



Introduction to the special issue of coastal and ocean management entitled the South China Sea project: a multilateral marine and coastal area management initiative

The South China Sea (Fig. 1) is a strategic body of water surrounded by nations that are currently at the helm of industrialization and rapid economic growth in the Asia-Pacific region. Bordered by the People's Republic of China to the north, the Republic of the Philippines to the east; Malaysia, the Republic of Singapore, the Republic of Indonesia and the Sultanate of Brunei Darussalam to the south, and the Kingdoms of Thailand and Cambodia, and the Socialist Republic of Viet Nam to the west, the South China Sea has always been central to issues of economic and political stability in Southeast Asia and adjacent regions. Today, it is central to defining environmental sustainability and food security for its coastal nations. The coastal sub-regions of these nations are home to 270 000 000 people or 5% of the world's population. About 122 major rivers drain 2.5 10⁶ km² of catchments and deliver materials, including suspended sediments, nutrients and pollutants, to the South China Sea.

The pace of economic development in these countries has not been without environmental cost and, in 1981, the ASEAN countries of Southeast Asia formed the Coordinating Body for the Seas of East Asia as a forum in which environmental problems could be discussed and actions planned to mitigate the adverse environmental consequences of rapid economic development. In October 1996, UNEP, as an Implementing Agency of the Global Environment Facility (GEF),¹ approached the GEF Secretariat with a proposal to develop a GEF-funded project encompassing the South China Sea that forms only part of the geographic coverage of the Coordinating Body for the Seas of East Asia (COBSEA). This approach was based on a request from the member governments of COBSEA that a GEF project be developed for the region to address regional environmental management. At that time, the GEF was unwilling to fund activities of the Regional Seas Programme of UNEP directly as it did not wish to be seen as funding the activities of regional seas conventions and action plans. Accordingly, UNEP, through its then Coordinating Office for the GEF, developed a proposal for a GEF project in the South China Sea, including the Gulf of Thailand. This proposal conformed to the GEF approach to funding activities addressing environmental problems in large marine ecosystems.

The GEF provided a project preparation grant in the amount of three hundred and fifty thousand US dollars on the understanding that this would be used by UNEP and the seven governments

concerned to develop a transboundary diagnostic analysis (TDA) of environmental problems of the South China Sea. This was intended to identify the environmental problems of the region, quantify them where possible, and prioritise them for future intervention by securing the agreement of all bordering countries to work together to resolve their common problems. The GEF Secretariat further requested that a framework Strategic Action Plan (SAP) be developed outlining future interventions. In developing these documents, the countries each produced a national report outlining the nature of their water-related environmental problems (UNEP, 1998a–1998g). A consolidated transboundary diagnostic analysis was also produced (Talaue-McManus, 2000) that encapsulated the identified issues and problems that had been prioritised during a regional experts meeting called to review all the documents and consider types and forms of intervention.

The initial Strategic Action Programme, produced in 1998 and published in 2000 (UNEP, 1999), formed the basis for UNEP to draft a full project proposal that was discussed by COBSEA and agreed at a meeting of all parties. In order to secure GEF funds, it was necessary for the GEF Focal Points in each country to formally endorse the project proposal. Six of the seven countries signed the document in December 1998. It took a further 18 months to secure the agreement of all seven countries to participate. The background to this is explained in the first of the papers contained in this special issue (Pernetta and Jiang, 2013). Following endorsement by all seven riparian countries, the project was accepted into the work programme of the GEF in December 1999. Development of the full project proposal therefore took a total of five years, a period that was considered by the GEF to be excessively long, so long in fact that, at one point, they were on the verge of cancelling the project due to the length of time taken to secure countries agreement to participate.

Despite these initial problems, following the approval of the project proposal by the GEF Council, it took only twelve months to develop the full project document including the legal agreements between UNEP and the seven governments concerned and for signature of the 38 Memoranda of Agreement between UNEP and the national agencies and institutions that would undertake the work of the project. The final operational project document² was submitted to the GEF Secretariat in December 2001 and the project commenced in January 2002 following the transfer of a senior UNEP staff member from Nairobi, Kenya, to head the project

¹ The Global Environment Facility was initially founded in 1990 by a group of donor countries as a mechanism to provide a new and additional source of aid for developing countries to address environmental issues and problems. Following its restructuring in 1994, it became the financial mechanism for a number of Global Environmental Conventions. It remains the single largest source of funding globally for addressing environmentally related issues and problems.

² An "operational project document" is one in which all the necessary legal agreements are signed and included, rather than being a document that contains merely a description of the project activities and components together with the anticipated outputs, and outcomes that constitutes a project proposal.

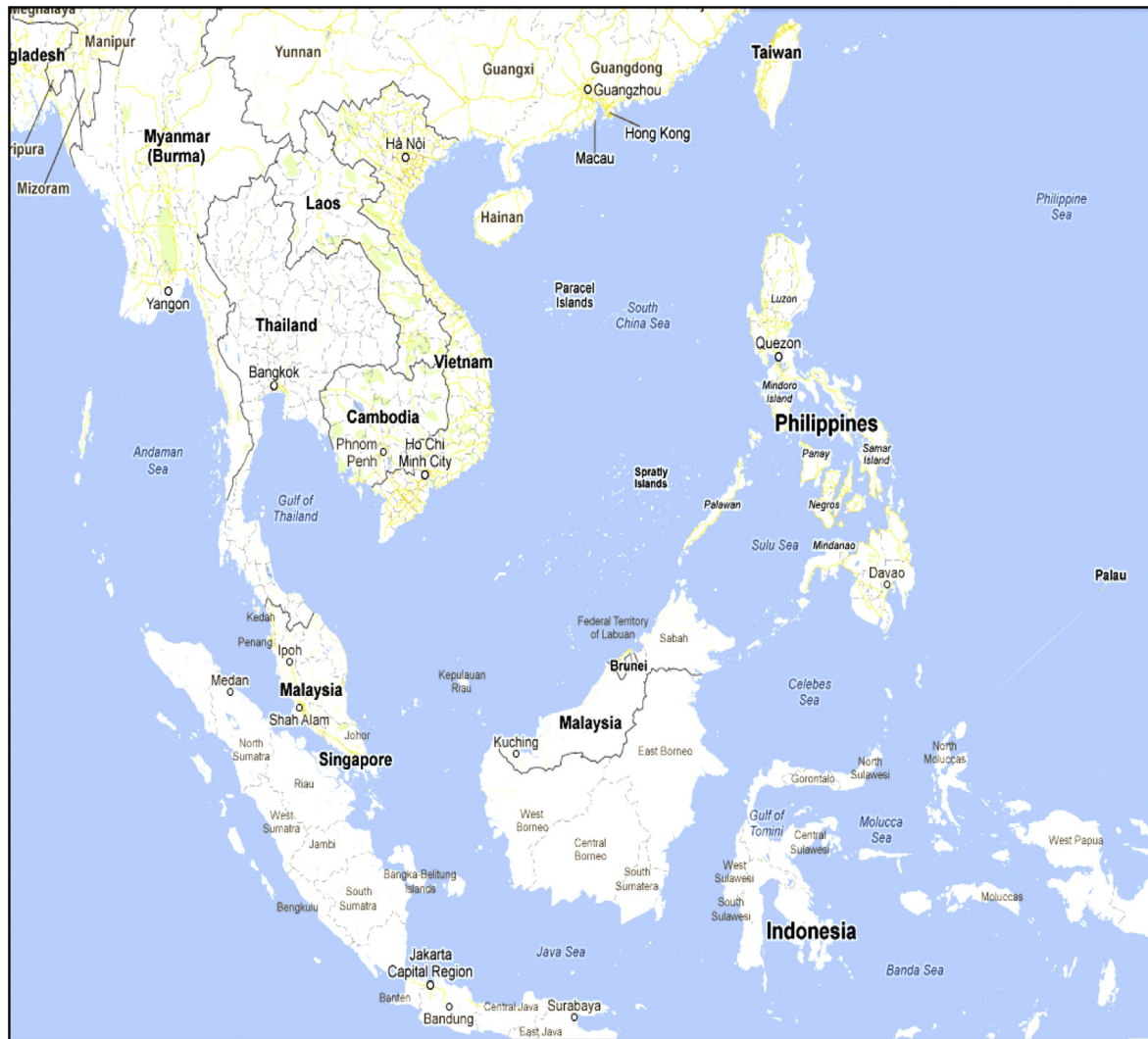


Fig. 1. Map of the South China Sea and Gulf of Thailand
Source: Google maps.

Coordinating Unit in Bangkok, Thailand. Project activities commenced with the first regional meeting in March 2002.

1. Findings of the Transboundary Diagnostic Analysis (TDA)

The regional Transboundary Diagnostic Analysis (Talaue-McManus, 2000) identified the loss and degradation of coastal habitats as the most severe problem in the South China Sea. Such loss was regarded as being of global significance because the Indo-West Pacific marine biogeographic province has long been recognized as the global centre of marine shallow-water biological diversity. Forty-five mangrove species out of a global total of 51 (Spalding et al., 1997), 50 of 70 coral genera (Tomascik et al., 1997), 20 of 50 seagrass species (Sudara et al., 1994), and 7 of 9 giant clam species (Tomascik et al., 1997) are found in the nearshore areas of the South China Sea. Compared to the Atlantic, the tropical Indo-West Pacific is highly diverse. Only 5 mangrove species and some 35 coral species are found in the Atlantic compared with 45 mangrove and over 450 coral species recorded from the Philippines. Coral species diversity is lower in areas away from Southeast Asia with 200 species being recorded from the Red Sea, 117 from South East India and only 57 from the Persian Gulf.

The TDA summarised the situation with respect to coastal habitats as follows:

“Recent estimates suggest that approximately 2 million hectares of mangrove forest or 12% of the world total are located in the countries bordering the South China Sea. This represents only 31% of the estimated total found in these countries at the start of this century (National TDA Reports). Estimated rates of loss in each country range from around 0.5 to 3.5% of the total area per annum and at these present rates could result in total loss of this habitat in the region by around 2030. Chou et al., (1994) estimate that 82% of the coral reefs surveyed in the South China Sea display evidence of degradation while Bryant et al. (1998) suggest that 50% of the Philippine and 85% of Indonesian reefs are at high risk. Comparable estimates for degradation of seagrass habitats are not available but are unlikely to be as high as this.”

The TDA noted that the high species diversity of the shallow water habitats of the region, combined with the variation in geomorphic and geological settings and formation types, contribute to the global significance of these habitats and that the richness of the flora and fauna was accompanied by the area's high natural productivity (Table 1). In this latter context, the TDA noted that:

“Capture fisheries from the South China Sea contribute 10% of the world’s landed catch at approx. 5×10^6 tons year⁻¹ (Pauly and Christensen, 1993). From the standpoint of aquaculture, five of the eight top shrimp producers in the world are border states of the South China Sea. These are Indonesia (first), Viet Nam (second), China (third), Thailand (sixth), and the Philippines (eighth) (Menasveta and Fast, 1998).”

Table 1
Marine production in seven participating South China Sea countries (from Talaue-McManus, 2000).

Country	Capture fisheries (t/yr)	Culture production (t/yr)	Total (t/yr)
Cambodia	30 500	1 500	32 000
China – South China Sea	2 689 000	3 303 500	5 992 500
Indonesia – South China Sea	1 956 513	136 661	2 093 174
Malaysia	569 058	No data	At least 570 000
Philippines – South China Sea	120 592	At least 109	At least 120 700
Thailand	At least 768 650 (for 23 major species)	234 000	At least 1 003 000
Viet Nam	737 150	No data	At least 740 000
Total for 7 countries	6 871 463	3 604 465	10 475 928
Total for world (1995) ^a	84 000 000	6 700 000	90 700 000
% of world production	8.2%	54%	12%

^a (FAO, 1997).

The TDA further noted that the richness and productivity of the South China Sea and associated environments were, however, seriously threatened by high population growth, pollution, over-harvesting and habitat modification, resulting in high rates of habitat loss and impairment of the regenerative capacities of coastal habitats. The socio-economic impacts of environmental deterioration were considered significant for the newly-developed economies of this region because, although GDP was dominated by the industry and service sectors, food consumption patterns relied heavily on cheap protein derived from fishery resources. The agriculture sector (including fisheries) remained a source of significant revenue and an important domestic source of food.

In addition to the loss and degradation of coastal habitats, the TDA highlighted over-exploitation of marine resources as a significant problem, particularly in the Gulf of Thailand. It observed that, although capture fisheries resulted in only 8.2% of the world’s total in 1995 (Table 2), 54% of world culture production came from these countries and that coastal aquaculture was recognised as one of the major sources of habitat loss and destruction.

In reviewing the regional data concerning marine pollution, the TDA report concluded:

“Taken as a regional data set, major gaps exist and there is great need to monitor the major pollutant sources and the rates at which they release pollutants. Monitoring data is often non-existent or in some cases of such poor quality that they are better ignored than used for management decisions. Monitoring the amount of effluent dumped and its effects are essential before remediative efforts are made. Given that pollutants enter water bodies from point and diffuse sources, and interact with the substrate, suspended and dissolved load, it is difficult to attribute any impact to a pollutant or a source with unequivocal certainty. It cannot be repeated enough how important monitoring data are. They provide information on the current state of the environment, the natural variability or noise in the system, the input from anthropogenic sources and the result of mitigative efforts. The impacts are influenced by the nature of the pollutants, not in isolation of other substances and particles in the

water but in their interaction with these. Hence, the management of pollution requires a holistic view of the natural and anthropogenic sources and their impacts. Appropriate mitigation can only be achieved by reducing loads across all man-made sources, and by addressing the social and economic drivers which influence these.”

(Talaue-McManus, 2000 page 67.)

On the basis of the national reports and the draft TDA, a regional meeting of national coordinators, responsible for the preparatory work together with regional experts, ranked the identified water-related environmental issues and problems as indicated in Table 2.

2. Implementation of the project from January 2002 to December 2008

The GEF project document provided extremely detailed information regarding the management of the project, the manner in which priority actions would be decided and which bodies would be responsible for financial decision-making. However, it contained very little detail in terms of the nature of actions that were to be taken or how the individual components were to be completed. The three paragraphs that encapsulate the total guidance contained in the project document regarding the implementation of the first component of the project on habitats (i.e., the largest component involving the expenditure of 21 million US dollars or 65% of total project costs) are reproduced below.

“22. Actions at the national level, proposed within **Component 1** relating to habitat degradation and loss are detailed under four sub-components addressing the four priority habitats in the region. Activities within each sub-component include: establishment or revitalisation of National Committees or technical working groups, to review national data on biodiversity; management; restoration and development activities impacting each habitat; research and publications; economic evaluation; institutions and legislation; and development of compatible, inter-linked national systems for regional data management. These preparatory actions will provide the background against which to develop or update national management plans, including required legislation, in order to maintain nationally important habitat areas. National, public meetings will be convened for presentation and review of the plans, prior to their adoption by Governments.

23. At the regional level, task teams will be formed, and meetings convened to: develop guidelines for national management plans to maintain regionally significant habitat areas of transboundary

Table 2
Preliminary ranking of major concerns and principal issues for the South China Sea (reproduced from Talaue-McManus, 2000).

Major concerns	Score	Rank	Principal issues	Score	Rank
Habitat	18.5	1	Mangroves	21.0	1
			Coral reef	20.0	2
			Seagrasses	17.0	6
			Estuaries	16.0	7
Over exploitation	17.5	2	Marine	19.0	3
			Freshwater	16.0	7
Pollution	14	3	Sewage	19.0	3
			Freshwater contamination	17.5	5
			Agricultural loading	15.0	9
			Industrial waste	15.0	9
			Sedimentation	14.0	11
			Solid waste	13.0	12
			Hydrocarbon	12.0	13
			Ship-based sources	12.0	13
Atmospheric	8.5	16			
Freshwater concerns	9	4			15

significance; draft and finalise, for adoption by governments, the criteria for the selection of priority transboundary habitat areas; apply the criteria to identify and prioritise areas for future management, protection/restoration; select 3 regional priority sites within each habitat class for initiation of demonstration projects; develop and adopt regional priority actions for inclusion in the revised SAP designed to meet the agreed targets of the framework SAP. Regional guidelines for conservation of each of the four habitats of Component 1 will be arrived at between participating countries. Sub-component 1.5 will involve consideration by a regional meeting of senior advisors of the recommendations of each of the regional task teams to ensure overall conformity between the sites of recommendations and to formulate overall recommendations for inclusion in the Strategic Action Programme. The outputs from these activities will be reviewed and adopted at high level intergovernmental meetings which will also adopt a regional portfolio of priority management projects and approve the selection of the sites for initiation of the demonstration projects.

24. Coral reef activities will not be executed on oceanic coral systems but will focus on non-oceanic reef systems outside disputed areas. It is agreed that, in the initial phase, coral reef sites of the project will be selected from those Southeast Asian countries participating in the project. The final sites will be recommended by the regional expert group, reviewed and accepted by the participating countries, and subject to the approval of the Project Steering Committee. The present project will not duplicate the activities pursued by other similar projects, including GEF projects. UNEP, serving as the Secretariat of the project, will invite all participating countries of the project to participate in the activities, including meetings, workshops, seminars, etc. related to the coral reef activities designing, planning and implementation as well as capacity building efforts, e.g. training."

These paragraphs provide considerable latitude in designing project interventions and in executing activities designed to achieve the outputs and outcomes detailed elsewhere in the document. The Logical Framework Matrix³ of the project document defined the overall objectives of the project as: improved regional co-ordination of the management of the South China Sea marine and coastal environment; improved national management of marine and coastal habitats; and improved integration of fisheries and biodiversity management in the Gulf of Thailand.

Six outcomes were defined including the adoption of a revised SAP, the creation of a regional database for planning and management and implementation of components of the SAP. The Logical Framework Matrix goes on to define the results in terms of 20 items defining specific outputs including national management plans for coastal habitats, implementation of nine demonstration sites, agreed priority listing of pollution hotspots and management plans for the establishment of a regional system of fisheries refugia.

It might be considered unusual for a project to attempt to achieve such a diversity of outputs, outcomes and results but the South China Sea project completed all of the anticipated tasks and produced more than the anticipated number of outputs with only two exceptions. A set or regionally adopted water quality objectives, water quality and effluent standards could not be agreed and the preparation of an investment portfolio was only partially completed.

In addition to the outputs and outcomes anticipated in the project document, there were a significant number of other project

outputs, including the signing of a bilateral agreement between Cambodia and Viet Nam concerning joint management actions in one of the largest seagrass beds in the South China Sea, the development of an interactive project website that permitted project participants to upload materials and take responsibility for individual pages, and the organisation and conduct of regional scientific conferences and Mayors Round Tables. These additional achievements are documented in other articles in this issue.

The papers presented in this special issue of Coastal and Ocean Management present some of the significant aspects of the South China Sea and contributions arising from innovative work undertaken by the GEF project. The intention is that the lessons learned will be properly documented and thereby made available for the benefit of a wider audience.

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John C. Pernetta
35/323 Yingrouyniwe, Moo 8, Bangtalad, Pak kret,
Nonthaburi 11120, Thailand

J. Michael Bewers
Bustier 89, c/Sant Jordi 7, Pas de la Casa AD-200, Andorra

³ The Logical Framework Matrix is a project planning tool designed to link the project activities and components with specific objectives, outputs and outcomes that is a required element in a GEF project.