries of education in some countries and under the ministries of environment or other ministries in other countries. The major initiatives of environmental education are coming from ministries other than the ministries of education. In-service and pre-service training programs are provided to teachers and other facilitators. Teaching materials have been developed locally and disseminated. Also, a variety of innovative methods of teaching and learning are being practiced.

b. Progression towards greener curricula

Cross-curriculum approaches have been adopted to integrate environmental themes into curricula. In this approach, the whole curriculum is reviewed and environmental concerns are incorporated into all subjects, not just one particular subject. Some countries have begun to “green” their curricula by incorporating environmental concerns and have emphasized the use of local resources in teaching and learning processes. This involves the integration of environmental principles, problems and solutions into other many disciplines. Both the natural environment and the man-made environment are involved.

c. Creation of new initiatives

Some of the innovative works being done in the region include new initiatives such as the designation of model schools and honor schools, the development of optional environmental courses, establishment of teacher’s centers for excellence and awards, Supreme Court orders to include environmental education in universities and collaboration between ministries and state universities for education, training, research and community services. Other initiatives include the creation of a green bank, an eco-polis center (a place for environmental information, education and hands-on activities in the community), a green press (collecting and publishing news related to environment), eco-clubs, eco-farming and eco-harvesting. In some countries, special economic incentives such as subsidies and tax-exemptions are also provided to schools that offer environmental education courses. In Indonesia, green banking programs have been initiated to provide insurance against environmental degradation. In these programs, the area to be used as collateral for credit requests for industrial zone development should be under environmental insurance for its future risks and impacts that might come from its industrial activities.

d. Perception of environmental education as a new approach to education

Environmental education is seen as an integrated approach to education. While some countries see it as providing values for education (concerning respect for nature and life, stewardship over natural resources, simple living, personal responsibility and gratitude for the abundant gifts of nature), others think that it provides a new perspective on education (concerning education in, about and for the environment). All these suggest that environmental education should not be an independent subject in its own right. Rather, it is a holistic approach to education that takes into consideration the environment that surrounds and affects people.

e. Development of composite courses at the primary level

Composite courses such as Environmental Studies, The Environment Around Us, The World Around Us, Environmental Science, Man and the Environment, Nature Science and Life Experiences have been adopted at the primary level, and environmental themes are either integrated into existing subjects or are developed as compulsory courses at the secondary level. Some countries have

introduced environmental courses as optional courses at the secondary school. Separate degree courses are offered at the tertiary level.

f. Shift of focus from physical science to social science courses

The trend shows that there has been a shift from incorporating environmental matters only in physical science courses towards including them in the courses of social science, liberal arts and humanities. In addition to physical science courses, environmental concerns can now be found in courses such as in Moral Education, Hygiene, Religion and Civic Education. This is because the social science aspect is also equally important in managing the environment. In order to elaborate this point let us take the example of the Asiatic wild water buffalo, which is found in Nepal. This animal is on the verge of extinction and is found only in the eastern part of Nepal. In order to understand fully its status, we must analyze the current social situation as well as the physical situation. An understanding of the destruction of the buffalo's habitat is possible only by understanding the social science aspects of the situation—for example, the norms and values of the people destroying their habitats, the dynamics of human actions, population pressure, poverty and socio-economic conditions. Nevertheless, environmental themes have been dominant in the physical science courses only.

g. Emphasis on formal education

Some countries have placed more emphasis on formal education because they envision that children will help educate their parents and can more easily influence their parents' actions. In turn, these parents will have a greater impact on environmental resources. This approach has been quite successful in some Asia-Pacific countries. However, there is less emphasis on non-formal education. In order to make environmental education successful, all types of education, both formal and non-formal, should be utilized.

h. Establishment of successful eco-business activities

Exemplary works such as the green bank, eco-labeling, eco-consumerism, environmental advocacy and green press are becoming popular. These activities have been successful in enhancing environmental education in the region. Green banking, as discussed earlier, has created public incentives for environmental insurance. Likewise, in many industrialized countries, eco-marks are changing people's attitudes toward products that are not environmentally friendly.

i. Emergence of new extra- and co-curricular activities

In addition to conventional ways of conducting theoretical and practical classes, various innovative ways are undertaken to provide opportunities for students to acquire knowledge, attitudes and skills in school as well as out of school. The opportunities include eco-clubs, green clubs, nature clubs, camp and outdoor education, intra-mural competition, project work, street theatre, internships, mock congresses and junior eco-clubs. These activities provide students with out-of-classroom opportunities to relate their knowledge to practice, obtain direct, first-hand experiences with the local environment and apply what they have learned in the classroom to real-life situations. The integration of theory into practice has had a great impact on the environmental activities of society.

j. Professional development

Numerous attempts have been made to improve environmental education in the region. These attempts include holding pre-service, in-service, on-the-job and professional programs and forming of environmental educator associations as forums for environmental educators to share and exchange their knowledge, expertise and experiences. Likewise, funds for conducting research and studies,

scholarship grants for professional development and networks for education have helped foster environmental education in the region.

(3) **Business and industry, NGOs and the media in promoting EE**

The innovative EE activities undertaken by business and industry (B&I), NGOs and the media in the Asia-Pacific region are briefly summarized in Table 2. For example, in the field of business and industry, the Fiji National Training Council (FNTC) has a structure, the Levy Grant Scheme, to encourage environmental education. In this scheme, private sector organizations submit one percent of their gross salaries to the Council to fund a program that enables employees to attend work-related improvement courses at a subsidized rate. It has been quite successful and is a pioneering work at the private level, as the coordination of private as well as public sectors are important in promoting environmental education. Positive recognition of such work would have a far-reaching impact on environment conservation and management. In many countries, NGOs are initiating demonstration projects. These projects have been successful in changing people's attitudes through real life experiences involving local people and generating income for local enterprises. The media have also been successful in raising public awareness by using local and modern media and by training journalists on environmental journalism and investigative journalism (Table 2).

Table 2. Summary of innovative environmental education activities

Service Providers	Innovative EE Activities
1. Business and industry	<ul style="list-style-type: none"> ▪ Initiating eco-business activities such as production of ozone-friendly refrigerators, solar energy systems, pollution control devices and decomposition machines; eco-marking (or eco-labeling); and green lists. ▪ Providing on-the-job training (on environmental impact assessments and ISO 9000 & 14000) for employees and environmental internships for students. ▪ Initiating Green Accounting, Green Banking, Green Productivity and Ecological Clean Programs. ▪ Sponsoring production of educational and promotional materials and public campaigns. ▪ Establishing funds for conservation activities. ▪ Creating the Levy Grant Scheme, where private organizations submit 1% of their gross salaries to fund courses for their employees.
2. Non-governmental organizations	<ul style="list-style-type: none"> ▪ Producing awareness materials and environmental awareness, training and research programs. ▪ Mobilizing community resources and linking income-generation activities with EE. ▪ Guiding conservation activities for environmental clubs. ▪ Providing press releases to raise consciousness. ▪ Establishing the Green Volunteer Network and Green Bazaar. ▪ Implementing innovative activities such as a demonstration project, interpretation center and alternate models of education. ▪ Lobbying the media, government, industry and business for viable education programs.
3. Media	<ul style="list-style-type: none"> ▪ Raising environmental awareness using both modern and local (traditional) media and establishing <i>Green Press</i>, <i>Green News</i> and <i>Green Wire</i>. ▪ Creating forums for complaints, opinion letters, lobbying and articles. ▪ Providing investigative reporting on the environment. ▪ Contributing messages and feature articles on television, newspapers and radio. ▪ Training reporters on environmental journalism.

(4) **Major issues and problems**

Issues and problems related to environmental education can be grouped into two categories: policy-related issues and program-related problems.

a. **Policy-related issues**

i. **Lack of national policy**

With the exception of a few countries such as the Philippines, Australia and Thailand, no country has

formulated a national policy on environmental education. No coherent plan provides a link from the kindergarten to university levels. As a result, environmental education receives no priority action, no allocation of resources, no budget and no support, and thus is marginalized from the national mainstream. Because of this, even those countries that have initiated environmental education programs show inconsistencies and discontinuities in implementing environmental education programs and activities. There is no evidence of serious efforts being made towards building institutional capacity in environmental education.

ii. Bias towards physical science

Prior to the Rio Summit, environmental topics were taught only in physical science and geography classes. After the Summit, however, the focus has been gradually moving towards social science, liberal arts and the humanities. Yet explicit incorporation of environmental themes is still biased towards physical science courses. Nevertheless, because human activity is the primary factor responsible for the deterioration and destruction of the environment, social science aspects should be given the same level of attention as the sound management of environmental resources. For example, water pollution is the result of human actions. Therefore, in order to prevent it, it is not only necessary to understand its physical basis, but also to promote human awareness of the problem and encourage compliance with environmental laws. This can only be done through the integration of environmental themes into areas of education other than physical science.

iii. Lack of government-wide commitment

Although environmental themes have been integrated into the formal education system, most of the environmental education initiatives come first from the sectoral ministries such as environment, fisheries, agriculture, forestry or natural resources, and not from the ministries of education. Their efforts are mostly related to specific issues and geared towards changing knowledge, attitudes and skills. They are not broad and comprehensive in terms of achieving sustainability. It is not possible to get the necessary full commitment from the government towards environmental education activities unless it is addressed in totality. Such a whole-of-government commitment is possible only through the involvement of the ministry of education.

iv. Lack of institutional coordination

All the countries report a lack of coordination amongst responsible agencies in the region. Because of this, the agencies either duplicate activities or compete for resources. When the situation degrades further, mutual 'mud-slinging' becomes a common phenomenon resulting in no action or delayed action. Several ministries adopt individual policies and procedures to pursue their own mandates without any collective action or vision. Usually, there is no consultation among these groups and if there is any agreement, it is loose, vague and morally non-binding.

b. Program-related problems

The problems prevalent in education programs (including environmental education) are summarized below.

i. Inadequate manpower

There is a notable shortage of trained manpower, especially of environmental educators and facilitators, to teach integrated courses such as Environmental Studies, Man and Environment and Nature Science. No major efforts have been initiated to promote teachers' competency and capability. Conventional teaching methods, such as lecture methods, are applied to teach dynamic courses such

as these. This reduces the quality of the education because there are no opportunities for students to observe directly the environment, or to be exposed to real-life situations.

ii. Rigid curricula and teaching methods

Existing curricula are book-based and examination-oriented. Further, the curricula are not oriented toward nurturing a sustainable society. Because classroom instruction is geared towards examinations, students prepare to appear for their final examinations and achieve high scores rather than develop actual skills and competencies in the subject matter. Despite the fact that environmental concerns are integrated into the curricula, they are neither vertically integrated nor horizontally coordinated. There are no vertical links between educational activities in one level with other levels, nor are educational activities within the same level horizontally coordinated with other course activities. Activities are duplicated, and teachers are often unaware of what other teachers are doing in other subjects. Students do not learn about the environment in critical ways and fail to see the interconnections that contribute to the overall complexity of the environment. Curricula are centrally controlled, and their development process is quite bureaucratic in nature. Furthermore, existing courses are tightly arranged and do not allow additional subjects to be incorporated. The unavailability, inaccessibility and irrelevancy of textbooks, instructional materials, manuals and guides have further aggravated the problems of effective curricular structure and processes. The pedagogy is mostly the “chalk-and-talk” method, and learning is based on the rote method and spoon-feeding. Because of this, students are encouraged to memorize rather than examine the problems critically.

iii. Inadequate physical facilities

In many countries, especially in rural areas, school buildings are dilapidated and do not have even minimal facilities such as furniture, classrooms, laboratories, libraries, resources, tools and equipment. Due to space limitations in some areas, several classes are being run in shifts. For example, in mountainous areas of Nepal and India, more than two classes share the same classroom. In Cambodia, the number of students is as high as 100 to 150 in a single class.

iv. Conceptual ambiguity

The concept of environmental education means many things to many people. In some countries, it is taken as another academic course without any relevance to, or bearing on, real-life situations, while in other countries, it is still in its infancy. Some believe that environmental education is a new perspective towards education and focuses more on values. There still exists confusion over its concepts and, therefore, its approach.

v. Unavailability of data and information

There is a dearth of data and information on the problems of environmental education. Even when data and information are available, they are not necessarily accessible. The data and information should be designed so that they are both usable by, and easily accessible to the general public. In many countries these days, data are stored in computer files. However, people who do not have access to computers, like many in Nepal, are virtually deprived of the use of such data. In such cases, these data should be reproduced in forms that are easily accessible to all.

2.1.4 Commonalties

The authors have already highlighted the great diversities and major educational problems of the

region. Also, indigenous and pioneering activities have been briefly presented above. They are just the one side of the coin. Further analysis of these reports indicates that the region comprises a multitude of commonalities that are the crux of collaboration and partnership for facilitating concerted actions in the field of environmental education in the region. The commonalities might be the common ground for launching joint efforts in enhancing environmental education in the region. These common points of interest are listed below:

- Exploring ways to find out effective educational processes that enhance the transition into a sustainable future
- Finding effective models of collaboration
- Formulating consensus-based national policies
- Providing problem-oriented training to teachers and environmental educators
- Reviewing and revising curricula
- Making data and information easily accessible
- Developing and making teaching materials easily available
- Improving pedagogy
- Providing continuity in executing environmental education
- Facilitating coordination and cooperation between government agencies and ministries
- Conducting action research
- Lessening sectoral bias in dealing with environmental education

2.1.5 Conclusion and implications

A preliminary review of these status reports indicates that countries and areas of the region are aware of, and responsive to, the need of environmental education to improve the quality of human life. They have shown an interest by incorporating environmental concerns into formal as well as non-formal education programs. Governments, non-governmental organizations, educational institutions, the media and other service providers have also made concerted efforts to meet growing challenges of environmental education to the public. Many pioneering activities have been initiated and an enthusiastic leadership appears to be emerging regardless of great resource constraints, persistent poverty, rising population, conflict in resource use, inequity and faulty development project. Thus, environmental education has gained momentum but has not been able to make the quantum leap towards preventing, stopping and reversing environmental degradation in the region because of complexity of the problems involved.

The problems of environmental education mentioned above are universal in nature and are directly related to the complex problems of development processes, persistent poverty, growing population and environmental degradation. For example, the significant environmental education problem of over-crowded classrooms is directly related to the large number of children in the community, resource constraints, geographical constraints, shortage of schools as well as teachers and so forth. In order to address this issue, a whole of the system approach should be taken into consideration. In other words, problems of persistent poverty, population and others should be addressed prior to addressing the issue of over-crowded classrooms.

The Asia-Pacific region is environmentally, economically and culturally a diverse region. Because of this diversity, educational problems faced by the countries of the region are also diverse and varied in nature. These problems are unique and need to be handled in a special way. However, we should look for some commonalities if we want to develop some mechanism of regional cooperation in implementing environmental education in the region and those common grounds have already been

identified in the previous sections. What we need is to investigate more to promote these common grounds for concerted regional actions in the region.

Educational activities that have been described as success (or innovative) stories are in all forms of education. Some are widespread, while others are patchy, isolated and scattered throughout the region. These stories are the uncommon wisdom of the Asia-Pacific region. In other words, they are the result of special efforts, ideas and approach embedded in the culture of the region. We do not know if these ideas would work well in other parts of the countries concerned, or in the region, or on a large scale. In order to determine their validity and suitability, these cases should be subject to pilot-application and replication. Their positive recognition is urgently needed. For this, more projects and actions are required to provide role models of successful environmental education efforts. More research is needed to provide the answers, yet we do not know how effective they are in real-life situations, or if formal education is the best way to achieve a sustainable society that meets the needs of the present generation without compromising the needs of future generations.

The previous section also suggests that there are a number of organizations including non-governmental organizations, media, business and industry, professional organizations and academia that are actively involved in the field of environmental education, as well as the regional organizations such as UNEP, UNESCO, IUCN and others. Any organization can boast that it is successfully undertaking environmental education activities. Nevertheless, there is also duplication of activities and competition among different organizations. When this is so, then it is necessary to determine their status and synergize their energy, strengths and ideas in promoting environmental education in the region.

The above discussion leads us to conclude that the region is, on the one hand, socially, economically and environmentally diverse and beset with complex and interrelated problems. On the other, there are plenty of successful examples of environmental education full of enthusiasm and committed leadership, together with varieties of pioneering activities at the regional level. What needs to be done to stimulate them is to provide appropriate incentives at the grass-root level so that people can be motivated to share their own successful ideas as well as adopt successful practices from others. Such incentives (in the form of a “leg-up” approach of building capacity, not a hand out approach of spoon-feeding or simply providing necessities) must first include giving positive recognition to their innovations, success stories and exemplary works and the development of a mechanism of sharing experiences and expertise with others within and outside the countries.

(Bishnu Bhandari, Osamu Abe)

2.2 Sectoral research

As an individual sectoral research, the Environmental Education Project focused upon following four sectors and conducted research in each sector: business and industry, NGOs, media and higher education. These sectors are thought to play important role in implementing environmental education. Through the research activities such as case studies, country studies, organizing several meetings and holding satellite research teams, outcomes were summarized in each sector. In this final report, we show the findings of research on each sector.

2.2.1 Business and industry sector and environmental education

The primary purpose of this section is to outline the responses of business and industry for effective development of environmental education in the Asia-Pacific region. The information presented here is

based on country reports submitted to the environmental education.

(1) Role of business and industry in environmental protection

The importance of business and industry (B&I) sectors in the protection of the environment for improving the quality of human life can be understood from the hard-hitting statements made by chief executive officers (CEO) and leading corporate experts. Robert Kennedy, CEO of Union Carbide has expressed his views on the indispensability of environmental protection in corporate management as 'speaking from personal experience ... environmental protection has become a survival issue for companies.' Sir Denys Henderson, Chairman of Imperial Chemical Industries emphasized environmental protection as the pillar of corporate culture. In his words 'good environmental performance is not an optional extra.' Brundtland, the author of the landmark treatise *Our Common Future* says that business and industry are 'perhaps the main instruments of changes that affect the environmental resource bases of world development' (Willums and Goluke 1992). Two years before the Earth Summit, Maurice Strong, the Secretary-General of the UNCED rightly pointed out at the ICC (International Chamber of Commerce) Forum in Bergen that "Industry is the principal instrument of economic growth; it is also the prime instrument of environmental and social change." There has also been some empirical evidence to support the above statements. According to one Youth Survey of 1995 on fourteen- and fifteen-year-olds of about 980 students from thirty countries, and one hundred percent of Malaysian respondents expressed the opinion that industry has helped promote education and has made their life better. The survey concluded that industry is in an excellent position to serve as a resource for the young generations of the world by informing them about the environment. And in developing countries, business and industry can play significant roles in setting a good environmental example to youth dependent on them for livelihood (Hai et al. 1996).

Also, it is a universal fact that the B&I sector has brought rapid changes in the society with the help of technology. Another important point to be mentioned here is that the B&I sector has the ability to influence the social and political context in which they operate, influence the markets for their products, and enhance their competitive edge. Also B&I sector can promote sustainable development and corporate environmental excellence.

This is the reason why the corporate sector has already recognized environmental management as among the highest corporate priorities and a key determinant to sustainable development (United Nations 1992). In Chapter 30 of Agenda 21, United Nations (1992) clearly stipulates:

A stable policy regime enables and encourages business and industry to operate responsibly and efficiently and to implement longer-term policies. Business and industry is responsible for increasing prosperity, providing major trading, employment and livelihood opportunities.

As the corporate world is responsible for the bulk of resources consumption and is the major source of air and water pollution and waste generation, it has a vital role to play in conserving resources, controlling pollution, minimizing waste and building environmental consciousness (Chia 1997).

(2) Role of B&I in environmental education

Emphasizing the role of business and industry in educating their constituencies, Schmidheiny (1995, vi) advocates:

People of business and industry (corporate sectors) retain fundamental obligation to inform and educate their constituencies about the urgent necessity and the reasons for changing the

course ... We believe that the best aspect of the human propensity to buy, sell and produce can be an engine of change. Business has helped to create much of what is valuable in the world today. It will play its part in ensuring the planet's future.

Schmidheiny (1995) has clearly mentioned the importance of environmental education in the region. This is because the reputation of business for innovation and entrepreneurship can be successfully applied to the environmental arena through the development of new management techniques, products and process. The United Nations calls upon business and industry to fully participate in the implementation of Agenda 21, and particularly in promoting cleaner production and responsible entrepreneurship (United Nations 1992). They are not only polluters, but they also promote clean technology and corporate environmentalism.

There is now a much wider awareness of environmental issues, and recognition that if industry is the direct source of the problems it is also the main provider of the solutions. With this is the wiser perception that industry must be encouraged, rather than browbeaten, to find the answers. This is our opportunity...The answer is not only to deal with the extremities, but also to go back to square one and see if you can design a process or a product that prevents the problem from arising in the first place. (Hai et al. 1996)

Environmental education is not a destination. Rather, it is a journey toward mitigating environmental problems. It is a holistic approach to the learning process to bring out desirable changes in human knowledge, attitude and skills. The ulterior purpose of environmental education is to enhance an individual's intellectual capacity and scholarship in order to attain their fullest potential. Because of this reason, B&I can promote the advantages of environmental education in achieving global environmentalism. Environmental education could include many roles, not limited to the following:

- Changing/modifying people's knowledge, attitude and behaviors
- Deepening people's understanding and heightening their awareness
- Transferring knowledge to future generations
- Making people innovative, investigative and inquisitive
- Fostering creativity as well ingenuity
- Enhancing people's volition

(3) *Major environmental actions and problems*

The analysis of the selected country reports indicates that there are some environmental problems, which are caused by business and industry in the region and are the direct result of the interaction between the B&I sector and the environment. The severity of the problem differs from country to country. These problems include (a) industrial wastes (solid, semi-solid, liquid and gas caused by chemicals, motor workshops, etc.), (b) air pollution generated by industry, power plants, use of natural gas, coal and oil, etc. (c) deterioration of soil quality in the vicinity of factories, (d) ground water pollution, (e) wastewater effluents, (f) toxic substances, (g) oily discharge, (h) the Minamata disease caused by the methyl-mercury poisoning discharged from a factory in Minamata in Japan, and (i) traditional practices of open dumping. Worse are the allowed practices used by both waste generators and collectors where the collected wastes are just dumped at nearby corner streets and finally dumped in open, unsanitary dumpsites. So far, there are only few sanitary landfills adopted today, but most of them are not within the sphere of safety standards.

Japan produces about 397 million tons of industrial waste a year. This waste is incinerated and

disposed of in landfills. In the process of incineration, these industrial wastes emit gases such as CO₂, NO₂, SO₂, and dioxins. Dioxin have such a serious impact on the health of human beings that they have become a big concern to the people of Japan.

Eco-business activities (activities that are friendly to the environment) are becoming popular in the region. These activities include the production of pollution control devices, decomposition machines, eco-labeling, advertisements for green technology such as ozone-friendly refrigerators, sprays, solar energy systems and so forth. All these indicate that business and industrial communities are gradually becoming aware of environmental deterioration and growing environmental problems. Business and industrial associations such as industry federations and chambers of commerce have begun to integrate environmental concerns in their activities. Some countries have categorized business and industry into different categories of black, yellow, red and so forth based on the severity of the damage they cause to the environment. The environmental impact assessment system (EIA) has been made mandatory prior to the beginning of the project. Even environmental acts and regulation have been formulated and enforced to abate pollution, especially water pollution in many countries. In some countries, companies have been proactive in environmental conservation.

Some exemplary activities initiated by business and industry communities as their response to protect their environment have been briefly summarized below.

a) In Pakistan, an air pollution charge is levied on industries that do not comply with the National Environment Quality Standards (NEQS). This tax is doubled every year. It is collected by the Chambers of Commerce and Industry and is used to undo the damage to the surrounding areas. As part of the process of the NEQS compliance, many thermal plants have installed flu gas desulfurization unit, or have switched to burning low sulfur (one percent) furnace oil, or even installed wastewater treatment systems. A good example of wastewater treatment is that Pakistan Steel treats its wastewater to irrigate roadside plantation, orchards and vegetable gardens.

b) In Fiji, the Fiji National Training Council has a structure in place, called Levy Grant Scheme, whereby private sector organizations submit one percent of their gross salaries to the Council to fund courses at a subsidized rate for employees to improve their works. The Council provides training on environmental management system under ISO 14000 series standards and codes of environmental practices.

c) The PINAESAN Bank of Indonesia and the Bank International Indonesia have initiated green banking to provide insurance against environmental degradation. In other words, any area which is to be used as a collateral to a credit request for industrial zone development should be under environmental insurance for its future risks and impacts which might come from its industrial activities. Also, long-term loans with lower interest rate are provided by NGOs for waste recycling project.

d) Large Japanese companies have started to manufacture “environmentally friendly” vehicles, equipment, machinery, power saving electric appliances, etc. For example, carmakers have begun to manufacture low pollution emitting vehicles, electrically powered cars (hybrid cars that run on petrol as well as on electricity), CNG (compressed natural gas) cars (that run on natural gas as well as electricity). Acquiring the ISO 14000 international standard is becoming popular and is considered prestigious among Japanese companies. Over 1,500 companies have received the ISO 14000 certification and are subject to examination by Environmental Management System Registrars (EMS) every three years. In a company, their employees are also required to carry an EMS card, which

records time, methods and targets of environmental management. This allows the employees to understand the importance of environmental management systems.

e) In Taiwan, the Environmental Protection Administration (EPA) has identified some selected companies, which must report industrial waste via an on-line reporting system, and then implement a plan to manage industrial waste disposal. The next step would be to monitor and evaluate information on waste reduction, reuse, storage and disposal technology assistance in the production process on-site. Some 480 products have been granted a “green mark.”

f) Pre-service, in-service and on-the-job training are provided to employees on ISO 9000 and 14000, EIA and others.

g) In cooperation with universities, some industries and companies in Japan conduct environmental internships for students.

h) Private sectors are undertaking initiatives to produce educational or promotional materials and sponsor their production.

i) Research work on water pollution and toxic substances are also underway. For example, the Industry-University Cooperative Research Center (IUCRC) is conducting research on toxic substance. The cooperating industries support activities to raise public awareness about environmental conservation.

j) In some countries, ISO 14000 has been implemented and industries have been evaluated and then certified. Those not meeting the standards have been shut down because of their outdated heavy pollution rendering technologies. Some enterprises have been listed in the black book since they have not met the national standards for environmental management.

(4) *Environmental responses in the region*

a. South Asia

Data and information from India and Pakistan show that environmental impact assessment is mandatory for the industries categorized as yellow or red. India has adopted the policy of adopting the best available clean and practical technologies at the beginning of the industrial operation rather than the end-of-pipe treatment. Guidelines and manuals have been prepared for waste management, utilization, reuse and recycling. The Central Pollution Control Board (CPCB) conduct media-based awareness raising programs on prevention and control of pollution. The government has developed a communication strategy for launching an awareness campaign on waste minimization in small-scale industries. The National Bank for Agriculture and Rural Development (NABARD) has taken initiatives with a view to familiarizing bankers with integrating environmental concerns in their criteria for financial assistance to projects. Industrial associations such as the Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce and Industry (FICCI) have increasingly shown an interest in integrating environmental concerns with their program of activities.

The Pakistan National Conservation Strategy has recognized the need to promote environmental awareness among the industrial sector and build their capacities to undertake sustainable industrial development. The Strategy has the following policies: (1) develop and enforce effective pollution controls, (2) promote clean industrial processes and recycling, (3) establish incentives for environmentally beneficial (or benign) industries, (4) develop a policy to site industry in areas of lower

environmental sensitivity, and (5) build awareness within industry. The National Environment Quality Standards (NEQS) of Pakistan deals with air pollution, water pollution and vehicular emission and noise. Also the Pakistan Environment Protection Act 1997 focuses on pollution and environmental impact assessment. The Technology Transfer Program in cooperation with IUCN-Pakistan also focuses on the abatement and control of industrial pollution and provides citizens the right to sue the polluter of the environment. The Pakistan Federation of Chambers of Commerce and Industry (FPCCI) is also active and has initiated a five-year program called Environment Technology Program for Industries (ETPI) to assist the manufacturing sector in identifying and implementing economical pollution prevention and abatement technologies and promoting the public awareness for environmentally friendly actions. The Pakistan Institute of Labor Education and Research (PILER) runs an environmental education program for workers all over the country.

b. Southeast Asia

In Indonesia, the Government introduced a Clean Production Program to facilitate all business stakeholders to cost-effectively manage their environment. The Program places emphasis on (1) efficient use and conservation of natural resources, (2) reuse and recycling on site, (3) substitution of raw material auxiliaries, (4) efficient operational processes, (5) provision of training, (6) good housekeeping practices, (7) product design and reformulation, (8) necessary change in process, and (9) modification of equipment, process or procedure. This Program also provides economic incentives, import duty exemptions and soft loans to influence business community's behavioral patterns in the management of their environment. Also, Business Performance Rating Evaluation Program has been implemented to promote the business and industrial sectors' compliance to environmental impact management requirements. It has been successful in motivating companies to restructure their factories and strive to improve their ratings so that they can "go public." Under this Program, the business performance rating evaluation has been ranked into five levels:

- Black Grade (industries make no efforts on environmental management)
- Red Grade (industries make efforts, but do not meet the criteria)
- Blue Grade (industries considered successful in satisfying the minimum requirements for wastewater quality as per the criteria)
- Green Grade (industries make and support efforts in environmental control)
- Gold Grade (industries which make serious and significant efforts on air pollution control and waste recycling directed at zero discharge, and have incorporated cleaner production and technology in their industrial activities)

The Indonesian Chamber of Commerce (KADIN) has established an Environment Unit to promote environmental awareness and advocacy among the business groups and individuals. Likewise, the Indonesian Business Council for Sustainable Development raises environmental awareness about pollution among the businessmen/industrialists by providing information as well as consultation services on eco-efficiency and clean technology.

In Lao P.D.R, industries have been categorized into (1) clean industry, (2) moderately polluting industry, and (3) highly polluting industry (includes animal slaughterhouses, tanneries and cement factories). People make and report complaints about wastewater release. If proved, the factory concerned is given a two-month notice to solve its problem, failing which the factory must be closed down until the problem is solved.

In Malaysia, business and industries that violate the environment department's regulation are prosecuted in the court. Their premises are closed down and/or they are required to pay fine.

Violations of certain provisions of the law are compoundable. In Thailand, the government has adopted a “Polluter Pays Principle” towards polluting factories to finance industrial clean-ups.

The Myanmar Agenda 21 has identified two major programs to (1) promote sustainable industrial development and cleaner production, and (2) promote sustainable transport and communication development.

The Philippine Agenda 21 has initiated a project called Private Sector Participation in Managing the Environment (PRIME) for companies and their respective associations. Its activities include training their staff and work force, accreditation of products and services, promotion of industry self-regulation, tax exemptions or rebates for maximum efficiency and cleaner production processes. Individual initiatives of businesses are encouraged and recognized with awards like “Likas Yaman Award” recommending easier access to credit facilities and other business incentives provided by the Department of Trade and Industry and the National Economic Development Authority.

c. Northeast Asia

In China, over 65,000 small enterprises were closed down after the implementation of ISO 14000 series. These industries were found using outdated heavy pollution rendering technologies. In 1999, four big enterprises were recognized as Top-Four National Environmental Education Bases for developing environmental education for their professionals and staff.

Major eco-business activities of Japan have already been mentioned elsewhere. Among others, the Japan Environmental Association permits labeling “eco-friendly” products with an “eco-mark,” if the products meet the criteria. Eco-industries such as the production of desulfurization systems, and a machine that decomposes raw refuse into CO₂ and H₂O without making compost are also emerging. One company has invented an additive that makes the recycling of polycarbonate possible without decreasing its strength. Also, the Federation of Economic Organizations (Keidanren) has established the Keidanren Nature Conservation Fund to support nature conservation activities conducted by NGOs.

In Taiwan, the Environmental Protection Plan of 1998 requires that the industries install the following devices: (1) pollution control devices in manufacturing and repair industries, (2) environmental sanitation and pollution control services in the industrial service sector, and (3) environmental protection engineering in the civil engineering industry. In order to encourage companies to voluntarily comply with environmental protection laws, the EPA provides assistance to enterprises to achieve ISO 14001 certification. Also, the Foundation of Taiwan Industry Service (FTIS) is involved in a number of activities such as waste minimization, industrial sanitation and occupational safety, environmental controls and so forth.

d. The Pacific

In Australia, one of the ways in which the federal government influences environmental best practices in business and industry is through partnership arrangements with relevant associations and other levels of government. It supports a range of incentive schemes to encourage more ecologically sustainable work practices, including the Cities for Climate Protection and Greenhouse Challenge programs. Cities for Climate Protection is a program that empowers local governments to reduce greenhouse gas emissions in their council and community. Greenhouse Challenge is a program designed to reduce greenhouse gases from business and industry through a voluntary and self-regulatory approach. It involves the company signing an agreement with the Federal Government

on expected reductions and on-going improvements to meet the targets that have been set. The Department of the Environment and Heritage manages a network of databases on the Internet, called EnviroNET Australia, which provides fast access to information on industry expertise, environmental technologies, education and research and development. Also, conferences are held on eco-efficiency, cleaner production, environmental reporting, and life cycle analysis.

In Fiji, the development of a “green list” has been initiated. Companies and industries that comply with the requirements of legislation have their names put on the list for incentives such as property tax rate reductions or lower import tariffs on machinery, etc., to implement a code of environmental practices. In 1998, a cement factory received tax relief on the importation of pollution control equipment to filter out dust.

This cursory review exposed the following features of environmental education activities of business and industry sectors in the Asia-Pacific region:

- Emergence of legislation primarily in treating the end-of-pipe activities
- Tendency towards manufacturing of “environment friendly” vehicles, machinery, equipment and products in industrialized countries
- Initiation of recycling and reuse projects in the region
- Categorization of industry based on the nature of environmental problems
- Focus on training and production of education materials
- Initiation of action research on a small scale
- Tendency towards developing partnerships with other sectors
- Providing training to students in real-life-situations

(5) Conclusion and suggestions

The paper has highlighted the importance of the B&I sector in management and protection of the environment and the role of the B&I sector in promoting environmental education in the region. The preliminary review of the status reports indicates that there are some responses to, and action in, environmental management. Despite high cost involvement at the initial stage, some countries have begun to establish eco-business or industry to support the idea of protection and management of the environment. However, environmental education activities appear to be at the minimum in the region, with the exception of a few developed countries. The countries of sub-regions appear to be far behind in fostering environmental education in the region with the exception of some education programs for workers in South Asia, eco-mark, consumer education and awareness raising activities in Northeast Asia and promotion of green list in a few countries in the Pacific region. The promotion of educational materials is on the rise in the region. In many countries, they are almost absent. In Solomon Islands, industries see environmental education activities as anti-development and are considered a threat to their very existence. In other countries, the B&I sector prepares environmental plans approved by the ministry for environment on a case-by-case basis. In countries like Japan and Korea, numerous activities related to consumer education are being carried out. This is the area that needs to be promoted by businesses and industries in the region. In order for B&I to promote environmental education, some strategic ways have been suggested. However, it should be noted that because the region is diverse in its environmental conditions, the actual strategies and methods differ from place to place, and must vary depending on the state of the environment and severity of the environmental problems. The suggestions are grouped under three sub-headings.

a. In-house capacity building

In order to provide shareholders, employees and suppliers with relevant knowledge to work with

greater consideration for the environment, companies should organize activities that enable them to work towards sustainability. These activities include (1) mandatory education, reeducation and training to the relevant stakeholders (employees, customers, suppliers, and dealers), (2) development of educational and awareness-raising materials and packages, (3) organizing participative seminars and leadership forums on specific issues, (4) conducting proactive dialogue with stakeholders, etc.

b. Green consumerism

It is said that an educated customer is the best customer. Despite the fact that consumers consider themselves to be very environmentally conscious, by and large, research shows that they are not willing to pay for environmental consideration. Customers are one of the important players in business and industry because consumers obtain and use their goods and services from environmental resources. They are also protected by eight basic rights, one of which is “the right to a clean and healthy environment.” But the main question that is in front of us is who is responsible to ensure this condition? The obvious answer is the government and the concerned authorities. But at the same time, each and every customer also bears moral and social obligations to use resources wisely. They have the purchasing power and have the rights to decide what to buy and what to consume. Their consumption patterns will determine the lifestyle and its ultimate environmental impact. The consumer possesses real power to effect change and ensure a healthy quality of the environment. There is a need to question the source and manufacture of the consumer item, to keep in mind the impact of products “from the cradle to the grave.” With greater awareness, some of these environmental problems become apparent. This is possible when the consumer becomes aware and desires change. Change will come about only when the consumer is educated about healthy consumerism and a clean and safe environment, to realize that what they purchase and use may be detrimental to the environment. To achieve this, we should promote green consumerism, where customers are introduced to the idea that they are, to some extent, responsible for the consequences of their buying decisions. We have to teach the customers to review every impact of their purchase. This is central to ethical consumerism (Chelliah 1996).

c. Symbiotic partnership with other institutions

Corporate sectors should attempt to forge smart partnerships with organizations for enhancing environmental education in the region. They can offer scholarships for schools, sponsor research, undertake internships and even run technical trade schools. They can provide key issues to business schools for their incorporation to their curriculum. In some countries, business-sponsored education programs have been quite successful in tackling the problems. They can search for environmental success stories and publicize them. Exchanges of employees have been quite successful in Japan. Some companies have been quite successful in inviting representatives of the leading organizations to visit their plants and seek their constructive suggestions for environmental improvement.

(Bishnu Bhandari)

2.2.2 Network-building for NGOs to promote education and public awareness for sustainability, with special reference to international cooperation

(1) Introduction

a. Background

Non-governmental organizations play an important role in promoting environmental education. Taking account of its importance, the maldistribution of resources, and international nature of causes and effects of environmental problems, trans-boundary actions are required for the promotion of environmental education activities by NGOs, in addition to domestic efforts for it. In fact, such international efforts have been put on political agenda.¹

Regardless of its importance, however, there seem to be insufficient studies for making strategic plans for promoting such activities, especially in the Asia-Pacific region. In order not only to improve the quality of each project but also to achieve synergies, research on this topic should be promoted further. Based on this recognition, the IGES Environmental Education Project has conducted research to identify the constraints on, and challenges for NGOs to promote environmental education in this region, so as to consider the countermeasures to improve the situation. In particular, emphasis has been put on international (trans-boundary) cooperation and the role of NGO networks.

b. Methodology

The project has carried out major research activities on this topic in the following manner. First, the needs of the related actors were assessed in Japan. A workshop entitled Environmental Education Workshop for Overseas Assistance was held with this aim, in cooperation with Japan Environment Corporation. While we recognize the mutual benefits of international cooperation, the actors can be divided into donors and recipients, in terms of the flow of resources. Japan was selected for inclusion in the case study site because it is the major donor in the region.

Second, case studies were conducted in Indonesia. This country was selected for the case study of a recipient of international assistance, because environmental education by Indonesian NGOs is very active and several international efforts between Japan and Indonesia promote environmental education. The research in Indonesia includes one case of an international cooperation project between Japan and Indonesia, which has been studied in a participatory manner. Information about these case studies is summarized in Table 3.

Table 3: Data Collection Activities

	Case Studies in Japan	Case Studies in Indonesia
Major Activities	Workshop	Field Study
Period	28-29 September 1998 (± 1 month for the questionnaire survey)	July 19-26 and November 9-20, 1998; Oct. 27-Nov. 20, 1999 ; Oct. 29- Nov. 7, 2000
Data Collection Methods Mainly Used		
<i>Interview</i>	×	○
<i>Questionnaire Survey</i>	○	○
<i>Focus Group</i>	○	○
<i>Observation</i>	×	○
<i>Literature Review</i>	○	○

¹ For example, Initiatives for Sustainable Development, a comprehensive package announced in 1997 of Official Development Assistance (ODA) undertakings in Japan's international environmental cooperation, clearly mentions Japan's intention to support environmental education by NGOs through its major ODA scheme to support NGO activities: "Japan will assist environmental education projects through grant assistance for grass roots projects."

In parallel with these activities, a literature review was conducted in order not only to complement the studies above but also to prepare a theoretical framework, with emphasis placed on the role of networks.

This section is based on the research outcomes and consists of seven parts: (1) introduction, (2) definitions, (3) theoretical framework with focus on the role of networks, (4) case study in Japan (5) case study in Indonesia, (6) an international cooperation project, and (7) conclusion.

(2) Definitions

To facilitate the discussion that follows, this section defines three key terms.

a. International cooperation

"International cooperation" or "international aid" can be defined as "a trans-boundary flow of resources on concessional terms." Strictly speaking, the word "international" refers to the relation between nation-states, and often refers to international bodies such as the United Nations. However, in this article, the term "international cooperation" is used in the sense that includes the relationship with non-governmental actors. International cooperation can imply such cooperative endeavors as governmental efforts to promote environmental education by NGOs in the other countries through the use of official development assistance (ODA), as well as trans-boundary non-governmental efforts. "Overseas assistance" is used in the same way.

b. Environmental education by NGOs

In its limited sense, the term "education" can refer only to institutionalized educational activities in school, which are provided in a planned and organized way. However, NGOs have an educational impact on the audience through various and broad activities, ranging from "nonformal education," which is highly planned and organized education outside of the school (e.g., workshops, seminars, etc.), to "informal education." According to the Educational Resources Information Center (ERIC) of the U.S. Department of Education, informal education is "casual and continuous learning from life experiences outside organized formal or nonformal education" (ERIC 1999).² It includes influences on the general public by means of diverse media, such as posters, the mass media and so on. The many opportunities NGOs can provide for the public to participate in practical conservation activities, which have educational impact on the participants, can also be regarded as a part of informal education. Therefore, it is very important to use the term "education" in the broad sense in regard to environmental education by NGOs. Differences between the terms are represented in Table 4.

Table 4. Comparison of formal, non-formal and informal education

	Formal Education	Non-formal Education	Informal Education/Learning
in/out of School	in	out	out (in most cases)
Organised/ Institutionalised	Yes	Yes	No

Taking these characteristics into consideration, the terms "environmental education and communication" or "social learning about the environment" might be more appropriate when referring to educational activities by NGOs. The term "environmental education" is extended to cover the notion of these terms in this paper.

² ERIC defines nonformal education as "organized education without formal schooling or institutionalization in which knowledge, skills, and values are taught by relatives, peers, or other community members" (ERIC 1999).

c. **Networks**

Since the word “network” often refers vaguely to relations linking individuals, it has to be clarified to what kind of linking relations a network refer in this article. Eccleston (1996) classifies linkages among environmental NGOs into four levels according to degrees (Table 5).

Table 5. Types of linkages between Environmental NGOs

Networking:	Decentralised/unpredictable use of information from elsewhere. Passive and occasional use of information technology 'nets'.
Networks:	More active exchange of information with coordinating secretariat; More regular personal contacts; Emphasis most on information sharing rather than joint campaigning.
Coalitions:	Single event joint campaigns often among fairly diverse NGOs. Limited life recognised and accepted, given diverse missions.
Alliances:	Long-term allegiance to common ideals among very trusted partners; Very regular consultation by fax, IT and personal meetings.

Source: based on Eccleston(1996)

In this article, basically, the word “network” is used as Eccleston defines it. Also in this article, the term “NGO network” does not exclusively mean the networks of NGOs but also networks of stakeholders with NGOs at the center.

(3) Hypothesis of the benefits of NGO environmental education networks

Throughout the research activities, the project has put the focus on the role of NGO networks in this field, as it is theoretically thought to be a key to implement and promote effective international cooperation projects for environmental education by NGOs, as well as to support their domestic environmental education activities.

Table 6. 3 Hypothetical Benefits of NGO EE Network

(1) Improvements in Communication and Sharing of Resources among Members
(2) Improvements in External Relations
(3) Promotion of Social Learning

Fundamentally, the advantage of making a network is embedded in its ability to facilitate the gathering, accumulating, disseminating and sharing of resources such as information and knowledge. It can bring about many benefits to the members, which help increase the effectiveness and efficiency of their activities at the macro as well as micro level. Such potential benefits can fall into three groups as below, although they are inter-related (Table 6).

a. Improvements in communication and sharing of resources among members

This benefit of a network is very important for NGOs, as they are in close relations with the local community in most cases and are restricted in their range of activities or targets due to limited resources. First, it can result in organizing and optimizing the activities by each NGO through orientating them in a certain direction that can lead to a “movement.” Second, expanded information about the others can make efforts complementary to each other. It can increase collaborative efforts by sharing resources, which result in increased environmental education activities overall. Third, the linking of “places/fields” and “subjects” in environmental education achieved by improved communication leads to continued and consistent provision of learning opportunities. This is important, as environmental education is interdisciplinary in nature. Fourth, it can promote a participatory approach to activities by involving multiple actors. Fifth, it can lead to capacity building

of each member in terms of environmental education activities as well as the organizational management through sharing resources, including information, know-how, teaching materials, and human resources. Considering the “human-centered” characteristics of environmental education, which are different from types of development activities, this point is also significant. As a result, it increases the effect of international cooperation by effective and efficient transfer of resources through the “ripple effect.” Last, it would be encouraging for a local NGO to get to know about the other actors who are active toward the same purpose.

b. Improvements in external relations

A network can improve external relations. It can efficiently transmit the information on the members and the network itself, and induce actions by neighboring actors by improving the means of receiving and distributing external information. As a result, it can bring about some benefits such as increased access to the support (e.g., funds) to member’s activities. Also, it can help the members to start new projects by means of facilitating the information gathering of the areas unfamiliar with them. In addition, an established network can enhance the legitimacy of members by endorsing them, which makes it easier for the members to have more access to the external resources. Moreover, it can increase the influence on the other actors by force of numbers.

c. Promotion of social learning

Networks not only contribute to the promotion and improvement of environmental education by each member as mentioned above, they can also generate a great deal of educational effects on the society at large by linking stakeholders with NGOs. This function of a NGO network to promote “social learning” must be noted when environmental education by NGOs is discussed.

According to the research on environmental NGOs by Princen and Finger (1994), NGOs gain a comparative advantage over other actors, as they are capable of establishing two kinds of linkages in their independent political position, which promotes social learning.

One is the linkage between ‘biophysical’ environmental problems and ‘political’ issues (politicization). For example, an environmental problem (and resulting damage and remedies) is often recognized first at the local level. Causes are identified with the cooperation of NGOs, experts, and the media. Then, NGOs transmit relevant information in various forms appropriate for its receivers (‘translational linkage’), thereby making the matter a political issue. The other is ‘local-global’ linkage, which supports relevant movements and extends knowledge, information, and experience in early detection and prevention of recurrence of similar problems in other regions.

These two linkages enable people in different societies and locations to learn about the problem concerned, and the whole society, in turn, learns about (social learning) and addresses it. What has to be noticed here is that Princen and Finger point out that such linkages cannot be established by a single organization but by multi-tiered linkage among organizations, in such a form as a “network.”

Thus, it is important to construct cooperative relations/networks that make it possible for NGOs to take the initiative in working jointly with actors who can provide expertise and assist them in dispatching information, as it produces capability of promoting the social learning process.

Research on NGO activities in developing countries and international cooperation has also revealed the importance of the social learning process resulting from the linkage of NGOs (Korten 1990, Eldridge 1995). Although these studies are not on environmental education networks, they are highly relevant in examining the case of environmental education. Moreover, NGO networks in

environmental education that involve a wide range of activities and information can also potentially serve as standby networks stimulating network activities in other sectors. This is noteworthy when studying the significance of EE networks.

(4) Case studies: needs assessment for EE networks in Asian countries

a. Needs assessment of the donor side: the case of Japan

The findings of case studies in Japan have clarified the importance and actual needs of such a network on the donor side. Focus of Japanese case study is put on the conditions of NGOs in the context of overseas assistance with environmental education, rather than on their domestic environmental education activities.

A workshop was held as the core of Japanese case study as mentioned. People from about fifty related organizations (NGOs, funding organizations, governmental bodies, aid-implementing organizations, etc.) participated in it. Data and information were collected from the participants and other stakeholders by questionnaire survey in advance. At the workshop, participants were divided into two groups for focus group study, and facilitators of each group managed the discussion. The analysis in this section is based on them.³

As overseas assistance with environmental education by NGOs has been growing in number and scale for the last decade, more constraints on the promotion of environmental education have also been noticed. The keys to successful overseas environmental education project identified from the case study are shown in Table 7, according to project phase.

Table 7. Keys to Successful Overseas Assistance EE Projects according to Each Project Phase

Preparation	Identification of Proper Counterparts; Mobilisation of Resources (Funds, Human Resources, and Information)
Preliminary Survey	Gathering Qualitative and Quantitative Data about the Sites
Planning	Clarification of Each Component of the Project (Targets, Methodology, Fund, etc.), Flexibility; Planning for Maximum Extension and Sustainability of the Project
Implementation	Participatory Approach; Concerted Activities in the Donor Side
Evaluation	Multi-tier Evaluation System with Internal, External and Participatory Methods

Source: IGES (1999)

In regard to preparation phase, donors (including NGOs) generally implement projects with counterparts in the recipient county, and environmental education's projects are not exceptional. About eighty percent of NGOs answered that they implement the overseas environmental education's projects with counterparts (IGES 1999). Counterparts help donors in the countries that are unfamiliar with donors. They are also important in view of empowerment and the significance of participatory approach in achieving the overall goal of projects. They contribute to the sustainability of project impact as well as "ripple effects." Also, in terms of educational assistance, 'the foreign NGOs should not provide education directly to the children/youth' as 'the local people should be the sole educator for them' (Akaishi et al. 1997). However, some unsuccessful cases in finding counterparts due to the insufficient information and opportunities, which made the project activities sluggish, were reported at the workshop.

³ For further information, please refer to the report (IGES, 1999). All statistical figures about overseas assistance with EE by Japanese NGOs here are based on this survey.

“Securing related information,” is closely linked to the issue of counterparts.⁴ Apart from the counterparts, however, it is also meaningful to have close contact constantly with other donors with rich experiences, since there are few NGOs that can assign staffs to the project site on a long term and full-time basis. It can increase not only the information and knowledge for implementing the project successfully but also the information on other related projects, which help NGOs avoid overlapping and offsetting the effect of each project and achieve synergy effects.

It is very difficult to secure appropriate staff in the field of environmental education with knowledge and experiences in overseas assistance both in developed and developing countries. This is due to the fact that number of people in this field is insufficient, and that scattered. There is a need for efforts to increase information on human resources to improve the situation.

Especially in the case of international cooperation for environmental education, it is very important to mobilize funds, since NGOs depend heavily on grants from funding organizations. The result of questionnaire survey shows that 84.4 percent of the funds that Japanese NGOs use for overseas assistance with environmental education are the grants from funding organizations (IGES 1999). In addition to the increase in quantity, funds should be mobilized in an appropriate scheme for environmental education activities by NGOs. This is noteworthy, as it is required to reconsider the current funding schemes for better implementation of environmental education projects. For example, general funding schemes in Japan do not allow NGOs to count labor costs and they are provided on the single-year (not multiple-years) basis. However, considering the fact that such projects last more than one year on average and the human-centered nature of environmental education, it is necessary to improve current funding schemes.⁵ Therefore, it is important to facilitate the information exchange between funding organizations and NGOs on this topic, which leads to efforts for better funding schemes as well as to an increase in the amount of available funds.

Generally speaking, due to the lack of time and resources, it is very difficult for foreign NGOs to carry out thorough preliminary surveys for implementing the projects, regardless of their importance. In particular, socio-cultural traits of the project sites are hard to obtain as they are to be surveyed through a time-consuming process, despite their significance.

It is regarded important to promote a multi-tier evaluation system with internal, external and participatory methods, and thereby achieve effective planning and implementation of the project. Also, the improvement in this regard can attract more funds, since insufficient evaluation is one reason hindering expansion of assistance for environmental education.⁶

Let us consider whether and how a network can contribute to improving the situation, with reference to the three potential benefits mentioned above: (1) improvements in communication and sharing of resources among members; (2) improvements in external relations; (3) promotion of social learning.

With regard to a “preparation phase,” a network can contribute to the improvement of the situation,

⁴ Yamanishi argues that whether or not the educational assistance by Japanese NGOs turns out to be successful depends on how well counterparts can identify the living and educational needs of the recipients through participatory approach (Yamanishi 1997, 48-49).

⁵ The length of the whole cycle of overseas environmental education projects by NGOs is 55.5 months and the implementation phase is 25.9 months on average (IGES 1999).

⁶ One staff member of a funding organization stated that “Although many proposals on environmental education are submitted, it is very difficult to evaluate them. However, it is indispensable to evaluate them, because the result and importance of a proposed project must be clearly indicated to the fund suppliers. Therefore, the adoption rate is low when compared with other fields.” (IGES 1999)

through Benefit (1) and (2) above. It can help to secure appropriate human resources through Benefit (1), resulted from the increase in the flow (e.g., by fax, electronic mail, at meetings, etc.) and stock (e.g., websites, databases, etc.) of information.⁷ It can facilitate matters for identification of counterparts by Benefit (2). In addition, it can expand the information exchange between funding organizations and NGOs on this topic with Benefits (1) and (2), which leads to efforts towards improving and increasing appropriate funding schemes.

The network can also facilitate “preliminary surveys,” especially by Benefit (2) and enhanced participatory approaches as the result of it.

The network can help include the key points in the planning phase. Benefits (1) and (2) help to include objective viewpoints to achieve clarification and flexibility of the project. It also contributes to increasing conformity with other related projects and thereby optimizing the assistance effects on the macro level.

In this context, the potential benefits of a network, especially Benefits (1) and (2), can help address keys in the implementation and evaluation phases, such as globally coordinated activities, participatory approaches, appropriate relationships with the recipients, and multi-tier evaluation.

Thus, the case study has revealed the needs and importance of networks in donor countries to improve and expand overseas assistance with environmental education by NGOs.

b. Needs assessment of the recipient side: the case of Indonesia

The case studies in Indonesia have revealed the importance and actual needs of such networks on the recipient side. The focus of the Indonesian case study is not limited to the aspect of international cooperation but is extended to include the domestic environmental education activities. It tries to identify the domestic constraints on NGOs in promoting environmental education, in order to illustrate comprehensively what is needed when establishing a network in recipient countries. As in some other countries, efforts to promote environmental education by NGOs have been increasingly active in Indonesia. Among others, we should pay attention to Jaringan Pendidikan Lingkungan (hereinafter referred to as JPL), a nationwide non-governmental environmental education network.

This case study includes various activities as mentioned in Table 3, including a questionnaire survey of about seventy JPL members in November 1999.⁸ All graphs, tables and other statistical figures about JPL used in this and the next section are based on this survey.

Indonesia is the world's largest archipelagic nation, covering about 1.9 million square kilometers in total, stretching a distance of over 5200 kilometers from east to west. Its 200 million people live under various conditions. The country's per capita GNP was 680 dollars in 1998 (World Bank 2000). It is a multiethnic nation consisting of around 300 ethnic groups, and more than eighty percent of the people speak languages other than the national language in everyday life (Mizuno 1999). These geographical features can be an impediment to share information and other resources. In such an extensive and diverse country, it is clear that a network can play an important role in promoting environmental education.

⁷ The need for the latter was especially expressed by some participants. As one participant suggested, such networks can also lead to strategic capacity building of human resources.

⁸ This questionnaire survey was conducted during the JPL annual meeting/workshop (9-14 November 1999). Please refer to Nomura (2000) for further information.

In addition to the geographical features, an examination of the present conditions of NGOs helps us understand what the existence of a network means for Indonesian NGOs and their environmental education activities. Let us identify the challenges facing Indonesian NGOs and view them from the perspective of developing countermeasures. Challenges are categorized into four classes from (A) to (D) as shown in Table 8.

Table 8. Challenges facing Indonesian NGOs

<p>(A) capacity-building (B) improving the information-dissemination system (C) coping with political conditions (D) addressing diversified problems involved in the nation's social and economic development stages</p>

A number of research reports have raised these important issues for Indonesian NGOs: (A) their capacity-building and (B) need for improvement of the information-dissemination system (Japan Environment Corporation and the Japan Center for International Exchange 1997, etc.). Regarding both issues, several JPL leaders have pointed out that it is indispensable for Indonesian NGOs practicing environmental education not only to enhance their capability to provide environmental education but also to improve their abilities to send and receive information, including linguistic ability (Hendarti et al. 1998). For Indonesian NGOs, to which overseas relations are indispensable for expanding their activities, improvement of their linguistic ability is necessary. Regarding (B), which is related to the geographical features of Indonesia, regional information gaps exist in environmental regulation (Koesnadi 1997). While all information concentrates in Jakarta, inadequate social systems for information dissemination prevent it from spreading into every corner of Indonesia. In the case of environmental education also, according to a staff member of KEHATI (a representative grant-providing foundation in Indonesia), a great number of teaching materials published or distributed in the country have not reached NGOs, for some reason (Steffen 1998).

It is clear that two benefits of a network can help NGOs address issues (A) and (B) above, namely Benefits (1) and (2).

Eldridge (1995) identifies (C), the political necessity of linkages among NGOs, in his study of various NGO networks in Indonesia. Network building is necessary for NGOs, he says, to increase their influence and mutual cooperation in order to avoid co-option by the government, under the country's political conditions with the state being superior to civil society.⁹

In view of (D), the socio-economic development stage in Indonesia, measures for the environment require a wide range of activities involving those that promote "sustainable development." It is necessary for an NGO to build complementary relations with other organizations so that it can deal with various factors for solving problems. Surveys by the Japan Environment Corporation and the Japan Center for International Exchange (1997, 24-25) express the recent tendency of NGO activities in Indonesia as follows: "In addition to the introduction of participatory methods (localization), they have become aware of the close interaction between the environment and development (politicization) and integrate environmental problems with social development, as a result of failures in environment-limited strategies." This tendency seems to result from NGOs' intentions to address a diversity of problems. Education reflects it, as a matter of course. Ueda's survey shows that more than

eighty percent of NGOs in developing Asian countries conduct education activities from a comprehensive perspective, including social, economic, political, and cultural aspects as well as environment (Ueda 1997 11).

The benefits of networks, especially Benefit (2), can help NGOs cope with these socio-economic conditions.

What deserves attention here is that these four points mentioned above and summarized in Table 6 are equally applicable to many of the other developing countries in Asia. This applicability also illustrates the importance of environmental education networks for the promotion of environmental education by NGOs in this region.

It seems reasonable to review the needs of such networks in developing countries here, from a perspective of international assistance. A network increases assistance with improved external relations. It also achieves efficient implementation of assistance and spreading its effects in terms of time and space with facilitated communication and sharing of resources. In other words, effects produced by resources provided to one organization spread to others through a network.

Thus, the studies on the conditions of actors in donor and recipient country have revealed the needs and importance to establish networks on both sides of international cooperation for promoting environmental education by NGOs, as networks can provide the infrastructure for improving and expanding environmental education by NGOs.

(5) Feasibility and effectiveness of NGO environmental education networks: JPL and CART Project

The studies of the conditions of NGOs both in a donor and a recipient country in the light of the hypothesis of the benefits of NGO environmental education networks have shown potential needs of such networks in promoting environmental education by NGOs. We come now to the point at which it is necessary to analyze the effectiveness and feasibility of establishing them in a practical sense (especially by means of international cooperation). This section takes JPL as a case of such networks and the Common Agenda Round Table (CART) project as an international cooperation project to develop the network.¹⁰

Indonesia is blessed with abundant natural resources. Not surprisingly, many efforts have been made for a long time to protect the rich environment. In 1978, the first Indonesian environmental NGO, Yayasan Indonesia Hijau (YIH: Green Indonesia Foundation), was established. YIH was the first NGO to come into operation with the aim of promoting environmental education from a holistic perspective, while the international precursors focused on biological conservation in Indonesia.

Although YIH activities became sluggish in the 1980s, the nation-wide YIH activities stimulated grassroots environmental education activities in every corner of the country. With the beginning of the 1990s, the number of NGOs working in environmental education increased. Such NGOs include

⁹ Juliantara (1996) mentions four reasons that NGOs establish networks, taking the instance of the Yogyakarta NGO Forum on central Java island of Indonesia: they need resources, legitimacy, and information, especially in relationships with funding institutions; they can identify and coordinate their goals by viewing them in relation to others; they can enhance their capacity by participating in programs; and they can acquire greater political and social influence.

¹⁰ The Common Agenda Round Table (CART) is an effort of private sector to support and assist the promotion of the Common Agenda for Cooperation in Global Perspective, which was launched as a framework for cooperation between the United States and Japan.

current principal members of JPL such as the Environmental Education Center (PPLH, formed in 1990) and RMI (formed in 1992). Such movements culminated in the establishment of the nationwide environmental education network of JPL in 1996. Figure 2 shows that about eighty percent of the JPL member organizations were established in the 1990s.

JPL can be recognized as the national network for environmental education, in light of the above definition. It has an annual member meeting as the decision making body, a steering committee, and other committees in charge of the management of JPL activities with the secretariat. In terms of the size of the member organizations, JPL consists mainly of small- and medium-scale organizations. Statistically, the median of the number of full-time staff of the member organizations is 5, and the mode is 3. Its activities cover the extensive land area of the country as is shown in Figure 3. The fact that JPL consists of a number of medium-scale organizations from all over the country shows it plays an important role in bolstering environmental education at grass-roots level in each region through the capacity building of such organizations and nation-wide dissemination of information.

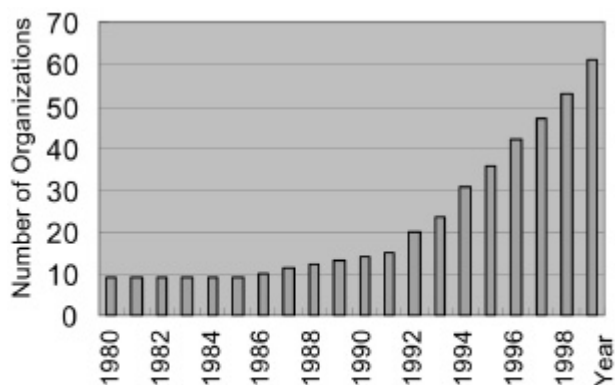


Figure 2. Year of establishment of JPL members (number of organizations/total) (N=61)

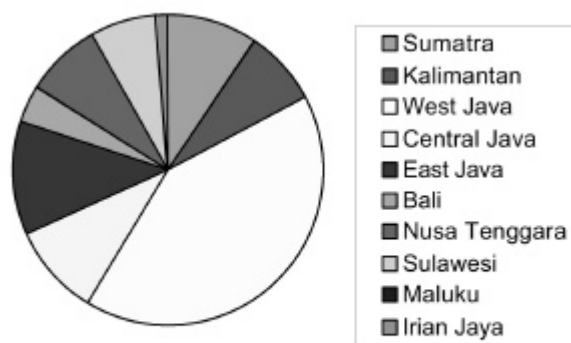


Figure 3. Number of JPL member organizations by region (Activity sites N=55/Multiple Answers)

Let us now examine whether the three potential benefits of the network to promote environmental education by NGOs are actually realized by JPL. First of all, the effectiveness of JPL, especially in terms of Benefit (1) is recognized by the members themselves. In response to the questionnaires, 47 of 66 JPL members said they benefited from JPL, despite the fact that the figure includes a number of new members. Most of the benefits mentioned by them overlap the points described in the aspect of Benefit 1. Notably, 30 of the 47 answered JPL brought about improvements of their programmes.

In terms of Benefit (2), it should be noted that the establishment of JPL has resulted in attracting many international efforts to support environmental education by NGOs in Indonesia. Such efforts include the Environmental Education Professional Training Programme (the collaborative project with Field Study Council (FSC/UK) supported by the British Council); the Japan-U.S. Common Agenda Round Table (CART) Environmental Education Project in Indonesia; Indonesia NGO Staff Environmental Education Training by IGES and Japan International Cooperation Agency (JICA); and the increase in the international funding for JPL members (e.g., from the Keidanren Nature Conservation Fund). Had it not been for JPL, efforts to support environmental education by NGOs in Indonesia would not have been as great. In fact, the start of most such projects was stimulated by JPL.

In other words, it is safe to state that such international efforts have helped to develop JPL and its activities. Among others, the role of the Common Agenda Round Table (CART) project must be noticed.

CART has carried out three projects for environmental education by NGOs in Indonesia since 1998. One of them is to establish and strengthen an environmental education network, namely JPL still in its infancy at the time, through technical and financial support. The aim is to promote environmental education by NGOs and, by so doing, to support NGOs in general and civil society at large. This project is unique because of its emphasis on supporting networks, rather than specific activities or projects.

More specifically, CART supports the weeklong JPL annual meeting every year, attended by more than fifty people from member NGOs and other related actors (governments, schools, private companies, including the media). One aim of the meeting is to conduct workshops for the capacity building of each participant through the transfer of knowledge, skills and information from Japanese experts and among participants. The other is to strengthen JPL as the national NGO network on environmental education, by giving opportunities for discussing and considering their current situation and challenges for the future, so that they can set the vision, mission, strategies and action plans of JPL. Many of the collaborative efforts mentioned in these plans have actually been put into practice, including developing a database of related actors and exploration of local potency and wisdom for environmental education. Five million yen are spent annually for this project (including the costs of Japanese staff such as airfare, which consisted of almost the half of the total). CART project support to JPL is summarized in Table 9.

Table 9. Major Activities at CART-Supported JPL Annual Meetings

1998	(Nov.11~15, in Bogor, 68participants) Assessment of needs in Indonesia to promote EE in general sense to set the vision, mission and strategies for each participant; Formulation of JPL action plans 1998
1999	(Nov.9~14 in Trawas-East Java, 81 participants) Establishment of vision, mission and strategies of JPL as the 'EE network', Enhancement of its structure (secretariat, decision making system, and etc); Formulation of JPL action plans 1999
2000	(Oct. 31~Nov. 5, in Borobudur, 89 participants) Review of JPL's past activities and Improvements of JPL's strategies and the structure
NB: Every annual meeting is accompanied with 'workshop' part for member's capacity building on EE in addition to the major activities mentioned above.	

Table 10. The Expansion of JPL Activities

1996	Situ Gunung, Sukabumi Workshop/ Annual Meeting
1997	Publication of <i>Kulit Pisang</i> Magazine of JPL
1998	JPL Annual Meeting Establishment of JPL E-mailing List Publication of JPL Member Directory (Indonesian) EE Professional Training Programme in cooperation with Field Study Council(FSC/ UK) started. JPL Workshop (supported by Common Agenda Round Table: CART)
1999	Annual Meeting Workshop (supported by CART /KEHATI) FSC's Programme 2 nd Semester Plastic bottle(PET) recycle program started Indonesian NGO Staff Environmental Education Training (IGES/JICA) started. Publication of <i>Kulit Pisang</i> Magazine of JPL Publication of JPL Member Directory (English/Indonesian), Implementation of Several Action Plans made at 1998 Annual Meeting

As is seen in Table 10, the JPL has become active and expanded its activities, especially since the CART project started in 1998. The JPL budget (revenue) has increased from 3,205,000 Indonesian rupiah in 1997 to 178,031,500 in 1999. There has also been a rapid increase in member organizations,

from 27 in 1996, to 37 in 1997, and 85 in 1999. Such increased resources have been used effectively according to the action plans made at the annual meetings.

These outcomes show that CART has contributed to the development of JPL, evidence that it is feasible to develop an environmental education network deliberately by means of international cooperation to support local initiatives. The role of international cooperation is an important point to be emphasized here.

In addition, the JPL example shows how international cooperation can extend and sustain the benefits of a network. Effects produced by resources provided to one organization spread to others (the “ripple effect”) through the network linkages. For example, information on the Minamata disease,¹¹ provided during an IGES-JICA training course, has been distributed through the network and benefited Indonesian NGOs engaged in environmental education relating to mercury problems in their local areas.¹² This point represents Benefit (3) of networks.

It is difficult to measure the full effects of a network. However, these findings make it clear that JPL has been contributing to the promotion of environmental education by NGOs in Indonesia. Considering the fact that the development of JPL owes much to international assistance, the achievements of JPL are significant as a model for future international efforts.

(6) Policy implications and conclusion

The three hypothetical benefits of NGO networks for environmental education were examined above: (1) improving communication and sharing of resources among members, which result in organizing and optimizing each network member’s activities and building its capacity; (2) improving external relations; and (3) promoting social learning.

The study of the conditions of NGOs both in one developed and one developing country, Japan and Indonesia, clarified the needs and importance of such networks to promote environmental education by NGOs. The case of JPL in Indonesia, with reference to the international CART project, has demonstrated the feasibility and effectiveness of such environmental education networks, especially by means of international assistance to support local initiatives. The case has shown that the proposed benefits of networks have been realized. Several voluntary efforts exist at local level to establish environmental education-related networks in other Asian countries. This report confirms the appropriateness of such efforts (e.g., Magallona and Malayang 2000).

In comparison with general ODA projects, the financial cost for projects of this sort to promote environmental education by NGOs is so small, as we have seen in the case of CART, that they can be implemented in many other countries. The necessary components of such projects fall into three categories as shown in Table 11.

Table 11. 3 Necessary Components of International Cooperation Project for NGO EE Networks

- | |
|---|
| <ol style="list-style-type: none">1. Financial and technical support to hold (national/regional) meetings2. Financial and technical support to secretariat (incl. computer skills—e-mail, website design.etc.)3. Capacity building by means of training, etc. |
|---|

¹¹ Minamata disease was a notorious case of industrial pollution in Japan caused by methyl-mercury poisoning.

¹² The information is based on a questionnaire and interview (Arisandi 2000), etc. NGO activities have actually led to the shutdown of a polluting company.

The CART project has shown that it is possible for existing aid schemes to implement these three components to support such networks (especially regarding the first and second components). In addition, the experiences of the IGES EE Project to provide environmental education training with JICA for Indonesian NGO personnel, mentioned only briefly here due to limited space, tell us that current technical cooperation schemes of ODA can also be used for such efforts (especially in regard to components 2 and 3).

In conclusion, it is significant and possible to establish and link networks to promote environmental education by NGOs on both the donor and recipient sides of international cooperation. Therefore, it is strongly recommended that the related actors (especially governments and NGOs) tackle these sorts of projects.

(Ko Nomura)

2.2.3 Media and environmental education

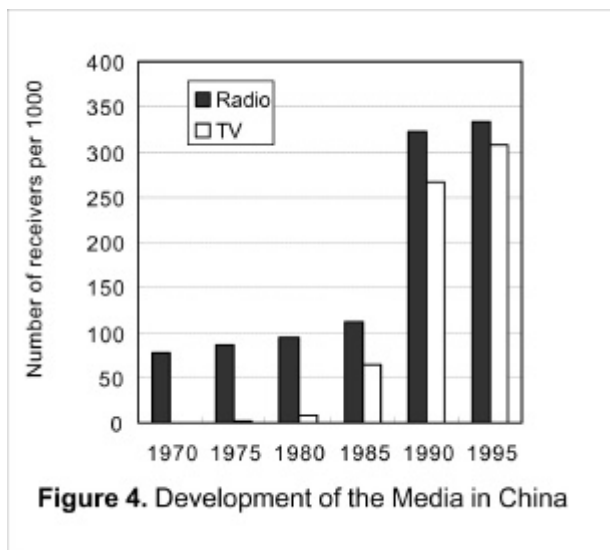
(1) Methodology

a. Background

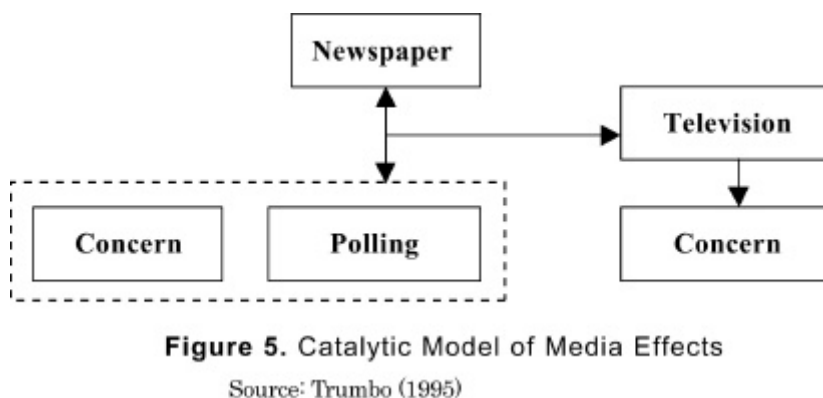
Today, access to the media is rapidly increasing in developing countries in the Asia-Pacific region, though there are some interesting tendencies in the spread of reception for electronic media. The rapid growth of media in China is an obvious example (Figure 4).

The rapid growth of the media in these developing countries raises the importance of the role of media. The media must pay attention and define expectations about what information they should provide. Especially, the international community, which aims for sustainable development, expects the media to actively provide information or messages about environmental conservation to the public.

In South Korea, most people, including journalists, and so on did not have adequate knowledge about the environment until the late 1980s. The main concern until then was economic development. In the early 1990s, the media started cover more stores about the environment than before. It is said that this trend gave the South Korean people more opportunities to consider their surroundings (Lee 1999).



It is difficult to grasp the global environmental issues such as global warming or depletion of ozone layer based on personal experience alone. Information about global environmental problems will only become widely known through coverage in the mass media, which have an important role in reporting the findings of scientists and specialists. Thus, the mass media are assumed to have an “agenda-setting function.” Thrumbo, in a comparative analysis about this function of the mass media, pointed out that newspaper coverage influences television coverage, but public concern about issues such as global warming seems to be more influenced by how the topic is covered by television, rather than by newspapers. He reported that the public concern is influenced by newspaper reports in relation to the results of the public opinion polls. Thrumbo named this process of the agenda-setting function the “catalytic model of media effects” (Figure 5).



According to research in Japan by the IGES EE Project’s Media Research Team, television news

viewing could promote concern and awareness for public environmental issues. Despite this, the amount of television viewing, assumed to be mainly entertainment programmes except for the viewing of news, was negatively related to the following dependent variables: the pro-environmental attitude scale, the pro-environmental behavior scale, and the likelihood of discussion about environmental issues with family or friends (Kawabata 2000).

This result in Japan means that environmental information should be actively distributed so that it gets coverage in the programmes in addition to only news programmes. Television is one of the key advertising media in societies of mass consumption. As such, it has a major function in “agenda-setting” in society. Therefore, in order the information about the environment to be disseminated widely to the public, it is necessary to allot funds for developing and producing programmes that can popularize environmental knowledge.

b. Target and approach

The primary purpose of this section is to address the current situations and to analyze environmental education in the media. Three approaches were used to identify issues in this research on media and environmental education: reviews of country studies, meetings, and specific research groups.

For the first approach, the IGES Environmental Education Project requested counterparts in thirty-four countries and two special areas in the Asia-Pacific region to submit reports on the state of their media. Research trips were also conducted.

In the second approach, the EE Project organized two Workshops on Media and the Environment. Twelve journalists from Asia-Pacific countries participated in these workshops and discussed features of the media and the environment education. A Regional Workshop on Environmental Education in the Asia-Pacific was also organized in December 1999 in Thailand. The direction and potential of our strategy were fully discussed at this workshop.

In the third approach, the Media Research Team was organized as a satellite research group of IGES Environmental Education Project. It conducted fundamental research about the relationship between the media and enhancement of public environmental awareness.

(2) *The status of environmental education by the media*

a. Environmental education by the media

The media are becoming active in initiating and promoting environmental education. Some countries have adopted the motto of striving to provide “well-informed reporting for a better-informed audience” and have advocated the importance of environmental education. The mass media in the region have, in recent years, become active partners in initiating and promoting activities that support and enhance environmental education, awareness and understanding. As the outreach of printed and broadcasted media continues to grow in the region, various organs of the media are emerging as the principal sources of information on the environment and development for most members of the public.

The Thessaloniki Declaration identifies the relationship between the media and environmental education as follows:¹³ “ The media should be sensitized and invited to mobilize its know-how and distribution channels to diffuse the key messages, while helping to translate the complexity of the issues into a form meaningful and understandable to the public. The full potential of new information

¹³ The Declaration of Thessaloniki was adopted at the International Conference on Environment and Society: Education and Public Awareness for Sustainability, held at Thessaloniki, Greece, in 1997.

systems should be used properly for this purpose.”

b. Case studies

Types of media have grown to include television, radio, newspapers, magazines, the Internet and mobile phones. Today they are deeply interrelated with people’s daily lives. Media differ in the way they disseminate information—by voice, pictures, printed or electronic methods and so on. This paper does not attempt to discuss what type of media is the best. The key point in considering environmental education through the media is to recognize that they have a strong influence in society. The following section provides examples to illustrate the roles of different media in environmental education in the Asia-Pacific region.

In China, the mass media, particularly television, is a common channel for adult populations in urban and rural areas to acquire environmental knowledge and information (Table 12).

Table 12 . Sources of environmental information in China

Medium	Urban	Rural
TV, Films and Radio	95.7%	88.8%
Newspaper/magazine	85.0%	3.7%
School Education	30.9%	15.0%

Source: Li (2000)

i. Newspapers

In Sri Lanka, it is no wonder that the printed media is the most popular and most accessible form of modern media because of the high rate of literacy. There are currently three major newspaper publishers who publish in all three languages. As a large numbers of Sri Lankans do not subscribe personally to newspapers, they prefer to read them in libraries and other public places. Environmental reporting in the newspapers is well established and prominence is given to issues of a controversial nature. The recent coverage of the planned construction of Sri Lanka’s first coal-powered power station is a good example (Raheem 1999).

ii. Radio

In Mongolia, as telephone, fax and electronic mail are only available in a limited areas, radio is the most effective means of communication (Boldsukh 1999). In Pakistan, radio is undisputedly the best medium for environmental communications. It is particularly effective in reaching two large and pivotal audiences; the users of natural resources who have low literacy levels and a high interest in these resources, and women who are both users of natural resources and processors in subsistence agriculture (Rizvi 1999).

In India, the All India Radio (AIR), with news, music, educational programmes, interviews, drama and development programmes, is one of popular mass media of communication in India. At least one program on an environmental theme is broadcasted each day at each of the broadcasting stations of the AIR. Also, a few NGOs work with the AIR to facilitate broadcasting on environmental themes (Sarabhai, Raghunathan and Kandula 1999).

iii. Television

In Indonesia, the Televisi Pendidikan Indonesia (Indonesia Education Television), owned by a private company, has frequently and periodically presented environmental education programmes targeted at different groups: elementary school children, undergraduate students, non-formal groups such as

women householders at home, and so on. Environmental subjects that have been produced and programmed by the National Open University include environmental impact assessments, water resource management, environmental pollution, natural resources management, forest conservation, sustainable development and Agenda 21. (Soetayono 1999)

iv. Internet

In Micronesia, a Japanese NGO known as World School Network (formerly World School Japan) brought in some small satellite communication equipment with a computer and set up a connection to the world. Using these instruments, World School Network started a project with garbage among schools in Japan, Micronesia and the United States, to compare contents of their trash boxes on the same day. Through such activities, children in these countries could share an awareness of issues concerning garbage. The government of the Federated States of Micronesia is installing such communication facilities on each island in order to provide information access for the children (Ohmae 1999).

c. Obstacles in implementing environmental education by media

Examples of environmental education activities by the media have increased in the Asia-Pacific region. However, there are still many obstacles or issues in the field of mass media, such as the lack of funding.

In Lao P.D.R., because almost all of media agencies are funded by the state, the amount of advertising and the material is limited. The daily expenses of the media agencies rely on the government's budget; nevertheless they cannot cover even half of their total expenses. Furthermore, media staff have a low level of motivation because their salaries are low. It is said that some government employees should seek extra jobs to survive (Khammalavong 2000).

In Myanmar, there has been no free press since 1962. It seems that the specter of environmental deterioration is not pervasive enough to affect the daily lives of the literate public yet. There appears to be only a small audience really interested in environmental affairs, judging from the fact that no journal or periodical totally concerned with the environment is available on the market. Some governmental personnel are knowledgeable about the environmental situation, but when they write or talk about the environment they only reflect the official views. It means that the present situation is not conducive to the improvement of the environmental conditions in Myanmar (Naing 1999).

(3) Campaign activities by the mass media

One of the main purposes of environmental education by the media is disseminating information widely on the environment to the public. In concrete terms this means that campaigns for environmental education using the function of mass media should be promoted positively as one of the means to create sustainable societies.

In China, the "wakening" of the mass media to pay close attention to environmental issues and encourage people to participate in environmental protection started in 1996. *China Children's News* was one of the beginners as well as the initiator of a large-scale environmental campaign in China called "Hand-in-Hand for the Earth" with millions of children and their parents participating. It is an excellent example which illustrates that China's environmental education can be very successful in a short time if international information, knowledge and methods on environmental conservation and sustainable development are quickly introduced and publicized by the mass media (Li 2000).

In South Korea, various forms of media in environmental conservation have been produced by the Ministry of Environment and distributed throughout the country. A monthly magazine of environmental information is published and distributed to local governmental offices and private organizations of environmental conservation. Stickers and posters (e.g., “Keep water clean for a sound life in the future”) were produced and distributed to the public, organizations, business and industry (Choi and Seo 1999).

In Japan, an excellent example of a campaign that illustrates the role of the media in disseminating information relating to environmental problems to the general public is the international meeting to discuss global warming held in Kyoto in December 1997, the Conference of the Parties (COP3) to the UN Framework Convention on Climate Change. Much of the Japanese public did not know much about global warming until this conference. During the conference, the media reported frequently on the happenings at the meeting. After conference, many Japanese have been well informed about global warming and climate change, because the media frequently provide up-to-date coverage on these topics.

This example shows that environmental media coverage is especially effective in efficiently and quickly disseminating environmental knowledge and awareness to the public.

(4) *General direction of the media in promoting environmental education*

Based on the above discussions, it is possible to assume that the media is a powerful, effective and influential tool to change people’s knowledge, attitudes and practices and to widely disseminate ideas and information about the environment. In its role as a watchdog, the media can influence the government and organizations to take more action on resource conservation and environmental protection. Media often also directly advocate protection and environmental rights. They can also be effective in linking local problems with global ones. In order to promote environmental education in the Asia-Pacific region, the media can conceivably undertake the following roles:

- Raise awareness/interests about environmental education
- Disseminate/promote successful and innovative practices on environmental education
- Assist in identifying “critical mass” of public concern
- Identify and promote relevant local media for environmental education
- Be a watchdog for both information providers as well as receivers
- Assist in creating a congenial setting for the community-wide commitment
- Encourage governments to support environmental education

(5) *Future prospects of the media*

a. *Importance of Information Technology (IT) for environmental education*

In some developing countries, the media are not fully developed. However, globalization in the field of information technology is also advancing rapidly and steadily toward such developing countries in the Asia-Pacific region. Through this movement, it is conceivable that this technology will be useful for developing countries. For instance, the Internet is thought to be an effective tool to eliminate gaps in access to information between developing and developed countries. Moreover, the potential for new information and communications technologies to make possible new patterns of development has already been pointed out and one IGES project is studying the topic. The rapid spread of these technologies is expected to continue in the future.

b. *Forecasting the spread of mass media*

The Project predicted the future ownership of radio and television receivers in selected countries of

the Asia-Pacific region in the year 2008 based on GDP per capita (Table 13).

Table 13. Increase in Number of Radio and Television Receivers per 1000 inhabitants

Country	Radio		Estimated Rate of Increase (%)	Television		Estimated Rate of Increase (%)
	1997	2008		1997	2008	
Bangladesh	50	74	149	6	11	174
Cambodia	128	256	200	9	15	168
China	335	346	103	321	368	115
Fiji	636	737	116	27	156	578
India	120	268	223	65	134	207
Indonesia	155	457	101	68	89	131
Korea, Rep.	348	1077	309	348	478	137
Lao P.D.R	145	189	130	10	109	1087
Malaysia	434	489	110	172	193	112
Mongolia	142	137	97	47	121	257
Nepal	38	55	148	6	74	1233
Pakistan	94	129	137	22	98	444
Papua New Guinea	91	266	293	9	113	1218
Philippines	161	310	192	52	137	264
Sri Lanka	211	212	100	84	159	190
Thailand	234	281	120	254	267	105
Vietnam	107	108	101	47	70	149

Source: Takahashi (2000)

The findings can be summarized as follows:

1. No significant correlation is seen in the ownership trends of radio and television. ($r=0.232269$)
2. Cambodia, India, South Korea, and Papua New Guinea are expected to have large increases in ownership of radio receivers (200 percent or more).
3. One-third or more of the people will own a radio in 2008 in China, Fiji, South Korea, and Malaysia.
4. Fiji, India, Laos, Mongolia, Nepal, Pakistan, Papua New Guinea, and the Philippines are expected to have large increases in ownership of television receivers (200 percent or more).
5. One-quarter or more of the people will own a television in 2008 in China, South Korea, and Thailand.

The following two points can be made based on the findings:

1. In countries like Cambodia, India, Korea, Papua New Guinea, Fiji, Laos, Mongolia, Nepal, Pakistan and the Philippines, where ownership rates of radio or television receivers are predicted to increase rapidly, it is expected that the ability to receive information on the environment will also increase rapidly. Therefore in these countries, where media is applied to improve public environmental consciousness, media policy's improvement is necessary.
2. In countries like China, Fiji, Korea, Malaysia and Thailand, it is forecasted that these media will become effective as tools of the environmental campaigns. Therefore, it is important to improve the policies through promoting appropriate programmes (software) like environmental information.

(6) Recommendations

a. Recommendations to developed (aid donor) countries and international organizations

- Apply grant funds, official development assistance, etc., to develop educational content for the spread of environmentally sound information.
- Selectively support projects which aim to improve low literacy rates in developing and

low-literacy countries.

- Consider ways to promote environmental education by promoting information technology.
- b. Recommendations to developing countries**
- Apply grant funds, official development assistance, etc., to develop content for the spread of environmentally sound information.
 - Find ways to take advantage of environmental education content which developed through overseas assistance.
 - Include the media in developing environmental education campaigns to improve the environment.
 - Promote improvements in infrastructure for information technologies.

(Masahiro Takahashi)

2.2.4 Environmental education at the tertiary level in the Asia-Pacific region

(1) Regional efforts

Asian countries have given the topmost priority to primary and secondary education in their overall development process. The Karachi Plan, the outcome of a UNESCO conference in 1960, mainly deals with universal compulsory and free primary education in Asia. The Plan promoted seven-year compulsory primary education programmes in the Asian region for twenty years, from 1960 to 1980.

Higher education in the region was expanded in the latter half of the 1970s (UNESCO 1998). This expansion was a response to the increased need and demand for higher education, and high expectations of economic growth resulting from the benefits of higher education. Higher education developed rapidly, especially in South Korea, China, the Philippines, Thailand, Indonesia and Malaysia. It can be said that the traditional university sector was expanded to absorb the populations who wanted to study in higher education. The non-university sector, such as polytechnics, has increased as well. In the 1980s, higher education saw what could be described as a diversification phenomenon. As a result of the population growth in the region, the institutions of higher education of various types began to be established around traditional universities. Especially active was the establishment of the short-term higher education, which aims to provide vocational, technological, and teacher training. Another aspect of this diversification was the establishment of open universities in the region. The Sukhothai Thammartirat Open University (STOU) was established in 1978 and became the first open university in the region. In 1971, a university operating an open admission method was established in Thailand. Special universities, which promote technological and vocational education, have rapidly attracted students in the region. Short-term institutions of higher learning such as institutes, colleges, and specialized schools, which offer non-degree programs, are also increasing in the private school sector in countries such as the Philippines and Indonesia.

During the 1980s, the lack of employment opportunities for graduate students from higher education programs became a serious problem in the region. This was noted especially in Thailand, South Korea, Indonesia and the Philippines. Umakoshi (1996) pointed out some reasons for the problem, such as the inability of the labor market to absorb highly educated people, economic fluctuations, mismatching between quality of higher educational programs and the needs of industry, etc.

It is forecasted that the demand for higher education will continue to rise in the region because of the rapid growth of population and the development of primary and secondary education from the 1960s to the 1980s. Umakoshi (1996) states that diversifying the higher education system is important to respond to this demand. He proposes suggestions such as establishing many kinds of short-term higher education programs, establishing universities based on distance learning, increasing the number of universities operating open admission systems, introducing both daytime and nighttime courses, establishing and reforming courses to meet social and industry demands, and developing graduate schools.

The Regional Workshop on Environmental Education, held in Bangkok, Thailand in 1986, is considered to be a milestone in the development of environmental education in the region. Many workshops, conferences and seminars were organized to prepare environmental education action plans in the Asia-Pacific region. Besides the creation of environmental education activities by universities at the national and sub-regional levels, many projects resulted from these efforts during the 1980s, including some important international initiatives: (1) Learning for a Sustainable Environment (LSE) and Teaching for a Sustainable World for the Teacher Training (TSW) by

UNESCO-APEID, (2) the Training and Research in Environmental Management (TREM) Project by UNEP-NETTLAP, and (3) Initiatives by UNESCO-UNITWIN. Various initiatives and research activities have also been conducted at a number of levels by different organizations.

(2) Methodology

This research aims to assemble data and information in a qualitative, as opposed to quantitative, manner. Eleven countries were selected for the study: Korea, Japan, China, the Philippines, Thailand, Indonesia, India, Nepal, Australia, Papua New Guinea (PNG), and Fiji. These countries were selected because they show common parameters on higher education.

The country status reports compiled by the IGES EE Project were used to extract the information. Since these reports have a rather limited amount of information about environmental education at the tertiary level, secondary sources were also used to collect more information about these countries. Next, the sub-regional characteristics and tendencies of environmental education at the tertiary level as reported by Sato and Abe (2000) were used as parameters to make analogies between the sub-regions. These parameters are the curriculum content, the way of cooperation with external organizations, the historical tendency of introducing environmental components into curriculums, and the style of international cooperation.

The development phases of institutions of higher learning modeled by M. Trow (1974) were used to make comparisons between countries. The three parameters included in this model relate to access to education: elite, mass and universal. Based on those categories of access to higher education the following elements were compared in this study: delivery style, areas and fields of environmental education, and form of cooperation with external organizations, etc.

(3) Results and discussion

a. Sub regional characteristics of environmental education at the tertiary level

The Asia-Pacific region has great diversity in terms of culture, political systems, religion, and language. Because of this diversity, the region displays various characteristics in terms of environmental education at the tertiary level. The analysis is presented in Figure 14, which is summarized below.

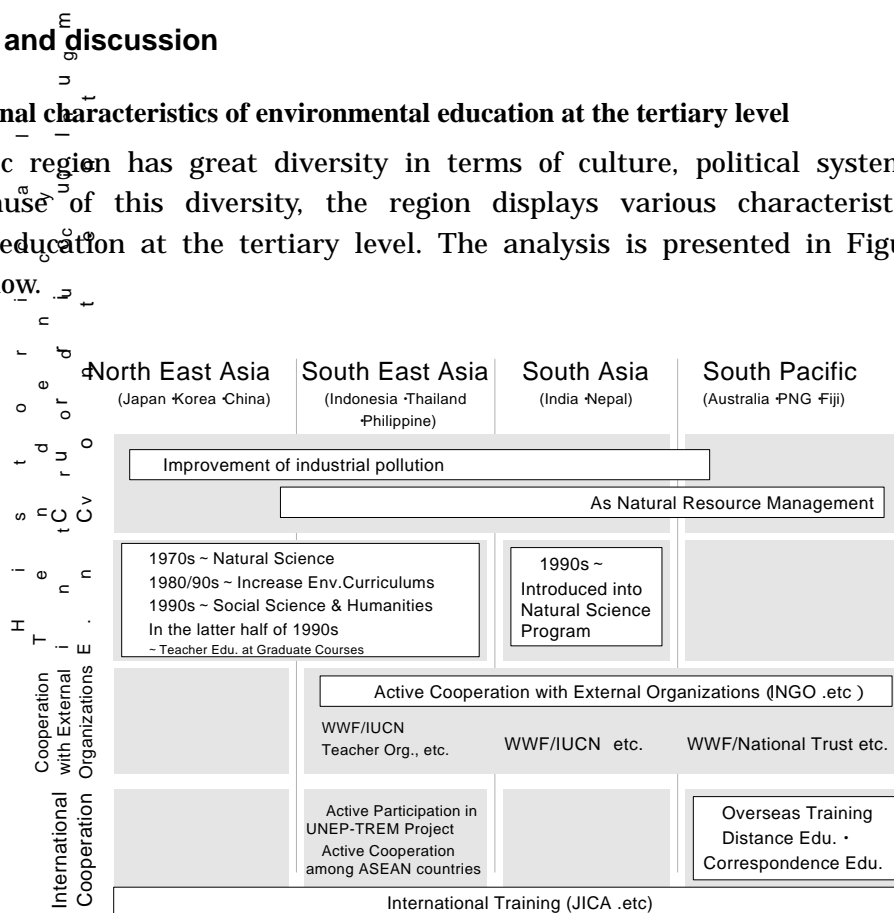


Figure 14. Sub regional characteristics of environmental education at the tertiary level

i. Curriculum Content of Environmental Education

The data show that there is a tendency in the Northeast Asia, Southeast Asia and South Asia to introduce environmental education to address the problem of industrial pollution. However, in the South Pacific region, the focus is on natural resource management.

ii. Historical Tendency of Introducing Environmental Components into Curriculum

A similar tendency can be seen in Northeast Asia and Southeast Asia, where environmental topics have been introduced in the fields of natural science in 1970s. This tendency remained during the 1980s and 1990s. In the 1990s, a new trend was seen towards coverage of environmental topics in the social sciences and humanities. Also, environmental concerns started to appear in teacher education at the level of graduate programs in the 1990s. Environmental education in the postgraduate programs was introduced in the latter half of the 1990s. In South Asia, environmental components were introduced in the natural sciences only since the 1990s. The historical development indicates that environmental education was first introduced in natural science courses and then was later extended to the humanities and social science courses.

iii. Cooperation with External Organizations

International cooperation between institutions of higher learning and external organizations is not seen in Northeast Asia. In contrast, instances of active cooperation with external organizations such as international NGOs and educational organizations (teachers' organizations, etc.) can be seen in South Asia, Southeast Asia, and Pacific countries. The type of cooperation with external organizations varies from sub-region to sub-region, especially in the Southeast Asia and South Asia, where international cooperation is prevalent between universities and international NGOs such as IUCN, WWF and National Trust for curriculum development, training and information services, communication, etc.

iv. International Cooperation

Sub-regions also have different characteristics in terms of the style of international cooperation. For example, in Northeast Asia, JICA and other such organizations are the only ones that provide training through international cooperation, whereas in other regions training comes from a greater variety of sources. For example, UNEP-TREM projects, THAITREM, MATTREM, PATTELPAM, are quite active in Southeast Asia, and overseas training, distance education, and correspondence education are quite common in the Pacific region and are mostly supported by international organizations.

b. Development phases of institutions of higher learning and environmental education

By using the criterion of attendance rates in higher education, Trow (1973) divides the development of higher education into three categories: (1) elite access (attendance by 0-15 percent of population), (2) mass access (15-50 percent attendance), and (3) universal access (50-100 percent attendance). A brief summary of Figure 15 is given below.

i. Delivery Style of Environmental Education

Elite access: The delivery style of countries emphasizing elite access to higher education is very active and efficient in using external knowledge to solve issues facing society. In these countries, program and curriculum developments are being undertaken in cooperation with international NGOs, and

overseas training activities in Australia and New Zealand. Training is provided by governments, institutions of higher learning and international NGOs.

Mass and universal access: The delivery style of environmental education at the tertiary level of countries that have mass and universal access to higher education is based on not only conventional methods but also non-traditional delivery systems such as correspondence courses, utilization of personal computers, experiential education, open universities, distance education, flexible courses, active networking in the region, extension services, information centers, environmental education centers, etc.

ii. Area and Fields of Environmental Education

Elite access: Environmental education is mostly provided in undergraduate, teacher training, general education, and professional development courses. A cross-curriculum approach is employed in curriculum development. Environmental themes are provided only in natural science

Mass and universal access: Environmental education is provided not only in the areas mentioned in the elite access category but also provided in postgraduate programs and research activities. Also in these phases, environmental education is provided in social sciences and humanities, and interdisciplinary as well as natural science. It is offered in the form of interdisciplinary courses.

iii. Institutional Cooperation and Networking

Institutional cooperation is very common in the mass access category. One may attribute the ease of making such networks to the high level of public interest and the systematic linkages between institutions of higher education. Figure 15 shows that it is difficult to make such a network in the universal access category because of greater variation in institutions.

	<u>ELITE</u>	<u>MASS</u>	<u>UNIVERSAL ACCESS</u>
	Fiji, PNG, Nepal, China, India	Indonesia, Thailand, Philippine	Japan, Korea, Australia
Edu. Target	UNDER GRAD. EDU. & TEACHER TRAINING - Undergraduate Program - Professional Development - General Education - Teacher Training	UNDER/POST GRAD. EDU., TEACHER TRAINING & RESEARCH - Undergraduate Program - Postgraduate Program and Research - Professional Development - General Education - Teacher Training	
Edu. Field	IN THE FIELD OF NATURAL SCIENCE - Curriculum in the Natural Science	IN THE FIELD OF NATURAL/SOCIAL SCIENCE AND HUMANITIES - Curriculum in the field of Natural Science - Curriculum in the field of Social Science and Humanities - Inter-Disciplinary Program	
Dissemination and Use of Sustainable Knowledge	ACTIVE USE OF EXTERNAL KNOWLEDGE - Edu., Training in Cooperation with INGOs (IUCN, WWF.etc) - Overseas Training in Australia & NZ (PNG) - Training provided by Gov., HEIs & INGOs - EE Center (China India)	NETWORK -Active Participation to Regional Network(UNEP-TREM Project)	
		OPENED FACILITIES - EE Center, Env. Information Center	
		USE OF PC, EXPERIENTIAL EDU. & CORRESPONDENCE EDU.. - Open Universities, Flexible Course - Use of TV PC, Distance Edu., Extension Services - Cooperative Edu., Experiential Edu., Correspondence Edu.	

Figure 15. Higher education development categories and environmental education at the tertiary level

In addition to the points mentioned above, other factors are also to be considered in enhancing environmental education at the tertiary level: (1) external influences, (2) national policy, and (3) environmental conservation movements. Among them, external “influences” such as the Stockholm

Conference on the Human Environment (1972), the UN Conference on Environment and Development (1992), and implementation of international programs by intergovernmental organizations and international NGOs play an important role in influencing environmental education at the tertiary level.

(4) Open system approach: an alternative way

What can be done to promote environmental education at the tertiary level? Taking the points mentioned above into consideration, it is suggested that the open system approach of higher education is the most realistic alternative way to meet the growing needs of environmental education at the tertiary level. The detailed description of an open system approach is the topic of discussion in the following paragraphs. An open system approach of higher education is not a new concept. It has already been tested and tried in the UK and the United States since the beginning of the nineteenth century. Currently, the open system of higher education is provided in two ways, the English model and the American model. The English model is a setup of extramural departments (EMD) for teaching and learning, whereas the American model makes use of multi-media in teaching and learning.

Cummings (1998) points out that this open system approach of higher education is the third “revolution” in education. The first revolution provided qualifications to professionals in the European Middle Ages. The second revolution provided basic research to influence the ideals and practices of institutions of higher education in many parts of the world. Though the third revolution, universities and colleges, like other modern organizations, are making dramatic efforts to reach out to their surrounding communities, (in other words, meeting social needs) in order to cultivate networks, create business opportunities, and thus expand revenues. According to a report by the National Institute for Educational Research (1993), the open system of higher education reorients the relationship between universities and their environments. Sato and Abe (2000b) point out that the open system approach of higher education can play a key role in the effective mitigation of problems facing society. Therefore, functions and systems of this approach should be considered for the effective development of environmental education at the tertiary level. They suggest that the following points should be considered when planning such education: external degree programs, non-traditional delivery systems, access to education, and partnerships in education.

Sato and Abe (2000b) also proposed a model for an open system approach of higher education, which is schematically presented in Figure 16. The model consists of three types of open systems: internally-oriented open system (A), externally-oriented open systems (B-1 and B-2) and open system to communities (C-1, C-2). They believe that through this model, environmental education can be promoted at the tertiary level in the Asia-Pacific region.

a. Internally-oriented open system

This is a dynamic system in which “open” system approaches, such as field studies, cooperative education, and experiential education are employed to provide environmental education at the tertiary level, especially for (1) extra degree programs, (2) non-traditional delivery systems, and (3) education in access. These approaches use problem-solving teaching and learning styles such as internships, practicums, sandwich education, interfaculty credit transfer schemes, sub-major area studies, cross-curriculum work and the setting of flexible courses. In order to achieve the goal of partnerships in education, interfaculty environmental education councils, interdisciplinary and multidisciplinary courses and programs should be set up.

b. Externally-oriented open system

This open system of higher education may also help to provide (1) extra degree programs, (2) non-traditional delivery systems, and (3) education in access. Under this system, environment-related programs, credit transfer schemes, experiential education and field studies, joint degree programs, and overseas training programs through inter-university coordination can be provided. For partnerships in education, the following approaches can be undertaken: implementation of international field studies, training, educational activities and credit transfer schemes through inter-university coordination.

c. Open system to communities

This model provides (1) extra degree departments (EMD), (2) non-traditional delivery systems, and (3) education in access through experiential education and field studies, training, practical educational activities, creation of EMD functions, open enrollment in cooperation with communities, etc. For partnerships in education, curriculum development, training in cooperation with external organizations, establishment of environmental education centers and environmental information center, and creation of flexible courses should be initiated. Rogers (1995) described “change agents” that provide communication links between resource systems of some kind and client systems. He also mentioned that communications between the agent and client are important and a good deal of two-way information exchange need to take place. In his opinion, change agents can be expected to play a role in making bridges between higher education and local communities. NGOs and professional educational organizations may have roles to play in this process.

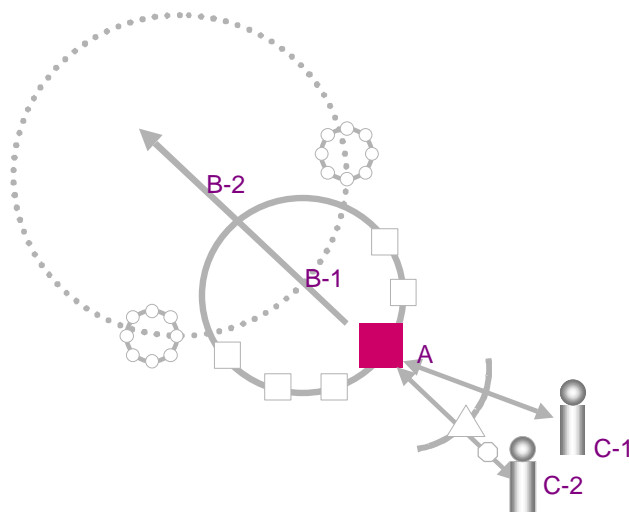


Figure 16: Models of open systems of higher education

(5) Conclusion and recommendations

This study found that sub-regional characteristics should be taken into consideration when implementing environmental education at the tertiary level in the Asia-Pacific region. As in other parts of the world, institutions of higher education here may be gradually transformed from institutions where access is for the elite, into the institutions that allow mass access, followed by universal access. Some characteristics of higher education, such as targets, fields, delivery styles and

the methods of cooperation should also be fully taken into consideration when implementing environmental education in the region.

It is also necessary to consider other factors, such as external influences and national activities, that may influence higher education. In particular, we can see that the impacts of external influences are comparatively high in environmental education at the tertiary level in the region; for example, the Stockholm Conference (1972), UNCED (1992), international programs by intergovernmental organizations and NGOs, national policies and national movements. It is necessary to consider a country's cultural, social, economic and historical background for the effective development of environmental education at the tertiary level.

In order to promote environmental education in the region, the IGES Environmental Education Project proposed five action items in its Regional Strategy on Environmental Education in the Asia-Pacific Region. In addition, the Project researchers made the following suggestions to promote environmental education at the tertiary level in the region.

a. Policy setting and the establishment of a steering committee

Institutions of higher education should have clear policies for integrating and implementing environmental education. Such policies must ensure that integration and implementation occurs not only across curriculum activities and interdisciplinary approaches, but also in institutional practices. Institutions of higher education should use every opportunity to raise the awareness of the public, government, industry, funders, and universities by publicly addressing the urgent need to move toward environmentally sustainable societies. The development of such a policy can proceed with the establishment of steering committee and a secretariat comprised of representatives from all disciplines and departments to formulate a plan of action or system to provide advice, coordinate courses and monitor programs. It is important to first provide forums that will generate discussions (involving both members of staff and students of the universities) so that general consensus can be reached on the best ways to undertake environmental education and interdisciplinary collaboration.

b. Place more emphasis on learning activities

Institutions of higher education should place more emphasis on learning activities than on teaching activities if the ultimate goal of environmental education is to educate "environmentally responsible" citizens. The over-reliance on traditional teaching methods and delivery styles should gradually be changed to accommodate the use of cooperative approaches, field studies, discussions, laboratory work, observation, simulation models, and participatory projects and research, etc.

c. Establish programs

Institutions of higher education should establish programs to produce expertise in environmental management, and related fields to ensure that university graduates are environmentally literate and responsible citizens. They should also create programs to develop the capability of university faculties to teach environmental literacy to all undergraduate, graduate, and professional school students. Cross-curriculum and inter-disciplinary approaches should be utilized for the effective development of environmental education. Institutions of higher education should develop and expand not only traditional delivery styles and teaching methods but also non-traditional delivery systems and external degree programs. The institutions should also undertake more research to develop teaching techniques, teaching-materials and evaluation methods for these programs.

d. Attempt to involve institutions of higher learning in national environmental plans

Governments should facilitate the participation of institutions of higher learning in their national environmental action plans as these institutions can provide the expertise and experience for environmental management.

e. Active cooperation with external organizations

Institutions of higher education should encourage cooperation with governments (at all levels), foundations, and industries in supporting university research, education, policy formation, and information exchange relating to environmentally sustainable development. The institutions should work with UNEP, UNESCO and other national and international organizations to promote an effort of universities worldwide to realize a sustainable future for humanity. Institutions of higher education should also expand work with external organizations such as NGOs and professional educational organizations, to assist in finding solutions to environmental problems.

f. Establishment of environmentally sound facilities and management

The institutions should establish environmentally sound facilities and manage them in an environmentally sustainable way. ISO certification and “lifecycle management” may be useful for these purposes. The institutions may need to set examples of environmental responsibility by establishing environmental management programs for their own operations.

g. Avoid duplication of efforts

In order to avoid duplication and overlapping of efforts, cooperative activities should be promoted at the faculty, university, national and international level. These cooperative activities may help develop the quality of education delivery systems, teaching methods, materials, curriculums and various activities.

(Masahisa Sato)

2.3 Regional strategy on environmental education in the Asia-Pacific

A first draft of the comprehensive strategy for environmental education was prepared based on information collected throughout the first phase of research in the IGES Environmental Education Project. A second draft produced a more refined strategy based on comments submitted by approximately seventy experts worldwide. It was discussed and modified at the regional workshop held in Thailand in 1999 and revised as a third draft. Some revisions resulted in the final version of the “Regional Strategy on Environmental Education in the Asia-Pacific.” This final report of the first phase of research presents the Agenda for Action portion of the strategy.

2.3.1 Critical issues and the role of environmental education

The condition of the world’s environment is deteriorating at an alarming rate due to the impacts of human activities, which are affected by economic behavior and rapidly changing demographic and socio-economic patterns. Consequently, the world is beset with a range of problems such as global climate change; degradation of ecosystem; depletion of the ozone layer; rapid population growth; transboundary pollution; increasing rates of urbanization; high levels of solid, toxic and industrial waste and noise pollution; acid rain; depletion of natural resources; desertification; loss of biodiversity and natural habitats; inadequate shelter health care and water supplies; and diminishing wetlands and coastal resources.

These problems are also prevalent the Asia-Pacific region. In addition to the problems listed above, the region is beset with other problems, such as (1) domestic and other forms of pollution (mostly caused by dust, emissions from transportation and smoke), (2) water shortages and contamination, (3) shrinking forests, (4) problems of sanitation, (5) disposal problems of toxic materials (including nuclear waste), (6) light pollution, (7) haze episodes caused by forest fires, (8) coastal zone (mangrove, sea grass and coral reef) degradation, (9) marine pollution, and (10) loss of soil and soil fertility.

The deterioration of the natural environment is linked inextricably with human actions and is the outcome of dynamic interactions of poverty, population growth and its changing population distributions, and the misuse of resources, wasteful production, hyper-consumption, human greed and so forth. Paradoxically, underdevelopment as well as haphazard development processes are also responsible for this precarious situation.

In order to improve these conditions, people must change their lifestyles, consumption patterns, norms and values and ways of thinking. We need to reorient our perspectives and actions toward the environment, for which environmental education plays an important role. Highlighting the role of education in a changing world, the Delors Commission has rightly pointed in its book, entitled *Learning: The Treasure Within* (UNESCO 1996, p.49), that “Education should help everyone to become, to some extent, a citizen of the turbulent and changing world that is being born before our very eyes.” The Commission believed in environmental education because it is a holistic approach to the learning process, whereby individuals and community acquire the knowledge, attitudes, skills, values and motivation to improve the quality of environment and attain an ecologically and socially sustainable future.

The point needs to be re-emphasized that environmental education is not an end in itself for mitigation of environmental problems but a journey in achieving sustainable development. In other words, it is a means to achieve the goal. And its primary purpose is to enhance an individual’s intellectual capacity and scholarship in order to reach their full potential. Thus education plays

important roles in achieving sustainability. Its roles, among others, are the following:

- Changing people's knowledge, attitudes and behavior
- Deepening people's understanding and heightening their awareness
- Passing knowledge to future generations
- Making people innovative, investigative and inquisitive
- Fostering creativity as well ingenuity
- Enhancing people's volition

2.3.2 Why this strategy?

This strategy is a comprehensive framework of actions on environmental education for the Asia-Pacific region and takes account of perspectives of this region.

It is an outcome of a series of participatory processes including discussions, consultations and workshops with key players and stakeholders of the region and the empirical data extracted from status reports of thirty-four countries and two special areas. It primarily builds upon successful practices of environmental education in the region. Its main objective is to promote and foster eco-consciousness in relation to an environmentally sound and sustainable society in Asia and the Pacific region through the development of a regional mechanism for concerted action in environmental education.

2.3.3 Target audience

The document is prepared for those institutions and organizations concerned with improving the quality of human life through environmental education. This includes a broad range of governments, schools, universities, business and industry, the media, research organizations, donors, NGOs, professional groups, international organizations, inter-governmental agencies and civil society in general. In the coming years, IGES, in partnership with regional and sub-regional organizations, governments and other institutions, will be primarily involved in assisting and facilitating national partners in the implementation of the strategy.

2.3.4 Strategic approach

The strategy will focus on the following aspects to bring regional strengths together for promotion of environmental education in the region:

- Building on success: The Environmental Education Strategy attempts to learn from the successes and mistakes of the past, and addresses the present and future needs of society.
- Developing smart partnerships: It attempts to bring stakeholders together to collaborate and share knowledge, experiences, expertise and resources for a common purpose.
- Seeking synergies: It attempts to bring additional strengths together by combining energy, strengths and ideas of two or more stakeholders in order to achieve a goal.

2.3.5 Action agenda

Having considered the issues in the region, our vision, mission and strategic approach, the following framework of actions has been recommended to foster environmental education in the Asia and Pacific region. The Agenda for Action is presented in Table 14 below. The details for each action at regional, sub-regional and national levels are proposed in the following section.

Table 14: Agenda for Action

- | |
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| <ol style="list-style-type: none">1. Strengthen the capacity of stakeholders.2. Develop partnership for collaborative works.3. Review/improve the curriculum and program development.4. Facilitate the improved governance for environmental education.5. Mobilize external assistance for educational activities. |
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Action One: Strengthen the capacity of stakeholders

Rationale: The transfer of knowledge, other essential processes such as acquiring awareness, attitudes, skills and ethics, analytical ability and capacity building are key to achieve an environmentally sound and sustainable society. Through education and training, desirable changes in people's knowledge, attitude and behaviors, can be obtained. Therefore, capacity building is considered to be the driving force for enhancing environmental education. The enabling capacity of local people is dependent upon their institutional capacity and capabilities, and active participation. In order to strengthen capacity, the following operational objectives have been identified.

Operational Objectives

1. Enhance processes to build the capacity of environmental educators, facilitators and organizations.
2. Support environmental education initiatives by community-based organizations and local communities.
3. Mobilize resources and promote environmental education resource centers to support environmental educators, facilitators and organizations.
4. Promote networking among, and training for, environmental educators and facilitators.

Suggested Actions

Regional Level

1. Support training and capacity building for school and community environmental education.
2. Coordinate/sponsor international exchanges, trainings and visiting programs.
3. Assist in the establishment and effective use of resource centers at different levels.
4. Facilitate the establishment and strengthening of regional forums.

Sub-regional Level

1. Encourage and support regional, sub-regional and national initiatives.
2. Facilitate the development of collaborative ventures on common themes.
3. Act as a sub-regional contact point for data and information dissemination.
4. Assist in public awareness-raising activities.

National Level

1. Provide more opportunities for appropriate training to teachers, trainers, environmental activists, environmental facilitators and organizations.
2. Organize sensitization and awareness programs for different groups including the private sector, policy- and decision-makers, community leaders, etc.
3. Encourage and support the development, testing, production and dissemination of innovative

educational materials suited to local contexts.

4. Promote advocacy for environmental rights.
5. Encourage environmental education towards sustainable development.
6. Encourage environmentally friendly production and consumption.

Outputs

1. More training, awareness raising and capacity building activities.
2. Establishment of resource centers.
3. Development and dissemination of educational materials.
4. Exchange programs initiated.

Action Two: Develop partnerships for collaborative work

Rationale: Every country has its own specialties and strengths in the region. These specialties can be directly shared through networking, collaborative work and partnerships. For this matter, partnerships based on mutuality and reciprocity are vitally important in a diverse and wide region like Asia-Pacific. A true partnership for environmental education is working together for a common goal and includes a wide range of activities such as networking of organizations and individuals, as well as sharing of knowledge, experiences and perspectives, initiating collaborative work, etc. It also means taking the comparative advantage into consideration, strengthening cooperation and synergy between countries, and securing the optimum benefits from minimum resource utilization. In sum, it can be said the purpose of partnerships is to bring regional strengths together. The operational objectives of collaborative partnerships in environmental education are as follows.

Operational Objectives

1. Facilitate a consultative process at regional and sub-regional levels in collaboration with existing institutions and networks.
2. Encourage synergy between governments, regional and sub-regional organizations, NGOs, media, business and industry and other service sectors.
3. Activate and strengthen effective networks such as databases, initiatives, collaborative work, cooperative studies, etc.
4. Develop institutional mechanisms for sharing experiences and expertise.
5. Establish information network systems.
6. Develop a regional directory of environmental educators and facilitators.

Suggested Actions

Regional Level

1. Support/strengthen existing regional communication networks/forums such as ARNEE (ASEAN Network on Environmental Education), SASEANEE (South and Southeast Asia Network for Environmental Education), NETTLAP (Network for Environmental Training at Tertiary Level in the Asia-Pacific), etc.
2. Encourage the formation of country focal points to forge strong regional links.
3. Facilitate the regular organization of workshops, roundtable discussions and forums for collective consideration of environmental education activities.

Sub-regional Level

1. Establish linkages/collaboration with sub-regional environmental organizations such as SACEP (South-Asia Cooperative Environment Programme), ASEAN (Association of South East Asian Nations), SPREP (South Pacific Regional Environment Programme), NEASPEC (North

East Asia and South Pacific Environment Cooperation), ICIMOD (International Center for Integrated Mountain Development), MRC (Mekong River Commission), etc.

2. Establish and maintain databases, information networks, websites, electronic bulletin boards, etc.
3. Facilitate and undertake sub-regional collaborative works and demonstration projects.
4. Encourage inter-subregional processes of exchanging information, experiences and expertise.

National Level

1. Develop and maintain active linkages with relevant organizations.
2. Involve policy-makers and researchers in environmental education programs and activities.
3. Involve stakeholders including private sectors, NGOs, and local communities in preparing and implementing collaborative projects.
4. Provide technical support to stakeholders in their capacity building, particularly in exploration of funds, project formulation, implementation, monitoring and evaluation.
5. Provide institutional mechanisms for sharing experiences, expertise and successful lessons.
6. Disseminate success stories, materials and lessons on environmental education.
7. Encourage the involvement of stakeholders at all levels of planning, implementing, monitoring and evaluation.
8. Formulate and conduct specific pilot and demonstration projects.

Outputs

1. Establishment and organization of the regional/sub-regional/national workshops and forums.
2. Formation of country focal points.
3. Developing and strengthening environmental education networks.
4. Exchange of information, expertise, experiences and materials.
5. Directory of the network of facilitators and educators in environmental education from throughout the region is shared widely.
6. Networks of environmental educators and facilitators established to share teaching and learning strategies, curriculum frameworks, successes and barriers in environmental education.
7. An annual recognition scheme for environmental educators and facilitators is conducted to acknowledge key individuals and groups in the Asia-Pacific region.
8. Stories of successful practices in environmental education are shared at appropriate forums such as in conference presentations, academic papers, stories in magazines as well as video and multimedia.

Action Three: Review/improve the curriculum and program development

Rationale: “Environment” is a broad term that goes beyond nature studies and involves economic, political, social and cultural dimensions. That is why it has to be addressed in a holistic framework. Environmental educators and facilitators should be able to facilitate the creation of a sustainable future in a dynamic and fast-changing world. Environmental education should be part of the learning throughout life (or life-long learning). The ways of learning as well as content should be focussed in the curriculum and environmental education program. Environmental education organizations need to demonstrate the use of sustainable practices as an example in their everyday operations. It is for these reasons that we need to review and improve curriculum and program development periodically, both structure (curriculum) as well as process (pedagogy), in all forms of education. The operational objectives have been identified as follows.

Operational Objectives

1. Establish, review and revise environmental education policy at the national and regional levels.
2. Revise, as required, curriculum development, examination and assessment strategies, teaching and learning approaches and evaluation in environmental education at the formal, informal and non-formal levels.
3. Develop a network of environmental educators and facilitators who engage in ongoing discussions and professional development about environmental education (such as aims, objectives, teaching and learning strategies, successful practices, assessment of students and evaluation processes, etc.).
4. Provide training to staff who develop curricula.
5. Use evaluation as a means to reflect on the objectives and progress of all environmental education programs.
6. Encourage the development of resource materials for environmental education and use of the local community as a resource for learning.
7. Recognize environmental educators and facilitators for their excellence, success, contribution and innovation.

Suggested Actions

Regional Level

1. Strengthen the network of environmental educators and facilitators to share teaching and learning strategies, curriculum frameworks, success and barriers in environmental education.
2. Take stock of ongoing environmental education initiatives at all levels and in relevant sectors.
3. Develop professional development plan for environmental educators and facilitators involved at all levels and sectors.
4. Establish a recognition scheme for environmental educators and facilitators.

Sub-regional Level

1. Develop professional development plan for environmental educators and facilitators involved at all levels.
2. Strengthen networking of environmental education organizations within the sub-region.

National Level

1. Develop a professional development plan for environmental educators and facilitators involved at all levels and sectors.
2. Develop local curriculum materials and resources.
3. Revise the curriculum frameworks, teaching and learning activities, as required.
4. Develop case studies of successful practices of environmental education in print form, using a variety of languages.
5. Establish professional development network for environmental educators and facilitators to explore innovative teaching and learning strategies, curriculum and evaluation with an emphasis on problem solving and community participation. For example, action research may be used as a means to develop this network.
6. Promote greening of educational institutions to ensure that their own internal and routine practices are environment-friendly and sustainable.
7. Develop general guidelines to help environmental educators and facilitators to use their local community as a resource for learning.

Outputs

1. Revision of curriculum frameworks, examination and assessment processes at all levels with flexibility to meet individual, community and national needs.
2. Evaluation processes established and evaluation tools developed at all levels.
3. Evaluation used as an essential part of environmental education program planning and implementation.
4. Use of the local community as a resource for teaching and learning in environmental education.
5. Development of materials, resources and curriculum using appropriate teaching and learning strategies.
6. Environmental education policy developed at national and regional levels.
7. Production of resource materials for environmental educators and facilitators on environmental education programs.

Action Four: Facilitate improved governance for environmental education

Rationale: Improved governance in the context of environmental education would encompass effective organizational structures, proper coordination, sound management and periodical monitoring and review. Because of the multi-disciplinary and composite nature of environmental education, effective governance is vitally important to deal with issues of environmental education at all levels of the educational system. Actors and processes from both private as well as public sectors should be considered in dealing with those issues. And environmental education should be approached in a holistic manner. To achieve this goal, the following objectives have been identified.

Operational Objectives

1. Prepare a sound national and sub-national environmental education policy based on needs, capacity and requirements.
2. Adopt and develop appropriate processes to involve the relevant organizations.
3. Create an amenable structural mechanism that facilitates incorporation of environmental education issues in all channels of education.
4. Facilitate in preparing receptive, capable and committed environmental educators and facilitators.

Suggested Actions

Regional Level

1. Assist and support countries in the formulation of national environmental education policy.
2. Assist countries in activities that ensure the continuity and consistency of environmental education programs.
3. Encourage implementation of activities mentioned in Actions 1,2,3 and 5.
4. Assist in disseminating successful practices of environmental education.

Sub-regional Level

1. Provide trainings and workshops for formulating national policy of environmental education.
2. Provide support to prepare national policy and legislation of environmental education.
3. Support and strengthen effective networking systems.

National Level

1. Establish a national steering committee for environmental education.
2. Formulate national policy on environmental education.

3. Encourage cooperation and interaction between stakeholders and relevant organizations at all levels of environmental education project planning and implementation.
4. Provide new training opportunities/incentives for environmental educators and facilitators.
5. Encourage the integration and incorporation of environmental education activities in formal, non-formal and informal education.
6. Enhance institutional capacity and capability for environmental education.
7. Compile basic data and information on environmental education.
8. Encourage and support regular monitoring and evaluation of environmental education activities.

Outputs

1. National environmental education policy documents prepared.
2. Human resources trained and developed for environmental education.
3. Improved governance for environmental education.

Action Five: Mobilize external assistance for educational activities

Rationale: Environmental education is a priority issue in the region. National governments have shown their commitments to protect their environment. However, many countries in the region are not in a position to adopt this policy due to lack of funds and resources. More external support would trigger their efforts. It is, therefore, important to explore the opportunities to mobilize external assistance and resources for enhancing environmental education, thereby enabling them to protect their environment by themselves. The operational objectives of this action are as follows:

Operational Objectives

1. Identify national and sub-national projects that could benefit from external support.
2. Explore possible sources of external funding and technical assistance.
3. Strengthen mechanisms for securing external assistance and effective project management.
4. Develop mechanisms for granting and receiving assistance and for closer south-south cooperation.

Suggested Actions

Regional Level

1. Develop and maintain databases of donors and international agencies in the region.
2. Communicate with donor agencies for the growing importance and need of environmental education activities.
3. Establish regional trust for environmental education training, research, scholarship and exchange programs.
4. Assist countries and sub-regional networks in preparing locally owned proposals and grants application.

Sub-regional Level

1. Conduct environmental education assessment to identify projects that can be most appropriately conducted and implemented at sub-regional level.
2. Support the development and implementation of sub-regional strategies through coordinated funding and technical assistance.
3. Develop mechanisms to share experiences across the sub-region.

National Level

1. Conduct environmental education needs assessment to identify projects that can be most appropriately implemented at national level.
2. Focus on projects in the formal education sector in rearranging education for sustainable development.
3. Focus on environmental education projects in the non-formal sector in capacity building for the environment.

Outputs

1. Increased cooperation at the regional and sub-regional levels, especially south-south collaboration.
2. Environmental education needs assessment conducted at sub-regional and national levels.
3. Development and implementation of sub-regional strategic plans for environmental education.
4. Increased donor awareness of, and support for, environmental education.
5. Establishment of effective database on environmental education activities of donors.
6. Well-funded trust for training, research and scholarship in environmental education.
7. Training in writing grant application and project management, and evaluation at the sub-regional and national levels.
8. Increased number of comprehensive projects on environmental education in the formal and non-formal education sectors.

3. Conclusion

3.1 Conclusion

The Project was successful in clarifying the status, problems, issues and general directions of environmental education in the Asia-Pacific region through a three-year comprehensive assessment and sector-based research activities. The findings are already addressed in the main text of this report. In this section, we briefly outline the outcomes of the IGES Environmental Education Project in the first phase of research.

For many years, the international community has been calling for the implementation of environmental education to achieve the goal of environmental conservation. Recommendations arising from important meetings—Agenda 21 from the Earth Summit in 1992, and the Thessaloniki Declaration in 1997, for example—have repeatedly appealed for stronger environmental education programs and activities. Based on such those recommendations that indicate a significant amount of international consensus, the IGES Environmental Education Project began to conduct research on ways to promote and improve environmental education, focusing on the Asia-Pacific region.

This Project found that the necessity and importance of environmental education have already been recognized and related activities have been started throughout the Asia-Pacific region. In addition, business and industry, non-governmental organizations, the media and higher education are all recognized as important actors to implement environmental education in its broadest context. However, this comparative study found great differences in the design of environmental education systems in the region.

These differences are thought to be due to the differences in cultures and in political and economic systems. Nevertheless, it appears that transfers of environmental education system design and techniques to other countries is possible by rearranging and proposing the appropriate policies or methods that have already proven successful elsewhere. It is impossible to conclude that specific systems or techniques used in developed countries are always appropriate in developing countries. The Project was collected many cases of environmental education activities from the Asia-Pacific region that seemed to be successful examples. If these successes can be transferred to other countries, it seems possible to create new development patterns or “leap-frogging” of environmental education in the Asia-Pacific region. Because grants and other funds must be used effectively, it is important that international cooperation relating to the environment and environmental education basically be concerned with technology transfers.

Taking these factors into consideration, the Project formulated the “Regional Strategy on Environmental Education in the Asia-Pacific” in cooperation with researchers, experts and specialists from the region. Essentially this strategy shows some directions as to how to organize and manage environmental education effectively. However, because this strategy is intended to be comprehensive enough to apply to the entire Asia-Pacific region, it might be considered too conceptual. Despite this, one must remember that this is only an initial attempt to define a strategy for the entire region, and it must be revised in the future to adapt to changing circumstances.

Our three years of research repeatedly confirmed the importance that the networking between stakeholders in order to implement environmental education effectively. The basis of a network is partnership, and the concept of partnership in the field of environmental education was widely recognized in conferences, symposiums and workshops organized by the Project. Partnership is

cooperation between like-minded individuals, organizations or institutions to achieve a common goal agreed upon by stakeholders on a mutual and reciprocal resource-sharing basis.

The Environmental Education Project has continued to foster environmental education networks of organizations, institutions and individuals in the Asia-Pacific region through occasional meetings such as the “Environmental Education Workshop for Overseas Assistance,” the “International Conference on Environmental Education in the Asia-Pacific Region,” and the “Regional Workshop on Environmental Education in the Asia-Pacific.” These networks have the potential of developing into concrete schemes that can play vital roles in promoting environmental education effectively in the Asia-Pacific region.

The Project also successfully participated in international joint projects to promote better environmental education through the evaluation of the Japan-U.S. Common Agenda Round Table—Indonesia Environmental Education Project, and positively supported the China, Korea and Japan Tripartite Environmental Education Network Project.

3.2 Remaining issues for future research

Although the Environmental Education Project has made progress with many activities in the first phase of research, some issues need attention in the future. It is necessary for the Project to clarify those remaining issues.

The Project cannot be complete without practical activities. Some activities are organized for parents and children every year in the Shonan Village Center, where IGES is located, but besides these, practical activities were underrepresented in the first phase.

With the focus of the Project on research, it was not possible to formulate concrete activities based on our research outputs. Nor could the Project analyze existing educational materials in detail. Nevertheless, it is certainly important to investigate what kinds of environmental education materials exist and what is needed today in the Asia-Pacific region. Accordingly, the Project will pay more attention to research on environmental education materials in the future and take part in more concrete activities.

Besides the “Regional Strategy on Environmental Education in the Asia-Pacific” the Project was not able to prepare country-specific strategies on environmental education, because it was not able to focus on any one country.

Moreover, the Project was not able to propose any innovative environmental education models, partly because the Project was unable to conduct practical environmental education activities in the first phase. In the future, it is important for the Project to consider and conduct practical research about environmental education, with closer links to communities that will use the outputs.

4. Evaluation and achievements

The sections above have provided the overall background of the Project, its objectives, and achievements made during the past three years. This section deals with the self-evaluation of the Project in relation to outputs, performance, management and efficiency. Based on this self-evaluation, some suggestions are made with a view to improve the Project's operations and style.

4.1 Assessments of major outputs

4.1.1 Originality

Conventional research on environmental education has concentrated on school education. The major originality of the Environmental Education Project is its broad view of four main sectors for environmental education: business and industry, NGOs, the media, and school education. The preparation of status reports from thirty-four countries and two special areas is unique in the sense that it addresses the issues of promoting environmental education in the Asia-Pacific region through those four channels. Original reports as well as abridged versions serve as databases for environmental education. Also, a synthesized version is being prepared for easy reference. This is the first effort of its kind to put information together in a single volume in the field of environmental education from so many countries in the region. The reports have helped deepen the understanding of issues and problems related to environmental education in the Asia-Pacific region.

4.1.2 Advancement from the current level of research

The research started with humble beginnings as an assessment of country needs in relation to environmental education and led to the formulation of a regional strategy. The strategy awaits formal endorsement and then will be ready to move ahead to actual implementation based on principles of reciprocity in partnership with national agencies and organizations.

4.1.3 Influences on policy-making process

The Environmental Education Project, in partnership with UNEP has been successful in motivating inter-governmental organizations (IGOs) and international NGOs to develop a sub-regional strategy on environmental education in the ASEAN region and South Asia. ASEAN has recently completed the formulation of the strategy, where as SACEP is in the process of formulating the same for the South Asia. The government of Japan also initiated the formation of the Tripartite (China-Japan-Korea) Environmental Education Network (TEEN) at the end of 2000 and it is expected to grow into an East Asia environmental education network in the future. These initiatives show that the Project has been, to some extent, successful in influencing policy-making processes at the regional level.

4.1.4 Appropriateness and timeliness to stakeholders' needs

Our findings also confirm the fact that human actions generally accepted to be the centerpiece of environmental degradation and deterioration in the region. What is lacking is an integrative mechanism and incentive to manage and conserve the environment. The Regional Strategy on Environmental Education in the Asia-Pacific helps to address what is lacking. It provides an understanding of the dynamics of main factors in environmental education as well as guidance on how to tackle environmental problems holistically, from the regional to the local level. The five recommended actions in the strategy are the common ground coming out of intensive discussions between researchers, experts and facilitators for the advancement of environmental education

collectively in the region.

4.1.5 Outreach

At this stage the dissemination of our outputs has been limited to our partners, collaborators and international organizations in the Asia-Pacific region. However, we have not been able to reach out to partners in other parts of the world. The comments received from the users of our outputs are quite satisfactory: while the outputs have taken into account previous works, they do not duplicate or make the previous works redundant. They also point out the need for integrated action on the ground. This is what the Project will focus on in the second phase of research.

It must be noted that the initial aims and objectives of the Project were broad and ambitious and that work on each of the four sectors identified in the research was done rather independently. Because of the size of the research tasks, its integration of research activities across the sectors was difficult to coordinate. This problem needs to be addressed in the future.

4.2 Evaluation of the performance of the Project

The Project made every effort to achieve the goals stated in the research plan. Researchers were required to develop their own annual performance targets in consultation with the Project Leader, with whom they were regularly in touch. Frequent meetings of the researchers were helpful in clarifying the issue of coordination and inter-personal relationships. Nevertheless, the researchers experienced problems in performing their duties and responsibilities smoothly. It is hoped that this kind of problem will be solved after the appointment of a full-time Project Manager in the second phase. Another problem is that the Project's objectives were too broad and ambitious with four thrust areas. In reality, it has been difficult to move in an integrated way between sectors. In this regard, more of a team approach is required not only in formulating goals and objectives but also in determining the means of implementation.

4.3 Evaluation of management of the Project

The Project has been successful in managing its activities in an interactive-cum-participatory way. For example, it has effectively brought regional strengths together through its four sectors of research and has developed effective networking and partnership with many agencies and organizations in the region. It has been successful in procuring funds from Japanese organizations and in disseminating its outputs in the region in a limited way. Its negative dimension cannot be discussed without considering the context under which it was working, the inputs it received, the process it adopted both in formulating the plan as well as implementation, and the type of outputs it produced. There was no integration of the four sectors in defining the problems of environmental education; there was no concrete action plan; there was no effort to develop institutional linkages with regional organizations, and so forth. In order to address these issues, the experiences of the first phase should be taken into consideration while managing the project in the second phase, especially incorporating innovation, team spirit, accountability and synergy. Also, the Project needs to consider how to develop more effective linkages with other projects of IGES.

4.4 Economic efficiency of Project management

Achieving the Project's goal with a minimum of expenses and resources has been the central objective of the management of the Environmental Education Project. Whenever possible, steps were taken to minimize spending, resources, time and energy. These are briefly highlighted below:

- Status reports were prepared together with local collaborators in the target country, thus avoiding the practice of hiring expensive international consultants to do the job.
- In order to minimize expenses, the Project organized the regional workshop for international participants in Bangkok. This drastically reduced project costs.
- Emphasis was given to the use of the Internet and other inexpensive means of communication to avoid high costs on logistics, hiring new consultants, visiting the places, purchasing items and so forth. Likewise, secondary information was used whenever possible, to avoid duplication of work, waste of resources, etc.
- Researchers were dispatched to regional workshops only when required and when participation of the workshop was directly related to the benefits of the Project.
- Research results and findings were put on the Internet and hard copies sent only to those who do not have access to Internet facilities, or when hard copies were requested.
- The practice of outsourcing was adopted to avoid high costs of printing reports and proceedings. Also, the Project is seriously considering the services of publishers, printers, etc., in other parts of the region in order to avoid high cost within Japan, for the dissemination of reports, documents, etc.

The following funders provided grants to Environmental Education Project.

- Japan Environment Corporation, to organize the Environmental Education Workshop for Overseas Assistance (1.1 million yen), 1998
- Environmental Agency of Japan, to hold the International Conference on Environmental Education in Yokohama (12.5 million yen), 1998
- JICA Aid Scheme for Short-term Expert Dispatch to Developing Countries (2 million yen), 1999.
- JICA Aid Scheme for Short-term Training, local scheme from which three Indonesians were invited to Japan (3 million yen), 1999
- Japan Fund for the Global Environment of the Japan Environment Corporation, to hold Environmental Education Workshop for Overseas Assistance (3 million yen), 1999
- AEON Group Environment Foundation, to hold a regional workshop in Thailand (3 million yen), 1999
- Environment Agency of Japan, to manage the Synthetic Environmental Study Zone/Model Project (8.4 million yen), 1999
- JICA Aid Scheme for Short-term Training, local scheme from which six Indonesians were invited to Japan (1.2 million yen), 2000
- Japan Fund for Global Environment of the Japan Environment Corporation, to hold Workshop on Evaluation Activities of Environmental Education (2.5 million yen), 2000

4.5 *Suggestions for improving the Project in the second phase*

Based on the conclusions and overall evaluation, the following are suggested for improving the Project in the second phase of research. These points are briefly summarized below.

- Learn from the experiences and capitalize on the strengths acquired in the first phase. On the basis of failures and successes mentioned above, the Project activities will be reoriented to address new ideas, inputs and issues in the program.
- Coordinate effectively within and outside the Project. The Project will promote effective channels of communication, specify the lines of authority and adopt regular monitoring of performance and activities.
- Promote relationships with other agencies and organizations. The Project will attempt to

establish and maintain institutional relationships with agencies and organizations having similar interests in achieving common goals.

- Strengthen the existing network. The existing network of partnerships will be strengthened and expanded in disseminating the products of research as well as sharing knowledge, experience and expertise.

It is hoped that the appointment of a Project Manager, currently being planned, would help mitigate many of the problems related to coordination and inefficiency and incorporate strengths and positive points of the Project in the second phase.

5. References

- Abe, O., ed. 1999. *Workshop on Media and the Environment in the Asia-Pacific Region*. Japan: IGES.
- Abe, O., ed. 2000. *2nd Workshop on Media and the Environment in the Asia-Pacific Region*. Japan: IGES.
- Abe, O. and B. Bishnu. 1999. An overview of environmental education in the Asia and Pacific region. In *Proceedings of the International Conference on Environmental Education in the Asia-Pacific Region*, Yokohama, Japan, 27-28 February 1999.
- ADB. 1997. *Emerging Asia: Changes and Challenges*. Philippines: The Asian Development Bank Publications.
- Akaishi, K., Y. Yamanishi, K. Ueda and M. Isono., eds. 1997. *Studies on education assistance by NGOs, a Handout Document for Development Assistance Seminar 1997*, Foundation for Advanced Studies on International Development (FASID), Tokyo.
- Arisandi, P. 2000. Interview by Ko Nomura (IGES staff) at JPL annual meeting 2000, Borobudur, 31st October-5th November, 2000.
- Bhandari, B. 2000. Regional Environmental Education Strategy and the Media. In *2nd Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Boldsukh, T. 1999. Environmental Education in Mongolia. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Chelliah, T. 1996. Consumer Education: A Meaningful Approach to Creating Environmental Awareness and Social Responsibility towards a Sustainable Lifestyle. In *Strengthening Development of Environmental Education in Malaysia Proceedings of the First National Workshop on Environmental Education*, edited by K.A. Pan and Dr. B.L. Lim, Department of Wildlife and National Park, United Nations Development Programme and Institute of Strategic and International Studies, Malaysia.
- Chia, S.Y. 1997. Environmental Strategies and Issues in Singapore. In the *First International Workshop for Strategic Research on Global Environment*, edited by Masaru Moriya. Japan: Preparatory Organizations to Establish the Institute for Global Environmental Strategies, Environment Agency of Japan and Kanagawa Prefectural Government.
- Choi, D.H. and H.A. Seo. 1999. Environmental Education in South Korea. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Cummings, W. 1998. The Third Revolution of Higher Education. *Japanese Journal of Higher Education Research* No. 1, May 1998: 199-213.
- Eccleston, B. 1996. Does North-South collaboration enhance NGO influence on deforestation policies in Malaysia and Indonesia? In *NGOs and Environmental Policies: Asia and Africa*, edited by D. Potter. 66-89. London: Frank Cass.
- Eldridge, P. J. 1995. *Non-government organizations and democratic participation in Indonesia*. Kuala Lumpur: Oxford University Press.
- ERIC (Educational Resources Information Center). 1999. <http://ericae.net/scripts/ewiz/> (November 25, 1999).
- Hai, T. C. and M. Abraham, eds. 1996. *Towards Corporate Environmental Excellence: The Role of Business in Sustainable Development*. Kuala Lumpur: Global 500 Forum and Golden Hope Plantations Berhad.
- Hendarti, L., E. Budianta, and D. Sutasurya. 1998. Interview by Ko Nomura (IGES staff), at JPL workshop, Bogor, Indonesia 10-15 November 1998.
- IGES. 1999. *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*. Japan: IGES.
- IGES. 1999. Kankyo kyoiku kaigai shien workshop (Proceedings of Environmental Education Workshop for Overseas Assistance). IGES. Kanagawa.
- IGES. 2000. *Regional Strategy on Environmental Education in the Asia-Pacific: Third Draft*. Japan: IGES.
- Japan Environment Corporation and the Japan Center for International Exchange. 1997. Heisei hachi nendo kaigai minkan kankyo hozondetai no jittai tou ni kansuru chousahoukokusho (Report on the status of environmental NGOs overseas in Indonesia). Tokyo: Japan Environmental Corporation.
- Juliantara, D. 1996. Developing size without force: notes on our experiences. In *The Indonesian NGO agenda toward the year 2000*, edited by R. Ibrahim. 277-284. Jakarta: CESDA-LP3ES.
- Kawabata, M. 2000. TV Viewing and Cultivation of the Environmental Concern in Japan. In *2nd Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Khammalavong, A. 2000. Journalism in Lao PDR. In *2nd Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Koesnadi, H. 1997. Environmental Management and Environmental Law Enforcement in Indonesia. In *Environmental Law and Policy in Asia: Issues and Enforcement*, edited by Y. Nomura and N. Sakumoto, 86-107. Tokyo: Institute of Developing Economies.
- Korten, D. 1995. *NGO to volunteer no 21 Seiki (Getting to the 21st Century)*, translated by T. Watanabe. Tokyo: Gakuyo Shobo
- Lee, G. 1999. Environmental Conditions in Korea and the Role of Journalism. In *Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Li, H. 2000. In Cooperation with Mass Media is a Powerful Way of Environmental Education in China. In *2nd Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Magallona, M. and Malayang, B.S. 2000. Environmental Governance in the Philippines. In *Country Reports on Environmental Governance in Five Asian Countries*, edited by Y. Harashima, 101-142. Kanagawa: IGES.
- Mizuno, K. 1999. Multi-lingual shakai no yukue. *Ajiken World Trend* Vol.42.17-18.
- Moriya, M. 1997. *Proceedings of the First International Workshop for Strategic Research on Global Environment. Preparatory Organization to Establish the Institute for Global Environmental Strategies*. Yokohama, Japan. 5-6 November.

- Naing, U T. 1999. The Present Environmental Issues and Journalism in Myanmar. In *Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- National Institute for Educational Research. 1993. *Shougai gakushu jyuuyou ni taioushita daigakukaihou shisutemuni kanshuru jishouteki kenkyu houkokusho* (Empirical Research on Open System of Higher Education for the Needs of Lifelong Learning). Tokyo: National Institute for Educational Research.
- Nomura, K. 2000. Present state of the environmental education network in Indonesia –questionnaire results and related analysis. IGES Working Paper (IGES/EE/Working Paper P-5E). Kanagawa: IGES.
- Ohmae, J. 1999. Introduction on Activities, World School Japan. In *Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Princen, T. and M. Finger. 1994. *Environmental NGOs in World Politics*. London: Routledge.
- Raheem, Ryhana. 1999. Environmental Education in Sri Lanka. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Rizvi, A. R. 1999. Environmental Education in Pakistan. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Rogers, E.M. 1995. *Diffusion of Innovation* (fourth edition). New York: Free Press. 335-370.
- Salmah, C. 1999. Environmental Education in Malaysia. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Sarabhai, K.V., M. Raghunathan. and K. Kandula. 1999. Environmental Education in India. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Sato, M. and O. Abe. 2000a. *Concepts on Open system Approach at the Tertiary Level*. Kanagawa: IGES Environmental Education Project.
- . 2000b. *Environmental Education at the Tertiary Level in the Asia Pacific*. Kanagawa: IGES Environmental Education Project.
- Schmidheiny, S. 1995. *Changing Course: A Global Business Perspective on Development and the Environment* (fourth edition). Cambridge: the MIT Press.
- Soetayono, R. 1999. Environmental Education in Indonesia. In *Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*, edited by IGES. Japan: IGES.
- Steffen, J. 1998. Interview by Nomura (IGES staff), tape recording, at KEHATI Office, Jakarta, Indonesia, 16 November 1998
- Takahashi, M. 2000. A Study of the Forecasting Possession of Radio and Television Receiver. In *2nd Workshop on Media and the Environment in the Asia-Pacific Region*, edited by O. Abe. Japan: IGES.
- Thrumbo, C. 1995. *Longitudinal Modeling of Public Issues: An Application of the Agenda-Setting Process to the Issue of Global Warming*, n.p.: The Association for Education in Journalism and Mass Communication.
- Trow, M. 1974. Problems in the Transition from Elite to Mass Higher Education, Policies for Higher Education. Conference on Future Structures of Post-Secondary Education: OECD.
- Ueda, K. 1997. Report of the survey on the current status of environmental education at the grassroots level in the Asian region (in Japanese). *Kokusai kyoiku kenkyu kiyou* (International education studies) Vol. 3.1-23.
- Umakoshi, T., ed. 1996. *Gendai ajiano kyouiku sono dentouto kakushin* (Education in Contemporary Asia, tradition and innovation). Tokyo: Toshin-do Publishing.
- UNESCO. 1998. National Strategies and Regional Co-operation for the 21st Century. In the proceedings of the Regional Conference on Higher Education, Tokyo, Japan, 8-10 July 1997.
- UNESCO. 1999. Statistical Yearbook.
- United Nations. 1992. *Earth Summit: Agenda 21* (The United Nations Program of Action From Rio). New York: United Nations Department of Public Information.
- United Nations/ESCAP. 1995. *State of the environment in Asia and the Pacific 1995*. Bangkok: ESCAP, United Nations and Asian Development Bank. ST/ESCAP/1585, 1995.
- Willums, Jan-Olaf and U. Goluke. 1992. *From Ideas to Action: Business and Sustainable Development*. The ICC Report on the Greening of Enterprise 1992. Special Edition of the UN Conference on Environment and Development. A report prepared by the International Environmental Bureau of the ICC. Norway: ICC Publishing and Ad Notam Gyldendal.
- World Bank. 2000. *World Development Report 1999/2000*. New York: Oxford Uni.
- World Bank. 2000. *The World Bank Global Economic Prospects 2000*.
- Yamanashi, Y. 1997. Educational Cooperation Practice in Asia—Case studies of overseas assistance in India. Akaishi, K. et al., op. cit. eds. *Studies on education assistance by NGOs*. Tokyo: FASID.

List of Achievements

1. Commercial Publications

None

2. Books Published by IGES

FY1998

IGES Environmental Education Project (1998) "*Environmental Education Workshop for Overseas Assistance*" Hayama, IGES, 199pp.

IGES Environmental Education Project (1998) "*Partnership among Citizens toward Environmental Conservation and Ideal Environmental Education*" Hayama, IGES, 69pp.

IGES Environmental Education Project (1999) "*International Conference on Environmental Education in the Asia-Pacific Region*" Hayama, IGES, 149pp.

IGES Environmental Education Project (1999) "*Workshop on Media and the Environment in the Asia-Pacific Region*" Hayama, IGES, 86pp.

FY1999

IGES Environmental Education Project(1999) "*Environmental Education in the Asia and Pacific Region: Status, Issues and Practices*" , 921pp.

IGES Environmental Education Project(2000) "*Regional Strategy on Environmental Education in the Asia-Pacific*" (2nd Draft), 29pp.

IGES Environmental Education Project(2000) "*Regional Strategy on Environmental Education in the Asia-Pacific*" (3rd Draft), 64pp.

SUTASURYA, Dabid and NOMURA, Ko et al. (eds.)(1999) "*Member's Profile:Environmental Education Network of Indonesia*" (Jaringan Pendidikan Lingkungan Indonesia) IGES, JICA ,113pp.(in English, Indonesian)

FY2000

IGES Environmental Education Project (2000) "*2nd Workshop on Media and the Environment in the Asia-Pacific Region*",67pp.

IGES Environmental Education Project (2000) "*Partnership for Environmental Education: Regional Workshop on Environmental Education in the Asia-Pacific*",152pp.

IGES Environmental Education Project (2000) "*Perspectives of Environmental Education in the Asia-Pacific Region: Interim Report of Environmental Education Project*",58pp.

IGES Environmental Education Project (2000) "*Study of Media and the Environment: Interim Research Report*",101pp.

IGES Environmental Education Project (2001) "*Proceedings of Workshop on Evaluation of Environmental Education Activities*",90pp. (to be published)

3. Workshops and Seminars organized by IGES

FY1998

Date	Title of the workshop	Lecturers and participants	Place
Jun. 26, 1998	IGES Opening Symposium: Partnership among Citizens toward Environmental Conservation and Ideal Environmental Education	Shigeyuki OKAJIMA(Yomiuri Shimbun), Osamu KOBAYASHI(Tokyo Electric Power Company), Harumi SUDA(Earth Day Japan Tokyo Office), Naotoshi MIYAMOTO(Irifune Primary School), Akio MORISHIMA, Osamu ABE	Yokohama Symposia /Yokohama
Sep. 28-Sep. 29, 1998	Environmental Education Workshop for Overseas Assistance	Makoto ASHINO(JICA), Mitsuyuki IKEDA(Okayama UNESCO Association), Yuko INUI(Wild Bird Society of Japan), Keiko UEDA(Tohwa Univ.), Seiji UTSUMI(Ministry of Education of Japan), Mutsuo OHNAKA(Japanese Society for Preservation of Bird), Chihiro KATO(International Education Resource & Innovation Center), Motohiko KOGA(Action for Mangrove Reforestation), Akira SAITO(Japan Environment Cooperation), Norio SAITO(OECF), Stefan OTTOMANSKI(Japan Wildlife Research Center), Michiyuki TSUCHIYAMA(Japan Environment Cooperation), Koichi TSURUDA(International Society for Mangrove Ecosystems), Yukako NAKAMURA(Kiyosato Educational Experiment Project), Kazuhiro HARA(OISCA), Fumiko FUKUOKA(Conservation International), Kenichi MIZUNO(Forum of Environmental Journalist), Takafumi MIYAKE(Sotoshu Volunteer Association), Naoko MIYAKE(Japan Nature Game Association), Junko YASUOKA(WWF Japan), Kazuhara YAMAMOTO(International Lake Environment Committee Foundation), Toshio YOSHINAGA(Foundation Minamata Disease Centre Soshisha), Shigeyuki OKAJIMA(Yomiuri Shimbun), Kazuo MATSUSHITA, Osamu ABE	Shonan Village Center /Hayama
Feb. 16-Feb. 17, 1999	Workshop on Media and the Environment in the Asia-Pacific Region	Jun-ichi OHMAE(Asahi Shimbun), Shunji MIKAMI(Toyo University), Gunho LEE(The Chosun Ilbo Co.,Ltd.), Mohan MAINALI(Freelance Journalist), Ivan EGORTCHEV(UTRO ROSSI), Ping-Yuan ZHU(Liaoning Daily), Zafarullah KAHN(Green Press), Tun Naing U(UNDP), Kazuo MATSUSHITA, Osamu ABE, Bishnu BHANDARI	Shonan Village Center/Hayama
Feb. 27-Feb. 28, 1999	International Workshop on Environmental Education in the Asia-Pacific Region	Tetsuo ITO(Environment Agency of Japan), John FIEN(Griffith University), Hyung-Shin KANG(Ministry of Environment of Korea), Bing HAO(Beijing Normal Univ.), Murugadas T.LOGANATHAN(Wetlands International-Asia Pacific-Malaysia Program), Yoshisada KUGA(Ecopolis Center), Keio UEDA(Tohwa Univ.), Akio MORISHIMA, Osamu ABE, Bishnu BHANDARI	Pacifico Yokohama / Yokohama
Feb. 28, 1999	International Symposium on Environmental Education in the Asia-Pacific Region	Tetsuo ITO(Environment Agency of Japan), John FIEN(Griffith Univ.), Hyung-Shin KANG(Ministry of Environment of Korea), Bing HAO(Beijing Normal Univ.), Murugadas T. LOGANATHAN(Wetlands International-Asia Pacific-Malaysia Program), Kazuo MATSUSHITA, Osamu ABE, Bishnu BHANDARI	Pacifico Yokohama / Yokohama

FY1999

Date	Title of the workshop	Lecturers and participants	Place
May 23,1999	Workshop for Strategic Research on Environmental Education in the Asia-Pacific Region	Osamu ABE, Masahiro TAKAHASHI, Ko NOMURA, Masahisa SATO, Yohei HARASHIMA	Tokyo Gakugei University/Tokyo
Jul. - Aug.,1999	JICA International Aid Scheme for Short-term Training	Latipah HENDARTI (RMI), David SUTASURYA (YPBB), Agus WIYONO(PPLH)	Shonan Village Center/Hayama, JICA/ Tokyo
Jul. 16 ,1999	Environmental Education Project Evaluation Meeting	Osamu KOBAYASHI (Tokyo Electric Power Company),Seiji UTSUMI (Osaka University), Hissho KITAMURA (The Yasuda Fire & Marine Insurance Co., Ltd.)	IGES Tokyo office/ Tokyo
Dec. 8-10,1999	Workshop on Strengthening NGOs in International Project: A Focus on Environmental Education	Daniella TILBURY (University of Cambridge), Debbie HECK (Griffith University), Latipah HENDARTI (RMI), Terumasa AKIO (Minsai Center)	National Olympics Memorial Youth Center/Tokyo
Dec. 17-18,1999	Regional Workshop on environmental Education in the Asia-Pacific	John FIEN (Griffith University), Seiji UTSUMI (Osaka University), Lilia N. RABAGO (University of the Philippines), Suk-Jin CHOI (Korea Institute of Curriculum and Evaluation), Retno SOETARYONO (University of Indonesia)	Mahidol University/ Thailand
Feb. 17-18,2000	2nd Workshop on Media and the Environment in the Asia-Pacific Region	Takeshi HARA (Waseda University), Shunji MIKAMI (Toyo University), Iwan USMAN SOSIAWAN (Byweekly Magazine TAJUK), Anchalee KONGRUT (Bangkok Post), Shigeyuki OKAJIMA	Shonan Village Center/Hayama

FY2000

Date	Title of the workshop	Lecturers and participants	Place
Jun.27-Jul.29,2000	Environmental Education Training for NGO Staff in Indonesia	Juanita Margaretha MANDAGI(JARI), Maria Mumpuni PURBONINGRUM(PPLH), Muhammad Taufik Fauzul HAQ(JARI), Novi KUSPRIYANDARI(YASERU), Satia BUDIANTI(RMI), Tatang MITRA SETIA(ALAMI)	IGES/Hayama, JICA/ Tokyo
Dec.18,2000	Workshop on Evaluation of Environmental Education Activities	Yukio HIROSE(Nagoya Univ.), Seiji UTSUMI(Osaka Univ.), Tomohide BANZAI(Saitama Univ.), Naoko KAKUTA(ERIC), Keiko NAKAMOTO(Towa Univ.), Yuriko MINAMOTO(Consultant for International Development), Satoshi ICHIKAWA(Shiga Univ.), Masayo HASEGAWA(LEAD JAPAN), Kenichi MIZUNO(TVE Japa), Miki KAWABATA(Mejiro Univ.), Shunji MIKAMI(Toyo Univ.),Naohiro MASUDA(KEEP), Kenji KAWAMURA(Partnership), Taito OKAMURA(Nara Univ.), Taro HATOGAI(National Insutitute of Educational Research)	Shibuya Markcity/ Tokyo

4. Academic Papers

(i) Papers compiled and published by IGES

FY1999

IGES Environmental Education Project (1999) "A Report of Brainstorming Seminar on Environmental Education at the Tertiary Level in Asia and the Pacific", 30pp.

IGES Environmental Education Project(1999) "Environmental Education in Japan: A Japanese Country Report on Environmental Education", p.512-548

ABE, Osamu and BHANDARI, Bishnu (1999)"Environmental Education in Asia and the Pacific: Some Problems and Prospects"

FY2000

BHANDARI, Bishnu and ABE, Osamu (2000) "Environmental Education in the Asia-Pacific Region: Some Problems and Prospects" *International Review for Environmental Strategies* Vol.1 No.1, p.57-77

(ii) Contributions to journals outside of IGES

FY1998

ABE, Osamu, SATO, Masahisa, TAKAHASHI, Masahiro and NOMURA, Ko (1998) "Recent Keywords for Environmental Problems" *"Class Room" Network(Jugyodukuri Network)* Vol.11, No.2, p.26-28

ABE, Osamu, ISHIKAWA, Satoshi, SATO, Masahisa, NOMURA, Ko and TAKAHASHI, Masahiro(1999) "Thessaloniki Declaration of the Conference on Educating for a Sustainable Future-a Transdisciplinary Vision for Concerted" Japanese Society of Environmental Education, *Environmental Education* Vol.8, No.2, p.71-74

TAKAHASHI, Masahiro (1998) "Children in Community, Community in Education" *Education* Vol 48, No.12, p.93-97

TAKAHASHI, Masahiro (1999) "The Function of Environmental Education in Reconstructing of University" Saitama University, *Journal of Center of Research and Training for Educational Practice* No.12, p.157-168

FY1999

FIEN, John, ABE, Osamu and BHANDARI, Bishnu (2000) "Towards Education for a Sustainable Future in Asia and in the Pacific" *Prospects* vol.30, No.1, p.41-56

SATO, Masahisa (1999) "International Trends in Environmental Education, and its Asia-Pacific Initiatives" (in Japanese) *Kankyo to Bunmei* vol.7, p.7-8

SATO, Masahisa (1999) "Role of Cooperative Education in the Institutions of Japanese Higher Education: the Case of Internship Activities and Sandwich Education" *Economic Education (Keizaigaku Kyoiku)* No.18, p.23-27

SATO, Masahisa and PHILIP, James (1999) "Nature and Environment as Perceived by University Students and Their Supervisors" *The International Journal of Environmental Education and Information* vol.18, No.2, p.165-172, Stanford University

TAKAHASHI, Masahiro (1999) "Toward the International Implementation of Environmental Education" *Kankyo* vol.24, No. 5, p.15-16

TAKAHASHI, Masahiro and ABE, Osamu (1999) "International Cooperation and Development of Environmental Education in Future" *Environmental Research Quarterly (Kikan Kankyo Kenkyu)* 113, p. 7-12

TAKAHASHI, Masahiro and ABE, Osamu (2000) "A Study of Institutionalization on Environmental Education in Thailand" *Journal of Center of Research and Training for Educational Practice* No. 13, p. 73-80

FY2000

TAKAHASHI, Masahiro and ABE, Osamu (2000) "Comparative Study of Institutionalization on Environmental Education between Japan and Thailand" *Environmental Information Science Extra: Papers on Environmental Information Science* No.14, p.121-126

TAKAHASHI, Masahiro and ABE, Osamu (2000) "Issues and Practices on Environmental Education in Samoa" *Journal of Center for Research and Training for Educational Practice* No.14, p.81-89

5. Lectures at Workshops and Seminars

FY1998

Date	Titles	Lecturers	Place
May. 23, 1998	"Relation between Learning and Exercise in Education of Environmental Pollution" Japanese Society of Environmental Education, 9th Annual Convention (Japanese Society of Environmental Education)	Masahiro TAKAHASHI	Osaka Kyoiku University/Osaka
May. 23, 1998	"The Study of Eco School Project in Europe" Japanese Society of Environmental Education, 9th Annual Convention (Japanese Society of Environmental Education)	Masahisa SATO, Satoshi ICHIKAWA	Osaka Kyoiku University/Osaka
May. 24, 1998	"Environment as Perceived by University Students and Their Intern Supervisors" Japanese Society of Environmental Education, 9th Annual Convention (Japanese Society of Environmental Education)	Masahisa SATO	Osaka Kyoiku University/Osaka
Sep. 14, 1998	"Public Awareness through Activities of NGOs: The Nepal's Experience" Workshop on Wetland Conservation & Management: The Role of Research & Education in Enhancing Public Awareness	Bishnu BHANDARI	University Sains / Malaysia
Nov. 27, 1998	"IGES and the EE Project in Asia and the Pacific Region" The Fourth Asia-Pacific NGO Environmental Conference (APNEC 4) (Asia-Pacific NGO Environmental Conference)	Osamu ABE, Bishnu BHANDARI	National University of Singapore/ Singapore
Nov. 28, 1998	"Role of Cooperative Education in the Institutions of Japanese Higher Education: The Case of Internship Activities and Sandwich Education" Japan Association of Economic Education (Japan Association of Economic Education)	Masahisa SATO	Waseda University/ Tokyo
Dec. 16-20, 1998	"Assessment of Environmental Education in the Asia-Pacific Region" Workshop on Awareness and Education on Natural Resources at Keoladeo National Park	Bishnu BHANDARI	Rajasthan/India
Mar. 21, 1999	"Growth of Cooperative Education in 1970-80s in the US" The First Research Meeting of Japan NPO Research Association (Japan NPO Research Association)	Masahisa SATO	Keio University / Tokyo

FY1999

Date	Titles	Lecturers	Place
May 13, 1999	"A Brief Introduction of IGES and it's Activities" 7th Meeting of Conference of the Contracting Parties to the Convention on Wetlands	Bishnu BHANDARI	San Jose/Costa Rica
May 23, 1999	"Strategy for Promotion of Environmental Education in Asia Pacific Region" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Osamu ABE, Bishnu BHANDARI	Tokyo Gakugei University/Tokyo
May 23, 1999	"Current Situation on Environmental Education at the Tertiary Level in the Asia Pacific, International Activities and Networking in the Region" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Masahisa SATO, Bishnu BHANDARI, Osamu ABE	Tokyo Gakugei University/Tokyo
May 23, 1999	"Image of Eco-School in Japan" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Masahisa SATO and others	Tokyo Gakugei University/Tokyo
May 23, 1999	"The Reform of Educational Systems and Environmental Education in Japan" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Masahiro TAKAHASHI, Osamu ABE	Tokyo Gakugei University/Tokyo
May 23, 1999	"State and Prospects for Overseas Assistance with Environmental Education by NGOs in Asia-Pacific" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Ko NOMURA	Tokyo Gakugei University/Tokyo
May 23, 1999	"Strategic Research on Environmental Education at the Tertiary Level in the Asia Pacific" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Masahisa SATO	Tokyo Gakugei University/Tokyo
May 23, 1999	"Strategies for the Research on Environmental Education by NGOs in Asia" Japanese Society of Environmental Education Annual Meeting 1999 (Japanese Society of Environmental Education)	Ko NOMURA	Tokyo Gakugei University/Tokyo

May 30, 1999	"Why a Strategy on Environmental Education in the Asia-Pacific Region" Wise-Use Seminar	Bishnu BHANDARI	Ramsar Center Japan/Tokyo
Jun. 12, 1999	"Action as an Individual" Environmental Leadership Training Seminar	Masahisa SATO	Shonan Village Center/Hayama
Jun. 26, 1999	"New Global Civilization and Environmental Education" 1999 Open Meeting of the Human Dimensions of Global Environmental Change Research Community	Osamu ABE, Bishnu BHANDARI	Shonan Village Center/Hayama
Jul. 19, 1999	"Environmental Education in the Asia-Pacific Region" JICA Project (JICA)	Bishnu BHANDARI	Shonan Village Center/Hayama
Jul. 19, 1999	"The Development of Environmental NGOs in Japan" JICA Project (JICA)	Ko NOMURA	Shonan Village Center/Hayama
Jul. 19, 1999	"The Trend of International Efforts in the Education Sector in Asia-Environmental Education and NGO" JICA Project (JICA)	Ko NOMURA	Shonan Village Center/Hayama
Jul. 19, 1999	"How to Write Good Proposals for Japanese Funds" JICA Project (JICA)	Ko NOMURA	Shonan Village Center/Hayama
Jul. 20, 1999	"Environmental Education Programs and Activities, their Characteristics and Story Lines, PLT (Project Learning Tree), Project Wild, Project Aquatic, FIT, Reduce Reuse Recycle, Teaching for a Sustainable World" JICA Project (JICA)	Masahisa SATO	Shonan Village Center/Hayama
Jul. 20, 1999	"Teaching Methodology Options for Environmental Education" JICA Project (JICA)	Masahisa SATO	Shonan Village Center/Hayama
Aug. 11, 1999	"Tertiary Level Environmental Education in the Asia Pacific Region" JICA Project (JICA)	Masahisa SATO	Shonan Village Center/Hayama
Sep. 7, 1999	"External Constraints on Participation" 3rd IGES International Workshop on Forest Conservation Strategies for the Asia-Pacific Region (IGES)	Bishnu BHANDARI	University of Tokyo/Tokyo
Sep. 13, 1999	"Role of Local Communities in the Wise Use of Wetlands: Can Local Community Play a Role in the Wise Use of Wetlands?" International Workshop on Wetlands, Awareness, Local People and the Ramsar Convention in the Mekong River Basin	Bishnu BHANDARI	Phnom Penh/Cambodia
Sep. 25, 1999	"The Growth of Environmental NGOs in Japan" Society for Environmental Economics and Policy Studies Annual Convention 1999 (Society for Environmental Economics and Policy Studies)	Ko NOMURA, Osamu ABE	Ritsumeikan University/Kyoto
Sep. 26, 1999	"Current Situation and the Problems on Environmental Education at the Tertiary Level in the Asia-Pacific" Society for Environmental Economics and Policy Studies Annual Convention 1999 (Society for Environmental Economics and Policy Studies)	Masahisa SATO, Osamu ABE	Ritsumeikan University/Kyoto
Oct. 1, 1999	"IGES and the Environmental Education Project in Asia and the Pacific Region" UNEP-NETTLAP Conference (NETTLAP)	Osamu ABE, Masahisa SATO	Phuket/Thailand
Oct. 4, 1999	"Teaching Methodology Options for Environmental Education, Constructivism and Whole Language" Executive Committee Meeting of the Joint Project for Compiling the Brochure on Acid Deposition	Masahisa SATO	Bangkok/Thailand
Oct. 19, 1999	"Environmental Education for Wise Use of Wetlands and Their Resources" Wise-Use Meeting	Bishnu BHANDARI	Ramsar Center Japan/Tokyo
Nov. 9, 1999	"IGES Environmental Education Research Activities in the Asia-Pacific" Consultation Workshop on ASEAN Environmental Education Action Plan	Masahisa SATO, Osamu ABE	Manila/Philippines
Dec. 17, 1999	"Environmental Education in Japan" Regional Workshop on Environmental Education in the Asia Pacific	Ko NOMURA, Osamu ABE	Mahidol University/Thailand
Jan. 29, 2000	"Environmental Education at the Tertiary Level in the Asia Pacific" The 45th Research Meeting of Center for Environmental Education and Lake Science	Masahisa SATO, Osamu ABE	University of Shiga/Otsu
Feb. 1, 2000	"Thinking Process for Teaching Activities on Environmental Education" The Executive Committee Meeting of the Joint Project for Compiling the Brochure on Acid Deposition Control	Masahisa SATO	Bangkok/Thailand

FY2000

Date	Titles	Lecturers	Place
May 27-28, 2000	"Environmental Education in the Asia-Pacific Region : Status, Issues and Practices" Japanese Society of Environmental Education, 11th Annual Convention (Japanese Society of Environmental Education)	Osamu ABE, Bishnu BHANDARI	Tokura-Kaiyamada HighSchool/Nagano
May 27-28, 2000	"A Study of Institutionalization on Environmental Education" Japanese Society of Environmental Education, 11th Annual Convention (Japanese Society of Environmental Education)	Masahiro TAKAHASHI, Osamu ABE	Tokura-Kaiyamada HighSchool/Nagano
May 27-28, 2000	"Trends and Problems of Environmental Education at the Tertiary Level in the Asia Pacific" Japanese Society of Environmental Education, 11th Annual Convention (Japanese Society of Environmental Education)	Masahisa SATO, Osamu ABE	Tokura-Kaiyamada HighSchool/Nagano
May 27-28, 2000	"Environmental Education by NGOs in Indonesia" Japanese Society of Environmental Education, 11th Annual Convention (Japanese Society of Environmental Education)	Ko NOMURA, Osamu ABE	Tokura-Kaiyamada HighSchool/Nagano
Jun. 3, 2000	"Action as an Individual in the Core of Environmental Internship" Unites Nation University Workshop (United Nation Univ.)	Masahisa SATO	United Nation Univ./ Tokyo
Aug. 31-Sep. 1, 2000	"Media and Environmental Education" Media Symposium (Asia Forum of Environmental Journalists)	Bishnu BHANDARI, Masahiro TAKAHASHI	Kitakyushu International Conference Center/ Fukuoka
Sep. 2, 2000	"Environmental Education in the Asia and Pacific" Global 500 Asia Forum (Global 500 Asia Forum)	Osamu ABE	Rihga Royal Hotel Kokura/Fukuoka
Oct. 3-5, 2000	"Environmental Education in the 21st Century: Topics for Discussion" International Workshop on Wetlands Communication, Education and Public Awareness (Wetland Internaional Japan)	Osamu ABE	Tajiri Town / Miyagi
Oct. 24, 2000	"Status on Environmental Education in the Asia Pacific" Environmental Education Course Focused on Aquatic Environment 2000 (JICA, OIC)	Bishnu BHANDARI	United Nation Univ./ Tokyo
Oct. 24, 2000	"Problems and Perspective on Environmental Education" Environmental Education Course Focused on Aquatic Environment 2000 (JICA, OIC)	Osamu ABE	United Nation Univ./ Tokyo
Oct. 24, 2000	"Environmental Education at the Tertiary Level in the Asia Pacific" Environmental Education Course Focused on Aquatic Environment 2000 (JICA, OIC)	Masahisa SATO	United Nation Univ./ Tokyo
Oct. 24, 2000	"Environmental Education by NGO" Environmental Education Course Focused on Aquatic Environment 2000 (JICA, OIC)	Ko NOMURA	United Nation Univ./ Tokyo
Oct. 24, 2000	"Kowgai Education(Pollution Education) in Japan" Environmental Education Course Focused on Aquatic Environment 2000 (JICA, OIC)	Masahiro TAKAHASHI	United Nation Univ./ Tokyo
Nov. 21, 2000	"Environmental Education in the Asia Pacific" Book Production: How to Produce Environmental Education Materials (JICA, OIC)	Osamu ABE, Bishnu BHANDARI	TIC/Tokyo
Nov. 21, 2000	"The Role of Media and Communication for Promoting Environmental Education" Book Production: How to Produce Environmental Education Materials (JICA, OIC)	Osamu ABE, Masahisa SATO	SATOTIC/Tokyo
Nov. 29-Dec.1, 2000	"Japan's Environmental Education" China,Korea and Japan Tripartite Environmental Education Symposium (Ministry of the Environment, Japan Environmental Education Forum)	Osamu ABE	Tanuki Lake / Shizuoka
Dec. 19-21, 2000	"IGES Initiatives in Environmental Education in the Asia Pacific Region" UNESCO/Japan Seminar on Environmental Education in Asia-Pacific Region 2000 (UNESCO)	Masahisa SATO	Olympic Center/ Tokyo
Dec. 19-21, 2000	"Points to be Considered in the promotion of Networking in Environmental Education" UNESCO/Japan Seminar on Environmental Education in Asia-Pacific Region 2000 (UNESCO)	Masahisa SATO	Olympic Center/ Tokyo

6. Participation in Committees outside of IGES

None

7. Field studies

FY1998

Date	Purpose	Place	Participants from IGES
Jul. 19-26, 1998	Research on Environmental Education Projects by the Japan-US Common Agenda Roundtable/the Status of Environmental Education by Indonesian NGOs	Jakarta, Bogor/Indonesia	Ko NOMURA
Nov. 9-20, 1998	Research on Environmental Education Projects by the Japan-US Common Agenda Roundtable/the Status of Environmental Education by Indonesian NGOs	Jakarta, Bogor/Indonesia	Osamu ABE, Ko NOMURA
Mar. 28-Apr.3, 1999	Survey on Networking with the Regional Organization	Bangkok/Thailand	Osamu ABE, Bishnu BHANDARI

FY1999

Date	Purpose	Place	Participants from IGES
Mar. 28 - Apr. 3, 1999	Survey on Networking with the Regional Organization in the Asia-Pacific Region	Bangkok/Thailand	Osamu ABE, Bishnu BHANDARI
Sep. 7-11, 1999	Survey on Tertiary Level Environmental Education in Thailand	Bangkok/Thailand	Masahisa SATO
Sep. 7-12, 1999	Survey on the Status of Environmental Education in Thailand	Bangkok/Thailand	Masahiro TAKAHASHI
Oct. 6-15, 1999	Survey on Tertiary Level Environmental Education in Thailand	Bangkok, Chiang Mai/ Thailand	Masahisa SATO
Oct. 27-Nov. 20, 1999	Survey on Environmental Education by Indonesian NGOs	Jakarta, Bogor, Surabaya/ Indonesia	Ko NOMURA

FY2000

Date	Purpose	Place	Participants from IGES
Apr.3-17,2000	Evaluation of Environmental Education Video Project	Suva/Fiji Apia/Samoa	Osamu ABE, Masahiro TAKAHASHI
Apr.3-17,2000	Survey on Environmental Education at Tertiart Level	Manchedter, Cambridge/UK	Masahisa SATO
Apr.21-29,2000	Evaluation of Environmental Education Video Project	Jakarta, Bogor/Indonesia	Osamu ABE , Ko NOMURA
Oct.29-Nov.7, 2000	Survey on Environmental Education by Indonesian NGOs	Jakarta, Yogyakarta/ Indonesia	Osamu ABE, Ko NOMURA

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Published by Institute for Global Environmental Strategies, March 2001

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