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Project



Global Environment  
Facility

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***Reversing Environmental Degradation Trends  
in the  
South China Sea and Gulf of Thailand***

**REPORT**

**Fourth Meeting of the Regional Working Group for  
the Coral Reefs Sub-component**

***Guangzhou, China, 27<sup>th</sup> – 30<sup>th</sup> November 2003***



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Cover Photo: Abandoned net overgrown with other organisms, by Badrul Huzaimi.

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## **Report of the Meeting**

### **1. OPENING OF THE MEETING**

1.1 The Project Director, Dr. John Pernetta welcomed participants on behalf of Dr. Klaus Töpfer, the Executive Director of the United Nations Environment Programme (UNEP) and Dr. Ahmed Djoghlaif, Assistant Executive Director, and Director, Division of Global Environment Facility Co-ordination (UNEP/DGEF).

1.2 Dr. Pernetta, noted that the project had reached a critical watershed in its development and that this meeting had before it a number of items regarding the finalisation of anticipated outputs from the preparatory phase. These activities must be completed before proceeding to the operational phase of the project during which demonstration activities would be initiated. He noted further that funds had already been approved by the GEF for the demonstration sites as a single allocation without the sites having been identified in advance. Since this was an unusual procedure it was vital that the process of site selection be fully transparent and that the data and information used as the basis for decisions be scientifically credible and that the criteria used meet the GEF requirements.

1.3 Dr. Pernetta reminded participants that the existing Memoranda of Understanding (MoUs) were due to expire on December 31<sup>st</sup> 2003 and that to ensure continuity of action it was necessary to extend these until June 2004 to take account of initial delays in fund transfer and start-up of activities at the national level. In this connection he noted that MoUs for the second phase of the project would be different for each Specialised Executing Agency (SEA) reflecting the nature of individual demonstration sites and the varying responsibilities of individual SEAs in their execution. It was imperative that any amendments to the existing MoUs be drafted and finalised before members left Guangzhou if the project was to transit smoothly from the preparatory to the operational phase. To assist the Focal Points Ms. Nita Tangsujaritvichit was present in the meeting and would work with each Focal Point on the necessary revisions to the budget to conform with the revised work plan.

1.4 Dr. Pernetta indicated that a further item requiring substantive discussion and input was the finalisation of the demonstration site proposals themselves and indicated that Mr. Boon Tiong Tay would join the meeting to assist focal points in finalisation of the financial sections of the demonstration site proposals.

1.5 In conclusion Dr. Pernetta noted further that an important element of the next phase of the project was the further elaboration of the Strategic Action Programme, a regional document that had been endorsed by the participating governments. Consequently the meeting had a substantial volume of work before it, and he wished participants a successful, productive, and enjoyable four days.

1.6 The Chairperson of the Regional Working Group on Coral Reefs (RWG-CR), Mr. Abdul Khalil bin Abdul Karim, opened the formal session of the meeting and welcomed members and observers to the meeting. The list of participants is contained in Annex 1 of this report.

### **2. ORGANISATION OF THE MEETING**

2.1 The Chairperson of the RWG-CR, invited Mr. Yihang Jiang to introduce the documentation available to the meeting in both hard copy and on CD-ROM. Mr. Jiang briefly introduced each of the documents indicating in general terms the expected outcome of their consideration. The list of documents is attached as Annex 2 of this report.

2.2 Mr. Jiang briefed participants on the administrative arrangements for the conduct of the meeting, and the proposed organisation of work (UNEP/GEF/SCS/RWG-CR.3/Inf.3). He noted that formal sessions of the meeting would be conducted in English and in plenary although it was envisaged that, a breakout session would need to be scheduled in order to allow the focal points to finalise the amendments to their existing MoUs with Ms. Nita Tangsujaritvichit.

### **3. ADOPTION OF THE MEETING AGENDA**

3.1 The Chairperson introduced the provisional agenda prepared by the Project Co-ordinating Unit (PCU) as document UNEP/GEF/SCS/RWG-CR.3/1, and invited members to propose any amendments or additional items for consideration.

3.2 The Project Director proposed an additional agenda item for consideration under any other business. He suggested that the PCU brief members on the draft programme for the Regional Scientific Conference and that members provide inputs and suggestions regarding the programme and planning arrangements. The RWG-CR agreed to consider this matter under agenda Item 8, Any other Business.

3.3 With the addition of this item the regional working group adopted the agenda as contained in Annex 3 of this report.

### **4. REPORTS FROM THE PROJECT CO-ORDINATING UNIT REGARDING OVERALL PROGRESS TO DATE**

#### **4.1 Status of mid-year progress reports, expenditure reports, and budgets**

4.1.1 The Chairperson invited Mr. Jiang to introduce this agenda item and document UNEP/GEF/SCS/RWG-CR.4/4, *"Current status of budgets and reports from the Specialised Executing Agencies in the participating countries"*. Mr. Jiang noted that this document presents a summary of the current status of budgets and administrative reports, including audit reports, received by the PCU from the SEAs in the participating countries.

4.1.2 Mr. Jiang highlighted the difficulties of the PCU in respect of the implementation of the individual MoUs due to delays in receipt of administrative reports. He noted that under-expenditure and carry-forward of unspent monies from the cash advances constituted a problem. Members are requested to note that under-expenditures cannot be carried beyond the 31<sup>st</sup> December 2003 without extension of the existing MoUs. Such an extension can only be justified in terms of initial start-up delays including *inter alia* delays in receipt of the first tranche of funds in 2002, and subsequent documented delays at the national level. Any such extension must be signed before the expiry of the current MoU.

4.1.3 Mr. Khalil noted that new rules issued by the Malaysian Ministry of Finance precluded his engagement of certain sub-contractors, which had caused delays. Vietnam noted that some difficulties of an administrative and procedural nature had prevented smooth flow of funds and that a request had been made to audit the two years 2002 and 2003 together. Professor Ridzwan Abdul Rahman, noted that some difficulties in Malaysia could potentially be overcome through transfer of funds via a third party such as a University, which had greater flexibility.

4.1.4 It was agreed that administrative difficulties encountered during this preparatory phase should be taken into consideration when drafting the new Memoranda that would become operational on 1<sup>st</sup> July 2004.

4.1.5 Professor Porfirio Alino noted that administrative problems interfered with the smooth delivery of outputs and that he foresaw potential difficulties could arise in instances where the present institutions involved in preparatory activities simply handed over responsibility for implementing demonstration sites to another entity without retaining some active involvement.

4.1.6 In response Dr. Pernetta noted that the intention had always been that the focal points for the preparatory phase would remain the focal points for the second phase but that they might not take a direct role in execution of the demonstration site activities, rather they would have a supervisory or directorial responsibility.

4.1.7 Following brief interventions from all members it was agreed that all MoUs would be extended to June 30<sup>th</sup> 2004 and that each focal point would produce a specific work plan following completion of discussion of agenda item 4. Subsequently these would be considered as the basis for formulating the budget revision and completing a revision to the MoU prior to closure of the meeting.

The meeting agreed that, this was necessary to permit finalisation and publication of the substantive reports and continuation of national committee and sub-committee activities whilst the second memoranda to March 2007 were negotiated and signed.

## **4.2 Status of planned substantive outputs from the national level activities**

4.2.1 The Chairperson invited Mr. Jiang to introduce this agenda item and document UNEP/GEF/SCS/RWG-CR.4/5, *"Current status of substantive reports on coral reefs from the Specialised Executing Agencies in the Participating Countries"* that, contains a summary of the current status of the substantive reports received to date, by the PCU.

4.2.2 Documentation received by the Secretariat from the Focal Points up to the end of September, 2003 had been circulated by e-mail and electronic copies of all reports and documents received from the national level were provided to the meeting on CD-ROM, together with hard copies of the demonstration site proposals for reference of each member during discussion under agenda item 5. Mr. Jiang noted that, not all reports had been received in draft, hence the process of external independent review had been delayed. Draft reviews from one regional expert, together with the review of the PCU had been consolidated in document UNEP/GEF/SCS/RWG-CR.4/6.

4.2.3 During discussion it was noted that major outputs anticipated during the preparatory phase included a review of the national data and information; a review of national legislation and management infrastructure; a review of past and ongoing projects; and, a national action plan. During discussion numerous issues were raised regarding the nature of the publications, which should be produced; the language of the outputs; the audience and the modes of publication.

4.2.4 Opinion was divided regarding whether the national outputs should be published nationally or whether they should be aggregated by topic and published as regional syntheses; or both. It was also noted that different countries had different expectations and needs regarding publication of the preparatory phase outputs. There was an overall consensus however that national outputs were needed, in the national language in some instances, but that there was an equal need for regional products that presented a regional as opposed to a purely national perspective.

4.2.5 The meeting agreed that a national substantive report on the status of coral reefs should be produced by all countries but different views were expressed regarding the manner in which the outputs should be aggregated.

4.2.6 Dr. Pernetta noted that the mangrove working group had decided that rather than publishing the reviews of past and ongoing projects as separate documents these would be incorporated into the country reports on the status of mangroves. He reminded the meeting that one purpose of this output had been to assemble the background information regarding current investments in order to avoid duplication when selecting the demonstration sites.

4.2.7 Regarding the reviews of national legislation and management infrastructure the working group noted that these had been reviewed by the Regional Task Force on Legal Matters (RTF-L) and that a primary task for this task force was to provide access to existing legislation and advice regarding best practices based on experience in each of the participating countries. It was noted that the list of expected "contents" produced by the RTF-L was exactly that, a list of expected contents and not, a required format that needed to be replicated in each report. A number of focal points noted that they had already edited and revised their reports in the light of comments from the RTF-L and their own national members.

4.2.8 It was noted that if any, or all, of the reports were to be combined into a single regional publication then this would have to wait until the last country contribution had been completed. Discussion included consideration of alternative modes of publication including via the web and internet.

4.2.9 The discussion resulted in a consensus view of the need for both national and regional level outputs reflecting the regional nature of the project and the national inputs. The production of the regional outputs would require substantial work and it was generally agreed that these would necessitate hiring assistants to work with the national reports in producing a regional syntheses.

4.2.10 The view was expressed that the review of past and ongoing projects could be satisfactorily published via a web-based database. This had the added advantage that the outputs from the project components could be compiled as a complete, single, output and also that if the database was interactive then new projects could be added as they came on stream. The database should be searchable either geographically or by topic/discipline.

4.2.11 It was noted that numerous alternatives had been raised and discussed and therefore it was agreed that each country would indicate their own intentions with respect to national level publication and dissemination following which the regional level outputs would be considered. These views are summarised in the following table, which indicates the manner in which the reviews are to be combined for publication at the national level.

No.	Output Title	Cambodia	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Regional
1	Review of Data & Information [Status/country report]	Separate + 2, 4, 5	Separate + 4, 5	Separate + 2, 3, 4, 5	Separate + 5	Separate + 2, 3, 4, 5	Separate + 2, 4, 5	Regional publication and distribution of national reports Regional synthesis
2	Past & Ongoing Activities	add to 1	add to 6	add to 1	add to 6	add to 1	add to 1	Regional web-based Database Interactive
3	National Legislation	Separate	Separate	add to 1	add to 6	add to 1	add to 6	Regional overview and best practice database
4	Economic Valuation	add to 1	add to 1	add to 1	add to 6	add to 1	add to 1	RTF-E reg. valuation
5	Site Characterisation	add to 1	add to 1	add to 1	1	add to 1 Separate GIS database	add to 1	Regional GIS database
6	National Action Plan	Separate	Separate	Separate	Separate	Separate	Separate+3	Strategic Action Programme

4.2.12 The language of publication at the national level would be at the discretion of focal points but all national level reports would be published in English by the country concerned for distribution in the region. In cases where the reports are published in English the PCU could decide not to undertake a separate publication but pay for additional copies that would be subsequently dispatched to the PCU for regional distribution.

4.2.13 During the subsequent discussion it was noted that the Strategic Action Plan would address only the South China Sea and that for those countries with coastlines bordering other seas or oceans (Indonesia, Malaysia, Thailand and the Philippines) the national action plan would cover a broader geographic area. Dr. Pernetta briefly outlined the distinctions between a SAP and a traditional action plan. The SAP consists of targeted and budgeted actions, defines who is responsible for which action and target dates for completion of the actions. In addition it contains an economic analysis of the costs of action and non-action. The national action plans are similarly constructed since achieving the goals and targets of the regional Strategic Action Plan will require collective actions at the national level.

4.2.14 Mr. Kim Sour raised the issue of how the National Action Plan should be prepared in those countries with no prior experience, and whether or not guidelines for their preparation existed. In response Dr. Pernetta suggested that existing national plans such as the national environment action plan and national biodiversity action plan be analysed to see what references they might contain to coral reefs. Then on the basis of the national committee's identification of the needs for action the plan could be drafted to build upon the elements contained in existing national plans. Mr. Sour stated that in his view Cambodia would require external advice and assistance and it was suggested that the members of the Regional Working Group and other regional experts could be invited to contribute and assist and that either national funds could be used or the costs could be borne by the project's regional co-ordination budget.

4.2.15 Dr. Alino noted that a strategy for the seas of East Asia, was to be adopted during the upcoming PEMSEA organised meeting to be held in Kuala Lumpur and that elements of this could also be used for guidance in drafting national action plans. During the subsequent discussion it was noted that the East Asian Seas document was more of a policy level statement rather than an operational document detailing the actions to be taken and that its geographic scope was extremely broad. National coral reef action plans needed to be consistent with this broader regional strategy but needed to be much more "operational" in their approach and content.

4.2.16 Concerning the finalisation of the National Action Plans it was noted that drafts were expected to be produced prior to the completion of the preparatory phase but that the finalisation of these would be a lengthy process involving iteration between the national and regional level to ensure compatibility of the objectives and targets and to ensure high level political support and acceptance of the document. Dr. Pernetta noted that one needed to consider what can be delivered by June 2004 in the first instance and then the longer-term work plan would indicate when the action plan is to be endorsed by the governments.

4.2.17 During subsequent discussion it was proposed that Cambodia build into its short term work plan a working meeting involving experts from the Regional Working Group to prepare an initial draft.

4.2.18 Participants agreed that following the completion of agenda item 4 individual focal points would draft specific work plans detailing the timetable for the production of the national level outputs. These would then constitute the first element of the amendment to the Memoranda of Understanding, and the basis for creating the overall work plan for the regional working group as a whole.

#### **4.3 Status of planned substantive outputs from the regional level**

4.3.1 In introducing this agenda item the Chairperson noted that this was a proposal regarding the production of a regional overview on Coral Reefs as a background document for the Regional Scientific Conference. He invited Mr. Jiang to introduce the document.

4.3.2 Mr. Jiang introduced the draft outline, contents, and format for the proposed document and invited the meeting to discuss the general format and contents. He noted that individuals needed to be identified who would be willing to contribute specific sections of the document. He stated that members should note that the overview must be printed in time for the Regional Scientific Conference in February 2004 and this would necessitate finalisation of the document by December 15<sup>th</sup>.

4.3.3 The outline was then considered section-by-section, and agreed as it appears in Annex 4 of this report. Following a discussion of possible authors for the foreword and agreeing that, this should be written by a prominent coral reef specialist with international standing, who was from the region Professors Ridzwan and Chou were proposed as co-authors of the foreword. In accepting this responsibility they also offered to write section 2, jointly.

4.3.4 It was agreed that each member would write national inputs to each section and that individual members would take responsibility for co-ordinating inputs to specific sections. It was agreed that Dr. Alino and Dr. Yeemin would consolidate inputs to section 3 Coral reef distribution & biodiversity; Dr. Suharsono and Mr. Sour, inputs to section 4 State of coral reefs & present threats; Dr. Vo Si Tuan and Mr. Khalil inputs to section 5, Use and value. The PCU would take responsibility for the remaining sections, basing the text upon the outputs from the present meeting.

4.3.5 Following these agreements members agreed that they would write their individual inputs to each section overnight and pass them to the individual's responsible for each section. These individuals would then consolidate text for inputting by the Secretariat such that drafts of the text would be made available prior to the end of the meeting. At this time recommendations would be put forward by the responsible individuals concerning tables, diagrams, and photographs to be included in each section. Once the nature of these had been decided the RWG-CR would identify suitable sources.



## **5. REVIEW OF THE SITE RELATED DOCUMENTS**

### **5.1 Site characterisation; cluster analysis; environmental and socio-economic ranking; and available supporting documentation**

5.1.1 The Chairperson introduced this agenda item by reminding members that, the clustering and ranking of sites is based on agreed environmental criteria developed during the third meeting of the Regional Working Group. He advised members that during the third meeting of the Regional Scientific and Technical Committee (RSTC), the preliminary results of the cluster analysis and ranking of the proposed coral reef sites had been discussed, and that the RSTC had decided to remove the parameter of “number of mammal species” from the data used to cluster sites.

5.1.2 In addition the RSTC had recommended the removal of one parameter from each of the highly correlated pairs resulting in 8 parameters being used in the final cluster analysis.

5.1.3 The Senior Expert, Mr. Jiang advised the members that, some numbers used in the ranking process were not supported by detailed lists of species, or references to original sources. Hence the numbers used in the ranking are open to question. He noted that the meeting would need to validate the numbers, add any new data and re-run the cluster analysis, following which they would need to examine and agree on the revised rank scores, before finalising the ranking of the potential demonstration sites.

5.1.4 The meeting discussed the revised listing of parameters used in the most recent cluster analysis and agreed to accept the recommendations of the RSTC. During the discussion of the raw data used in the cluster analysis it became apparent that not all members had provided species lists or references in support of the numbers claimed at certain sites. Following a review of those data that had been received, members noted that for those sites lacking species lists at the present time, such lists were available and would be dispatched to the PCU immediately upon the return of members following closure of the meeting.

5.1.5 The data were then reviewed and a number of amendments and revisions proposed by various members. The situation with regard to Cambodia was discussed at length and it was noted that the numbers quoted for each site were not all based on site-specific observations but had been derived from a listing of all species recorded from Cambodian coral reefs. It was noted that inclusion of such data biased the cluster analysis since it effectively weighted these sites in the analysis. Following discussion it was agreed to remove two of the Cambodian sites, for which most data were derived from the national list rather than site-specific lists.

5.1.6 Dr. Alino indicated that during local level discussions, potential management at one site, El Nido, had withdrawn in favour of a neighbouring district Calamianes. Hence he had prepared a demonstration site proposal for the Calamianes Islands whilst the site data in the cluster analysis were for El Nido. There followed a discussion on whether or not this was acceptable given that the RSTC had advised that no new sites should be added to the analysis initiated during the third meeting of the Regional Working Groups. Following a detailed consideration of this issue the working group agreed that Calamianes should not be included in the cluster analysis, nor considered as a potential demonstration site at this stage.

5.1.7 Mr. Khalil, noted that following extensive field surveys sufficient data were now available for one of the Malaysian sites originally excluded from the cluster analysis through lack of data. He provided the data and the proposed Tun Mustapha Park (originally listed as Banggi) was added to the current list for clustering.

5.1.8 It was noted that the listing of endangered and threatened species should be based on the IUCN listings and definitions and not on national lists. Data based on national lists were removed from the table. An extensive discussion ensued regarding whether or not marine mammals should be included in the listing of endangered and threatened species at each site and it was agreed that these should be removed such that, the lists of endangered and threatened species would be based upon turtles, fish and marine invertebrates only. The data were revised to conform to, this agreement, and the final table of data is included in Annex 5 of this report.

5.1.9 In reviewing the data relating to crustaceans and echinoderms the very high numbers from the Thai sites were noted and it was further noted that these reflected intensive work by Thai specialists. It was clear therefore that the Thai data were not directly comparable to those from the other sites since such detailed listings had not been compiled in other countries.

5.1.10 A cluster analysis was then run on the full data set of eight parameters; on the data set without crustaceans; and, on the data set with crustaceans and echinoderms removed. Following an extensive discussion of these results, which are presented in Annex 5, it was agreed that the cluster to be used in the first step of demonstration site selection would be the one prepared using 6 parameters, that is with the crustacean and echinoderm data removed.

5.1.11 Following completion of the clustering the working group considered the ranking table, noting that, the removal of the parameter "number of marine mammals" had necessitated some adjustment to the rank scores. The meeting agreed to accept the rank scoring system recommended by the RSTC.

5.1.12 The Senior expert noted that when the actual data were reviewed in relation to the numerical classes for the indicators originally used in scoring environmental criteria and indicators they failed to separate sites in a number of the indicators. The PCU upon reviewing these data had recommended in Document UNEP/GEF/SCS/RWG-CR.4/5 that, some adjustments be made to the ranges for a number of the classes of indicator. The meeting discussed these at length and agreed to accept a number of the recommendations regarding alterations to the ranges. The finally agreed ranking criteria, indicators, and scores for the environmental parameters are presented in Table 1 of Annex 6.

5.1.13 Members then prepared a tabulation of revised rank scores for the environmental criteria and indicators for all forty-three coral reef sites. These data are presented in Table 2 of Annex 6.

5.1.14 A preliminary tabulation of rank scores for the social and economic criteria and indicators was then prepared, based on the originally agreed scoring system. These data were extensively discussed and the meeting recognised that some indicators and ranking scores needed to be modified in order to reflect more correctly the objectives of the activities at the proposed demonstration sites and the overall goals of the project.

5.1.15 With regard to the threats, the meeting considered the discussions and decisions of the third meeting of the RSTC and agreed to use the approach recommended by the RSTC, that is the higher the reversibility of the threat the higher the score, rather than higher levels of threat receiving a higher score. This was viewed as being consistent with the general goal on the project, i.e. to reverse environment degradation in the South China Sea and Gulf of Thailand.

5.1.16 Dr. Pernetta drew the attention of the meeting to the higher weight assigned to the three criteria: potential co-financing; stakeholder involvement; and potential for transboundary management, which together totalled 60 percent of the total 100 score. He expressed concern regarding the differences in interpretation of these criteria and questioned the scores of 20 points for potential transboundary management to numerous sites. In response, Professor Ridzwan indicated that in the case of the Tun Mustapha Park the potential for transboundary management in association with the Philippines authorities was high, and that discussions on such a possibility had already occurred. Similarly in the case of Phu Quoc this site was located on the Vietnamese, Cambodian border and contacts had been initiated to establish joint management of the reef systems in this area, while in the case of Koh Chang the area was within an existing joint development agreement between Cambodia and Thailand. The remaining Thai sites had been ranked for transboundary management potential on the basis of their accessibility and demonstration value.

5.1.17 The meeting agreed that transboundary management referred to the potential for joint (i.e. two country) actions and activities to manage ecosystems, shared between the two countries. The meeting understood that the stakeholder involvement under the category of "National significance" indicates the involvement of national government. The local stakeholder/community involvement criterion refers to the involvement of all other stakeholders and communities apart from the national government. The classes of rank scores were amended to include "potential" transboundary management and actual transboundary management.

5.1.18 The meeting considered that it would be more reasonable if the environmental indicators were to have more weight in the overall ranking of potential demonstration sites than the indicators for socio-economic criteria. As initially applied the two scores were accorded equal weight.

5.1.19 The rank scores for the socio-economic indicators were therefore adjusted downwards to a total of 85 and the finally agreed indicators and weight are presented in Table 3, and final ranking scores are shown in Table 4 of Annex 6.

## **5.2 Critical review of proposals for demonstration sites**

5.2.1 The Chairperson invited Mr. Boon-Tiong Tay, Manager Project Financing, to introduce the discussion on the critical review of the demonstration site proposals. Mr. Tay referred to meeting document UNEP/GEF/SCS/RWG-CR.4/9 and indicated that his discussion would focus on the financial elements of the demonstration site proposals, specifically, Sections 12, 13, 14 and 15; and that Mr. Jiang would later lead the discussion on the non-financial, technical elements of the proposals.

5.2.2 Mr. Tay explained that the four sections pertaining to the financial aspects of the demonstration sites are very important because the demonstration site proposals will be central to the resource mobilization business plan, which he intends to present to potential donors to seek additional co-financing. Consequently, well reasoned, discussed, and prepared, Sections 12 to 15 are critical and necessary to support the operational and financial arguments for funding the additional demonstration sites; and to substantiate the contention that the demonstration site proposals were prepared diligently and in an acceptable manner.

5.2.3 He further explained how these sections are very closely related. The outcome of the demonstration site activities discussed in Section 12 (Outcome) should clearly support the South China Sea Project objectives and should be realistic for the site and the activities. Section 13 (Activities) should identify the demonstration site activities that would deliver the Outcomes discussed in Section 12; all activities should result in some output or contribute to some outcome. Section 15 (Estimated Budget) would detail the estimated costs of implementing the activities identified in Section 13; ensuring that the activities are co-financed and fully funded, and that the costs involved are appropriate. Section 14 (Financial Sustainability and Risk Assessment) would present details of how the demonstration site intends to sustain the beneficial outcome of its activities after the project funding has been expended; and how the risks involved, if any, will be addressed.

5.2.4 Mr. Tay presented a model of Sections 13 and 15 that illustrates the relationship between these sections and properly analyses the estimated budget by activities and object of expenditures over the life of the demonstration site activities. This model was made available to the RWG members in hard and electronic form and is attached as Annex 7 to this report.

5.2.5 Mr. Tay requested that the RWG members revisit Sections 12 to 15 of their proposals and amend them in accordance with the discussion. He also offered to assist them in person over the next few days and through email thereafter, with the preparations of their Sections 12 to 15; and to review and comment on their drafts, if they wished.

5.2.6 Acknowledging the usefulness of this offer, Professor Ridzwan enquired as to the deadlines for the delivery of the revised demonstration proposals and if this would allow sufficient time for a proper consultative revision of the proposals. Mr. Yihang responded that this would be discussed during the agenda item on the work plan, but the proposals were already overdue and had to be available in advance of the partnership workshop to be convened in conjunction with the Regional Scientific Conference in February next year.

5.2.7 In response to an earlier query from Professor Ridzwan, Dr. Pernetta confirmed that country co-financing could be provided both in-cash and in-kind but that these two types of support had to be distinguished and accounted separately. He also discussed and clarified the issue of "associated financing" in relation to co-financing for the demonstration sites, associated financing was financing to other projects or programmes which contributed towards the achievement of the same goals as the demonstration site, whereas co-financing was financial and other contributions by partner agencies including governments, directed towards the activities of the project.

5.2.8 Responding to a query from Dr. Suharsono, Mr. Tay indicated that typically project management/administration costs and capital equipment acquisition, such as cars and boats, cannot be covered by GEF funds but should be provided by the government as co-financing or through alternative co-financing sources. Dr. Pernetta further clarified UNEP's rules pertaining to these expenditures items; that, for example, while capital acquisitions of facilities and transportation equipment would not be supported by the GEF grant, the project would cover the reasonable rental and operating costs of obtaining these services or could cover costs of modest traditional modes of transport.

5.2.9 The Chairperson invited Mr. Jiang to introduce the reviews of the demonstration site proposals prepared by the PCU and contained in document, UNEP/GEF/SCS/RWG-CR.4/9, *"Reviews of the proposed coral reef demonstration site proposals bordering the South China Sea"*.

5.2.10 Mr. Jiang informed the meeting that the demonstration site proposals received by the PCU well in advance of the meeting had been reviewed by the PCU, and comments on individual proposals were provided in the document. However, due to the late receipt of some of the proposals, it was not possible for the PCU to review all the proposals prior to the meeting. He then introduced the general comments based on the proposals received.

5.2.11 He suggested to the meeting that the best way to consider the draft proposals was to provide comments collectively as a group, for the improvement of the proposals, and to review the proposals country by country; providing suggestions for modification and improvement.

5.2.12 The Chairperson invited the focal point from Cambodia to introduce the two demonstration site proposals. Mr. Sour informed the meeting that the two proposals prepared by Cambodia, were for Koh Tunsay (KEPCR1) and Koh Sdach (KKCR2). He informed the meeting that:

- Capacity building is an important element for Cambodia in all demonstration sites proposed;
- Monitoring of coral reef status will be essential for understanding coral reef status in Cambodia as there is presently very limited data and information available;
- Public awareness on the significance of coral reef needs to be raised amongst the fishing community; and
- Law enforcement is weak in Cambodia, and considerable effort is needed to improve law enforcement.

5.2.13 Professor Chou commented that replenishment of fish stocks in coral reef areas is not really a realistic target for demonstration activities. It would be better if the proposed activities could focus on the establishment of infrastructure for protection and sustainable use of coral reef resources, thus public awareness would be an important activity.

5.2.14 The meeting realised that the outcomes of the proposed demonstration sites should be measurable. If the outcomes included in the proposal could not be achieved, it would be better to change them to more realistic and measurable ones.

5.2.15 Dr. Tuan commented that as the establishment of a marine protected area would take a long time, with a lot of effort, it would not be wise to expect the establishment up MPA in the proposal, in particular if there was a lack of government co-financing.

5.2.16 Following clarification of the difference between outputs and outcomes, Dr. Pernetta noted that in the demonstration site proposals, there was a need to include indicators of success. Indicators can be process-oriented, such as the management committee meets regularly as planned in the proposals, and agrees to the actions planned. Environmental indicators, are more difficult and measuring change in environmental state is difficult if not impossible within the time frames of the project. Environmental stress reduction is less difficult to identify and perhaps indicators should focus on stress reduction, rather than change in environmental state. He suggested that it was important not to set a goal if it is not achievable.

5.2.17 Dr. Suharsono introduced the demonstration site proposal prepared by Indonesia. He informed the meeting that the name of the potential demonstration site was Banka-Belitung. Since this area is close to Kalimantan, the impacts from developments have been a major concern for protection of coral reefs in the area. He then introduced the proposal in detail.

5.2.18 It was noted by both Dr. Ridzwan and Mr. Jiang that the stakeholders' involvement in the demonstration proposal focussed only on the users of coastal resources. The proposal should identify the roles of the stakeholders in the management of coastal resources and include other stakeholders, such as the national and local governments.

5.2.19 Dr. Yeemin introduced the four demonstration proposals prepared by Thailand. He informed the meeting that the national committee for coral reefs in Thailand decided to prepare 4 demonstration site proposals, with the clear understanding that not all of them will be supported by the GEF grant. He informed the meeting that the first priority coral reef site at national level is Koh Chang. The main objective of the proposal is to set up an eco-tourism area and he informed the meeting that the necessary infrastructure has been set up by the government. Tourism education and public awareness are the main objectives for the proposal.

5.2.20 Koh Chumporn is the second priority as it is a new marine park, the major challenge is how the new marine park can manage the coral reef to avoid resource degradation, and activities include livelihood development and public awareness. The project will encourage multi-agency management in the demonstration site.

5.2.21 Koh Samui, as the third priority, covers a large area, but only 10% of the marine park is coral reefs. The challenge for the demonstration site, when approved, will be how to improve the coral status to that of 20 years ago. He also informed the meeting that the main objective of the proposal in Koh Angthong, as the fourth priority, is to provide a good model of coral reef management, as the marine park has been long established with 20 years of management experience.

5.2.22 Dr. Ridzwan suggested to add indicators to measure the outputs and outcomes of the proposed demonstration site activities and suggested that monitoring of coral reefs should be one of activities.

5.2.23 Dr. Pernetta expressed appreciation for the well prepared proposals, and indicated that in the proposal of Koh Chang there is no indication of the potential joint management project with Cambodia. He further indicated that if this aspect were to be included, it would be appropriate to include assessment of the relevant risks associated with the geopolitical interactions between the two countries.

5.2.24 Dr. Tuan introduced the two demonstration site proposals prepared by Viet Nam; Ninh Hai and Phu Quoc. He informed the meeting that the main objectives of the proposed demonstration site in Ninh Hai are to manage coral reef for sustainable fishery and eco-tourism. Co-ordination and co-operation with the relevant existing WWF and ICRAN projects in the region will definitely ensure the success of the proposed demonstration activities.

5.2.25 The proposed activities in Phu Quoc will focus on the joint management of coral reef resources with Cambodia, as the site is located on the border of the two countries. He informed the meeting that discussions have been held with the National Technical Focal Point from Cambodia, and he promised that such discussion would continue with respective partners in Cambodia, when the new government is fully functioning. This demonstration site encompasses not only coral reefs but also seagrass, and mangroves.

5.2.26 Dr. Pernetta commented that one should not under estimate the difficulties of joint management, involving two countries, both politically and technically. He noted that apart from the agreement between the national governments, it is nice to know there is also provincial level agreement for co-operation between the two countries.

5.2.27 Dr. Alino introduced the demonstration sites proposals prepared by the Philippines. He informed the meeting that:

- The proposed activities in Calamianes will focus on eco-tourism, and the provincial council is the co-ordinating body for the management of relevant activities.
- The major threat for coral reefs in Batangas is the discharge from the power plant. The private companies, together with local communities, are engaged in protection of coral reefs. The activities proposed in the demonstration site will focus on environment education and setting up a sanctuary for protection of coral reefs.
- There is established infrastructure in Masinloc in protecting and managing coral reefs in that area. The main activity will be the regular monitoring of the impacts of the power plant. The major task in Masinloc is to engage private companies in the management of the coastal resources.
- In Bolinao, the demonstration activities will focus on how all users should and can work together, and setting up the monitoring system to understand changes of coral reefs. There is a Dutch project in that area, which could be co-ordinated with the activities in the demonstration site.

5.2.28 Dr. Pernetta raised a general point. He informed the meeting that instead of using the concept of marine protected area, it would be more appropriate to use the concept of sustainable use, as it more closely matches the GEF goals and objectives.

5.2.29 Mr. Khalil introduced the three demonstration site proposals prepared by Malaysia. He informed the meeting that two of the sites are in Peninsula Malaysia, and another one, in Sabah, which has significant potential for transboundary management.

5.2.30 Dr. Ridzwan informed the meeting that for the proposed demonstration site located in Sabah, the commitments from state, local and national governments are high. The area is under high threats from fishing activities and there is substantial funding supporting existing activities, including alternative livelihoods.

5.2.31 The meeting agreed that all demonstration site proposals prepared by the participating countries need to be modified according to the comments received from the Regional Working Group, and the proposals should be finalised before the deadlines agreed by the group. It was also agreed that the deadline for finalisation of the proposals would be discussed under agenda item 6. The meeting fully understood that the demonstration site proposals are a major outcome of the project during the last two years that need to be finalised, edited and printed, for use during the Regional Scientific Conference, in particular in the partnership workshop.

### **5.3 Possibilities for extension of the network of demonstration sites through collaboration with ICRAN sites and the GEF Project "Biodiversity Management in the Coastal Area of China's South Sea"**

5.3.1 Ms. Yue Chen was invited by the Chairperson to introduce the UNDP/GEF/SOA<sup>1</sup> biodiversity project entitled "Biodiversity Management in the Coastal Area of China's South Sea". She outlined the proposed activities, which would take place at four sites one of which (Sanya Island) was focussed on coral reefs and involved, monitoring, capacity building, and restoration. A second demonstration site involved mangroves and the project also includes activities addressing land-based pollution.

5.3.2 Ms. Chen informed the meeting that the project will be 4-8 year, in which GEF supports the first 4 years of demonstration activities, and the last 4 years will focus on the transfer of the experience from the demonstration sites to other relevant sites. The total GEF grant supporting the activities of this project is US\$ 3.195 million.

5.3.3 She informed the meeting that within the framework of this project, the main activities at the Sanya coral reef demonstration site would include:

- long term survey and monitoring of coral reefs;
- coral reef baseline studies;
- enhance law enforcement in the Marine Protected area;
- build up a GIS map; and
- a pilot study on coral reef transplantation.

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<sup>1</sup> SOA = State Oceanic Administration

5.3.4 It was noted that the Project Steering Committee had decided that the PCU explore possible linkages between the UNEP/GEF South China Sea Project and other GEF projects bordering the South China Sea. As a consequence Ms Chen had been invited to this meeting to present the UNDP/GEF/SOA project and to explore possible ways of co-operation. It was noted that the UNDP/GEF/SOA project was not yet operational and that the organisation and management was planned to operate at three levels: national; provincial and local.

5.3.5 The members of the Regional Working Group expressed their strong interests in the project. Mr. Jiang asked a question on the management structure of the project, in particular for the operational phase to which Ms. Chen responded that the project would be mainly implemented by the provincial governments, with local project offices.

5.3.6 Dr. Tuan stated that as a network of coral reef demonstration sites would be established within the framework of the UNEP/GEF South China Sea project. It would be beneficial for the region if the coral reef demonstration site within this project could be involved in the network.

5.3.7 There followed a discussion of possible ways in which collaboration between the UNEP/GEF project and this activity could be established. The RWG-CR recommended that a representative of the National Executing Agency for the project be invited to become a member of the Regional Working Group in order to establish a mechanism for overall co-ordination and co-operation and to ensure that when the project become operational, regular exchange of information would be secured. At the practical technical level it was agreed that the local management of the project would be kept informed of developments in the network of demonstration sites.

5.3.8 Ms Chen expressed the view that these proposals were very welcome and she would convey the recommendation of the group to the Project Manager in SOA. It was agreed that the Project Director would also follow-up the meeting recommendation with SOA.

5.3.9 Mr Jiang outlined the activities of the International Coral Reef Action Network (ICRAN) in general, and provided information related to the sites located in the South China Sea marine basin in particular. He informed the meeting that some achievements have resulted from the ICRAN demonstration and/or target sites, in particular in the area of community based management. He emphasised that co-ordination and co-operation should be ensured at site level.

5.3.10 Dr. Tuan briefed the meeting on the outcomes at the ICRAN demonstration site in Ninh Tuan, Viet Nam, which was paired with Apo Island in Philippines. These included the management plan of the site, local agreements on protection of coral reefs, and volunteer programmes at the site level.

5.3.11 The meeting agreed that close linkage between the coral reef sub-component of the South China Sea project and ICRAN demonstration sites should be established. Representatives from the ICRAN project should be invited to the next meeting of RWG-CR. The meeting further agreed that the experiences obtained from the ICRAN demonstration sites should be take into consideration in planning and executing the demonstration site activities in the South China Sea project.

## **6. REVISION OF THE WORK PLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON CORAL REEFS WITH EMPHASIS ON THE PERIOD OCTOBER 2003 TO JUNE 2004**

6.1 The Chairperson invited Mr. Jiang to introduce this agenda item with reference to the document UNEP/GEF/SCS/RWG-CR.4/10 *"Proposals for a revised work plan and timetable for the RWG-CR with details of outputs and milestones between November 2003 and June 2004"*.

6.2 Mr Jiang reminded the participants that during the first and second meetings of the Regional Working Group a flow chart of activities and work plan and timetable had been developed and agreed. The meeting noted that as a consequence of the sequential delays in production of national level outputs it was necessary to revise the regional work plan and timetable.

6.3 Following extensive discussion of the work plan, and a full consideration of the required deadlines for provision of national outputs, the meeting agreed the revised work plan for the Regional Working Group, which is attached as Annex 8 to this report.

## **7. DATE AND PLACE OF THE FIFTH MEETING OF THE REGIONAL WORKING GROUP ON CORAL REEFS**

7.1 Mr. Jiang informed the meeting that in the document UNEP/GEF/SCS/RWG-CR.4/10, the proposed dates for the fifth meeting of the RWG-CR, are 22-25 November 2004. The meeting noted that the decision of the Project Steering Committee that future meetings of the regional working group should be organised at a demonstration site.

7.2 The meeting agreed the dates for the fifth meeting of RWG-CR, proposed by the PCU and agreed that selection of the venue would be made only following selection of the demonstration sites.

## **8. ANY OTHER BUSINESS**

### **8.1 Regional Scientific Conference**

8.1.1 Dr. Pernetta provided members with the provisional outline of the programme for the Regional Scientific Conference and noted that there are two major purposes for the conference:

- (i) to get all focal points from different countries and different components together to exchange information and share experiences of the implementation during last two years; and
- (ii) to organise a partnership workshop to provide donors with information regarding the proposed demonstration site proposals, and solicit their involvement in co-financing these sites.

8.1.2 To achieve these two purposes, the programme of the conference needs to be attractive to both potential donor agencies and South China Sea project family.

8.1.3 Following clarification of the detailed elements of the conference programme, the meeting felt that the conference would provide a good opportunity to exchange views with experts from other countries and other components. More importantly, the conference will provide a good chance for the national experts to meet potential donors directly.

8.1.4 The meeting agreed the draft programme for the conference and further agreed that they would provide details of any potential contributions upon their return.

## **9. ADOPTION OF THE REPORT OF THE MEETING**

9.1 The Rapporteur, Dr Yeemin, presented the draft report of the meeting, which was considered, amended, and adopted as it appears in this document.

## **10. CLOSURE OF THE MEETING**

10.1 The Chairperson expressed appreciation to the South China Sea Institute of Oceanology for their organisation of the meeting venue, and administrative and technical support to the meeting.

10.2 The Project Director expressed appreciation on behalf of UNEP for the hard and constructive work that all members had invested in the meeting. The Chairman also expressed his appreciation for the hard work and support of all members.

10.3 The being no further business the meeting was closed at 1430 on 30<sup>th</sup> November 2003.



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## ANNEX 2

### List of Documents

#### Discussion documents

UNEP/GEF/SCS/RWG-CR.4/1 Amend.1	Provisional agenda
UNEP/GEF/SCS/RWG-CR.4/2 Amend.1	Provisional annotated agenda
UNEP/GEF/SCS/RWG-CR.4/3	Report of the meeting
UNEP/GEF/SCS/RWG-CR.4/4	Current status of budgets and reports from the Specialised Executing Agencies in the participating countries.
UNEP/GEF/SCS/RWG-CR.4/5	Current status of substantive reports on coral reefs from the Specialised Executing Agencies in the Participating Countries.
UNEP/GEF/SCS/RWG-CR.4/6	Reviews from a regional expert, and the PCU of the drafts of the substantive reports produced by the Specialised Executing Agencies in the participating countries.
UNEP/GEF/SCS/RWG-CR.4/7	Proposed timetable, contents and responsibilities for the production of the regional overview of coral reefs bordering the South China Sea.
UNEP/GEF/SCS/RWG-CR.4/8	Cluster analysis; and environmental and socio-economic ranking; of potential coral reef demonstration sites conducted following the third Regional Scientific and Technical Committee meeting.
UNEP/GEF/SCS/RWG-CR.4/9	Critical reviews of the proposed coral reef demonstration sites bordering the South China Sea.
UNEP/GEF/SCS/RWG-CR.4/10	Proposals for a revised, work plan and timetable for the RWG-CR with details of outputs and milestones between October 2003 and June 2004.
UNEP/GEF/SCS/RWG-CR.4/11	Demonstration site proposals from the participating countries.

#### Information documents

UNEP/GEF/SCS/RWG-CR.4/Inf.1	Provisional list of participants
UNEP/GEF/SCS/RWG-CR.4/Inf.2	Provisional list of documents
UNEP/GEF/SCS/RWG-CR.4/Inf.3	Draft programme
UNEP/GEF/SCS/RWG-CR.3/6	Guidelines for the preparation of demonstration site proposals and format for use in their presentation.

***The following documents were supplied on CD-ROM and via published copies previously dispatched by mail.***

UNEP/GEF/SCS/RWG-M.3/3	Third Meeting of the Regional Working Group on the Mangroves Sub-component for the UNEP/GEF Project "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand". Report of the meeting. Bali, Indonesia, 3 <sup>rd</sup> – 6 <sup>th</sup> March 2003 UNEP/GEF/SCS/RWG-M.3/3.
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UNEP/GEF/SCS/RWG-W.3/3	Third Meeting of the Regional Working Group on the Wetlands Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Bali, Indonesia, 4 <sup>th</sup> – 7 <sup>th</sup> March 2003 UNEP/GEF/SCS/RWG-W.3/3.
UNEP/GEF/SCS/RWG-LbP.3/3	Third Meeting of the Regional Working Group on the Land-based Pollution Component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 7 <sup>th</sup> - 10 <sup>th</sup> July 2003 UNEP/GEF/SCS/RWG-LbP.3/3.
UNEP/GEF/SCS/RWG-F.3/3	Third Meeting of the Regional Working Group on the Fisheries Component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Siem Reap, Cambodia, 29 <sup>th</sup> April – 2 <sup>nd</sup> May 2003 UNEP/GEF/SCS/RWG-F.3/3.
UNEP/GEF/SCS/RWG-CR.3/3	Third Meeting of the Regional Working Group on the Coral Reefs Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Kota Kinabalu, Malaysia, 24 <sup>th</sup> – 27 <sup>th</sup> March 2003 UNEP/GEF/SCS/RWG-CR.3/3.
UNEP/GEF/SCS/RWG-SG.3/3	Third Meeting of the Regional Working Group on the Seagrass Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Kota Kinabalu, Malaysia, 25 <sup>th</sup> – 28 <sup>th</sup> March 2003 UNEP/GEF/SCS/RWG-SG.3/3.
UNEP/GEF/SCS/RSTC.3/3	Third Meeting of the Regional Scientific and Technical Committee for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting Phuket, Thailand, 16 <sup>th</sup> – 18 <sup>th</sup> June 2003 UNEP/GEF/SCS/RSTC.3/3.
UNEP/GEF/SCS/RTF-E.1/3	First Meeting of the Regional Task Force on Economic Valuation for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 11 <sup>th</sup> – 13 <sup>th</sup> September 2003 UNEP/GEF/SCS/RTF-E.1/3.
UNEP/GEF/SCS/RTF-L.1/3	First Meeting of the Regional Task Force on Legal Matters for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 15 <sup>th</sup> – 17 <sup>th</sup> September 2003 UNEP/GEF/SCS/RTF-L.1/3.

## **ANNEX 3**

### **Agenda**

- 1. OPENING OF THE MEETING**
- 2. ORGANISATION OF THE MEETING**
- 3. ADOPTION OF THE MEETING AGENDA**
- 4. REPORTS FROM THE PROJECT CO-ORDINATING UNIT REGARDING OVERALL PROGRESS TO DATE**
  - 4.1 Status of mid-year progress reports, expenditure reports, and budgets**
  - 4.2 Status of planned substantive outputs from the national level activities**
  - 4.3 Status of planned substantive outputs from the regional level**
- 5. REVIEW OF THE SITE RELATED DOCUMENTS**
  - 5.1 Site characterisation; cluster analysis; environmental and socio-economic ranking; and available supporting documentation**
  - 5.2 Critical review of proposals for demonstration sites**
  - 5.3 Possibilities for extension of the network of demonstration sites through collaboration with ICRAN sites and the GEF Project "Biodiversity Management in the Coastal Area of China's South Sea.**
- 6. REVISION OF THE WORKPLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON CORAL REEFS WITH EMPHASIS ON THE PERIOD OCTOBER 2003 TO JUNE 2004**
- 7. DATE AND PLACE OF THE FIFTH MEETING OF THE REGIONAL WORKING GROUP ON CORAL REEFS**
- 8. ANY OTHER BUSINESS**
  - 8.1 Regional Scientific Conference**
- 9. ADOPTION OF THE REPORT OF THE MEETING**
- 10. CLOSURE OF THE MEETING**

## ANNEX 4

### Outline of “Coral Reefs in the South China Sea”

#### Background

The Regional Working Groups decided during the third round of meetings that a regional overview of the habitats covered by each sub-component of the project would be produced as background material for the Regional Scientific Conference to be held in February 2004. The intention was that, a draft would be put together for review by, the fourth meeting of each regional working group. In the event this proved impossible, hence the fourth meeting discussed and agreed the following outline and responsibilities and prepared draft sections of the text during the course of the meeting.

#### CONTENTS

Foreword - 1 page – (Responsible persons: **Professors Dr. Ridzwan Abdul Rahman and Dr. Chou Loke Ming**)

Introduction - 1 spread, [2 pages] Broad introduction at global to regional scales (Responsible persons: **Professors Dr. Ridzwan Abdul Rahman and Dr. Chou Loke Ming**)

Text covering:

- Global distribution of coral reefs,
- Biological diversity compare with other regions of world wide distribution,
- Rates of loss in area over the 20<sup>th</sup> Century, globally and regionally,
- Global importance of SCS coral reefs.

Box bottom left covering the purpose and objectives of the South China Sea Project.

Box top right GIS map of coral reef distribution bordering the South China Sea.

Coral reef distribution & diversity in SCS - 2 spreads, 4 pages (Responsible persons: **Dr. Porfirio M. Alino and Dr. Thamasak Yeemin**)

Text covering:

- Ecology of coral reefs and services provided,
- Environmental impacts/consequences of habitat loss,
- Social & economic consequences of habitat loss.

Box giving details of past and present areas of coral reefs in SCS countries cf. global totals.

2 photos from countries illustrating typical undisturbed coral reef habitats.

State of coral reefs & present threats - 1 spread 2 pages (Responsible persons: **Dr. Suharsono and Mr. Kim Sour**)

Text covering:

- Country based reviews of status, threats and actions to protect coral reef,
- Destructive fishing and tourism impacts on coral reef habitat loss/degradation.

Use & value of coral reef systems bordering the South China Sea - 1 spread 2 pages (Responsible persons: **Dr. Vo Si Tuan and Mr. Abdul Khalil bin Abdul Karim**)

Text covering:

- Range of present direct uses,
- Indirect uses,
- Economic valuation.

Photo, divers in coral reef area, (column width)

Box on aquarium fish trade.

Purpose of the demonstration sites - 1 spread 2 pages (Responsible person: PCU)

Text covering:

- Types of demonstration sites illustrating sustainable use,
- Demonstrating what?
- And for whom?
- Value of regional co-ordination and networking,
- Anticipated outcomes.

Process of selecting sites - 2 spreads 4 pages (Responsible person: PCU)

Text covering:

- Data and information; criteria and indicators, selection and agreement,
- Cluster analysis and the purpose of the clustering procedures,
- Ranking, environmental and socio-economic indicators,
- Priority listing and proposals.

End page 1 page - Photo and details of the Regional Working Group on Coral Reefs (Responsible person: PCU)

**Format**

Cover: Folded, single colour background with

Front cover layout as per the draft above

Back cover Further information - contact details for RWG-CR and PCU

Inside Front Cover UNEP standard

Pages: A4 centre stapled, full colour, 18 to 24 pages maximum

Two columns text with boxes, photos, maps and diagrams occupying column, full text, or full spread width

Margins: top, bottom, right, and left: 1 inch (2.54 cm), gutter margin

Headers 1.27 from top margin Alternating headers

Even pages: "page #" and "title" left hand aligned

Odd pages: "page #", "chapter name" right hand aligned

Text justified, Font Arial 9 pt.

## ANNEX 5

### Final Cluster Analysis of Potential Coral Reef Demonstration Sites

#### Background

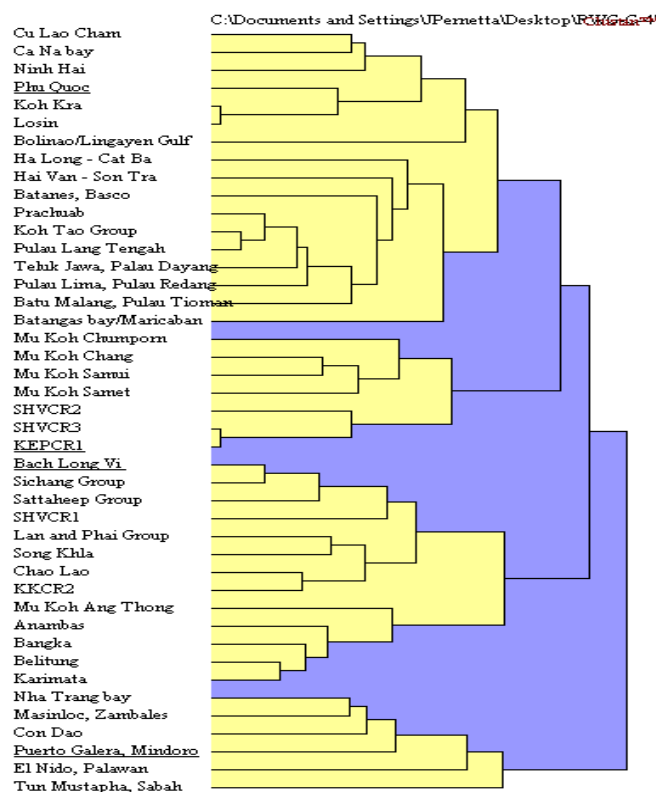
Subsequent to an initial review of the data set used, and the cluster analysis conducted, by the Regional Working Group on Coral Reefs during its third meeting, the Regional Scientific and Technical Committee (RSTC) made specific recommendations regarding the finalisation of the cluster analysis and the ranking criteria and indicators. At its fourth meeting, the Regional Working Group on Coral Reefs discussed these recommendations from the RSTC, and agreed to follow them in finalising the cluster analysis of potential coral reef demonstration sites.

#### Available data and results

During the fourth meeting of the Regional Working Group on Coral Reefs, the members reviewed more carefully the data used in the previous cluster analyses. Table 1 lists the complete data set initially agreed for inclusion in the cluster analysis of coral reefs. In accordance with the discussions and agreements during the meeting, as recorded in the main body of this report, cluster analyses were performed on (i) the complete data set of eight parameters (resulting in a missing data percentage value of 16%); (ii) the data set excluding crustaceans as a parameter (resulting in a missing data percentage value of 12%; and, (iii) the data set excluding crustaceans and echinoderms (resulting in a missing data percentage value of 8%).

Based on a review and discussion of these results, the meeting agreed to adopt the data set without crustaceans and echinoderms for the final cluster analysis for coral reefs (Table 2). The data were transformed using z scores (Table 3) and a cluster analysis was performed using the Clustan Graphic6 software programme. The resulting dendrogram is presented in Figure 1, and the proximity matrix based is presented in Table 4.

**Figure 1** Dendrogram of potential coral reef demonstration sites based on Euclidean distance and mean proximity, using the data presented in Table 2.





**Table 1 Data set for cluster analysis of potential coral reef demonstration sites agreed during the third meeting of the RWG-CR.**

Site Name	Hard coral species	Live coral cover (%)	No. of algal spp.	No. of crustacean species	No. of echinoderm species	No. of coral reef fish species	No. of other ecosystem	No. of endangered and threatened species
Cu Lao Cham	131	33.9	122	84	4	178	1	4
Nha Trang bay	351	26.4	55	69	27	222	2	3
Con Dao	250	23.3	84	110	44	202	2	4
Phu Quoc	89	42.2	98	9	32	135	2	3
Ninh Hai	197	36.9	190	24	13	147	1	4
Ca Na bay	134	40.5	163	46	26	211	1	3
Ha Long - Cat Ba	170	43	94	25	7	34	2	4
Hai Van - Son Tra	129	50.5	103	60	12	132	1	4
Bach Long Vi	99	21.7	46	16	8	46	<b>M</b>	2
Batanes, Basco	<b>M</b>	55.00	41	<b>M</b>	<b>M</b>	86	1	3
Bolinao/Lingayen Gulf	199	40.00	224	<b>M</b>	<b>M</b>	328	2	4
Masinloc, Zambales	<b>M</b>	33.00	57	<b>M</b>	<b>M</b>	249	2	4
Batangas bay/Maricaban	290	48.00	141	<b>M</b>	<b>M</b>	155	2	4
Puerto Galera, Mindoro	267	33.00	75	<b>M</b>	<b>M</b>	333	2	5
El Nido, Palawan	305	40.00	129	<b>M</b>	<b>M</b>	480	2	5
Mu Koh Chumporn	120	55	<b>M</b>	304	21	106	4	5
Mu Koh Chang	130	40	43	250	20	113	4	6
Mu Koh Ang Thong	110	55	7	136	21	106	4	1
Mu Koh Samui	140	40	7	136	21	106	4	5
Mu Koh Samet	41	35	38	134	11	74	4	5
Sichang Group	90	20	40	304	11	86	4	2
Sattaheep Group	90	33	40	304	15	75	4	2
Lan and Phai Group	72	18	40	304	15	75	2	2
Chao Lao	80	30	33	123	12	105	2	3
Prachuab	74	40	18	106	16	162	2	4
Koh Tao Group	79	45	7	136	21	106	2	4
Song Khla	12	20	2	<b>M</b>	<b>M</b>	30	2	2
Koh Kra	80	40	<b>M</b>	<b>M</b>	<b>M</b>	80	1	2
Losin	90	40	<b>M</b>	<b>M</b>	<b>M</b>	90	1	2
Anambas	206	<b>M</b>	26	24	25	128	3	2
Bangka	126	<b>M</b>	<b>M</b>	25	23	169	3	2
Belitung	164	38.46	<b>M</b>	10	35	170	3	2
Karimata	192	<b>M</b>	<b>M</b>	15	15	200	3	2
Batu Malang, Pulau Tioman	96	62.6	3.8	<b>M</b>	<b>M</b>	123	1	4
Pulau Lang Tengah	86	41.3	3.1	<b>M</b>	<b>M</b>	117	2	4
Pulau Lima, Pulau Redang	96	46.3	10	<b>M</b>	<b>M</b>	113	1	4
Teluk Jawa, Palau Dayang	80	38.4	11.9	<b>M</b>	<b>M</b>	156	1	4
Tun Mustapha, Sabah	252	<b>M</b>	69	<b>M</b>	45	375	4	4
KKCR2	67	29.3	<b>M</b>	<b>M</b>	1	51	2	<b>M</b>
SHVCR1	34	23.1	<b>M</b>	<b>M</b>	14	6	3	<b>M</b>
SHVCR2	23	58.1	3	<b>M</b>	<b>M</b>	51	3	<b>M</b>
SHVCR3	70	<b>M</b>	<b>M</b>	<b>M</b>	14	42	3	<b>M</b>
KEPCR1	67	41	<b>M</b>	<b>M</b>	14	51	3	<b>M</b>

**Table 2 Final agreed data set for coral reef cluster analysis.**

Site Name	Hard coral species	Live coral cover (%)	No. of algae spp.	No. of coral reef fish species	No. of other ecosystem	No. of endangered and threatened species
Cu Lao Cham	131	33.9	122	178	1	4
Nha Trang bay	351	26.4	55	222	2	3
Con Dao	250	23.3	84	202	2	4
Phu Quoc	89	42.2	98	135	2	3
Ninh Hai	197	36.9	190	147	1	4
Ca Na bay	134	40.5	163	211	1	3
Ha Long - Cat Ba	170	43	94	34	2	4
Hai Van - Son Tra	129	50.5	103	132	1	4
Bach Long Vi	99	21.7	46	46	<b>M</b>	2
Batanes, Basco	<b>M</b>	55.00	41	86	1	3
Bolinao/Lingayen Gulf	199	40.00	224	328	2	4
Masinloc, Zambales	<b>M</b>	33.00	57	249	2	4
Batangas bay/Maricaban	290	48.00	141	155	2	4
Puerto Galera, Mindoro	267	33.00	75	333	2	5
El Nido, Palawan	305	40.00	129	480	2	5
Mu Koh Chumporn	120	55	<b>M</b>	106	4	5
Mu Koh Chang	130	40	43	113	4	6
Mu Koh Ang Thong	110	55	7	106	4	1
Mu Koh Samui	140	40	7	106	4	5
Mu Koh Samet	41	35	38	74	4	5
Sichang Group	90	20	40	86	4	2
Sattaheep Group	90	33	40	75	4	2
Lan and Phai Group	72	18	40	75	2	2
Chao Lao	80	30	33	105	2	3
Prachuab	74	40	18	162	2	4
Koh Tao Group	79	45	7	106	2	4
Song Khla	12	20	2	30	2	2
Koh Kra	80	40	<b>M</b>	80	1	2
Losin	90	40	<b>M</b>	90	1	2
Anambas	206	<b>M</b>	26	128	3	2
Bangka	126	<b>M</b>	<b>M</b>	169	3	2
Belitung	164	38.46	<b>M</b>	170	3	2
Karimata	192	<b>M</b>	<b>M</b>	200	3	2
Batu Malang, Pulau Tioman	96	62.6	3.8	123	1	4
Pulau Lang Tengah	86	41.3	3.1	117	2	4
Pulau Lima, Pulau Redang	96	46.3	10	113	1	4
Teluk Jawa, Palau Dayang	80	38.4	11.9	156	1	4
Tun Mustapha, Sabah	252	<b>M</b>	69	375	4	4
KKCR2	67	29.3	<b>M</b>	51	2	<b>M</b>
SHVCR1	34	23.1	<b>M</b>	6	3	<b>M</b>
SHVCR2	23	58.1	3	51	3	<b>M</b>
SHVCR3	70	<b>M</b>	<b>M</b>	42	3	<b>M</b>
KEPCR1	67	41	<b>M</b>	51	3	<b>M</b>

**Table 3 Data transformed to z scores for cluster analysis.**

Site Name	Hard coral species	Live coral cover (%)	No. of algae spp.	No. of coral reef fish species	No. of other ecosystem	No. of endangered and threatened species
Cu Lao Cham	-0.002	-0.404	1.048	0.396	-1.268	0.505
Nha Trang bay	2.739	-1.086	-0.109	0.849	-0.317	-0.33
Con Dao	1.481	-1.368	0.392	0.643	-0.317	0.505
Phu Quoc	-0.525	0.351	0.633	-0.048	-0.317	-0.33
Ninh Hai	0.82	-0.131	2.222	0.076	-1.268	0.505
Ca Na bay	0.035	0.196	1.756	0.736	-1.268	-0.33
Ha Long - Cat Ba	0.484	0.424	0.564	-1.089	-0.317	0.505
Hai Van - Son Tra	-0.027	1.106	0.72	-0.079	-1.268	0.505
Bach Long Vi	-0.401	-1.514	-0.265	-0.965	Missing	-1.164
Batanes, Basco	Missing	1.515	-0.351	-0.553	-1.268	-0.33
Bolinao/Lingayen Gulf	0.845	0.151	2.809	1.942	-0.317	0.505
Masinloc, Zambales	Missing	-0.486	-0.075	1.127	-0.317	0.505
Batangas bay/Maricaban	1.979	0.879	1.376	0.158	-0.317	0.505
Puerto Galera, Mindoro	1.692	-0.486	0.236	1.993	-0.317	1.34
El Nido, Palawan	2.166	0.151	1.169	3.508	-0.317	1.34
Mu Koh Chumporn	-0.139	1.515	Missing	-0.347	1.585	1.34
Mu Koh Chang	-0.015	0.151	-0.316	-0.274	1.585	2.175
Mu Koh Ang Thong	-0.264	1.515	-0.938	-0.347	1.585	-1.999
Mu Koh Samui	0.11	0.151	-0.938	-0.347	1.585	1.34
Mu Koh Samet	-1.123	-0.304	-0.403	-0.676	1.585	1.34
Sichang Group	-0.513	-1.668	-0.368	-0.553	1.585	-1.164
Sattaheep Group	-0.513	-0.486	-0.368	-0.666	1.585	-1.164
Lan and Phai Group	-0.737	-1.85	-0.368	-0.666	-0.317	-1.164
Chao Lao	-0.638	-0.759	-0.489	-0.357	-0.317	-0.33
Prachuab	-0.712	0.151	-0.748	0.231	-0.317	0.505
Koh Tao Group	-0.65	0.606	-0.938	-0.347	-0.317	0.505
Song Khla	-1.485	-1.668	-1.025	-1.13	-0.317	-1.164
Koh Kra	-0.638	0.151	Missing	-0.615	-1.268	-1.164
Losin	-0.513	0.151	Missing	-0.512	-1.268	-1.164
Anambas	0.932	Missing	-0.61	-0.12	0.634	-1.164
Bangka	-0.064	Missing	Missing	0.303	0.634	-1.164
Belitung	0.409	0.011	Missing	0.313	0.634	-1.164
Karimata	0.758	Missing	Missing	0.622	0.634	-1.164
Batu Malang, Pulau Tioman	-0.438	2.207	-0.993	-0.171	-1.268	0.505
Pulau Lang Tengah	-0.563	0.269	-1.006	-0.233	-0.317	0.505
Pulau Lima, Pulau Redang	-0.438	0.724	-0.886	-0.274	-1.268	0.505
Teluk Jawa, Palau Dayang	-0.638	0.005	-0.854	0.169	-1.268	0.505
Tun Mustapha, Sabah	1.505	Missing	0.132	2.426	1.585	0.505
KKCR2	-0.8	-0.822	Missing	-0.914	-0.317	Missing
SHVCR1	-1.211	-1.386	Missing	-1.377	0.634	Missing
SHVCR2	-1.348	1.797	-1.007	-0.914	0.634	Missing
SHVCR3	-0.762	Missing	Missing	-1.006	0.634	Missing
KEPCR1	-0.8	0.242	Missing	-0.914	0.634	Missing

**Table 4 Proximity matrix of potential coral reef demonstration sites included in the dendrogram presented in Figure 1.**

Case	Cu Lao Cham	Nha Trang bay	Con Dao	Phu Quoc	Ninh Hai	Ca Na bay	Ha Long - Cat Ba	Hai Van - Son Tra	Bach Long Vi	Batanes, Basco	Bolinao/Lingayen Gulf	Masinloc, Zambales	Batangas bay/Maricaban	Puerto Galera, Mindoro	El Nido, Palawan	Mu Koh Chumporn	Mu Koh Chang	Mu Koh Ang Thong	Mu Koh Samui	Mu Koh Samet	Sichang Group	Sattaheep Group	Lan and Phai Group	Chao Lao	Prachuab	Koh Tao Group	Song Khla	Koh Kra	Losin	Anambas	Bangka	Belitung	Karimata	Batu Malang, Pulau Tioman	Pulau Lang Tengah	Pulau Lima, Pulau Redang	Teluk Jawa, Palau Dayang	Tun Mustapha, Sabah	KKCR2	SHVCR1	SHVCR2	SHVCR3	KEPCR1						
Cu Lao Cham	0.00																																																
Nha Trang bay	0.56	0.00																																															
Con Dao	0.35	0.27	0.00																																														
Phu Quoc	0.28	0.63	0.48	0.00																																													
Ninh Hai	0.25	0.58	0.43	0.41	0.00																																												
Ca Na bay	0.22	0.61	0.47	0.29	0.24	0.00																																											
Ha Long - Cat Ba	0.34	0.58	0.45	0.28	0.39	0.43	0.00																																										
Hai Van - Son Tra	0.27	0.66	0.53	0.26	0.35	0.30	0.27	0.00																																									
Bach Long Vi	0.56	0.75	0.61	0.48	0.73	0.66	0.57	0.68	0.00																																								
Batanes, Basco	0.54	0.62	0.69	0.37	0.65	0.56	0.40	0.30	0.79	0.00																																							
Bolinao/Lingayen Gulf	0.45	0.66	0.53	0.56	0.37	0.37	0.63	0.55	1.00	0.89	0.00																																						
Masinloc, Zambales	0.33	0.21	0.22	0.36	0.54	0.47	0.50	0.47	0.72	0.58	0.61	0.00																																					
Batangas bay/Maricaban	0.43	0.47	0.42	0.47	0.33	0.42	0.36	0.39	0.85	0.47	0.44	0.44	0.00																																				
Puerto Galera, Mindoro	0.46	0.40	0.31	0.59	0.53	0.55	0.59	0.57	0.91	0.76	0.48	0.25	0.45	0.00																																			
El Nido, Palawan	0.67	0.61	0.58	0.80	0.67	0.67	0.84	0.75	1.23	0.99	0.46	0.58	0.59	0.32	0.00																																		
Mu Koh Chumporn	0.72	0.96	0.81	0.57	0.71	0.74	0.51	0.60	1.00	0.83	0.70	0.81	0.62	0.81	1.01	0.00																																	
Mu Koh Chang	0.61	0.75	0.58	0.56	0.71	0.74	0.48	0.60	0.76	0.81	0.78	0.59	0.62	0.60	0.84	0.32	0.00																																
Mu Koh Ang Thong	0.79	0.82	0.82	0.54	0.89	0.77	0.63	0.70	0.66	0.67	0.95	0.82	0.76	0.90	1.08	0.67	0.74	0.00																															
Mu Koh Samui	0.62	0.69	0.56	0.51	0.74	0.73	0.45	0.59	0.64	0.73	0.82	0.55	0.62	0.61	0.87	0.28	0.18	0.60	0.00																														
Mu Koh Samet	0.61	0.82	0.64	0.49	0.75	0.73	0.49	0.62	0.58	0.76	0.84	0.56	0.73	0.73	0.98	0.42	0.25	0.66	0.24	0.00																													
Sichang Group	0.66	0.69	0.59	0.52	0.78	0.72	0.60	0.75	0.09	0.87	0.88	0.65	0.79	0.80	1.04	0.81	0.64	0.56	0.54	0.49	0.00																												
Sattaheep Group	0.63	0.70	0.61	0.42	0.75	0.67	0.51	0.65	0.22	0.72	0.84	0.62	0.71	0.79	1.02	0.65	0.58	0.38	0.46	0.43	0.20	0.00																											
Lan and Phai Group	0.51	0.66	0.53	0.44	0.67	0.60	0.54	0.63	0.11	0.72	0.85	0.56	0.77	0.77	1.03	0.93	0.74	0.67	0.65	0.59	0.32	0.39	0.00																										
Chao Lao	0.37	0.60	0.45	0.27	0.57	0.49	0.37	0.44	0.26	0.50	0.74	0.35	0.62	0.63	0.90	0.69	0.56	0.58	0.47	0.44	0.38	0.35	0.24	0.00																									
Prachuab	0.37	0.64	0.49	0.28	0.58	0.49	0.37	0.36	0.54	0.41	0.71	0.26	0.58	0.55	0.81	0.52	0.45	0.59	0.39	0.40	0.54	0.47	0.46	0.23	0.00																								
Koh Tao Group	0.44	0.69	0.56	0.30	0.62	0.54	0.34	0.35	0.57	0.34	0.78	0.41	0.59	0.63	0.88	0.46	0.45	0.55	0.38	0.40	0.58	0.47	0.51	0.28	0.13	0.00																							
Song Khla	0.63	0.81	0.68	0.52	0.81	0.72	0.61	0.70	0.27	0.71	1.00	0.64	0.89	0.90	1.17	0.95	0.77	0.68	0.67	0.59	0.38	0.43	0.19	0.29	0.49	0.51	0.00																						
Koh Kra	0.43	0.82	0.69	0.28	0.47	0.35	0.46	0.42	0.43	0.40	0.71	0.67	0.68	0.89	1.13	0.81	0.89	0.66	0.78	0.77	0.68	0.59	0.44	0.32	0.42	0.40	0.46	0.00																					
Losin	0.41	0.79	0.67	0.27	0.45	0.32	0.45	0.41	0.43	0.40	0.68	0.65	0.66	0.87	1.10	0.81	0.89	0.66	0.77	0.78	0.68	0.59	0.45	0.31	0.41	0.40	0.47	0.03	0.00																				
Anambas	0.64	0.49	0.47	0.46	0.76	0.68	0.50	0.60	0.40	0.53	0.89	0.59	0.59	0.72	1.00	0.72	0.72	0.36	0.57	0.69	0.36	0.37	0.40	0.41	0.51	0.50	0.56	0.63	0.61	0.00																			
Bangka	0.63	0.78	0.62	0.35	0.67	0.53	0.61	0.64	0.44	0.75	0.67	0.70	0.70	0.91	1.18	0.69	0.88	0.36	0.69	0.76	0.34	0.36	0.38	0.38	0.51	0.53	0.56	0.55	0.53	0.27	0.00																		
Belitung	0.52	0.58	0.52	0.33	0.52	0.43	0.48	0.56	0.54	0.68	0.51	0.54	0.53	0.69	0.91	0.64	0.71	0.44	0.56	0.65	0.46	0.34	0.52	0.39	0.45	0.47	0.61	0.47	0.45	0.17	0.12	0.00																	
Karimata	0.66	0.59	0.51	0.48	0.65	0.55	0.65	0.69	0.66	0.80	0.58	0.66	0.58	0.79	1.05	0.75	0.92	0.47	0.73	0.88	0.49	0.51	0.55	0.53	0.61	0.64	0.75	0.67	0.64	0.19	0.22	0.12	0.00																
Batu Malang, Pulau Tioman	0.57	0.82	0.74	0.46	0.70	0.61	0.48	0.35	0.84	0.26	0.85	0.65	0.63	0.74	0.93	0.61	0.66	0.64	0.61	0.67	0.86	0.72	0.76	0.55	0.39	0.31	0.76	0.54	0.53	0.58	0.65	0.70	0.73	0.00															
Pulau Lang Tengah	0.42	0.65	0.52	0.31	0.61	0.54	0.35	0.37	0.53	0.38	0.77	0.36	0.59	0.60	0.86	0.49	0.45	0.57	0.37	0.39	0.54	0.46	0.47	0.24	0.09	0.06	0.48	0.39	0.39	0.49	0.51	0.45	0.62	0.36	0.00														
Pulau Lima, Pulau Redang	0.40	0.68	0.56	0.34	0.58	0.51	0.36	0.29	0.59	0.26	0.77	0.45	0.58	0.62	0.87	0.62	0.57	0.65	0.51	0.55	0.69	0.60	0.55	0.33	0.21	0.16	0.56	0.36	0.36	0.58	0.66	0.56	0.73	0.25	0.18	0.00													
Teluk Jawa, Palau Dayang	0.34	0.65	0.50	0.33	0.57	0.48	0.41	0.34	0.52	0.39	0.74	0.33	0.61	0.57	0.83	0.68	0.57	0.69	0.52	0.53	0.63	0.58	0.47	0.27	0.16	0.21	0.50	0.37	0.36	0.60	0.65	0.55	0.73	0.37	0.18	0.14	0.00												
Tun Mustapha, Sabah	0.78	0.58	0.52	0.77	0.86	0.81	0.83	0.83	1.06	1.06	0.68	0.58	0.65	0.43	0.53	0.83	0.71	0.85	0.68	0.84	0.80	0.82	0.92	0.83	0.75	0.83	1.08	1.24	1.22	0.67	0.82	0.76	0.68	0.89	0.81	0.90	0.87	0.00											
KKCR2	0.46	0.99	0.70	0.37	0.56	0.58	0.45	0.61	0.27	0.85	0.86	0.69	0.86	0.96	1.35	0.78	0.59	0.78	0.60	0.50	0.53	0.49	0.26	0.15	0.38	0.39	0.28	0.35	0.36	0.71	0.57	0.53	0.80	0.82	0.33	0.49	0.42	1.49											

## ANNEX 6

### Final Ranking of Potential Coral Reef Demonstration Sites Based on Environmental and Socio-Economic Indicators

#### Background

During the third meeting of the Regional Working Group on Coral Reefs (RWG-CR), the ranking criteria and the weights for environmental and socio economic indicators were discussed and agreed by the Regional Working Group (Annex 6, UNEP/GEF/SCS/RWG-CR.3/3). A preliminary ranking of priority sites using both environmental and socio-economic indicators was undertaken of the potential coral reef demonstration sites bordering the South China Sea. Subsequent to this meeting, the Regional Scientific and Technical Committee (RSTC), reviewed the preliminary cluster analysis and ranking that had been carried out by the RWG-CR, and agreed that the parameter “number of mammal species” should be removed from the cluster analysis and ranking.

#### Finalisation of ranking scores and indicators

Based on the discussions and agreements during the fourth RWG-CR meeting, the indicators and weights for the environmental characteristics were revised. (Table 1). The ranking results for the 43 proposed coral reef demonstration sites, based on the agreed revised scores for environmental characteristics, are presented in Table 2. At the same meeting, the socio-economic indicators and weights were also reviewed and discussed, and the agreed revised indicators and weights are provided in the Table 3. Based on these revised weights for socio-economic indicators, the ranking scores of the proposed demonstration sites are presented in the Table 4.

**Table 1** Agreed scores for environmental criteria and indicators of coral reefs.

Indicators	Scale of Indicators				
	1	2	3	4	5
<b>Biological diversity, 60 points</b>					
No. Hard coral Genera	< 30	31-40	41-50	51-60	> 60
Maximum score, 10	1	4	6	8	10
No. Hard coral species	< 100	101-150	151-200	201-300	> 300
Maximum score, 10	2	4	6	8	10
Percentage live coral cover	0-10	11-25	26-50	51-75	>75
Maximum score, 8	1	2	4	6	8
Percentage algal cover	>40	10-40	<10		
Maximum score, 3	1	2	3		
Number of coral reef fish genera	< 20	21-30	31-50	51-60	>60
Maximum score, 9	1	3	5	7	9
Number of coral reef fish species	<100	101-250	251-400	401-600	>600
Maximum score, 10	2	4	6	8	10
Number of other ecosystems	1	2	3	4	
Maximum score, 10	2.5	5	7.5	10	
<b>Transboundary Significance, 20 points</b>					
No. of Migratory Species	<5	5-10	> 10		
Maximum score, 10	3	6	10		
Tourism (yes or no)	no	yes			
Maximum score, 5	0	5			
Cross-boundary Fishing (yes or no)	no	yes			
Maximum score, 5	0	5			
<b>Regional/Global Significance, 10 points</b>					
Number of endangered and threatened species	<5	5-10	>10		
Maximum score, 10	3	6	10		
<b>Area, 10 points</b>					
Area of coral reefs (ha)	< 100	101- 500	> 500		
Maximum score, 10	3	6	10		

**Table 2** Ranking scores for agreed environmental indicators.

Site Name	Hard coral genera	Hard coral species	Live coral cover (%)	Algae cover (%)	No. of coral reef fish genera	No. of coral reef fish spp.	No. of other ecosystem	No. of migratory species	Tourism	Trans boundary fishing	No. of endangered and threatened species	Area	Ranking scores
<b>First Cluster</b>													
Ninh Hai	6	8	4	3	7	4	5	3	5	5	10	20	80
Mu Koh Chang	6	4	4	3	9	4	10	10	5	5	6	10	76
Mu Koh Chumporn	4	4	6	3	9	4	10	10	5	0	6	10	71
Mu Koh Samui	6	4	4	3	9	4	10	10	5	0	6	10	71
Ca Na bay	6	4	4	3	7	4	2.5	3	5	5	7.5	10	61
Batangas	8	10	4	2	9	4	5	6	5	0	3	3	59
Cu Lao Cham	4	6	4	3	5	4	2.5	3	5	5	10	6	57.5
Koh Tao Group	6	2	4	3	9	4	5	10	5	0	3	6	57
Mu Koh Samet	1	2	4	3	7	2	10	10	5	0	6	6	56
Phu Quoc	4	2	6	3	5	4	5	3	5	5	7.5	6	55.5
Prachuab	4	2	4	3	9	4	5	10	5	0	3	6	55
Ha Long - Cat Ba	6	6	6	3	3	2	5	3	5	5	10		54
Bolinao/Lingayan	8	6	2	1	9	6	5	3	5	0	3	4	52
Hai Van - Son Tra	6	6	8	3	9	4	2.5	3	0	0	10		51.5
Batu Malang, Pulau Tioman	6	2	6	3	9	4	2.5	3	5	5	3	3	51.5
Pulau Lang Tengah	6	2	4	3	9	4	5	3	5	0	3	3	47
Teluk Jawa, Palau Dayang	4	2	4	2	9	4	2.5	3	5	5	3	3	46.5
SHVCR2		2	6	3		2	7.5	10	5	5		6	46.5
Pulau Lima, Pulau Redang	6	2	4	2	9	4	2.5	3	5	0	3	3	43.5
Losin	4	2	4	3	7	2	2.5	6	5	0	3	3	41.5
Batanes, Basco	1		6	2	5	2	2.5	6	5	5	3	3	40.5
Koh Kra	4	2	4	3	5	2	2.5	6	5	0	3	3	39.5
KEPCR1		2	4	2		2	7.5	10	0	5		3	35.5
SHVCR3		2		2		2	2.5	10	5	5			28.5
<b>Second Cluster</b>													
Mu Koh Ang Thong	4	4	6	3	9	4	10	10	5	0	3	6	64
Belitung	8	6	4		5	4	7.5	3	5	0	3	10	55.5
Anambas	8	8		3	5	4	7.5	3	0	5	3	6	52.5
Karimata	8	6			5	4	7.5	3	0	5	3	10	51.5
Chao Lao	6	2	4	3	5	4	5	10	5	0	3	3	50
Sichang Group	4	2	2	3	5	2	10	6	5	0	3	6	48
SHVCR1		2	2	3		2	7.5	10	5	5		10	46.5
Sattaheep Group	4	2	4	3	5	2	10	6	0	0	3	6	45
KKCR2		2	4	2		2	5	10	5	5		10	45
Bangka	6	4			5	4	7.5	3	5	0	3	6	43.5
Lan and Phai Group	1	2	2	3	5	2	5	6	5	0	3	6	40
Song Khla	1	2	2	3	1	2	5	6	0	0	3	3	28
Bach Long Vi	4	2	2	3	1	2	0	3	0	5	5	0	27
<b>Third Cluster</b>													
El Nido, Palawan	10	8	4	2	9	8	7.5	6	5	5	6	10	80.5
Tun Mustapha, Sabah	10	8		2	7	6	7.5	6	5	5	3	10	69.5
Nha Trang bay	8	10	2	3	9	4	5	3	5	5	7.5	6	67.5
Con Dao	6	8	2	3	5	4	5	3	5	5	10	10	66
Puerto Galera	10	8	4	2	9	6	2.5	6	5	0	6	3	61.5
Masinloc	3		2	2	9	4	5	6	5	5	3	6	50

**Table 3 Agreed scores for socio-economic criteria and indicators of coral reefs to be used in the ranking of coral reef sites bordering the South China Sea.**

Indicators	Scale of Indicators			
	1	2	3	
<b>Reversibility of threats, 25 points</b>				
Reversibility of fishing impact	Low	Medium	High	
Maximum score, 5	1	3	5	
Reversibility of development impact	Low	Medium	High	
Maximum score, 5	1	3	5	
Reversibility of coral mining	Low	Medium	High	
Maximum score, 5	1	3	5	
Reversibility of land-based pollution	Low	Medium	High	
Maximum score, 5	1	3	5	
Natural impact (typhoon, bleaching and COT star fish)	Low	Medium	High	
Maximum score, 5	1	3	5	
<b>National significance, 15 points</b>				
Identified as a national priority	Rest	3	2	1
Maximum score, 5	0	1	3	5
Level of direct stakeholder involvement in management	Low	Medium	High	
Maximum score, 5	1	3	5	
socio-economic value	Low	Medium	High	
Maximum score, 5	1	3	5	
<b>Finance consideration - co financing, 15 points</b>				
Potential for co financing	< 1:1	1:1	> 1:1	
Maximum score, 15	5	10	15	
<b>Local stakeholder/ community involvement, 15 points</b>				
Local stakeholder/ community involvement	Low	Medium	High	
Maximum score, 15	5	10	15	
<b>Transboundary management, 15 points</b>				
Potential transboundary management	no	Potential	yes	
Maximum score, 15	0	5	15	

**Table 4 Final ranking scores for socio-economic indicators, for those potential demonstration sites for which proposals were received.**

	Fishing impact	Development impact	Coral mining	Land-based pollution	Natural impact	National priority	Stakeholder involvement	Socio-economic value	Co-financing	Stakeholder community involvement	Potential transboundary management	Rank Score
<b>First Cluster</b>												
Nihn Hai	3	3	3	5	3	0	5	3	15	15	0	55
Mu Koh Chang	1	1	5	1	1	5	5	5	15	15	15	69
Mu Koh Chumporn	1	1	5	1	1	3	5	5	15	15	0	52
Samui	1	1	5	1	1	1	5	5	15	15	0	50
Batangas	3	3	3	3	3	3	3	3	5	15	0	44
Phu Quoc	1	3	5	3	3	1	1	5	10	10	15	57
Anda bolinao-bani-Alaminos	3	3	3	3	3	3	5	5	5	15	0	48
Batu Malang, Pulau Tioman, Pahang	3	1	3	3	3	3	3	5	5	10	0	39
Pulau Lang Tengah	5	5	5	5	3	1	3	3	5	15	0	50
KEPCR1	1	5	3	3	5	5	5	5	5	15	5	57
<b>Second Cluster</b>												
Mo Koh Angthong	3	3	5	3	1	0	3	5	15	10	0	48
Belitung	5	3	5	3	5	3	3	5	5	10	0	47
KKCR2	3	5	3	5	5	5	3	3	5	10	5	52
<b>Third Cluster</b>												
Tun Mustapha	3	3	5	3	3	5	3	5	10	15	15	70
Masinloc, Zambales	3	3	5	3	2	3	5	3	15	15	0	57



Following the meeting the Regional Working Group agreed, through an electronic discussion to a weighting ratio between the environmental and socio-economic indicators. Considering the importance of the environmental indicators in the ranking process, it was agreed that environmental indicators should be weighted to 70%, and socio-economic indicators, to 30% of the total rank score. Table 5 presents the final result of the ranking of potential demonstration sites in the three clusters.

**Table 5 Final rank score for the weighted, combined scores of environmental indicators (70%) and socio-economic indicators (30%).**

Site Name	Environmental indicators rank score	Socio-economic indicators rank score	Total score <sup>2</sup>	Overall Rank
<b>Cluster 1</b>				
Mu Koh Chang	76	69	73.9	<b>1</b>
Ninh Hai	80	55	72.5	<b>2</b>
Mu Koh Chumporn	71	52	65.3	<b>4</b>
Mu Koh Samui	71	50	64.7	<b>5</b>
Phu Quoc	55.5	57	55.95	<b>7</b>
Batangas	59	44	54.5	<b>8</b>
Bolinao/Lingayan	52	48	50.8	<b>11</b>
Pulau Lang Tengah	47	50	47.9	<b>12</b>
Batu Malang, Pulau Tioman	51.5	39	47.75	<b>13</b>
KEPCR1	35.5	57	41.95	<b>15</b>
<b>Cluster 2</b>				
Mu Koh Ang Thong	64	48	59.2	<b>6</b>
Belitung	55.5	47	52.95	<b>9</b>
KKCR2	45	52	47.1	<b>14</b>
<b>Cluster 3</b>				
Tun Mustapha, Sabah	69.5	70	69.65	<b>3</b>
Masinloc	50	57	52.1	<b>10</b>

<sup>2</sup> 70% Environmental Indicators. and 30% Social .Economic .Indicators.

## **ANNEX 7**

### **Suggested Model for Preparation of Section 13 and Section 15 of the Demonstration Site Proposals**

**Section 13. PLANNED ACTIVITIES TO ACHIEVE OUTCOMES.** (The activities are to be undertaken and state, indicators can be used to measure the extent to which planned activities have been implemented.)

The planned activities to achieve the desired outcomes are as follows:

**1. Sustainable tourism development and management**

1. Promotion of responsible tourism activities.
2. Regulation of tourism.
3. Systemization of marine tourism.
4. Development of diving activities.

**2. Effective law enforcement**

1. Patrol, inspection, protection, law enforcement.
2. Eradication of illegal activities.

**3. Providing knowledge and building public awareness in order to raise their understanding on coral reefs and other marine ecosystems and sustainable utilization of marine resources**

1. Training and seminars for students.
2. Training and seminars for tourism operators.
3. Training and seminars for government staff.
4. Training and seminars for local people.

**4. Community organizing multi-sectoral coral reef conservation**

1. Encourage coordination among government agencies, private sector, NGOs, and local communities during planning, operation and evaluation phases to strengthen co-management of all activities in the area and to reduce any obstacles of project implementation.
2. Increase numbers of researchers, site managers and experienced NGOs through research fund raising, training, seminars, and study visits.

**5. Monitoring programs**

1. Modelling of eco-tourism development project design, preparation and implementation.
2. Studies on socio-economic tools for management of all tourism and fisheries activities.
3. Ecological and socio-economic monitoring programs and project evaluation.

## Section 15. ESTIMATED BUDGET

**Table 1** Estimated Budget (in US\$) by Activities (columns) and by Objects of Expenditure (rows).

	Component 1:				Component 2:		Component 3:				Component 4:		Component 5:			Total
	Act. 1	Act. 2	Act. 3	Act. 4	Act. 1	Act. 2	Act. 1	Act. 2	Act. 3	Act. 4	Act. 1	Act. 2	Act. 1	Act. 2	Act. 3	
Salary	0	0	14,400	0	109,500	0	0	0	0	0	0	0	0	0	0	123,900
Allowances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-profit supporting organizations	75,000	0	0	69,000	0	41,250	0	25,000	0	25,000	0	0	75,000	75,000	37,500	422,750
Commercial organizations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Training</b>																
Travel	0	1,875	7,500	0	0	0	4,500	0	2,250	0	2,700	0	0	0	0	18,825
Subsistence	0	6,375	17,100	0	0	0	22,500	0	20,250	0	16,200	0	0	0	0	82,425
<b>Equipment</b>																
Computer	0	0	0	0	0	0	0	0	0	0	0	15,000	0	0	0	15,000
Office	0	0	0	0	0	0	0	0	0	0	0	7,500	0	0	0	7,500
Instrument	0	0	0	0	0	0	0	0	0	0	0	15,000	0	0	0	15,000
<b>Travel</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Evaluation</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Miscellaneous</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reporting costs	0	0	16,500	0	0	0	0	0	0	0	0	0	0	0	0	16,500
<b>TOTAL</b>	<b>75,000</b>	<b>8,250</b>	<b>55,500</b>	<b>69,000</b>	<b>109,500</b>	<b>41,250</b>	<b>27,000</b>	<b>25,000</b>	<b>22,500</b>	<b>25,000</b>	<b>18,900</b>	<b>37,500</b>	<b>75,000</b>	<b>75,000</b>	<b>37,500</b>	<b>701,900</b>

**Table 2 Estimated Budget (in US\$) by Object of Expenditure by Years.**

OBJECT OF EXPENDITURE			2004		TOTAL	2005		TOTAL	2006		TOTAL
			GEF	Gov.		GEF	Gov.		GEF	Gov.	
<b>1000</b>	<b>PROJECT PERSONNEL COMPONENT</b>										
	<b>1100</b>	Project Personnel	20,650	20,650	<b>41,300</b>	20,650	20,650	<b>41,300</b>	20,650	20,650	<b>41,300</b>
	<b>1999</b>	Component Total	<b>20,650</b>	<b>20,650</b>	<b>41,300</b>	<b>20,650</b>	<b>20,650</b>	<b>41,300</b>	<b>20,650</b>	<b>20,650</b>	<b>41,300</b>
<b>2000</b>	<b>SUB-CONTRACT COMPONENT</b>										
	<b>2100</b>	Sub-contracts-non-profit organizations	70,875	70,875	<b>141,750</b>	70,875	70,875	<b>141,750</b>	69,625	69,625	<b>139,250</b>
	<b>2999</b>	Component Total	<b>70,875</b>	<b>70,875</b>	<b>141,750</b>	<b>70,875</b>	<b>70,875</b>	<b>141,750</b>	<b>69,625</b>	<b>69,625</b>	<b>139,250</b>
<b>3000</b>	<b>TRAINING COMPONENT</b>										
	<b>3100</b>	Travel Costs	3,137.5	3,137.5	<b>6,275</b>	3,137.5	3,137.5	<b>6,275</b>	3,137.5	3,137.5	<b>6,275</b>
	<b>3200</b>	Subsistence Costs	13,737.5	13,737.5	<b>27,475</b>	13,737.5	13,737.5	<b>27,475</b>	13,737.5	13,737.5	<b>27,475</b>
	<b>3999</b>	Component Total	<b>16,875</b>	<b>16,875</b>	<b>33,750</b>	<b>16,875</b>	<b>16,875</b>	<b>33,750</b>	<b>16,875</b>	<b>16,875</b>	<b>33,750</b>
<b>4000</b>	<b>EQUIPMENT &amp; PREMISES COMPONENT</b>										
	<b>4100</b>	Computer	2,500	2,500	<b>5,000</b>	2,500	2,500	<b>5,000</b>	2,500	2,500	<b>5,000</b>
	<b>4200</b>	Office Equipment	1,250	1,250	<b>2,500</b>	1,250	1,250	<b>2,500</b>	1,250	1,250	<b>2,500</b>
	<b>4300</b>	Instrument	2,500	2,500	<b>5,000</b>	2,500	2,500	<b>5,000</b>	2,500	2,500	<b>5,000</b>
	<b>4999</b>	Component Total	<b>6,250</b>	<b>6,250</b>	<b>12,500</b>	<b>6,250</b>	<b>6,250</b>	<b>12,500</b>	<b>6,250</b>	<b>6,250</b>	<b>12,500</b>
<b>5000</b>	<b>MISCELLANEOUS COMPONENT</b>										
	<b>5100</b>	Reporting Cost	2,750	2,750	<b>5,500</b>	2,750	2,750	<b>5,500</b>	2,750	2,750	<b>5,500</b>
	<b>5999</b>	Component Total	<b>2,750</b>	<b>2,750</b>	<b>5,500</b>	<b>2,750</b>	<b>2,750</b>	<b>5,500</b>	<b>2,750</b>	<b>2,750</b>	<b>5,500</b>
	<b>9999</b>	Grand Total	<b>117,400</b>	<b>117,400</b>	<b>234,800</b>	<b>117,400</b>	<b>117,400</b>	<b>234,800</b>	<b>116,150</b>	<b>116,150</b>	<b>232,300</b>

## Revised Work plan for the Regional Working Group for Coral Reefs

**Table 1      Work Plan for the Regional Working Group for Coral Reefs.**

[illegible]

**Table 2 Schedule of meetings for 2004.** (RWG = Regional Working Group; -M = Mangroves; -C = Coral reefs; -S = Seagrass; -W = Wetlands; -F = Fisheries; LbP = Land-based Pollution; RTF-E = Regional Task Force on Economic Valuation; RTF-L = Regional Task Force on Legal Matters.)

	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M							
January					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
					H																				Chinese NY												
February							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
								H									Regional Science Conference			RSTC-4										PSC-3							
March		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
						H										Ad hoc													RWG-LbP-4								
April					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
					LbP-4				RWG-F-4					Thai NY																							
May							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
									RTF-L-2															ExComm													
June			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
			RTF-E-2																																		
July					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
												H											RWG- S-5														
September				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
																RWG-C-5													RWG-M-5								
October					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
									RWG-W-5					RWG- F-5						Ramadan																	
November		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
									Ramadan						H									RWG-LbP-5													
December				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
								H			RSTC-5			PSC-4														Xmas	H								