

Training and Education Programs and Activities Related to Integrated Coastal Management in Southeast Asia

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CHOU LOKE MING. 1998. Training and education programs and activities related to integrated coastal management in Southeast Asia, p. 119-127. *In The Regional Workshop on Partnerships in the Application of Integrated Coastal Management*. 12-14 November 1997, Chonburi, Thailand. 167 p.

Abstract

The results of coastal mismanagement are evident throughout Southeast Asia. Expanding economies and rapid population growth in recent decades compound the pressure on the coastal environment leading to widespread degradation. Integrated management of the coastal area has been advocated as a means to minimize such impacts so as to achieve sustainable development. Greatly lacking is appropriately-trained people in integrated coastal management. Such training is necessary to provide coastal zone managers with enhanced capabilities to deal with interdisciplinary issues and multisectoral planning. Some of the region's tertiary institutions have started offering degree programs in integrated coastal zone management. Many have been active in conducting short-term training courses not only for practitioners but also for different sectors of the community. The current priority is to train managers of today, while recognizing the long-term need to train managers of tomorrow. However, many trainers are not in the best position to conduct formal or informal training courses on their own as they themselves have been trained in separate disciplines and lack an essential understanding of issues and processes beyond their fields of expertise.

Introduction

The coastal environment is a dominant feature of Southeast Asia and in most countries, a high percentage of the population remains concentrated in coastal areas. Expanding population and rapid coastal development have placed increasing pressure on coastal resources, resulting in habitat destruction, marine pollution and diminished resources (Chou 1994; Chua and Garces 1994; Hay et al. 1994). Integrated coastal management (ICM) is an effective strategy that provides a broad, anticipatory, management-based approach, compared to the reactive and problem-driven approach of sectoral management. With development, loss of environmental assets cannot be totally avoided, but can be effectively minimized through appropriate planning and management. Traditional disciplinary-based sectoral planning and management have not been successful because of the multidisciplinary nature of coastal management issues (Scura et al. 1992). Integration and coordination are important considerations for effective management. Since ICM requires an integrated, multidisciplinary approach, it will also require appropriately-trained personnel. This is an important area in which the region's tertiary institutions can play a positive role (Chou 1995a). Equally important is the time taken before the region acquires sufficient numbers of ICM-trained personnel.

At the 1990 ASEAN-US Workshop on Coastal Area Management Education in the ASEAN Region, it was agreed that trained manpower in integrated coastal zone management is not adequately provided by educational institutions in the ASEAN region (Chua 1991). While effective coastal area management can best be achieved through the development and

implementation of integrated programs, the management capabilities of government and non-government organizations responsible for coastal area management need to be strengthened. The public and all stakeholders also need to be made aware of society's critical dependence on the continued productivity of coastal resources, and this can be achieved through non-formal education programs. Professional and technical support staff of coastal management-related agencies must receive formal training in coastal area management in order to deal efficiently with issues and problems, and to develop effective strategies. Their capability must be enhanced with good knowledge of coastal resources and the environmental, social, cultural and economic systems, as well as an understanding of present and future environmental problems and their solutions through an integrated management approach.

Training and Education Needs

It is accepted that a major step towards ensuring success in ICM programs has to be the development of capacities at the national and local levels to plan and manage the coastal zone. Education, training and networking were identified as the general modes of enhancing human resources development (Chua 1996). The lack of technical and management capacities particularly at the local level is identified as a main constraint to ICM programs in the region (IWICM 1996).

Coastal managers with broad-based environmental management training can responsibly lead and coordinate ICM program development and implementation. Presently, there are insufficient numbers of coastal managers with the necessary interpersonal skills to coordinate inter-agency activities, to mobilize human and financial resources, and to direct management-oriented research and information development. This deficiency is serious in view of the rapid pace of coastal development throughout the region. While it is argued that there is a clear need for coastal managers with a holistic approach to coastal resources systems, a broad knowledge of human activities directly or indirectly associated with coastal resources, strong interpersonal skills, and a sensitivity to the interests and concerns of different interest groups (Chua 1996), such qualities are also highly desirable of ICM trainers. Present-day trainers from tertiary institutions who are expected to conduct ICM courses often themselves lack the multidisciplinary background if they are to handle courses single-handedly. Coastal management is currently being taught in different faculties as part of a broader environmental science program, and maintains a strong discipline bias. Many of today's trainers in the region have been trained in separate disciplines and lack a proper understanding of issues and processes beyond their fields of expertise.

Chou (1995b) provided a review of the region's needs in ICM training and education. A 1986 UNEP survey showed that many tertiary institutions within the Asia-Pacific region have incorporated environmental education either as part of a discipline such as engineering, biology, earth sciences, and law, or as an independent degree program. A few of the many examples of the latter are the degree programs on environmental studies in Indonesia, and environmental engineering at the Asian Institute of Technology in Thailand. That survey also revealed the tendency for education and training in environmental issues to be orientated towards general degree programs rather than specialist training because of a shortage of employment opportunities for the latter in the region (ESCAP 1992).

In her assessment of training needs in coastal zone management for the region, McManus (1993) stressed that both long-term as well as short-term training are necessary. Degree programs provide a pool of professionally-trained managers and coordinators of integrated coastal management initiatives. In Southeast Asia, most ICM practitioners begin with a degree in a related discipline and do require short-term training in ICM while on the job.

Chou (1995a) and Hay et al. (1994) pointed out that the need to train ICM practitioners is also accompanied by the need to train those responsible for educating and training such individuals. Immediate training needs in ICM for Southeast Asia are in the following categories:

1. Formal degree programs to train managers for the future;
2. Non-formal, short-term programs for present-day managers;
3. Programs for educators of today and tomorrow; and
4. Programs for different user groups such as policy-makers, developers, public, coastal communities.

These strategies should overcome the present problem of a limited pool of trained people. In addition, effective dissemination of information to policy-makers and different levels of society will increase awareness of the importance of integrated coastal management. Capacity-building is an important objective of ICM training and education activities for the region.

The observation by Crawford and West (1993) that the major gap in integrated coastal zone management training is the lack of professionals with interdisciplinary views and experiences, fully applies to the region. Kenchington (1993) stressed the importance of training educators, managers and the public.

The ASEAN-US Coastal Resources Management Project invested much resources for manpower development in order to upgrade national and local capabilities in ICM. Short-term training courses were organized for all groups of project personnel in order to enhance capacity while a few younger project staff were selected for Masters degree programs in the United States in relevant specialized fields of coastal and marine resource management (Scura et al. 1992). A survey conducted towards the end of the training phase concluded that among the 118 ASEAN nationals involved, 68% were in jobs for which they were trained, 93% considered their training relevant and almost one-third had increased levels of responsibility (Dalusung 1992).

Chua and Parmintuan (1996) estimated that in the Philippines, one coastal manager is needed for every 30,000 people in coastal municipalities. Based on this, there is a tremendous shortage of suitably-trained coastal resource managers with knowledge and technical skills to implement ICM particularly at local levels. R. Dahuri (pers. comm.) said that there was a great demand for the training of coastal managers from Indonesia's 230 coastal districts. The Regional Workshop on the Protection and Management of the East Asian Seas held in Subic Bay, Philippines in July 1997 recognized the need to conduct regional training to strengthen national capacity in planning and effective management of coastal and marine areas.

Strategies to strengthen human resources and institutional capacities are required and should be built into ICM programs. IWICM (1996) suggested that acquisition of knowledge and practical management skills is best facilitated through in-service training and active participation in existing ICM programs. Improving the capacity of stakeholders to contribute effectively to ICM programs is best achieved through public meetings, extension services and workshops.

Status of ICM Training and Education Activities

A 1993 survey of the region's institutions carried out by UNEP's Network for Environmental Training at Tertiary Level in Asia and the Pacific (NETTLAP) showed that various degree courses covering a broad range of marine environment related topics are being taught. Most of these courses are given as part of a broader environmental science degree

course. Some universities offer further specialized courses at Masters level, but to date, few institutions in Southeast Asia are offering a basic or higher degree course in ICM. Many of the institutions have indicated the intention to introduce a specialized Masters course in ICM in the near future in order to meet the demand for trained personnel to handle what is recognized as a growing environmental problem. The situation remained unchanged when assessed at a regional intergovernmental meeting at the end of 1993 (Hay and Pradhan 1993).

While increasing attention on the region's coastal zone management problems is evident from the growing number of research projects, conferences/meetings, and short-duration training courses involving researchers and policy-makers, a gap remains in terms of a structured degree course in integrated coastal management. The demand for the integration of the environment into development and decision-making is resulting in an increase in the number and type of short-term professional and in-service training courses in tertiary level education.

Non-formal Training

A regional report indicated that short-term training courses at the national level are not lacking (Hay and Chou 1993). Many programs have been developed and packaged for different target groups. Bogor Agricultural University (Indonesia), for example, has provided short-term training in Integrated Coastal Zone Planning and Management for eleven batches of planners, managers, government officers, private-sector officers and tertiary-level educators since 1993. These short-term training courses are useful as immediate-term measures to raise the level of awareness and understanding of specific groups, in view of the lack of appropriately-trained personnel. There are also many of such initiatives in the region as well and the following are few of the examples.

The University of Rhode Island (USA) has established a Coastal Resources Centre in Sri Lanka and has organized short-term training courses in special area "Integrated Coastal Zone Management" in collaboration with two institutions in Southeast Asia, the Prince of Songkla University in Thailand and Silliman University in the Philippines (Crawford et al. 1993). The Coastal Resources Institute of the Prince of Songkla University has continued this short-term training in "Integrated Coastal Zone Management" with a 3-week course early this year.

The International Tropical Marine Resource Centre, a consortium comprising the Great Barrier Reef Marine Park Authority, James Cook University and the Australian Institute of Marine Science, conducted a 3-week training course on "Management of Marine Ecosystems and Their Uses" for scientists and managers of the region. The course, conducted in Malaysia in September 1993, was followed by in-country training courses in Indonesia, Mauritius, Papua New Guinea, Thailand and Vietnam.

Through the Coordinating Body on the Seas of East Asia (COBSEA), an intergovernmental organization that advises UNEP on the East Asian Seas Action Plan, two projects have been implemented to produce training materials. From these projects, training materials for marine protected areas (Kenchington and Ch'ng 1994) and integrated coastal management (Kenchington 1996) have been published. One of its recent training activities concentrated on biological impacts of pollutants in the marine environment (UNEP 1994, Chou 1995c, Ward 1996).

A series of ICM awareness-raising workshops in Vietnam and Indonesia was organized in 1996 by the Japan International Marine Science and Technology Federation (JIMSTEF) in collaboration with agencies from both countries. This followed the publication of a book on coastal management issues and approaches in the Asia-Pacific region (Hotta and Dutton 1995).

The GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas developed a 3-week training workshop combining formal lectures with sequential visits to demonstration sites in Batangas (Philippines), Xiamen (China) and Singapore. This course entitled "The Application of ICM System to the Prevention and Management of Marine Pollution in the East Asian Seas Region" has been conducted for the third time in as many years and has received participants not only from East Asia, but also from South Asia, East Africa and Latin America. Highlights of this training workshop are given in Table 1. The Programme has also conducted a series of on-site training to increase the capacity of coastal planners and stakeholders at its two ICM pilot sites, Batangas and Xiamen. In addition, the program has conducted various training activities in a wide range of ICM-related topics. In December 1997, the program offered a one-week training course on integrated environmental impact assessment in conjunction with the City University of Hongkong and the Coastal Management Center (Manila). Activities included the development of training materials on Integrated Coastal Management, and Integrated Environment Impact Assessment for publication in 1998.

The UNDP (United Nations Development Program) is in the process of developing the "Train-Sea-Coast" program. The approach involves the creation of intercountry cooperative training and human resource development networks of training/educational centers that agree to join the global network and share the task of training development.

Table 1. Features of the GEF/UNDP/IMO Regional Training Course "The Application of ICM System to the Prevention and Management of Marine Pollution in the East Asian Seas Region" (provided by H.M. Yu).

1.	Practical experience in ICM system development with two-thirds of course time devoted to field studies at 17 selected sites in China, Philippines and Singapore
2.	Improving institutional frameworks in order to implement effective technical and engineering interventions in ICM application
3.	Examination of ICM application under different socioeconomic systems: market-based developing economy; market-based developed economy; and developing economy of central planning and market mechanisms
4.	Exploration of rural and urban applications of the ICM system
5.	Identification of integrated waste management practices, covering hazardous and non-hazardous waste, waste minimization, and integrated facilities and services
6.	Examination of sustainable financing mechanisms and options at the local and national levels, including property rights, public and private partnership and use of market-based instruments
7.	Analysis of international cooperation in ICM application, particularly at the regional and subregional levels, the networking of ICM sites and projects, compliance with international conventions and guidelines on marine pollution
8.	Development of ICM strategic planning and application, particularly at the local level

Degree Programs and Curricula

Courses in some aspects of integrated coastal management are being offered by tertiary institutions of the region and are in various stages of development. Due to its multidisciplinary nature, many of these courses remain within their respective faculties and retain a discipline bias. Some other constraints include the absence of curriculum guidelines, and the limited number of instructional materials and educators trained in coastal management.

A structured degree course in coastal management requires input from many disciplines and inevitably an adjustment of present administrative and operational procedures within institutions. Such a change should be worth the effort for universities within the region to accept in order to serve the needs of the region.

Participants at a regional workshop to assess coastal area management education in the ASEAN region agreed that trained manpower in integrated coastal management is not adequately provided at present by the region's educational institutions (Chua 1991). While both formal and non-formal education in coastal area management were considered important, the workshop restricted discussion to the former in which a Masters program in integrated coastal zone management was considered necessary for coastal area planners and managers. A proposed one-year Masters curriculum focused on issues of regional relevance and covered basic principles of tropical ICM with emphasis on regional and developing-country examples. In this way, educational institutions can adopt the curriculum on a national or regional basis.

The Prince of Songkla University (Thailand) established a 2-year Masters and a 1-year Diploma program in Coastal Resources Management in 1991 (Boromthanarat 1991). Implemented through its Coastal Resources Institute (CORIN), the curricula provided for a multidisciplinary approach. Zulfigar (1993) indicated that 2 Malaysian universities—Universiti Putra Malaysia (UPM) and the Universiti Sains Malaysia (USM) were due to offer Masters degree programs in coastal zone management from 1994. The proposed duration of these courses is 18 to 24 months. While the curriculum developed by UPM provided for a multidisciplinary and generalized approach, the one developed by USM provided the opportunity to specialize in either "pollution studies", "coastal ecology" or "aquaculture". These topics were selected based on the country's identified needs. The National University of Singapore has recently established an interdisciplinary consultative group on environmental issues and technology, and is in the process of developing a Masters program in ICM. Bogor Agricultural University in Indonesia started an MSc program in ICM in August 1997 with 24 students from various local agencies and the private sector. This is in response to the country's need to train coastal managers from their 230 coastal districts and each course will accept up to 25 participants. The Asian Institute of Technology has recently announced implementation of MSc and PhD programs in Integrated Tropical Coastal Zone Management. These programs will be offered from 1998.

In all types of training, the approach is to provide trainees with interdisciplinary skills in identifying and implementing appropriate solutions to coastal zone management problems and in the adoption of preventive and mitigative strategies, rather than programs which are multidisciplinary or founded on the single disciplines on which coastal zone management is based. Hay (1993) advocates the maturation of training programs to the extent that the focus is on solution-oriented approaches rather than on sectoral problem identification and quantification, and the development of generalized approaches.

NETTLAP

The Network for Environmental Training at Tertiary Level in Asia-Pacific (NETTLAP) is a UNEP initiative designed to enhance capacity of tertiary institutions in the Asia-Pacific region to help meet the education and training demands associated with efforts to achieve sustainable development in the region. The program's ultimate aim is to strengthen environmental expertise at both technical and managerial levels in the region and this is to be achieved by increasing environmental expertise of tertiary-level educators and, through them, graduates of tertiary institutions and decision-makers and policy formulators in both government and private sector.

The Network has established a directory of key tertiary-level environmental institutions and educators throughout Asia-Pacific. It encourages development and application of innovative methods in environmental training, identification of needs and sharing of knowledge through ongoing interaction among network partners, preparation and

dissemination of instructional materials, curricula guidelines and training and educational systems, and organization of technical training seminars and workshops. The project is implemented by UNEP/ROAP (Regional Office for Asia and Pacific), in collaboration with UNEP's Environmental Education and Training Unit (EETU), and was initiated in January 1993 as the second phase of an earlier activity arising from the recommendations of the Regional Meeting of Experts to Develop a Programme of Action for Environmental Education and Training in Asia and the Pacific, held in Bangkok, November 1985.

Within the project's framework, a few thematic networks have been established, each with a different coordinator and supported by 2 additional network nodes. One of these thematic networks is "Coastal Zone Management". Coordination of project activities is through National Focal Points identified by participating countries and through Specialist Focal Points, one for each Network theme.

It is envisaged that many of the identified constraints to ICM training can be addressed through the Coastal Zone Management Thematic Network of NETTLAP. The identification of appropriate training materials which have been developed within the region and their wide dissemination throughout the region would be a welcome solution in assisting coastal management educators establish effective and much-needed training programs. Such programs would be significant in contributing towards producing sufficient numbers of trained personnel equipped to handle coastal management problems.

Consolidating and Strengthening Future Efforts

Capacity-building in ICM for the region requires intensified training activities. These activities should be aimed at training more trainers, providing them with effective support, and developing effective means of assisting trainers and trainees in communication (Chua 1996). A strong and effective regional coordinating effort can help to consolidate all the different ICM training and education initiatives. A Southeast Asian "training network" mechanism will be useful for:

1. identifying all available training programs in the region and to review their effectiveness;
2. facilitating exchange of information and experiences concerning the training of planners, managers and stakeholders;
3. making widely available the lessons learned from regional ICM initiatives which will serve as useful examples to ICM training and education;
4. assisting and strengthening tertiary institutions in the region to provide ICM training;
5. supporting trainers with appropriate training materials and technical advice; and
6. informing donor agencies of ICM training and education needs and directing their efforts towards meeting long-term regional requirements rather than isolated, short-lived, project-driven needs.

It is timely to consider training and education in ICM over the long term. It is also necessary to make these requirements known to donor agencies so that they can contribute to a more consolidated effort that addresses the needs of the region. Quality control must be applied to the selection of training materials and courses that have been offered in the region so that only those considered most appropriate and relevant could be supported over the long term.

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