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Environment Programme



UNEP/GEF South China Sea  
Project



Global Environment  
Facility

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

**REPORT**

**Sixth Meeting of the Regional Working Group for  
the Wetlands Sub-component**

***Sihanoukville, Cambodia, 12<sup>th</sup> – 15<sup>th</sup> September 2005***



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## **Report of the Meeting**

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

#### **1.1 Welcome Address**

1.1.1 Dr. John Pernetta, Project Director opened the meeting, at 08.30 am on 12<sup>th</sup> September 2005, and welcomed participants on behalf of the Executive Director of UNEP, Dr. Klaus Töpfer, and the Assistant Executive Director, and Director of the UNEP Division of Global Environment Facility Co-ordination, Dr. Ahmed Djoghlaif.

1.1.2 Dr. Pernetta noted that the Agenda was very full and contained a number of important items requiring discussion and decision during the meeting. Of these he noted that there was a need to review the cluster analysis of wetlands sites and further develop the goals and targets for inclusion in the SAP.

1.1.3 Dr. Pernetta noted that Mr. Sok Vong was no longer the Cambodian focal point for the wetland's sub-component, and had been replaced by Mr. Koch Savath, who was also the Cambodian National Technical Focal Point for the South China Sea Project. He welcomed Mr. Savath to the meeting, and introduced the new PCU members attending the meeting, namely Mr. Christopher Paterson, Fisheries expert, and Ms. Nguyen Thi Thu Ha, Vietnamese intern. He noted that the PCU was, for the first time in three years operating with a full compliment of staff and hoped that this would provide impetus to the work of the project.

1.1.4 Dr. Pernetta welcomed Mr. Chev Kimheng, the Deputy Provincial Governor of Sihanoukville, Cambodia to the meeting and invited him to make an opening statement on behalf of the Government. The Deputy Provincial Governor, Mr. Chev Kimheng extended his warmest welcome to the Project Director, Dr. John Pernetta, and the Regional Working Group on Wetlands. He expressed his appreciation to the Project for the selection of Peam Krasop as a demonstration site, which he believed would assist the Government in improving the management of Cambodia's coastal, resources. He wished the members well in their deliberations and invited them to dinner on the evening of Monday 12<sup>th</sup> September 2005.

1.1.5 Dr. Pernetta thanked the Deputy Provincial Governor of Sihanoukville and the host organisation, the Ministry of Environment, on behalf of the United Nations Environment Programme for their support to the Project, and to this meeting of the Regional Working Group.

#### **1.2 Introduction of Members**

1.2.1 Dr. Pernetta invited members to introduce themselves to the meeting. There followed a *tour de table* during which the members introduced themselves and the list of participants is attached as Annex 1 to this report. Mr. Savath expressed his pleasure in joining the RWG-W and indicated that he looked forward to contributing to the ongoing work of the group.

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

#### **2.1 Election of Officers**

2.1.1 Members recalled that at the fifth meeting of the Regional Working Group on Wetlands (RWG-W), held in Halong City, Viet Nam from 5 - 8<sup>th</sup> October 2004, Ms. Marlynn M. Mendoza, Focal Point from the Philippines, Mr. Narong Veeravaitaya, Focal Point from Thailand, and Mr. Dibjo Sartono, Focal Point from Indonesia, were elected as Chairperson, Vice-Chairperson and Rapporteur respectively.

2.1.2 Members recalled further that the Rules of Procedure state that, the Regional Working Group shall elect, from amongst the members, a Chairperson, Vice-Chairperson and Rapporteur to serve for one year. The rules state further that, officers shall be eligible for re-election no more than once. The working group noted that since Ms. Mendoza had served for 30 months and Mr. Narong had served for 21 months, they were ineligible for re-election to the same office.

2.1.3 The Project Director called for nominations of officers of the working group and Ms. Mendoza nominated Dr. Mai Trong Nhuan as Chairperson. Mr. Dibjo nominated Mr. Savath as Vice-Chairperson and Mr. Narong as Rapporteur for the meeting. The officers were duly elected by acclamation.

2.1.4 Dr. Pernetta noted that the PCU member for the RWG-W, Ms. Sulan Chen, was currently on special leave whilst finalising her PhD thesis. He noted further that Ms. Chen would defend her thesis on the 14<sup>th</sup> of September and the group wished Ms. Chen well in her endeavours.

## **2.2 Documents Available to the Meeting**

2.2.1 The Chairperson invited Ms. Thu Ha to introduce the documentation available to the meeting and Ms. Thu Ha reviewed the discussion and information documents listed in document UNEP/GEF/SCS/RWG-W.6/Inf.2, noting that these had been lodged on the project website. Members were invited to table any additional documents including copies of new national publications. The list of documents available to the meeting is contained in Annex 2 of this report.

## **2.3 Organisation of Work**

2.3.1 Ms. Thu Ha, then presented the draft programme for the conduct of business contained in document UNEP/GEF/SCS/RWG-W.6/Inf.3. She noted that the meeting would be conducted in English and in plenary, although working groups could be formed at the discretion of members, to finalise substantive items of business.

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

3.1 The Chairperson introduced the Provisional Agenda prepared by the PCU for the meeting as document UNEP/GEF/SCS/RWG-W.6/1, and the Annotated Provisional Agenda, document UNEP/GEF/SCS/RWG-W.6/2 and invited members to propose any amendments or additional items for discussion.

3.2 No additional items were proposed for inclusion on the agenda and since no amendments were suggested the agenda was adopted as it appears in Annex 3 of this report.

## **4. STATUS OF THE MID-YEAR PROGRESS REPORTS, EXPENDITURE REPORTS, AUDIT REPORTS AND MOU AMENDMENTS**

4.1 The Chairperson invited the Project Director, Dr. Pernetta, to introduce document UNEP/GEF/SCS/RWG-W.6/4, *"Current status of budgets and reports from the Specialised Executing Agencies in the participating countries"* and to draw to the attention of the meeting any outstanding issues or matters requiring the attention of the working group.

4.2 Dr. Pernetta noted with regret that Dr. Ebil Bin Yusof, the Wetland Focal Point for Malaysia, was unable to participate in the meeting due to illness. He also noted that there have been no audit reports submitted by the Wetland's sub-component in Malaysia for 2003 and 2004 expenditures and that expenditure statements were also overdue. He noted that the Malaysian Specialised Executing Agency responsible for this sub-component was currently holding a substantial cash balance of \$44,000. Dr. Pernetta noted that he would have to take action regarding this matter in the near future to recover these funds from the Malaysian Government.

4.3 Dr. Pernetta expressed the hope that with the new change in government structure in Malaysia the situation regarding Malaysia's participation in this project would improve in the near future. He noted that Government restructuring in Malaysia has resulted in the creation of the Ministry of Natural Resources and Environment, which is now responsible for environmental portfolios that were previously administered by the Ministry of Science, Technology and Environment. He indicated that these changes might require the re-writing of the MoUs and the selection of new focal points.

4.4 Dr. Pernetta indicated that Audit Reports have now been received from all countries, except for Malaysia and noted further that all 6-month progress reports for the period from June to December 2004 had been received by the PCU. He noted that all countries, except Malaysia, Philippines and Indonesia, had also submitted their 6-month reports for the period January to June 2005.

4.5 Dr. Pernetta reviewed Annex 7 *"Estimation of Government In-Kind Financing of National Level Actions for the Period July 2004 to June 2007"* of the report of the fourth meeting of the Project Steering Committee, document UNEP/GEF/SCS/PSC.4/3. He noted that the actual co-financing of the Wetland's sub-component has been less than originally estimated occasioned in part by the non-submission of some progress reports and hence an under-recording of co-financing during the first half of 2005. He reminded the Focal Points that following the decision of the Project Steering Committee, the forms for 6-month reporting had been modified to enable inclusion of additional information regarding co-financing received by the SEA, including cash or in-kind support from other organisations.

4.6 The Chairperson invited Focal Points to comment on the status of any outstanding 6-month reports. Ms. Mendoza indicated that she would be able to submit the 6-month reports for the Wetland's sub-component by Friday 23 September.

4.7 Mr. Dibjo indicated that due to the effects of the Tsunami in December 2004, the work of his organisation had been directed towards mitigating the impacts of this disaster making completion of project related tasks in the South China Sea Project difficult. He stated that he was in contact with Ms. Nita Tangsujarivitchit regarding outstanding matters and would send final versions of his outstanding reports to the PCU by the 31<sup>st</sup> October.

4.8 Dr. Pernetta reminded the Focal Points that the reports are quite simple to complete and that they are due within 30 days of the end of each financial period, January-June or July to December. He stated that it is very important that each Specialised Executing Agency take very seriously their fiscal responsibilities, including meeting deadlines for expenditure and progress reporting.

## **5. UPDATE AND FINALISATION OF THE NATIONAL SUBSTANTIVE REPORTS**

### **5.1 Status of Publications in National Language**

5.1.1 The Chairperson invited the Secretary to present document UNEP/GEF/SCS/RWG-W.6/5. Members were reminded that national reports were to have been published by the focal points in national languages for distribution in each country by December 31<sup>st</sup> 2004, and that a minimum of twelve copies of these publications should be submitted to the Project Co-ordinating Unit. In cases where the formal publications had not yet been submitted to the PCU, members were requested to bring twelve copies with them to the meeting.

5.1.2 The Chairperson invited each focal point to provide the working group with a brief report regarding the status of national level publications. Mr. Savath, Focal Point for Cambodia, tabled 12 copies of Cambodia's National Wetlands Report in Khmer together with copies of the Mangrove National report.

5.1.3 Mr. Dibjo stated that he had sent the English version of the National Report to the PCU, and had been awaiting clearance from the PCU to publish the national language versions of the report. Dr. Pernetta referred to paragraph 4.4 of the report of the fifth meeting of the RWG-W (UNEP/GEF/SCS/RWG-W.5/3), highlighting that the original MOU task of publishing the National Report in national language, should have been completed by June 2004. Mr. Dibjo stated that published versions of Indonesia's Bahasa version of the National Report will be available for distribution in November 2005.

5.1.4 Professor Chen Guizhu stated that China's national language version of the National Report has been completed, and was submitted to SEPA in December 2004 for clearance prior to publication. Professor Chen has only recently received the necessary clearance and will have the published version available for distribution by October 2005.

5.1.5 Ms. Mendoza indicated that the Philippines National Report will be published and available for distribution in November 2005 as the process of bidding for the printing contract had just been completed.

5.1.6 Mr. Narong tabled copies of the Thai National Report, which is undergoing final copy editing and which should be published and available for distribution by the end of 2005.

5.1.7 Dr. Mai stated that the 500+ page monograph prepared by the Vietnamese Wetlands sub-component has been sent to the central government for the necessary clearance required to publish the full report as a monograph. He noted that a summary report had already been published

## **5.2 Finalisation of National Reports in English for UNEP Publication**

5.2.1 The Project Director noted that the English versions of all national wetlands reports had been reviewed, revised, and edited for publication and the PCU had just completed the formatting of these reports. He noted that the wetlands and fisheries reports were the first full sets of reports available for publication and it was hoped that these would be printed before the end of the year.

## **6. REVISION OF THE NATIONAL ACTION PLANS AND REGIONAL STRATEGIC ACTION PROGRAMME**

### **6.1 Review of Revised National Action Plans**

6.1.1 Members were invited to consider, under this agenda item, the revised National Actions Plans submitted to the PCU in advance of the sixth meeting and contained in documents UNEP/GEF/SCS/RWG-W.6/6.Cam; 6.Chi; 6.Ind *et sequitor*. The Project Director noted that during the fifth meeting an agreed table of minimum contents had been developed and was presented in Annex 5 of document UNEP/SCS/GEF/RWG-W.5/3, he suggested that the contents of the revised National Action Plans needed to be reviewed against the agreed contents.

6.1.2 Mr. Savath reviewed the Cambodian National Action Plan, highlighting the mission statement, strategy, proposed actions, and costs which had been modified since the last meeting. Mr. Dibjo noted that the Indonesian NAP submitted was based on the Indonesian National Strategy and Action Plan for Wetland Management and he invited members to comment on the NAP, highlighting required amendments.

6.1.3 Professor Chen reviewed Tables 1-4 of the National Action Plan for China, noting that the NAP was being produced at the Provincial level and included 7 priority objectives and 10 specific activities. Ms. Mendoza noted that the Philippines National Action Plan, provides a framework for the development of more detailed site or area specific action plans at the local level.

6.1.4 Mr. Narong noted that in Thailand a meeting had been convened to revise the NAP, which focuses on actions for the period 2006 to 2010. He noted that the NAP addresses problems in 5 areas bordering the Gulf of Thailand, encompassed various habitat types, and the content followed Annex 5 of the report of the fifth meeting.

6.1.5 Dr. Mai stated that some further quantification of the objectives, and details of costs, and information regarding responsible authorities and institutions that will complete the activities needs to be included in the Vietnamese National Action Plan. He noted that discussions with the Ministry of Natural Resources and Environment were ongoing regarding the future adoption of the plan at the national level.

6.1.6 The Chairperson invited Dr. Pernetta to comment on the revised National Action Plans. Dr. Pernetta reminded the Focal Points that during the last meeting the working group had discussed at some length the purpose of the NAPs, their relationship to the regional Strategic Action Programme, and the reasons for failures of previously adopted "Action Plans". He noted that in his view many of the tabled NAPs were still formulated more as policy statements and statements of principle rather than providing operational level guidance to managers in executing agreed activities. He further noted that the NAPs should focus on the South China Sea coastline thus providing examples of the manner in which such operational guidance should be developed for the remainder of the country. Such operational guidance required the inclusion of information regarding what should be done, where and when it should be done, and who would do it, together with the estimated costs. He suggested that there was also a need to consider priority areas for implementation of the NAPs, highlighting the Vietnamese NAP as a good example, which outlines the costs and defines the responsibilities of the relevant agencies in specific detailed activities.

### **6.2 Discussion of the Regional Scientific and Technical Committee Advice Regarding the Goals and Targets of the Regional Strategic Action Programme.**

6.2.1 In introducing this agenda item Dr. Pernetta drew members' attention to document UNEP/GEF/SCS/RWG-W.5/3, the report of the fifth meeting of the working group and in particular to the record of discussion under agenda item 8.2 in which a preliminary revision of the targets and goals contained in the draft Strategic Action Programme was undertaken. Dr. Pernetta noted further that subsequent to the regional working group meeting, the fifth meeting of the Regional Scientific and Technical Committee had reviewed the recommendations of all working groups regarding future SAP goals and targets making specific recommendations to each working group.

6.2.2 It was noted that in addition, the RSTC had discussed the considerable disparity in the timeframes used by each regional working group and recommended that as far as possible, two milestones be adopted by each group as follows:

*10.2.5 The Committee considered the possible target year(s) for the revised SAP. It was agreed that, assuming the SAP would be adopted and implemented by 2007, then five and ten-year milestones would be 2012 and 2017, and these should be used by the Regional Working Groups.*

6.2.3 The specific comments of the RSTC regarding the goals and targets agreed by the RWG-W were as follows:

*The RSTC requested the RWG to review and revise Table 1 of the meeting report. It was pointed out that a Thailand lagoon site could be included. It was then suggested that the Thailand NTFP should liaise with the wetlands focal point to nominate the site for the development of updating of management plans.*

*RSTC requested the RWG-W to consider setting a target of "managed areas" rather than "management plans."*

6.2.4 The Chairperson invited the Focal Point for Wetlands from Thailand to brief the meeting on the outcome of any discussions held at the national level regarding the inclusion of a coastal lagoon in the Thai target areas for management plans. Mr. Narong indicated that there was only one coastal lagoon in Thailand, Songkla Lake and that this was the subject of considerable investment by the Thai Government, with activities managed by a high level Government Committee.

6.2.5 The committee was advised by Mr. Narong that he had not proposed the Songkla Lake for inclusion in the targets of the SAP since he had considered that the SAP targets should reflect only new management plans to be developed or up-dating of existing management plans that were not currently under implementation. This raised a specific query regarding what were the sites indicated in Table 1 of the meeting report UNEP/GEF/SCS/RWG-W.5/3, and which of these were proposed for development of new management plans and which for up-dating of existing plans. The table was amended and discussed at length and is presented below, as Table 1.

6.2.6 Discussion of the contents of Table 1 resulted in a realization that even if all the management plans were developed and implemented it would not be possible to evaluate the effectiveness of the targets with respect to reversing environmental degradation trends, since it was not known whether or not the total area of each habitat covered by the plans represented a significant proportion of the total area of each habitat along the coast of the South China Sea. It was agreed that in order to reach goals and targets that were likely to have an impact of the state of the environment, data regarding the total areas of each habitat, the areas currently included in marine and other protected areas and the areas that were sustainably or unsustainably managed was required. It was further agreed that data would be supplied by each focal point by the end of September as detailed in Table 2.

**Table 1 List of sites represented by the numbers in Table 1 of meeting report UNEP/GEF/SCS/RWG-W.5/3, N indicates no existing Management Plan, U indicates existing but out-dated plans requiring amendment and up-dating.**

	Lagoons	Estuaries	Tidal mudflats	Peat swamp	Non-peat swamp
<b>Cambodia</b>		Peam Krasop-N	Koh Kapik-N		
<b>China</b>	Wenhang -N	Pearl river-N; Beilun river-N	Shantou-N; Hepu-N; Zhanzhou-N		
<b>Indonesia</b>		Sembilang NP-U		Berbak NP-U	
<b>Philippines</b>		Malampaya sound-U; Pansipit-N	Manila Bay-N		
<b>Thailand</b>		Tapi-N	Thung Kha Bay - Savi Bay – U	Thale Noi non hunting area - U	
<b>Viet Nam</b>	Tamgiang-Cauhai-N; Tra O-N	Bach Dang-N; Dong Nai-N;Balat-U	Thai Thuy-N, Nghia Hung-N, Southwest Ca Mau-N	U Minh Thuong – N	
<b>Total</b>	<b>3</b>	<b>10</b>	<b>9</b>	<b>3</b>	<b>???</b>

**Table 2 Format for table of locations and areas of wetland types.**

Wetland Type	Name of site	Area in Ha	Area under Protection	Non-protected	
				Sustainable use	Non-sustainable use
Lagoons					
Estuaries					
Inter-tidal flats					
Peat Swamp					
Non-Peat Swamps					

6.2.7 Clarification of the criteria used to determine management status was requested and it was noted that since criteria for what constituted "sustainable use" had not been developed other groups had made decisions on the areas under "sustainable" and "non-sustainable" use, based on the existence of local regulations or management structures. The absence of such structures, or regulations indicated that management was unlikely to be sustainable. The following notes were intended to provide guidance to focal points in completing this table:

- Area under Protection = National Parks, RAMSAR sites, Biosphere Reserves, Marine Protected Areas – categories vary in different countries but the legal designation of the status is a requirement for including an area in this category.
- Non-protected = Areas not accorded legal status as one of the types of area listed in 1 above.
- Sustainable use = areas under some form of management either via local or provincial government regulations and or community based management structures.
- Non-sustainable use = areas for which no form of management rules exist or, for which no enforcement is taking place.

### **6.3 Discussion of Inputs from the Wetlands Sub-component to the Draft Strategic Action Programme**

6.3.1 The Chairperson invited the Project Director to introduce document, UNEP/GEF/SCS/ RWG-W.6/6, *"Analysis of the content of the draft National Action Plans from the perspective of the Regional Strategic Action Programme"*, which provides an overview and initial comparison of the content of the National Action Plans. In introducing the document Dr. Pernetta highlighted the need to consider alternative courses of action at the regional level that should be included in the SAP.

6.3.2 Dr. Pernetta noted that the purpose of the present exercise was different from the preliminary analysis of the content of the draft national action plans which had been conducted during the 5<sup>th</sup> meeting. The purpose of the present agenda item was to consider and agree on what needs to be done at the regional level to assist countries in sustainably managing their coastal wetlands. He noted further that, the PCU had been directed to prepare an initial draft SAP for the consideration of the RSTC meeting in December this year. This draft would be prepared based on the outcome of discussions at the regional working group level concerning targets and activities in each component and sub-component.

6.3.3 Dr. Pernetta then reviewed the work of the regional task forces in relation to the development of regionally agreed economic values for ecosystem goods and services (RTF-E), and possible modes of regional co-operation (RTF-L). He noted that certain project activities would need to be sustained following completion of the project, for example, the maintenance of the regional GIS database.

6.3.4 Dr. Pernetta noted that document UNEP/GEF/SCS/RWG-W.6/6 contained an extensive set of Tables that could be used to compare national level threats, goals, time frames, total costs, challenges, and objectives and activities of the National Action Plans for wetlands, with a view to identifying regional objectives and activities.

6.3.5 In discussing the threats facing wetlands bordering the South China Sea the group noted that four key threats included pollution (particularly organic matter and nutrients), unsustainable use, loss due to coastal development, and the introduction of exotic species. There followed an extensive discussion of the relative importance of these threats and the nature of impacts. It was recognised that the importance of the threats varied according to the specific habitat type and it was agreed that all members would rank the comparative importance of each threat to each of, the five, wetland types covered by the working group. The outcome is presented in Table 3; high scores represent low priority, and *vice versa*.

**Table 3 Ranking of threats to various wetland types bordering the South China Sea.**

	Estuaries		Lagoons		Tidal Flats		Peat Swamps		Non-Peat Swamps		Total	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Loss due to coastal development	19	3	16	3	9	1	11	2	14	1=	69	2
Unsustainable use	15	2	13	2	11	2	7	1	14	1=	60	1
Pollution	10	1	8	1	18	3	17	3=	17	3	70	3
Introduction of exotic species	27	4	23	4	28	4	17	3=	22	4	117	4

6.3.6 In discussing the outcome of this analysis the group recognised that overall the threat from exotic species was much lower for all habitat types than the other three threats, which were of a comparable level. They recognised further that, for estuaries and lagoons, the highest priority threat came from pollution but that for swamp forest unsustainable use represented the greatest threat.

6.3.7 In discussing the overall goals the Chairperson identified sustainable use as a goal common to each of the countries, which together with integrated management approaches constituted the overall goals for the wetland component of the regional Strategic Action Programme. The Chairman reviewed the purposes of the goals identified by each of the countries and summarised in Table 2 of document UNEP/GEF/SCS/RWG-W.6/6, and it was noted that the goals corresponded closely to the threats and that the purpose of the identified goals seemed obvious.

6.3.8 The Chairman introduced Table 3 of document UNEP/GEF/SCS/RWG-W.6/6, noting that a key challenge identified by all countries was the lack of co-ordination among stakeholders at both national and regional levels. Mr. Dibjo suggested that a lack of awareness was perhaps a key challenge while Dr. Pernetta and Ms. Mendoza noted that a significant challenge was the widespread lack of resource use rights or a sense of "ownership" over coastal resources. Professor Chen highlighted that lack of appropriate legislation for wetland management as a key challenge and also highlighted the fact that integrated management was difficult to achieve due to a lack of collaboration between agencies.

6.3.9 The working group proceeded to engage in a lengthy and detailed discussion of Tables 4.1 to 4.5, of document UNEP/GEF/SCS/RWG-W.6/6, encompassing the national objectives and activities, in order to determine the regional level activities for all five components. These were discussed and agreed by the group and regional actions were inserted into the tables, which are included as Annex 4 of this report.

## **7. DEVELOPMENT OF MEDIUM SIZED PROJECT PROPOSALS FOR THE WETLANDS SUB-COMPONENT**

### **7.1 Status of the Demonstration Site Proposals for Approved Sites**

7.1.1 The Chairperson invited the responsible Focal Points to brief the meeting on the status of the Medium Size Project Proposals and to present them for collective review by the members of the RWG-W. He noted that during the third meeting of the Project Steering Committee, three wetlands sites and one wetland/mangrove site had been selected as demonstration sites to be funded under the GEF Medium-sized Project (MSP) mechanism. These wetlands sites were:

- (i) Shantou (China)
- (ii) Malampaya sound (Philippines)
- (iii) Thale Noi (Thailand)
- (iv) Xuan Thuy mangrove site combined with Balat Estuary (Viet Nam, Balat Wetland)

7.1.2 The group's attention was drawn to the proposals, which were made available to the meeting in documents UNEP/GEF/SCS/RWG-W.6/7.Chi; UNEP/GEF/SCS/RWG-W.6/7.Phi; UNEP/GEF/SCS/RWG-W.6/7.Tha; and UNEP/GEF/SCS/RWG-W.6/7.Vie.

7.1.3 Mr. Narong noted that the proposal for the Thale Noi peat swamp was now final following liaison between the PCU and UNEP, Nairobi and that the National Technical Focal Point was currently arranging for the endorsement from the Thailand GEF Operational Focal Point.

7.1.4 Ms. Mendoza indicated that she had received feedback from UNEP, Nairobi on Thursday 8<sup>th</sup> September regarding the actions required to finalise the proposal for the Malampaya Sound demonstration site.

7.1.5 Professor Chen noted that she had submitted the final proposal to Nairobi in June 2005 and during discussion Dr. Pernetta stated that he recalled having received a copy of an e-mail message of comments from Nairobi but that he had not received a copy of Professor Chen's response. Dr. Pernetta indicated that Ms. Sulan Chen would assist Professor Chen in finalising the proposal upon her return to Bangkok next week.

7.1.6 Dr. Mai made a PowerPoint presentation regarding the status of the Balat Estuary proposal. Dr. Mai asked Dr. Pernetta about the status of Vietnam's proposal, as he had heard nothing from the DGEF since June 2005. Dr. Pernetta advised Dr. Mai to send a fax to UNEP Nairobi, requesting feedback regarding the status of the proposal.

7.1.7 Professor Chen made a presentation regarding the status of the Shantou wetlands proposal, including the funding sources, a site description, the root causes, intervention, development objectives, project objectives, outcomes, outputs, proposed management structure, and activities, including education and public awareness programmes.

7.1.8 In closing this agenda item Dr. Mai urged all focal points to complete the revisions as promptly as possible in order that the activities could be initiated in the near future.

## **7.2 Consideration of Activities for Sharing Experience and Information between Demonstration Sites**

7.2.1 During the third meeting of the Project Steering Committee a framework for regional co-ordination, dissemination of experiences, and personnel exchange between sites was considered and approved. This agreed framework was annexed to the report of that meeting as Annex 8 UNEP/GEF/SCS/PSC.3/3.

7.2.2 The Chairperson requested members to consider and discuss the nature of the training required at each demonstration site and what aspects of the work at the demonstration sites could be of value to other sites. There followed an extensive discussion of the training requirements at the demonstration sites and the outcomes were compiled into Table 4.

**Table 4 Training needs and opportunities at the wetlands demonstration sites.**

Site	Habitat	Offer	Criteria	Training Needs
Thale Noi (Thailand)	Peat Swamp	CB livelihood at the 3 <sup>rd</sup> year of project	Group – 1 week	<ul style="list-style-type: none"> <li>Wetland evaluation</li> <li>GIS application Biodiversity monitoring</li> </ul>
Balat (Viet Nam)	Estuary, Mangrove	Eco-tourism Silvo-Fishery	1 person for 2 months 1 person for 2 months	<ul style="list-style-type: none"> <li>Wetland wise use (1 person for 2 months)</li> <li>Biodiversity monitoring, Eco-approach (1 person for 2 months)</li> </ul>
Shantou (China)	Tidal Flat	Bird monitoring Ecotourism	3 persons for 1 month	<ul style="list-style-type: none"> <li>Biodiversity monitoring (1 month)</li> <li>Ecological approach (1 month)</li> </ul>
Malampaya Sound (Philippines)	Lagoon	Biodiversity monitoring Participatory management	Group 10 persons for 5 days	<ul style="list-style-type: none"> <li>Wetland management</li> <li>Wetland assessment monitoring</li> <li>Financing mechanism</li> <li>Wetland valuation</li> <li>Policy enforcement</li> </ul>
Peam Krasop (Cambodia)	Tidal Flat, Mangrove and Estuary			<ul style="list-style-type: none"> <li>Eco-tourism (3 persons for 1 week)</li> <li>Biodiversity monitoring (3 persons for 1 week)</li> <li>Eco-approach (3 persons for 1 week)</li> <li>Silvo-fishery (10 persons for 1 week)</li> </ul>

7.2.3 A number of focal points indicated that they had sent information to the PCU regarding the types of training/experiences that they could offer to groups/individuals visiting wetland demonstration sites. Professor Chen suggested that the Chinese share experiences in the areas of taxonomy, water quality monitoring and that the national government has provided funds for this aspect of the project.

## **8. UPDATE OF NATIONAL DATA FOR THE REGIONAL GIS DATABASE AND META-DATABASE**

8.1 The Chairperson invited Mr. Paterson, to introduce the document entitled "*Development of the regional South China Sea GIS database and metadata for the Wetlands Sub-component*" (UNEP/GEF/SCS/RWG.6/8) and to highlight any gaps and shortcomings, which need to be addressed by the members.

8.2 Mr. Paterson noted that the PCU together with SEA START RC were in the process of reviewing the data received and ensuring that this had been entered into the regional GIS database and that the document contained a detailed listing of the files currently held by the PCU. Ms Mendoza noted that at the fourth meeting of the RSTC she had made GIS data available to Dr Anond and it was agreed that Mr. Paterson would follow up with SEA START RC. Ms Mendoza indicated that she would supply a further copy on her return to the Philippines.

8.3 The working group reviewed the lists of files and discussed the format requirements. Mr. Dibjo indicated that he would provide the required data by the end of October. Dr. Mai indicated that the meta-data from Viet Nam would also be supplied at that time. All other focal points agreed to submit outstanding and additional GIS and metadata to the PCU by 10<sup>th</sup> October 2005.

8.4 Mr. Paterson provided an overview of the global information system developed by Google and highlighted its capabilities and potential uses by the working group members. He agreed to send a link to the Google Earth package to each member by 23<sup>rd</sup> September 2005.

## **9. RESULT OF THE CLUSTER ANALYSIS OF REVISED SITE CHARACTERISATION DATA**

9.1 The Chairperson invited the Project Director to introduce this agenda item, and document UNEP/GEF/SCS/RWG-W.6/9, "*Cluster Analysis for Wetland sites based on revised and amended data*". Dr. Pernetta drew members' attention to the comments and criticisms of the Regional Scientific and Technical Committee regarding the original cluster analyses. Members recalled that the RSTC during the fourth meeting had noted that:

7.5 *The meeting agreed to examine the results of the habitat sub-component one by one. The discussions on each sub-component were as follows:*

- *With regard to the wetland sub-component, the meeting realised that there were still some remaining problems of data quality and that therefore less reliance could be placed on the outcome of the cluster and ranking procedures than was the case for the other groups.*

9.2 Dr. Pernetta noted that this statement reflected the fact that the data used in the cluster analysis and ranking of sites still contained at that time, a number of entries that took no account of the previous comments of the RSTC. The comments of the RSTC made during the third meeting highlight two areas of primary concern: the size of the areas, and the numbers of associated habitats. It was subsequently agreed by the regional working group that rather than "management units" the area of the specific habitat should be used in the cluster analysis and that the number of associated habitats should take into consideration only the five wetlands types as approved by the PSC during its second meeting, and listed in Appendix 8 of the RAMSAR Convention (Lagoons; estuaries; inter-tidal mud flats, peat swamps and non-peat swamps in coastal areas).

9.3 Dr. Pernetta noted that in addition the data matrix still contained a number of anomalous entries and consequently individual members had been requested to bring to the meeting copies of the lists of species or publications containing them that, have been used to derive the numbers in the table. Of particular concern were the numbers of endemic species and some individual values, which were extremely high. He noted further that the group needed to review the data and discuss the inclusion of parameters such as the numbers of mammals that apparently reside in un-vegetated mud-flats.

9.4 There followed a detailed discussion of the data by habitat type during which it was apparent that for some sites the numbers of species recorded reflected more than merely those found in the particular habitat type into which the individual sites had been classified. Mr. Dibjo noted that he wished to remove the Indonesian sites from the analysis since two of these would be developed with Netherlands Government assistance, and the data represented total species for the administrative units rather than the individual habitat.

9.5 In the case of the data relating to estuaries the working group reviewed and updated the area (ha), total number of fish, total number of bird species, number of wetland types, number of migratory species, and site-specific endemic species. The group discussed the high numbers of fish species in sites such as the Pattani Bay Estuary and the Pearl River Estuary, the high number of wetland types reported for some estuaries, and the high numbers of site-specific endemic species for some sites such as the Pearl River Estuary. It was agreed that the number of vascular plant species, and the number of resident mammal species should not be used in the analysis since these reflected values for adjacent habitats rather than the water-body of the estuary itself.

9.6 The working group reviewed and updated the area (ha), total number of fish, total number of bird species, number of vascular plant species, number of resident mammal species, number of wetland types, number of migratory species, and site-specific endemic species data for inter-tidal mudflats. It was concluded that the number of vascular plant species and the number of resident mammal species be removed from the analysis.

9.7 There followed a review and update of the data relating to coastal lagoon sites. Ms. Mendoza recommended that the Malampaya Sound be added to the list of lagoon sites from the list of estuary sites. It was agreed that the resident mammals and data relating to vascular plant species would be removed.

9.8 In the case of the swamps it was noted that the numbers of peat and non-peat swamps were rather small and hence the analysis would be conducted of all swamps together. It was agreed that the site-specific endemic species column be deleted due to lack of data, and that the Berback site be removed from the analysis.

9.9 Dr. Pernetta presented the revised cluster analyses using various data sets and the outcome is contained in Annex 5 of this report. He noted that in all cases the Chinese sites formed outliers from the clusters reflecting the extremely high values for site-specific endemic species. Professor Chen agreed to send the complete lists of species for each site following her return to China. It was noted that these lists probably included species from wetland habitats adjacent to the primary habitat under consideration and would therefore likely be reduced in number.

9.10 In conclusion, it was agreed that Dr. Pernetta would review the species lists provided by Professor Chen, and that the PCU would undertake a final analysis and dispatch this to the members as soon as possible. Members would up-date the socio-economic data to produce a draft ranking, which the group could then discuss during the working group meeting to be convened during the second Regional Scientific Conference in Bangkok from 14-16 November.

## **10. TRAINING AND CAPACITY BUILDING NEEDS ASSESSMENT**

10.1 Mr. Paterson presented document UNEP/GEF/SCS/RWG-W.6/10 and reviewed the responses to the training needs assessment questionnaire received from members prior to the meeting. Mr. Paterson noted that an important task of the group was to identify the regional training needs for the wetlands sub-component of the project.

10.2 The summary tables prepared by the PCU were reviewed in detail, anomalies and errors corrected and the tables are attached as Annex 6 to this report.

10.3 In discussing the training needs and programme of activities for the remainder of the project Mr. Dibjo asked whether training should focus specifically on wetlands management, or broader coastal/marine management. Dr. Pernetta noted that the PCU would be preparing a broad training programme for consideration and approval of the Project Steering Committee that would encompass training needs in all aspects of the project.

10.4 Mr. Narong reviewed existing wetlands training activities in Thailand and stated that there was a need to identify how training under this project can best fill the gaps in existing training activities. The expert member reviewed the training courses in wetland management conducted by Mahidol University, noting that details of these programmes could be obtained from the following website: [www.en.mahidol.ac.th](http://www.en.mahidol.ac.th).

10.5 Mr. Dibjo asked how the SEAs can access the training budget and Dr. Pernetta noted that the programme once approved would be used to support participation in the activities together with associated costs of organising and running individual activities. Mr. Narong suggested that there is a need to identify the regional training needs, and Mr. Dibjo noted that there was in his view an urgent need for training in the area of community based management. Ms. Mendoza felt that policy enforcement were areas of current weakness and drew the attention of the group to the contents of Table 12.

10.6 The expert member proposed and the group agreed to identify and prioritise specific training needs. The group ranked the need for types of group training, including wetland valuation, wetland monitoring and assessment, wetland wise use, wetland restoration, financing mechanisms, and wetland community education and public awareness.

10.7 Dr. Mai noted that Viet Nam would like to train PhD and Master degree students using the available funds and Dr. Pernetta indicated that this was not one of the intended purposes of the programme, which should focus on training needs within the context of project activities.

10.8 There followed a discussion of the individual training needs in the context of which Mr. Dibjo highlighted internships as being a valuable mode of training. Dr. Mai proposed the topic of Silvo-fisheries whilst Mr. Savath noted the need for training in ecotourism. The members proceeded to rank the individual training needs and identify the nature of the individuals needing training. The outcomes of these discussions are presented in Annex 6 of this report.

## **11 CONSIDERATION OF THE ECONOMIC VALUATION OF THE IMPACTS OF LAND-BASED POLLUTION ON WETLANDS PREPARED BY THE REGIONAL TASK FORCE ON ECONOMIC VALUATION**

### **11.1 Framework for Valuing Impacts of Land-based Pollution on Wetlands**

11.1.1 In introducing this agenda item Dr. Pernetta noted that during the third meeting of the Task Force on Economic Valuation (RTF-E) the group had identified and discussed various types of pollutants, their possible impacts, and the applicability of these impacts to different habitats bordering the South China Sea. Following a consideration of the types of impacts, the Task Force proceeded to formulate procedures to be used in valuing the impacts including data needs, and appropriate valuation techniques. Annex 4 of that report (UNEP/GEF/SCS/RTF-E.3/3) contains the tables of frameworks and procedures for valuing the impacts of land-based pollution. Table 1 presents an overall framework whilst Tables 2.1 to 2.4 outline the impacts of land-based pollution on mangroves, coral reefs, seagrass and wetlands according to the three classes of change in economic value: namely productivity; amenity value; and human welfare. Dr. Pernetta introduced document UNEP/GEF/SCS/RWG-W.6/11 "*Valuing the Impacts of Land-Based Pollution on Wetlands*" noting that this was an extract from Annex 4 of the report of the third meeting of the Regional Task Force on Economic Valuation.

11.1.2 There followed a discussion of the contents of Table 1 of document UNEP/GEF/SCS/RWG-W.6/11. Dr Mai proposed that sediment quality should be added to water quality in all fields, and that sediment and water quality should be added as an impact consequent upon oil and hydrocarbon pollution. Professor Chen indicated that growth of water-weeds under enhanced nutrient regimes could be a significant impact in many wetlands. Dr. Sansanee noted that sediments could have additional impacts on wetlands through changes to sediment quality that change the species composition of the benthic community, and when excessive could block or change water channels with consequent costs for human transport and use of the system.

11.1.3 Mr Paterson pointed out that a significant impact in the region was the change in pH of the waterbody as a consequence of exposing acid sulphate soils to the atmosphere during shrimp pond and other coastal construction. Lowered pH has impacts on biological production in terms of causing changes to the species composition of plankton communities and ulcerative diseases in fish thus

lowering overall production from the system. The working group agreed to add these impacts to Tables 1 and 2. The group reviewed whether the impacts identified in Table 2 adequately reflect changes in productivity, amenity value or human welfare costs and amended the table as it appears in Annex 7. of this report.

## **11.2 Procedures to Undertake Valuation of the Impacts of Land-based Pollution on Wetlands**

11.2.1 The working group proceeded to review the contents of Table 3.4 regarding the valuation techniques that could be applied to the identified impacts, the indicators of measurement, data needs, and the assumptions. The group agreed that the table was comprehensive and that in general the data needed could be provided, although there would be difficulty for many areas in providing data regarding production levels and market prices prior to the impacts.

11.2.2 Mr. Dibjo noted that in the case of the demonstration sites it would be possible to undertake valuation exercises at the commencement and end of the project. During discussion it was noted that these guidelines were restricted to a consideration of loss in economic value consequent upon pollution. It was recognised that by valuing the impacts of pollution it was possible to value the benefits derived from removing or reducing the pollution impacts.

11.2.3 The working group considered the contents of Table 3.4 under the three categories of change in economic value, namely: productivity, amenity and human welfare and recognised that there were likely to be severe difficulties in collecting some of the data relating to human welfare consequent, for example, upon multiple sources of food poisoning. The group discussed whether the proposed valuation procedures are likely to be practical and operational in terms of the ease of collecting the required data and information.

11.2.4 Mr. Dibjo questioned the notion of amenity value and how it applies to wetlands that are not visited. Dr. Pernetta advised that there are techniques for determining the amenity value of sites that are not visited and that the working group had previously reviewed these techniques. He explained that the guidelines being developed will encompass these techniques.

11.2.5 Mr. Narong suggested that in terms of determining the impacts of heavy metal contamination of seafood on human health/welfare, hospital records may be obtained for an analysis of the number of cases involved. In this context it was noted that hospital records, could provide information on the numbers of acute and chronic cases, but that these records would not necessarily include information regarding the concentrations of heavy metals in seafood, nor would they provide information on losses due to illness when the individual was not hospitalised.

## **11.3 Consideration and Review of the Elements of Economic Valuation Contained in the Demonstration Site Activities.**

11.3.1 The chairperson invited members to consider the elements of economic valuation currently outlined in the demonstration site proposals and to discuss and agree a timetable for the provision of inputs to the work of the Regional Task Force on Economic Valuation (RTF-E).

11.3.2 Members noted that the RTF-E has already produced guidelines for the economic valuation of habitat goods and services and is proceeding to compile a database of empirical data relating to past valuations of goods and services. The purpose of the work of the RTF-E is to produce regionally agreed total economic values of habitat goods and services that may be used in the determination of the costs of action and non-action in the framework of the SAP. In this connection data generated through the application of the agreed procedures at sites, during a similar time frame, would provide a good base-line data set for the group, in comparing existing empirical values.

11.3.3 Mr. Narong noted that preliminary economic values would only be available from Thale Noi at the end of 2006. Dr. Mai indicated that a similar time frame applied in the case of the Balat Estuary. Ms. Mendoza noted that some data was already available from surveys conducted by the expert member of the RTF-E from the Philippines. Professor Chen indicated that preliminary data for the Shantou wetlands was already available and this would be revised and made available to the PCU by the end of the year.

## **12. PREPARATION OF INPUTS FROM THE REGIONAL WORKING GROUP ON WETLANDS TO THE SECOND REGIONAL SCIENTIFIC CONFERENCE**

12.1 The Chairperson invited, the Project Director to present the report of the second meeting of the Executive Committee of the Regional Scientific and Technical Committee (UNEP/GEF/SCS/RSTC/ExComm.2/3), which was provided for information of the RWG-W. This report contains a record of discussion and recommendations regarding the second Regional Scientific Conference to be convened in Bangkok, November 14 – 16, 2005.

12.2 The Project Director noted that, the first day would be devoted to the demonstration sites and that the mangrove and coral reef groups had agreed to produce a single presentation covering the highlights from all demonstration sites. The second day would be devoted to science for management with the morning covering natural sciences and the afternoon social sciences. The third day would include the opportunity to convene a meeting of the Regional Working Group on Wetlands and one item for consideration during that meeting would be the fisheries threats and the appropriate portions of the Code of Conduct for Responsible Fisheries that could be used during the execution of the demonstration site activities. He noted that all focal points would be invited to the meeting together with the site managers or a senior individual involved in executing the activities on site. Members were requested to provide the PCU with the names and full contact details of these individuals by the 22<sup>nd</sup> September 2005.

12.3 The Project Director stated that the RWG-W would need to agree on the content of the presentation, the presenter, and the timetable for provision of inputs from each site that highlight specific features of each site; the goals; and, what the anticipated outputs would be. During the discussion it was noted that the Balat Estuary highlights would included silvo-fishery, integrated management and ecotourism; Shantou would highlight the importance of the site as a major flyway, threats due to population size in Guangdong, and multi-sectoral management aimed at balancing use and protection for the conservation of regionally and globally significant biodiversity. Ms. Mendoza indicated stakeholder participatory management, biodiversity monitoring, and improved income and livelihood as the focus for Malampaya and Mr. Narong noted that Thale Noi highlights local participation in wetland management.

12.4 There followed a discussion of the elements that should be extracted by the focal points for inclusion in the overview presentation of the wetland demonstration sites. It was agreed that the wetlands focal points would provide to Dr Mai the following topics for each site:

- Background (significance, highlights, features values),
- Threats
- Work to be done (highlights of the activities),
- Intended outcomes,
- What is to be demonstrated (Impact and lessons learned).

12.5 The work plan for this task was discussed and agreed as follows:

- Each focal point to submit inputs regarding their demonstration sites to Dr. Mai and the PCU on 22<sup>nd</sup> September
- Dr. Mai to prepare a 1<sup>st</sup> draft and send to the focal points and the PCU for comment on 29<sup>th</sup> September
- Focal points to send comments to Dr. Mai by 1<sup>st</sup> October
- Dr. Mai to send the final version to the PCU by 6<sup>th</sup> October.

12.6 There followed a discussion of possible talks to be presented during the second day of the conference on the theme of science for management. Ms. Mendoza proposed and the group agreed that she would prepare a presentation on community based monitoring for management, the Philippines experience. Mr. Dibjo offered to prepare a presentation on community based sylvo-fisheries and the group agreed that this was an important topic for consideration in the framework of wetlands management. Ms. Mendoza agreed to make her presentation available by the end of September and Mr. Dibjo agreed to circulate his by 10<sup>th</sup> October. The group would provide inputs upon receipt of the drafts, and the final presentations would be made available to the PCU by October 15<sup>th</sup>.

12.7 In discussing items for the agenda of the Regional Working Group to be convened on the third day of the conference the Project Director indicated that the Fisheries Working Group would split their membership between each of the habitat working groups in order to discuss threats from fisheries to the environment and explain the relevant portions of the Code of Conduct for Responsible Fisheries. The purpose was to allow an exchange of views concerning the manner in which the fisheries members could provide support to the demonstration site activities and how the demonstration site activities could be used in support of the fisheries objective of promoting the FAO Code of Conduct for Responsible Fisheries and the Secretariat ASEAN Regional Guidelines.

12.8 Additional items considered by the group included the final agreement of the cluster analysis and ranking of the potential demonstration sites and further elaboration of the regional wetlands monitoring system. It was agreed that the PCU would prepare a provisional agenda and supporting documentation for circulation in advance of the meeting.

### **13. CONSIDERATION AND REVISION OF THE WORK PLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON WETLANDS FOR THE PERIOD 2004 TO 2007**

13.1 The Chairperson invited Ms. Thu Ha to introduce document UNEP/GEF/SCS/RWG.6/12, *"Proposed work plan and timetable for the Regional Working Group on Wetlands to June 2007"*, together with the amendments and additions inserted by the PCU on the basis of previous discussions.

13.2 During discussion particular attention was given to the delivery of national level inputs to the working group materials for the Regional Scientific Conference, the process of finalising National Action Plans and Demonstration Site Proposals, contributions to the Regional Strategic Action Programme, and development of a draft programme of activities for the regional exchange of experiences between wetland demonstration sites. The draft work plan and timetable were discussed, amended and agreed as they appear in Annex 8 of this report. All members undertook to meet the deadlines for the various outputs as detailed in the work plan.

### **14. DATE AND PLACE OF THE SEVENTH MEETING OF THE REGIONAL WORKING GROUP ON WETLANDS**

14.1 Members were reminded that the PSC had decided at its second meeting that future RWG meetings could only be convened at potential demonstration sites. This does not restrict a working group to convening its' meetings only at demonstration sites for the sub-component concerned, a meeting of the RWG-W for example, might be convened at a mangrove demonstration site.

14.2 The Chairperson invited members to propose a suitable venue for the seventh meeting of the RWG-W and Ms. Mendoza invited the working group to meet in Taytay, Palawan, Philippines. This offer was gratefully accepted by the group.

14.3 There followed a lengthy discussion of the timing for the meeting and following a consideration of individual work plans and schedules it was agreed that the meeting would be convened from 18 to 21<sup>st</sup> June 2006 in order to avoid the peak of the wet season (July and August). It was noted that travel to Taytay would involve an overnight stop in Manila hence members would leave home on Friday, overnight in Manila before travelling to Taytay on Saturday in order to commence the meeting on Sunday 18<sup>th</sup> June.

### **15. ANY OTHER BUSINESS**

15.1 Members were invited to consider and discuss any further items of business under this agenda item. No additional items were proposed for discussion.

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

16.1 Mr. Narong, the Rapporteur presented the draft report of the meeting for consideration and adoption by the members. The report was reviewed, amended and adopted as it appears in this document.

## **17. CLOSURE OF THE MEETING**

17.1 The Project Director thanked the participants for their hard work and expressed the hope that he would see them all in Bangkok in November.

17.2 The Chairperson thanked the PCU for their support to the meeting and Mr Koch Savath for his logistic support in organising the venue and local transport. He expressed his gratitude to all participants for their hard work and contributions during the discussions.

17.3 The meeting was formally closed at 17.10 on Thursday 15<sup>th</sup> September.

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## ANNEX 2

### List of Documents

#### Discussion documents

UNEP/GEF/SCS/RWG-W.6/1	Agenda.
UNEP/GEF/SCS/RWG-W.6/2	Annotated Agenda.
UNEP/GEF/SCS/RWG-W.6/3	Report of the Meeting.
UNEP/GEF/SCS/RWG-W.6/4	Current Status of Budgets and Reports from the Specialised Executing Agencies in the Participating Countries.
UNEP/GEF/SCS/RWG-W.6/5	Current Status of Substantive Reports of the Specialised Executing Agencies for the Wetlands Sub-component.
UNEP/GEF/SCS/RWG-W.6/6	Analysis of the Content of the Draft National Action Plans from the Perspective of the Regional Strategic Action Programme.
UNEP/GEF/SCS/RWG-W.6/6.Cam	Cambodian Coastal Wetlands Strategy and Action Plan.
UNEP/GEF/SCS/RWG-W.6/6.Chi	National Action Plan of China on Wetlands.
UNEP/GEF/SCS/RWG-W.6/6.Ind	National strategy and Action Plan for Coastal Wetlands Management.
UNEP/GEF/SCS/RWG-W.6/6.Phi	Action Plan for Philippines Wetlands in the South China Sea 2004-2009.
UNEP/GEF/SCS/RWG-W.6/6.Mal	<i>Not Available.</i>
UNEP/GEF/SCS/RWG-W.6/6.Tha	Draft National Action Plan on Wetland Management in the Gulf of Thailand Under the UNEP/GEF/SCS Project.
UNEP/GEF/SCS/RWG-W.6/6.Vie	National Strategic Action Plan for Conservation and Sustainable Development of Viet Nam Coastal Wetlands in Period of 2004-2010.
UNEP/GEF/SCS/RWG-W.6/7.Chi	MSP of China's Shantou Wetland.
UNEP/GEF/SCS/RWG-W.6/7.Phi	MSP of Philippines Malampaya Wetland.
UNEP/GEF/SCS/RWG-W.6/7.Tha	MSP of Thailand Thale Noi Wetland.
UNEP/GEF/SCS/RWG-W.6/7.Vie	MSP of Viet Nam Balat Wetland.
UNEP/GEF/SCS/RWG-W.6/8	Development of the Regional South China Sea GIS Database and Metadata for the Wetlands Sub-component.
UNEP/GEF/SCS/RWG-W.6/9	Cluster Analysis for Wetland Sites Based on Revised and Amended Data.
UNEP/GEF/SCS/RWG-W.6/10	Training Needs in the Framework of the UNEP/GEF Project Entitled: Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand.
UNEP/GEF/SCS/RWG-W.6/11	Valuing the Impacts of Land-Based Pollution on Wetlands.
UNEP/GEF/SCS/RWG-W.6/12	Proposed Work Plan and Timetable for the Regional Working Group on Wetlands to June 2007.

#### Information documents

UNEP/GEF/SCS/RWG-W.6/Inf.1	List of Participants.
UNEP/GEF/SCS/RWG-W.6/Inf.2	List of Documents.
UNEP/GEF/SCS/RWG-W.6/Inf.3	Programme.
UNEP/GEF/SCS/RWG-W.6/Inf.4	Framework for Regional Co-ordination, Dissemination of Experiences, and Personnel Exchange between Sites. [ANNEX 8 of document UNEP/GEF/SCS/PSC.3/3]
UNEP/GEF/SCS/RSTC/ExComm.2/3	Second Meeting of the Executive Committee of the Regional Scientific and Technical Committee. Report of the Meeting. Bangkok, Thailand 21 <sup>st</sup> – 22 <sup>nd</sup> February 2005 UNEP/GEF/SCS/RSTC/ExComm.2/3.

***The following documents are supplied in published form.***

- UNEP/GEF/SCS/RWG-SG.5/3 Fifth Meeting of the Regional Working Group on the Seagrass Sub-component for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Bintan, Indonesia, 24<sup>th</sup> – 27<sup>th</sup> August 2004 UNEP/GEF/SCS/RWG-SG.5/3.
- UNEP/GEF/SCS/RWG-CR.5/3 Fifth Meeting of the Regional Working Group on the Coral Reefs Sub-component for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Koh Chang, Thailand, 13<sup>th</sup> – 16<sup>th</sup> September 2004 UNEP/GEF/SCS/RWG-CR.5/3.
- UNEP/GEF/SCS/RWG-M.5/3 Fifth 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. Trat Province, Thailand, 26<sup>th</sup> – 30<sup>th</sup> September 2004 UNEP/GEF/SCS/RWG-M.5/3.
- UNEP/GEF/SCS/RWG-W.5/3 Fifth Meeting of the Regional Working Group on the Wetland Sub-component for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Ha Long City, Viet Nam, 5<sup>th</sup> – 8<sup>th</sup> October 2004 UNEP/GEF/SCS/RWG-W.5/3.
- UNEP/GEF/SCS/RWG-F.5/3 Fifth Meeting of the Regional Working Group on the Fisheries Component for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Phu Quoc Island, Viet Nam, 11<sup>th</sup> – 14<sup>th</sup> October 2004 UNEP/GEF/SCS/RWG-F.5/3.
- UNEP/GEF/SCS/RWG-LbP.5/3 Fifth Meeting of the Regional Working Group on the Land-based Pollution Component for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Shenzhen, China, 24<sup>th</sup> – 27<sup>th</sup> November 2004 UNEP/GEF/SCS/RWG-LbP.5/3.
- UNEP/GEF/SCS/RSTC.5/3 Fifth Meeting of the Meeting of the Regional Scientific and Technical Committee for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Pattaya, Thailand, 9<sup>th</sup> – 11<sup>th</sup> December 2004 UNEP/GEF/SCS/ RSTC.5/3.
- UNEP/GEF/SCS/PSC.4/3 Fourth Meeting of the Meeting of the Project Steering Committee for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Guilin, China, 13<sup>th</sup> – 15<sup>th</sup> December 2004 UNEP/GEF/SCS/PSC.4/3.
- UNEP/GEF/SCS/RTF-L.3/3 Third Meeting of the Regional Task Force on Legal Matters for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Alongpo City, Philippines, 28<sup>th</sup> February – 3<sup>rd</sup> March 2005 UNEP/GEF/SCS/RTF-L.3/3.
- UNEP/GEF/SCS/RTF-E.3/3 Third Meeting of the Regional Task Force on Economic Valuation for the UNEP/GEF Project *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"*. Report of the Meeting. Fangchenggang, China, 18<sup>th</sup> – 21<sup>st</sup> April 2005 UNEP/GEF/SCS/RTF-E.3/3.

## **ANNEX 3**

### **Agenda**

- 1. OPENING OF THE MEETING**
  - 1.1 Welcome Address
  - 1.2 Introduction of Members
- 2. ORGANISATION OF THE MEETING**
  - 2.1 Election of Officers
  - 2.2 Documents Available to the Meeting
  - 2.3 Organisation of work
- 3. ADOPTION OF THE MEETING AGENDA**
- 4. STATUS OF MID-YEAR PROGRESS REPORTS, EXPENDITURE REPORTS, AUDIT REPORTS AND MOU AMENDMENTS**
- 5. UPDATE AND FINALISATION OF THE NATIONAL SUBSTANTIVE REPORTS**
  - 5.1 Status of Publications in National Languages
  - 5.2 Finalisation of National Reports in English for UNEP Publication
- 6. REVISION OF THE NATIONAL ACTION PLANS AND REGIONAL STRATEGIC ACTION PROGRAMME**
  - 6.1 Review of Revised National Action Plans
  - 6.2 Discussion of the Regional Scientific and Technical Committee Advice Regarding the Goals and Targets of the Regional Strategic Action Programme
  - 6.3 Discussion of Inputs from the Wetlands Sub-component to the Draft Strategic Action Programme
- 7. DEVELOPMENT OF MEDIUM SIZE PROJECT PROPOSALS FOR THE WETLANDS SUBCOMPONENT**
  - 7.1 Status of the Demonstration Site Proposals for Approved Sites
  - 7.2 Consideration of Activities for Sharing Experience and Information between Demonstration Sites
- 8. UPDATE OF NATIONAL DATA FOR THE REGIONAL GIS DATABASE AND META-DATABASE**
- 9. RESULT OF THE CLUSTER ANALYSIS OF REVISED SITE CHARACTERISATION DATA**
- 10. TRAINING AND CAPACITY BUILDING NEEDS ASSESSMENT**
- 11. CONSIDERATION OF THE ECONOMIC VALUATION OF THE IMPACTS OF LAND-BASED POLLUTION ON WETLANDS PREPARED BY THE REGIONAL TASK FORCE ON ECONOMIC VALUATION**
  - 11.1 Framework for Valuing Impacts of Land-based Pollution on Wetlands
  - 11.2 Procedures to Undertake Valuation of the Impacts of Land-based Pollution on Wetlands
  - 11.3 Consideration and Review of the Elements of Economic Valuation Contained in the Demonstration Site Activities.
- 12. PREPARATION OF INPUTS FROM THE REGIONAL WORKING GROUP ON WETLANDS TO THE SECOND REGIONAL SCIENTIFIC CONFERENCE**
- 13. REVISION OF THE WORK PLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON WETLANDS FOR THE PERIOD 2005 TO 2007**
- 14. DATE AND PLACE OF THE SEVENTH MEETING OF THE REGIONAL WORKING GROUP ON WETLANDS**
- 15. ANY OTHER BUSINESS**
- 16. ADOPTION OF THE REPORT OF THE MEETING**
- 17. CLOSURE OF THE MEETING**

## ANNEX 4

### Analysis of the Content of the Draft National Action Plans

#### BACKGROUND

One of the planned outputs of the project is a Regional Strategic Action Programme (SAP) for the South China Sea. A draft SAP was developed during the period 1997-1999, based on the preliminary findings of the regional Transboundary Diagnostic Analysis. It is therefore somewhat out of date and a number of the activities during the preparatory phase of the project were designed to assemble the data required to update the background to this document. In addition a number of the activities contained in the draft SAP were designed to be completed during the implementation of the current project

The Fifth Meeting of the Regional Scientific and Technical Committee (RSTC) convened in Fangchenggang from 9<sup>th</sup>-11<sup>th</sup> December 2004, noted that:

*“10.1.2 ...Each meeting [RWG] reviewed the draft NAPs, and undertook a comparative analysis of the similarities and differences between the drafts, with a view to providing inputs to the updating of the Strategic Action Programmes.”*

And agreed that:

*“10.2.8 ...the writing and compilation of the revised SAP would be responsibility of the PCU, in conjunction with the Regional Working Groups, and that the relationship between the development of the NAPs and SAP should be clearly identified to ensure delivery of national level inputs to the SAP in a timely manner.”*

Consequently, it can be concluded that updating of the SAP is to be based on the NAPs of all (sub) components and all countries. The preparation of the NAPs is the responsibility of the individual members of each regional working group, whilst the responsibility for preparing the first draft of the SAP by December 2005 lies with the Project Coordinating Unit (PCU).

#### ANALYSIS OF THE NATIONAL ACTION PLANS FOR WETLANDS

Building on the comparative analysis conducted in the fifth meeting of the RWG-W, the purpose of the present analysis of the contents of the NAPs is to identify inputs to the preparation of the Wetlands Sub-component of the regional SAP. An analytical framework was designed based on the discussion and agreement in the 5<sup>th</sup> meeting of RWG-W and “General Guidance Provided to all Regional Working Group Regarding the National Action Plans” of the RSTC (Annex 7 of the 5<sup>th</sup> meeting report of the RSTC). The content of each cell, in each table, has been extracted from each NAP, and the attached tables relate to the National Action Plans for Wetlands.

During the meeting, members of the RWG-W conducted a comparative analysis of selected important elements of the national action plans, with a view to providing inputs to the updating of the Regional Strategic Action Programme. The results of the analysis are included in Tables 1-4.

**Table 1 Threats to Wetlands Outlined in each the National Action Plans.**

Cambodia <sup>1</sup>	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<ul style="list-style-type: none"> <li>- Illegal Logging;</li> <li>- Mangrove Wetland Reclamation for Shrimp Farms;</li> <li>- Mangrove Wetland Reclamation for Salt Production;</li> <li>- Other Mangrove Destruction;</li> <li>- Illegal Fishing;</li> <li>- Charcoal Production;</li> <li>- Shrimp farming;</li> <li>- Salt Farming;</li> <li>- Pollution: Fertilizer and pesticides.</li> </ul>	<ul style="list-style-type: none"> <li>- Enclosing beaches for land reclamation to impact the sea-route and flood discharge, destroy the wetland plants, cause the sea coastal eroding and decrease the habitats (1);</li> <li>- Destruction outside the wetland reserve (2);</li> <li>- Pollution caused the water quality to deteriorate and negatively affected biodiversity (6);</li> <li>- There are some danger posed by introducing exotic species into wetlands (7);</li> </ul>	<ul style="list-style-type: none"> <li>- High bird poaching;</li> <li>- Sand mining;</li> <li>- Pollution;</li> <li>- Destructive fishing;</li> <li>- Illegal logging;</li> <li>- Land conversion;</li> <li>- Expansive settlement;</li> <li>- Industrial and port development;</li> <li>- Overexploitation;</li> <li>- Climate change.</li> </ul>		<ul style="list-style-type: none"> <li>- Conversion of wetlands agricultural purposes, fishponds, and human settlements;</li> <li>- Coastal development for tourism and shipping;</li> <li>- Cutting of mangroves for household use and charcoal production;</li> <li>- Open access fishery;</li> <li>- Unsustainable and destructive fishing practices (e.g. dynamite and cyanide);</li> <li>- Introduction of exotic species (invasive plant and animal species);</li> <li>- Erosion and siltation;</li> <li>- By-catch problem;</li> <li>- Water use conflict;</li> <li>- Wildlife poaching;</li> <li>- River bed quarrying;</li> <li>- Pollution from domestic waste and agricultural run-off.</li> </ul>	<ul style="list-style-type: none"> <li>- Loss of wetlands is generally a result from their conversion for development activities such as cultivation, housing and tourist business;</li> <li>- Loss of biodiversity, some species declined;</li> <li>- Use illegal and destructive fishing tools;</li> <li>- Introduction of invasive alien species;</li> <li>- Illegal hunting;</li> <li>- Eutrophication with rapid growth in vegetation and increase sedimentation from runoff;</li> <li>- Pollution problem with expansion of urban areas and tourism;</li> <li>- Logging, particularly in mangrove and swamp forests;</li> <li>- Forest fire;</li> <li>- Agricultural land use in adjacent areas has compounded the problem.</li> </ul>	<ul style="list-style-type: none"> <li>- Reclamation and sea encroachment;</li> <li>- Unplanned and uncontrolled aquaculture activities;</li> <li>- Over-exploitation of resources and unplanned coastal zone development;</li> <li>- Agricultural development and others cause the problems to wetlands,</li> <li>- Pollutants, toxic chemicals, wastes discharged from industries, mining municipal, and human activities;</li> <li>- The increase of environmental calamities.</li> </ul>	<ul style="list-style-type: none"> <li>- Pollution (nutrient, organic materials, domestic waste, shrimp farm wastes, agricultural run-off pesticides, oil, ballast water, fishing fleets, Industrial discharge heavy metals)</li> <li>- Loss due to coastal development</li> <li>- Unsustainable use</li> <li>- Exotic species</li> </ul>

<sup>1</sup> Action is analysed at activity level of the Cambodian NAP, and all activities are implemented by DNCP and MoE.

**Table 2 Goals, Time Frames, Total Costs and Key Executing Agencies for each of the National Action Plans for the Wetlands Sub-component.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Goals</b>							
-Protecting and maintaining wetland products, functions and their attributes systems by monitoring and protecting water quality and level, biodiversity; -Managing the human activities and their widely utilizing the wetland resources; -Ensuring that the benefits coming from the sustainable use of the wetland is widely used with equity and contribute to poverty reduction.	To adopt effective measures, regard prevention as principle, eliminate or alleviate the losing and degraded reasons of wetland, alleviate or control the degraded actuality of wetland, protect the wetland and biodiversity that have global important meaning, maintain the ecological character and basic function, promote the sustainable development, enhance the ability of integrating protection and development, through establishing the demonstration sites, find out the measures and approaches of coastal wetland conservation and utilization, establish the conservation model of coastal wetland, guarantee the sustainable utilization of coastal resources and environment.	- To raise awareness and understanding, capability, and actively participation of stakeholders in management and utilization of coastal wetlands, wisely and sustainably.  - To strengthen inter-sectoral and inter-regional coordination and international cooperation in management and utilization of coastal wetlands, wisely and sustainably  - To identify and develop appropriate science and technology including indigenous knowledge in management and utilization of coastal wetlands, wisely and sustainably.	A fundamental objective of the management approach or philosophy is that authorized loses of wetlands are offset by restored, enhanced, or created wetlands that replace those lost acres and functions and values???	"People and institutions working responsively and cooperatively for sustainable wetland (Vision)?	- Formulation of a plan on integrated management of important wetlands with participatory processes;  - Establishment of responsible agencies and community networks for wetland conservation;  - Study and Prioritization of wetlands in the Gulf of Thailand in accordance to their potential and conditions.	To promote the conservation, restoration, management and the wise use of Viet Nam's coastal wetland ecosystems toward sustainable development and ensuring that wetlands functions, values and biodiversity are maintained and improved to meet the requirements of socio-economic development as well as resource and environmental protection.	- Sustainable use - Conservation and restoration of wetlands - Integrated management (ecological, inter-sectoral, multi-stakeholder)
<b>Purposes of goal</b>							
Protection, management, sustainable development.	Sustainable development, protection, conservation	Sustainable use, management, capacity building	Restoration?	Cooperation, sustainable use	integrated management, conservation	Management, conservation, restoration	-
<b>Time Frames</b>							
5 years	2005-2020			2005-2010	2006-2010	2004-2010	
<b>Total Costs</b>							
US\$53,500	Yuan 171 million				Baht? 330.15 million		
<b>Key Executing Agencies</b>							
DNCP, MoE	SEPA, SFA, SOA, MST, PMEPA, PMFA	National Wetlands Committee		DENR, DA-BFAR, LGU	PCD, ONEP, WFT, BCS, Local agencies, DMCR, MoE, DEQP, educational institutes, LDD, NPWPCD, RFD, WI, DoF.	MNRE, MF, MAR, MT, GDT, local authorities	

**Table 3 Challenges for Wetlands Management Outlined in each of the National Action Plans.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<ul style="list-style-type: none"> <li>- Conflicts over land tenure;</li> <li>- Issuing licences by different departments;</li> <li>- In-migration of villagers caused to increase population;</li> <li>- Social and political context was too difficult.</li> </ul>	<ul style="list-style-type: none"> <li>- Emphasis is on resource exploitation, not conservation and rehabilitation (2);</li> <li>- Lack of integrated legislation on resource limits or integrated management of wetland resources. Overlapping wetland administration (3);</li> <li>- Lack of the special wetland cooperation institution (4).</li> <li>- Lack of the staff of wetland conservation and management and the financing (5).</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of comprehensive data;</li> <li>- Public awareness is weak;</li> <li>- Trans-boundary issues;</li> <li>- Rejection from community for pond extension;</li> <li>- Lack of technology.</li> </ul>	<ul style="list-style-type: none"> <li>- The lack of outcomes evaluation;</li> <li>- The range of people and organisations involved directly or peripherally in wetland areas in vast and complex;</li> <li>- The fragmented efforts locally and nationally currently lack unity.</li> </ul>	<ul style="list-style-type: none"> <li>- Uncoordinated institutional arrangements;</li> <li>- Low level of access to basic services (education, health, sanitation and potable water);</li> <li>- Lack of appropriate tenure instruments to ensure protection;</li> <li>- Instances of public apathy and "Makasari";</li> <li>- Poor access to agricultural support;</li> <li>- People living below poverty level;</li> <li>- High population growth due to immigration.</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of coordination between partners and stakeholders;</li> <li>- Lack of adequate knowledge for wetland management;</li> <li>- Lack in human resources and competent authorities.</li> </ul>	<ul style="list-style-type: none"> <li>- Rapid population growth;</li> <li>- Backward practice of wetland utilization, poverty;</li> <li>- Lack of knowledge about functions, values and wise use of wetlands;</li> <li>- Inadequacy of policy system and legislation on coastal wetlands;</li> <li>- Overlapped and irrational wetland management system;</li> <li>- Financial investment in wetland management and conservation does not match wetland's potential and values;</li> <li>- Integrated research and investigation on wetlands are inadequate;</li> <li>- Awareness of local communities and managers is still poor.</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of coordination and collaboration among stakeholders</li> <li>- Lack of long-term security to use resources and sense of ownership</li> <li>- Lack of appropriated legislation and regulations on Wetland protection</li> <li>- Limitation of financial and human resources</li> </ul>

**Table 4.1 Objectives and Activities for Component 1: Research and Monitoring.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
Objectives							
1. Develop and design the standardized methodology and guideline for inventory and assessment (4.2.1); 2. To conduct survey of the site ecology, fauna and flora (4.2.3); 3. Species distribution and environmental stratification Mapping (4.2.4); 4. To do research for the new innovative and optimal approaches for wetland management (4.2.5); 5. To establish a process for the storage and access of data related to wetland environments (4.7);	1. Inventory, valuation and monitoring of wetland (4); 2. Strengthen scientific research on wetlands (5); 3. Establishment of an information database and management system (6);	1. Establishment and Development of Modern Data Base (1);	1. Research and Cooperative networks (3.7); 2. National Wetland Database (3.8)		1. To develop systems for participatory monitoring and assessment of wetland management, with mechanisms for information dissemination (6);	As in Objective 4.4	<b>- to maintain and update regional Wetlands GIS database and meta-database</b>

Table 4.1 *cont.* Objectives and Activities for Component 1: Research and Monitoring.

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
Activities							
Sub-component 1: Resource Assessment							
<p>1. Develop and design the standardized methodology and guideline for inventory and assessment (4.2.1), (US\$500, Medium, year 3-5);</p> <p>2. Establish group in Cambodia to undertake studies and to develop management strategies (4.2.3), (US\$1,000, Year 2-5, high);</p> <p>3. Fish management policies should take into account not only the stocking of commercial species (4.2.5), (US\$500, year 2-5, high).</p>	<p>1. To conduct survey, monitoring and evaluation of the wetland resources including current status, monitor on land dynamic changes, water quality, wetland biodiversity, and microclimate, forecast the disaster etc. (7), (Yuan 4.5 million, SFA, SEPA, 2005-2015);</p> <p>2. To Strengthen scientific research on wetlands laying a scientific foundation for wetland conservation and wise use (9), (Yuan 6million, MST, SEPA, 2005-2015);</p>	<p>1. Conduct regular study about inventory method (1.1);</p> <p>2. Encourage participatory data collection (1.2);</p> <p>3. Continue and broad the study regarding function and benefit of wetlands (8.4);</p> <p>4. Study and disseminate information of rate flora and fauna (8.5);</p> <p>5. Conduct regular inventory regarding status and distribution of wetlands (9.1);</p> <p>6. Study about status and distribution of peat swamp (10.2);</p> <p>7. Develop researches related to climate change impact (10.3);</p>	<p>1. Enhance the national inventory on wetlands (3.1.1);</p> <p>2. Improve understanding and study of the biodiversity and ecological character (3.7.1);</p> <p>3. National Wetland Committee and other extend wetland survey (3.8.1);</p>	<p>1. Conduct resource inventory and profiling including population assessment and carrying capacity studies (1.1);</p> <p>2. Conduct assessment, profiling and monitoring of threatened species, particularly vulnerable species that may become endangered in the future (1.2);</p> <p>3. Conduct of researches for habitat management (2.6)</p>	<p>1. Promoting and supporting surveys, studies and researches on status and utilization of wetlands (4.1), (Baht?16.75 million, NPWPCD, RFD, DMCR, ONEP, DoF, BCS, 2006-2008);</p>	<p>1. Strengthening research work oriented priority direction to meet requirements of management, conservation and sustainable development of coastal wetland (5.3);</p>	<p>- Develop the guideline for the standardisation of techniques for wetlands resources assessment</p>
Sub-component 2: Mapping							
<p>1. Develop kinds of needed maps for wetland management (4.2.6), (US\$1,000, year 2-5, high);</p> <p>2. Mapping degraded and/important areas (4.3.4), (US\$1,000, high);</p> <p>3. Mapping the zone for community with consultant with local people (4.5.1), (US\$1,000, year 2-5, medium);</p> <p>4. Boundary demarcation (4.5.2), (US\$5,000, year 2-5, medium);</p>				<p>1. Initiate ecosystem mapping and data validation (2.3)</p>			<p>- develop the guideline on wetlands classification and mapping</p> <p>- conduct the regional wetland map of peat-swamps, non-peat swamp, tidal flats</p>

**Table 4.1 cont. Objectives and Activities for Component 1: Research and Monitoring.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 3: Socio-economic and cultural assessment</b>							
		1. Economic valuation study, benefit cost analysis (3.1); 2. Study and develop function, benefit and value of biodiversity (8.5); 3. Conduct inventory of wise use practices (10.2);	1. Survey stakeholders (3.1.1);		1. Supporting economic valuation of wetlands (4.4), (Baht? 25 million, ONEP, educational institutes, 2006-2010);		- Develop the regional guideline of social and cultural assessment in wetlands - conduct and update economic valuation data of wetlands
<b>Sub-component 4: Database management</b>							
1. Establish database and library (4.4.4), (US\$1,000, year 2-5, medium).	1. To establishment of an information database and management system and establish a share mechanism for the dissemination (10), (Yuan 7.5 million, MST, 2005-2020);	1. Continuing and widening database cooperation efforts (1.2); 2. Prioritise data collection (1.3)	1. Use NALIS 2. MNRE establishes a shared mitigation database (3.7.1.1); 3. Initiate a programme designed to generate data of bio-geographic regions (3.8.1);				
<b>Sub-component 5: Information system</b>							
1. Collect the existing data and information (4.3.16), (US\$500, year 2-5, high); 2. Establish a central meta data system (4.7.1), (US\$4,000, year 2-5, medium); 3. Financial support for maintenance and data updating (4.7.2), (year 2-5, medium);	1. To establish monitoring network of wetland resources in SCS and establish a share mechanism for the dissemination of data and adopt advanced technology and methodology for monitoring indicators (8), (Yuan 45 million, SFA, SEPA, SOA, 2005-2020).	1. Developing clearing house mechanism, website, and meta data (1.2); 2. Obtain data from other sources (1.2)	1. Develop a single national recording system, or connect multiple systems to make all information easily manageable and attainable (3.1.1); 2. Consolidate information from different organisations (3.1.1);	1. Establishment of website and information data base (3.6);	1. Gathering ecological and natural resources information of important wetlands in each category (4.2), (Baht? 5 million, ONEP, 2006-2008);	1. Improving the background investigation, monitoring and database on Viet Nam coastal wetland (5.2)	
<b>Sub-component 6: Decision support system</b>							
		1. Review and distribute coastal wetland inventory guideline (1.1); 2. Encourage decision makers to use data (1.3);	1. Compile case studies by state and programme outcomes (3.1.1); 2. Take necessary action to secure the long-term conservation (3.7.1.1); 3. Take effective steps to accelerate the research, development and marketing;				- Develop and provide information and best practice for the decision makers

**Table 4.1 cont. Objectives and Activities for Component 1: Research and Monitoring.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 7: Environmental Impact Assessment</b>							
				1. Identification of indicator species or "bio-indicators" for monitoring wetland health and biodiversity, including changes in the ecological functioning of wetlands, and success of management measures (2.8);			
<b>Priority</b>							
High							
<b>Time Frame</b>							
Year 2-5	2005-2020				2006-2010		
<b>Cost</b>							
US\$15,500	Yuan 63 million				Baht? 46.75 million		
<b>Executing Agencies</b>							
DNCP, MoE	SFA, SEPA, MST, SOA				NPWPCD, RFD, DMCR, ONEP, DoF, BCS, educational institutes		

**Table 4.2 Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Objectives</b>							
1. Policy & legislation analysis for wetland management (4.1); 2. Institutional analysis (4.2); 3. To provide Institution, Policy and Legislation recommendation for management (4.3); 4. Strengthen the cooperation and coordination (4.4); 5. To identify and analysis the stakeholder in each site (Obj.4.2.2).	1. Establishment of a mechanism for management and coordination regarding wetland conservation and wise use (2); 2. Formulation and improvement of wetland conservation legislation (3); 3. Mobilization of pubic participation (8).	1. Developing policy, Law and its enforcement (3); 2. Improve International Cooperation and network (6);	1. Short-term evaluation of wetland action or programmes (3.1); 2. Long-term evaluation (outcomes-based evaluation) (3.2); 3. Increase collaboration, communication and cooperation (3.3); 4. Influence at the Decision-making level (3.4); 5. Formulation of wetland policy (3.5)	1. Strengthening institutional partnerships in the management and protection of wetlands (S3);	1. To revise, assess and re-prioritize different types of wetlands in the Gulf of Thailand, in order to obtain baseline information for administering wetland management (4)	1. To strengthen regional and international cooperation in conservation and sustainable development of coastal wetland (7); 2. To establish the policies, institution framework, mechanisms on cooperative management and conservation systems of coastal wetland at all relevant levels, sectors and fields (1);	- Strengthen regional cooperation - to update and analyse the policy and regulations on wetland management in participating countries

**Table 4.2 cont. Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Activities</b>							
<b>Sub-component 1: Integration of research programmes with management and policy making</b>							
1. Identify mechanism and opportunities for decision-making mechanism (4.1.4), (US\$500, year 2, medium).		1. Ensure application of economic valuation and others in management plan (3.3); 2. Distributing knowledge regarding coastal wetlands for development of policy (5.2); 3. Develop science and technology which are considered on indigenous wisdom (8.2); 4. Develop and disseminate information to all decision makers (10.3)	1. Develop effective national management guidelines for wetland based on the research (3.7.1.1); 2. MNRE analyses existing research to determine the effectiveness of using biological indicators and functional assessment for evaluating mitigation performance (3.7.1.1);		<b>1. Formulation of management plans for wetlands of different significant in order to enable effective conservation and wise use (1.1), (Baht? 25 million, LDD, ONEP, DMCR, 2006-2010);</b>		- develop priorities concern for research in the region - develop transboundary research to support the information for policy making - conduct guideline and compile for promotion - develop effective management wetland based on the research
<b>Sub-component 2: Monitoring the NAPs</b>							
			1. Develop an accepted long-term evaluation protocol (3.2.1);	1. Establish monitoring, evaluation and feedback system to improve performance and accountability of projects implemented (3.4);			- reporting on NAPs implementation at regional level - monitoring of the SAP

**Table 4.2 cont. Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 3: Review and improve existing laws and policies</b>							
1. Collect existing document related to policy, legal and plan (4.1.1.1), (US\$5,000, year 2, Medium); 2. Review the documents (4.1.1.2), (US\$3,000, Year 2, medium); 3. Analysis the strong and weakness (4.1.1.3), (US\$2,000, year 2, medium); 4. Establish roles and responsibilities of the various ministries and departments (4.1.2), (US\$500, Year 2, medium); 5. Review and carry out legislation (4.1.6), (year 2-5, medium); 6. Develop policy of each ministry and department (4.1.8), (US\$1,000, year 2-5, high); 7. Revise the strategy after implementation (4.3.24), (US\$500, year1-5, medium); 8. Incorporate environmental management in all tourism plans (4.4.6), (year 2-5, high).	1. To formulate a specific law and regulations with respect to SCS wetland conservation and sustainable use that provides guiding principles and codes of practice for wetland utilization and development (5), (Yuan 0.5 million, SFA, SEPA, 2005-2007);	1. Review available environmental standard (3.1); 2. Develop strategy for climate change mitigation (10.4)	1. Reconsider to evaluate the draft policy (3.5.1); 2. Review the present framework of national polices and regulations (3.5.1);	1. Development of anchorage and reef use policy (2.7); 2. Develop a National Wetlands Policy that will rationalize laws and policies on access to wetland resources, management jurisdictions and enforcement (3.2);	1. Conducting feasibility studies on possible revision of existing laws and regulation related to wetland management plans (4.3), (Baht? 5 million, ONEP, educational institutes, 2006-2008);	1. Establishing and reformulating organizational structures and enhancing the efficiency for management system of coastal wetland (1.1); 2. Consolidating, enhancing the efficiency of policies and legislation system related to coastal wetland (1.2); 3. Planning for sustainable development of coastal wetland areas (2.1);	- review and update the existing framework of wetland policy and regulation in the region - develop regional concern for the policy consideration
<b>Sub-component 4: Integration of government agencies</b>							
1. Establish the roles and responsibilities of the various Ministries and Departments (4.1.5), (US\$1,000, Year 2-5, High).	1. To set up a SCS wetland conservation leadership group and an effective co-operation and co-ordination mechanism among relevant governmental agencies to establish the strategic regulation and criteria (3) (Yuan 5 million, SFA, 2005-2010);	1. National committee actively coordinating and harmonizing policy (3.4); 2. National committee develops and distributes information and guidelines (3.4); 3. Strengthen function of National Wetlands Committee (4.2);	1. Continue efforts such as the National Wetland Committee (3.1.1); 2. Develop a system to facilitate ongoing communications (3.1.1); 3. Pursue the action based on the cross-sectional policies (3.4.1) 4. Integrate management basis (3.4.1)				- strengthening the cooperation of regional wetland committee - develop special body for wetland management and utilization in the region (SCS)

**Table 4.2 cont. Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 5: Stakeholder analysis and involvement</b>							
1. Identify coordination and decision-making process to undertake review government agencies (4.1.3), (US\$500, Year 2, medium); 2. Identify and analysis the stakeholder (4.2.2), (US\$500, year 2, medium); 3. Define goals and objectives of each site (4.3.14), (year 1-5, high); 4. Conduct local workshop to review the goals & objectives (4.3.15), (US\$1,000, year 1-5, high).	1. To organize the public to participate the activities of wetland conservation and management (13), (Yuan 0.5 million, PMEPA, 2005-2010);	1. Regular study through public consultation (3.1); 2. Conduct inventory of all stakeholders (6.3); 3. Increase private sector involvement and participation (7.2); 4. Assure involvement of conservation aspect in all sectoral agency activities (8.2);	1. Identify individuals, organisations, agencies (3.3.1)	1. Harmonize and consolidate stakeholders efforts relative to wetland management and enhance public-private sector partnership and close coordination and collaboration with concerned agencies/entities (3.3)		1. Enhancing roles of stakeholders, individual in establishing and broadening of wise use models of coastal wetland (2.3);	- develop the guideline of criteria on stakeholders involvement
<b>Sub-component 6: Community empowerment</b>							
		1. Continuing and broadening community empowerment activity (2.1); 2. Strengthen and empower local community institutions (2.2); 3. National Wetlands Committee communicates with local stakeholders (6.3)					-

Table 4.2 *cont.* Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 7: Strengthening traditional value and management system</b>							
		1. Recognise indigenous knowledge and policy (3.1);		1. Recognize the IP traditional culture and rights and harmonize IPRA and wetland policies (2.5);	1. Promoting traditional management, conservation and rehabilitation of freshwater wetland ecosystems of local communities (1.2), (Baht? 61.2 million, NPWPCD, RFD, Local authorities, 2006-2010); 2. Promoting traditional management, conservation and rehabilitation of coastal wetland ecosystems of local communities (1.3) (Baht? 30 million, Local agencies, 2006-2008);		- compile and analyse traditional value and their possibility to use in the region
<b>Sub-component 8: Establish an incentive system for good governance</b>							
			1. Provide incentives for effective collaboration (3.1.1);				- develop incentive mechanism to recognize outstanding accomplishment of sustainable wetland use
<b>Sub-component 9: Linkage to regional and international obligations</b>							
		1. Coordinate with other focal points of international conventions (6.1); 2. Issue information and guidelines pertaining cooperation and harmonization within international conventions (6.1)			1. Promoting national profile on wetland conservation in global forum (5.2), (Baht? 6 million, ONEP, Wetland International, educational institutes, 2009);	1. Fully implementing international commitments related to coastal wetland adopted by Viet Nam government (7.2);	

**Table 4.2 cont. Objectives and Activities for Component 2: National Policy, Legal and Institutional Arrangement and Co-ordination.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 10: International and regional cooperation</b>							
		1. Continue establish international cooperation efforts (6.2); 2. National Wetlands Committee in cooperation with other parties (6.2).	1. Strengthen international cooperation and information exchange (3.7.1);		1. Promoting cooperation with international organizations (5.1), (Baht? 3 million, NPWPCD, DMCR, BCS, WI, 2006-2008);	1. Broadening and improving regional and international cooperation for coastal wetland conservation and sustainable development (7.1);	- strengthen international and regional information exchange in the region - join effort for financing activities from international donors
<b>Priority</b>							
Medium							
<b>Time Frame</b>							
Year 1-5	2005-2010				2006-2010		
<b>Cost</b>							
US\$15,500	Yuan 6 million				Baht? 130.2 million		
<b>Executing Agencies</b>							
DNCP, MoE	SEAPA, SFA, PMEPA				BCS, LDD, ONEP, DMCR, ONEP, NPWPCD, RFD, Local agencies, WI, educational institutes		

**Table 4.3 Objectives and Activities for Component 3: Public awareness, Communication and Education.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Objectives</b>							
1. To produce poster, brochure and guidebooks for the site management (4.4.1); 2. To use multimedia to promote understanding and involvement (4.4.2) 3. Integrate the concept of wetland management and important to the schools (4.4.3); 4. Conduct study tours & sightseeing (4.4.4); 5. Provide training to public services (4.4.5); 6. To provide community awareness of wetlands (4.6.2); 7. To do communication and information (4.6.3).	1. Public awareness raising, education and personnel training (7);	1. Encourage public participation (2); 2. Education and Public Awareness (5);	1. National Wetland Monitoring and Awareness Programme (3.9)		1. To develop programs to strengthen knowledge and understanding of central and local administration as well as communities on conservation and wise use of wetlands (1)	1. To enhance community awareness, individual, enterprises, managers and decision-makers on coastal wetland (6);	- To develop programs to strengthen knowledge and public awareness on wise use of wetland management in the region - Develop tools for Communication, education, and public awareness

**Table 4.3 cont. Objectives and Activities for Component 3: Public awareness, Communication and Education.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
Activities							
Sub-component 1: Improve government services							
1. Develop a programme to increase awareness within government (4.6.1), (US\$1,000, year 2-5, medium); 2. Develop the programs on public awareness (US\$1,000, year 2, high); 3. Work with media for awareness and information exchange (4.4.3), (US\$500, year 2-5, high); 4. Use the established religious group such as monks, teachers (US\$500, year 2-5, medium); 5. Development of wetland related tourism activities be included awareness (4.4.8), (year 3-5, medium).		1. Continuing and broadening effort (2.1); 2. Continuing and broadening efforts (5.1); 3. Introduce World Wetland Day (5.1); 4. Improve cooperation with education practitioners (5.1); 5. Improve understanding of stakeholders (8.4)	1. A review of existing wetlands ecosystem understanding (3.9.1);	1. Publicize information concerning wetland values, protection, rehabilitation, policies and regulations and encourage involvement by individuals, groups, corporations and industries (3.1);	1. Campaigning for better awareness and wider understanding of values and importance of wetlands and necessity of their sustainable use (2.1), (Baht? 5 million, ONEP& local agencies, 2006-2010);	1. Capacity building for networks of dissemination and awareness raising (6.2);	
Sub-component 2: Development, improvement, and dissemination of awareness materials							
1. Develop a programme to increase awareness of wetlands and the benefits (4.6.2), (US\$1,000, year 2-5, medium); 2. Develop a nation awareness programmes (4.6.3), (US\$1,000, year 2-5, medium); 3. Integrate basic wetland ecology into school curricula (4.6.5), (US\$1,000, year 2-5, medium); 4. Develop training programmes for NGO working in rural areas and local agencies (4.6.6), (US\$1,000, Year 2-5, medium); 5. Develop poster, brochure & guidebooks (4.4.1), (US\$1,000, year 2, high); 6. Magazine with the picture for local people (4.4.2), (US\$1,000, year 2-5, medium).	1. To undertake a large-scale public awareness campaign on wetland conservation and resources protection by using various means to raise the level of public perception of wetland importance (11), (Yuan 0.5 million, PMEPA, SOA, SFA, 2005-2010);	1. Regularly publish and distribute status and economic value of coastal wetlands (1.3); 2. Distribute information materials of national policy (3.2); 3. Distribute NSAP, information, guidelines to stakeholders (6.3); 4. Disseminate the result of analysis of coastal wetland value and function (8.2); 5. Disseminate information regarding original flora and fauna (8.5); 5. Raise awareness and improve effort on man made wetland restoration (9.1); 6. Disseminate information about cause and impact of climate change (10.4).	1. Establish a series of specific, wetland-related education and interpretation studies (3.9.1); 2. Links to existing programmes and curricula (3.9.1); 3. Develop educational and exhibition proposals (3.9.1).		1. Develop curriculum on wetland management (3.3), (Baht? 70 million, MoE, related Agencies, 2006-2008);	1. Designing and applying programs for comprehensive awareness raising on coastal wetland (6.1);	- Develop a plan of educational and public awareness including advocacy in the region. - Translate all tools into national language

**Table 4.3 cont. Objectives and Activities for Component 3: Public awareness, Communication and Education.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Priority</b>							
Medium							
<b>Time Frame</b>							
Year 2-5	2005-2010				2006-2010		
<b>Cost</b>							
US\$ 9,500	Yuan 0.5 million				Baht? 75 million		
<b>Executing Agencies</b>							
DNCP, MoE	SEAPA, SFA, PMEPA				ONEP, local agencies, MoE		

**Table 4.4 Objectives and Activities for Component 4: Capacity Building and Sustainability.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Objectives</b>							
1. Patrolling and protection against the illegal activities (4.3.5); 2. To monitor and evaluate the site (4.3.4); 3. To provide awareness and build government agencies (4.6.1); 4. To strengthen Institutional Capacity Building (4.6.4); 5. To organise formal education (4.6.5); 6. To develop non-governmental organisations (4.6.6).	As objective 4.3.	1. Institutional strengthening (4); 2. Financial aspect of coastal wetlands management (7)			1. To develop and promote establishment of wetland information centre in pilot area to demonstrate, provide training on, and exchange knowledge on wetland management to relevant personnel for further adoption in the field (4) 2. To support establishment of responsible agencies and community networks for wetland conservation and utilization (3).	1. To build capacity for scientific research, inventory, integrated investigation of coastal wetland as well as set up the database to meet requirements for conservation, protection, wise use and sustainable development of coastal wetland (5);	-Assess the training needs for the region -Develop training center for wetlands.
<b>Activities</b>							
<b>Sub-component 1: Human resource development</b>							
1. Field visits at each site (4.3.17), (US\$500, year 2-5, medium)	1. To build the capacity of governmental, non-governmental organizations and communities in the field of wetland conservation and wise use (4); (Yuan 0.8, PMEPA, 2005-2008);	1. Study the effectiveness of wetlands focal point (4.1); 2. Study on the effectiveness of coordination mechanism (4.1);				1. Capacity building for institutions related to conservation and management of coastal wetland (1.3); 2. Capacity building for Viet Nam research institution on coastal wetland (5.1);	Capacity building for institutions related to conservation and management of coastal wetland such as internship and expert exchange.

Table 4.4 *cont.* Objectives and Activities for Component 4: Capacity Building and Sustainability.

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 2: Immediate training activities</b>							
1. Organize training programmes for relevant government ministries and local authorities (4.6.4), (US\$1,000, year 2-5, medium); 2. Develop training programmes for the publish working in rural areas and advertising local agencies (4.4.10), (US\$1,000, year 2-5, medium).	1. To strengthen training of enforcement teams, and conduct research into enforcement skills and means (6), (Yuan 0.3 million, SFA, SEPA, 2006-2009); 2. To conduct personnel training. Train manger and researchers through various channels. University and research institutes may develop courses related to practical wetland conservation (12), (Yuan 0.4 million, PMFA, 2006-2009)	1. Conduct regular training regarding policy and legislation (3.2); 2. Assess needs and tools for training (5.2); 3. Continuing and broadening training efforts (5.2);		1. Training and capacity building of local communities on natural resources management, appropriate agricultural practices (4.2);	1. Organizing training courses, meetings and seminars on wetland conservation and relations related to wetlands (3.2), (Baht? 7.2 million, DEQP, WFT, BCS, Local agencies, 2006-2008);		Develop training programmes as needed in the region
<b>Sub-component 3: Law enforcement</b>							
1. Establish a licensing system for the harvesting of all wetland species, enforce sustainable harvesting practice (US\$500, year 2-5, medium).		1. Improve capability of law enforcement (3.3)		1. Strengthen law enforcement and prosecution (2.4)			
<b>Sub-component 4: Monitoring, Controlling and Surveillance</b>							
1. Establish and implement patrolling system (4.3.25), (US\$1,000, year 2-5, high).							
<b>Sub-component 5: Financial sustainability</b>							
		1. Ensure coastal wetland management issues is stated in national and local development projects (7.1); 2. Ensure coastal wetlands management based on NSAP stated in government budget (7.1); 3. Improve understanding of stakeholders about funding opportunity (7.2); 4. Develop mechanism for cost sharing (7.3); 5. Develop "crossed subsidy" between benefit from environmental services (7.3);	1. Instil projections on economic contribution, social need and eradication of poverty level (3.5.1);	1. Identify provisions of basic services (e.g. Municipal/ Barangay water system project) and establish micro-financing support for community-based enterprises (4.7).			-Identify financing constraints in the region. -Strengthen the cooperation with multi- donors.

Table 4.4 *cont.* Objectives and Activities for Component 4: Capacity Building and Sustainability.

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 6: Infrastructure development</b>							
1. Establish the wildlife rescue centre for each site (4.3.12), (US\$3,000, year 3-5, medium);		1. Establish and develop information and education centre (5.2);			1. Establishing natural study centres and providing non-formal education at importance wetland sites (2.2), (Baht? 29 million, DMCR, Local agencies, 2006-2010);		Establish the linkage of wetland centers in the region
<b>Sub-component 7: Institutional building and strengthening</b>							
1. Strengthening the government's responsibilities (4.1.7), (US\$500, year 2-5, medium).			1. Communicate to across ministries and state governments (3.4.1)				- Establish network of wetland committee in the region.
<b>Sub-component 8: Network establishment and strengthening</b>							
		1. Developing relationship mechanism between National Wetlands Committee and committees (4.2); 2. Disseminate research results and carbon pilot projects to other region (9.2);	1. Set aside funds to diverse partnerships (3.3.1);		1. Promoting creation of networks for exchanging knowledge, news and information between public agencies and communities and between communities themselves (3.1), (Baht? 17 million, ONEP, DMCR, DEQP, local agencies, 2006-2010); 2. Promoting establishment of networks on wetland researches (4.5), (Baht? 10 million, ONEP, educational institutes, 2006-2010);		
<b>Priority</b>							
Medium							
<b>Time Frame</b>							
Year 2-5	2005-2009				2006-2010		
<b>Cost</b>							
US\$ 7,500	Yuan 1.5 million				Baht? 63.2 million		
<b>Executing Agencies</b>							
DNCP, MoE	PMEPA, SEPA, PMFA, SFA				WFT, BCS, Local agencies, DMCR, Local agencies, ONEP, DEQP, educational institutes		

**Table 4.5 Objectives and Activities for Component 5: Resource and Habitat Management.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Objectives</b>							
1. To identify and define the degraded areas or/and the important areas (Obj.4.3.1); 2. To do restoration activities (Obj.4.3.2); 3. Design zone for community development area (Obj.4.5.1); 4. Provide the community development approaches (Obj.4.5.1); 5. To develop management plan (4.3.3); 6. To build partners with different organizations for community development supports (4.5.1).	1. To establish wetland natural reserve to protect some important wetland and their biodiversity (1);	1. The wise use (8); 2. Restoration and rehabilitation (9); 3. Climate change control (10)	1. Development of guidelines (3.6);	1. Conservation of Wetland biodiversity by maintaining species diversity (S1). 2. Maintain and improve the quality of existing wetland habitats and ecosystems and degraded habitats (S2); 3. Improve well being of the local communities in and around wetlands (S4);	1. To promote public participation in planning for preservation, conservation and sustainable utilization of wetlands (2);	1. To establish and widely implement models for wise use and sustainable development of coastal wetland in selected ecosystems (2); 2. To harmoniously integrate socio-economic development programs, poverty-alleviation, environmental and natural resources protection campaigns in coastal wetland areas (3); 3. To guarantee to conserve coastal wetland areas with international, regional importance and restore key degraded coastal wetland (4);	- set up and update the management plan for typical wetland habitat and create the linkage among them
<b>Activities</b>							
<b>Sub-component 1: Develop guidelines for sustainable use</b>							
1. Develop the new innovative and optimal approaches for wetland management (US\$1,000, year 3-5, high); 2. Develop strategy and method to restore their ecosystem (4.3.5), (US\$500, year 2-5); 3. Draft management plan (4.3.18) (year 2-5, high), 4. Conduct workshop on management plan (4.3.19), (US\$1,000, year 2-5, high); 5. Adopt the management plan (4.3.20), (year 3-5, high).		1. Develop advocating efforts to support wise use (3.3); 2. Identify priority activity for coastal wetland management (7.2); 3. Continue and broad previous coastal wetlands management activities (8.2); 4. Continue and broad coverage of rewards programme for party whose successfully developing "Zero pollution" (8.3); 5. Develop guidelines in avoiding, control and eliminating the presence of invasive alien species (8.5); 6. Develop priority list of critical coastal wetlands (9.1); 7. Develop guidelines related to fire prevention (9.1); 8. Develop and distribute guidelines for carbon measurement (10.2);	1. Promote the sustainability of wetlands functions and values (3.5.1.1); 2. Formulate guidelines for development and management of wetland areas (3.6); 3. Establishment of priorities for sustainable development, conservation, management and wise use (3.7.1); 4. DOE with states and local governments develop the performance standard guidance on monitoring and adaptive management (3.7.1.1)	1. Develop management techniques for the maintenance, recovery and if necessary reintroduction of rare and threatened species (1.3); 2. Identify, access, delineate and monitor threatened habitats (2.1); 3. Provision of appropriate tenure instruments (4.3);		1. Setting up measures combined with socio-economic development programs, poverty-alleviation, environmental and natural resources protection campaigns in coastal wetland areas (3.1);	- compile all guidelines from member countries and select for translation to be distributed to the members

**Table 4.5 cont. Objectives and Activities for Component 5: Resource and Habitat Management.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 2: Strengthen management components</b>							
<p>1. Characterize all Wetlands sites and prioritize it (4.3.1), (US\$500, year 3-5, high);</p> <p>2. Thinning and pruning of the natural space for natural regeneration of the forest (4.3.8), (year 2-5, medium);</p> <p>3. Maintain the planted forest and natural forest (4.3.11), (year 2-5, medium);</p> <p>4. Prepare annual report on policies, activities, and plans (4.3.21), (US\$500, year1-5, high);</p> <p>5. Measure to encourage NGO participation (4.3.22), (US\$500, year2, high);</p> <p>6. Report the indicators identified (4.3.23), (year 1-5, high).</p>		<p>1. Rearranging structure and internal duty mechanism (4.2);</p> <p>2. Improve implementation of one river basin, one plan, one integrated management (8.2);</p> <p>3. Ensure application of precautionary principles (8.2),</p>	<p>1. Facilitating wetlands commitments made by Malaysia (3.5.1.1);</p> <p>2. MNRE facilitate wetlands sustainability, wise use of resources, management and conservation measures (3.7.1)</p>				
<b>Sub-component 3: Establish/enhance habitat system</b>							
<p>1. Develop action plan for the restoration (4.3.6), (US\$500, year 1-5, high);</p> <p>2. Conduct local workshop for the restoration (4.3.7), (US\$1,000, year 1-5, medium);</p> <p>3. Establish tree nursery for each site with identified species (4.3.9), (US\$500, year 2-5, medium);</p> <p>4. Plant trees from the nursery (4.3.10), (US\$500, year 2-5, medium);</p> <p>5. Delivery the rescued animal into habitats (4.3.13), (year 3-5, medium).</p>		<p>1. Increase in situ population of endangered flora and fauna (8.5);</p> <p>2. Conduct restoration and rehabilitation (9.1);</p> <p>3. Develop pilot projects for rehabilitation and conservation (9.2);</p>		<p>1. Establish nurseries, breeding and rescue centres (1.4);</p>		<p>1. Identifying coastal wetlands according to their importance and levels of endangerment to serve the management, conservation and restoration (4.1);</p>	

**Table 4.5 cont. Objectives and Activities for Component 5: Resource and Habitat Management.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 4: Community-based management</b>							
1. Develop community status (4.5.3), (US\$1,000, year 2-5, medium); 2. Develop approaches for people involvement (4.5.4), (US\$500, year 2, medium); 3. Give the right to local people in making planning and development (4.5.5), (US\$1,000, year 3, medium); 4. Support technical advise for development of their areas (4.5.6), (US\$500, year 3, medium).		1. Continuing and broadening community-based management (2.2); 2. Ensure all decision made had been fully accommodating community aspiration (2.2); 3. Develop and encourage community to apply user and polluter pay principles (7.3);		1. Enhance community-based resource and management programs and ensure women and youth's representation and participation (4.5)	1. Participatory monitoring and inspection of wetland utilization (1.4), (Baht? 15 million, PCD, ONEP, 2006-2010);		
<b>Sub-component 5: Sustainable use of coastal systems</b>							
		1. Stop any effort to convert coastal wetlands (8.1); 2. Develop effective mechanism an institution for coastal fire prevention (10.4).		1. Inclusion of settlement zone in the Municipal land and water use plan (CLWUP) (4.4); 2. Implement waste management (4.5);			
<b>Sub-component 6: Environmentally friendly technologies</b>							
		1. Develop technology to improve capacity in climate change mitigation and adaptation (10.1); 2. Study and develop technology in peat swamp management (10.2);					

**Table 4.5 cont. Objectives and Activities for Component 5: Resource and Habitat Management.**

Cambodia	China	Indonesia	Malaysia	Philippines	Thailand	Viet Nam	Region
<b>Sub-component 7: Types of management regimes, development of models</b>							
1. Establish a national program to identify and develop the potential opportunities for ecotourism and cultural tourism (4.4.7), (US\$500, year 3-5, medium); 2. Development of wetland related tourism activities designed to include and meet the needs of awareness (4.4.4), (US\$500, year 2-5, high); 3. Promote ecotourism to increase awareness (4.4.9), (US\$1,000, year 3-5, high).		1. Develop demonstration site (8.3); 2. Develop assisting programme for public activities that possibly exploit and pollute water resources (8.3); 3. Study on demonstration site and dissemination (9.1); 4. Disseminating information about concept in carbon trade and other mechanisms (9.2); 5. Implement pilot project, research result (10.2).				1. Establishing models for wise use of coastal wetland areas (2.2); 2. Implementing and broadening models for wise use of coastal wetland (2.3)	
<b>Sub-component 8: Alternative livelihood</b>							
				1. Identification of environment-friendly alternative livelihood and develop viable environment-friendly community enterprises (4.1);		1. Promoting sustainable development of live-hood though poverty-alleviation movement (3.2);	
<b>Sub-component 9: Establishment of management zones</b>							
1. Working on the highest prioritized sites, stakeholder meetings for define the important areas (4.3.2), (US\$500, year 2-5, medium); 2. Identify degraded and/or important areas (4.3.3), (US\$1,000, year 2-5, high).	1. Establishing 5 state level natural reserves (1.1), (Yuan 40 million, SEPA, 2005-2010); 2. Establish 15 provincial natural reserves (2) (Yuan 60 million, SEPA, 2005-2010);	1. Develop and promote area of which have important value and function to be conserved (8.1); 2. Review and stipulate protected status of coastal wetlands (8.1)		1. Establish wetland protected areas and draft integrated wetland resources management plan (2.2); 2. Delineation of municipal waters and management zones (2.5)		1. Developing conservation zones and restoring degraded coastal wetland (4.2);	
<b>Priority</b>							
High							
<b>Time Frame</b>							
Year 1-5	2005-2010				2006-2010		
<b>Cost</b>							
US\$ 13,000	Yuan 100 million				Baht? 15 million		
<b>Executing Agencies</b>							
DNCP, MoE	SEAPA				PCD, ONEP		

**Abbreviation**

<b>Cambodia</b>	<b>China</b>	<b>Malaysia</b>	<b>Philippines</b>	<b>Thailand</b>	<b>Viet Nam</b>
DNCP: Department of Nature Conservation and Protection of MoE MoE: Ministry of Environment	SEPA: State of Environmental Administration of China SFA: State Forestry Administration of China SOA: State of Oceanic Administration MST: Ministry of Science and Technology PMEPA: Provincial and Municipal Environmental Protection Administration PMFA: Provincial and Municipal Forestry Administration	MNRE: Ministry of Natural Resources and the Environment NALIS: National Landscape Information System DOE: Department of Environment	DA-BFAR: Department of Agriculture-Bureau of Fisheries and Aquatic Resources DENR: Department of Environment and Natural Resources LGU: Local Government Unit	BCS=Bird Conservation Society DEQP = Department of Environmental Quality Promotion DMCR = Department of Marine and Coastal Resources DOF = Department of Fisheries LDD=Land Development Department MOE: Ministry of Education <b>NPWPCD = National Park, Wildlife and Plants Conservation Department</b> ONEP = Office of Natural Resources and Environmental Policy and Planning PCD=Pollution Control Department RFD= Royal Forest Department WFT= Wildlife Fund Thailand WI: Wetland International	MF: Ministry of Fisheries MNRE: Ministry of Natural Resources and Environment MT: Ministry of Tourism GDT: General Department of Tourism MAR: Ministry of Agriculture and Rural Development

## **ANNEX 5**

### **Cluster Analysis for Wetland Sites Based on Revised and Amended Data**

#### **BACKGROUND**

The Regional Scientific and Technical Committee (RSTC) decided in its second meeting, Nha Trang, Viet Nam, 11-13 December 2002, to adopt a three-step procedure to establish the priority portfolio for wetlands sites bordering the South China Sea. Following that decision, the Regional Working Group on Wetlands (RWG-W) collected and consolidated data and information based on the agreed criteria, conducted a regional cluster analysis, and ranked the sites with assigned scores.

The final cluster analysis and ranking of the sites were submitted for consideration by the fourth RSTC meeting in Pattaya, Thailand, 15-17 February 2004. The RSTC noted that some of the concerns of members of the RSTC were not addressed by the RWG-W. It was pointed out by the RSTC that some of the data and information for the wetlands sites included in the cluster analysis were not accurate, and should be re-examined and checked for a final round of cluster analysis and site ranking.

- 7.5 The meeting agreed to examine the results of the habitat sub-component one by one. The discussions on each sub-component were as follows:
- With regard to the wetland sub-component, the meeting realised that there were still some remaining problems of data quality and that therefore less reliance could be placed on the outcome of the cluster and ranking procedures than was the case for the other groups.

The fifth meeting of the RWG-W, Ha Long city, Viet Nam, 5-8 October 2004, agreed that data and information should be re-examined and checked by the members of the RWG-W. Revised data and information were submitted to the PCU during the inter-session period between the fifth and sixth meetings of the RWG-W. Based on the revised data and information, a second round cluster analysis was undertaken during the sixth meeting of the RWG-W.

#### **REGIONAL CLUSTER ANALYSIS BASED ON REVISED AND AMENDED DATA**

During the sixth meeting of the RWG-W, the wetland sites were divided into four groups based on the types of wetlands agreed by the RWG-W as the focus of the wetlands component under the framework of the UNEP/GEF South China Sea Project. The data for estuaries, tidal flats, and lagoons are included in Tables 1-3, respectively. Table 4 contains data for swamps, including both non-peat swamps and peat swamps.

For the data on estuaries, the meeting noted that some sites contained anomalous numbers of fish species, and the Chinese wetlands included some extremely high values for site-specific endemic species. It was also noted by some members of the RWG-W that the number of fish species in a wetland site was difficult to verify. Therefore, for the estuary data set, three preliminary cluster analyses were run, as shown in Figure 1-3, which included cluster analyses on the revised data set, and on the data set with Pearl River data removed, and on both the Pearl River data and number of fish species removed.

For the data set of tidal flats, the three China sites (Dan zhou lingao, Hepu, and Shantou) contain abnormally high numbers of endemic species. A cluster analysis was conducted based on the revised data of Table 2, and another analysis on data with the endemic species data removed from the data set. The resulting cluster analyses are shown in Figure 4 and 5.

Figure 6 and 7 shows the cluster analyses on lagoons and swamps.

#### **REMAINING PROBLEMS AND FUTURE ACTIONS**

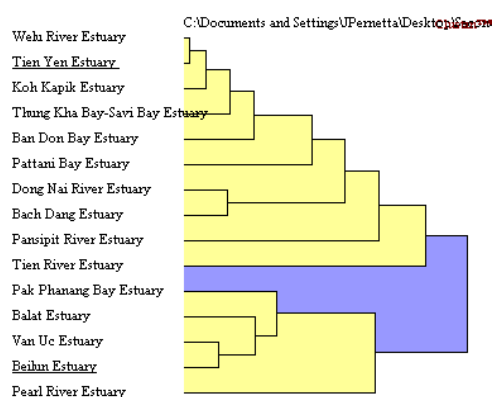
From various cluster analyses, it is obvious that Chinese sites contain some extremely high values for site-specific endemic species, resulting in their being outliers. The values should be supported by complete lists of species for each site. China's wetlands focal point, Professor Chen Guizhu, agreed provide these, upon return to China.

Upon receiving the supporting materials for the data submitted, the PCU will review the data set again, and undertake a final analysis. The RWG-W will collectively review the results during the second Regional Scientific Conference in Bangkok, 14-16 November 2005.

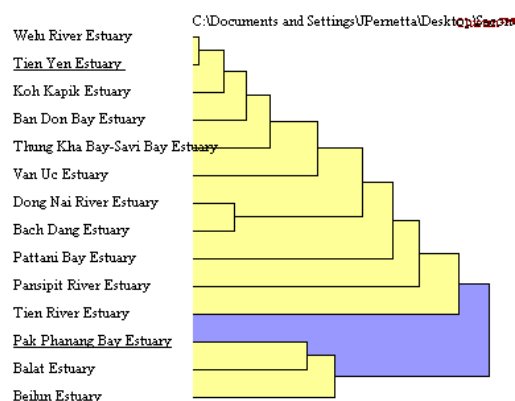
**Table 1** Revised data set for estuaries.

Site	Area (ha)	Total no. fish sp.	Total no. birds sp.	No. wetland types	No. migratory sp.	Site specific endemic sp.
Welu River Estuary	10,400	52	74	2	21	M
Ban Don Bay Estuary	49,459	35	46	2	12	M
Thung Kha Bay-Savi Bay Estuary	5,204	86	115	2	33	M
Pattani Bay Estuary	6,149	215	93	2	43	M
Pak Phanang Bay Estuary	13,597	140	226	2	84	M
Pansipit River Estuary	15	75	24	1	10	1
Balat Estuary	26,397	130	181	2	136	6
Tien River Estuary	100,691	155	41	3	20	2
Dong Nai River Estuary	49,711	155	130	2	22	5
Van Uc Estuary	6,990	123	118	2	90	2
Bach Dang Estuary	80,358	117	153	2	25	5
Tien Yen Estuary	24,738	82	57	2	31	5
Beilun Estuary	1,083	145	133	2	93	13
Pearl River Estuary	12,783	302	227	2	141	37
Koh Kapik Estuary	12,000	25	30	2	6	4

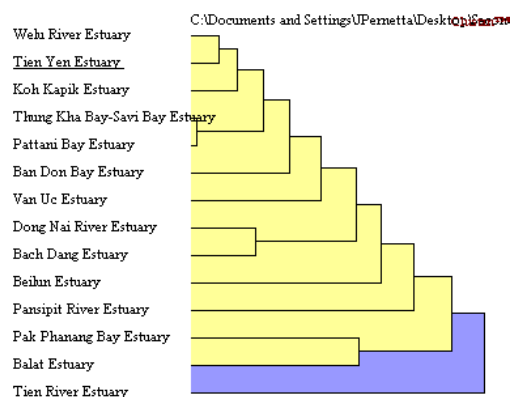
**Figure 1** Cluster Analysis based on z transformation of the data contained in Table 1.



**Figure 2** Cluster Analysis based on z transformation of the data contained in Table 1 with Pear River data removed.



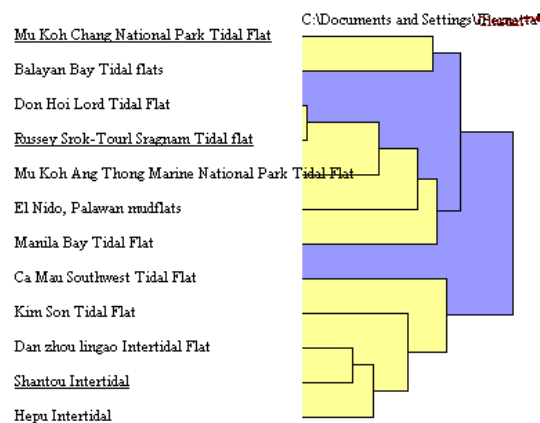
**Figure 3** Cluster Analysis based on z transformation of the data contained in Table 1 with Pear River and number of fish removed.



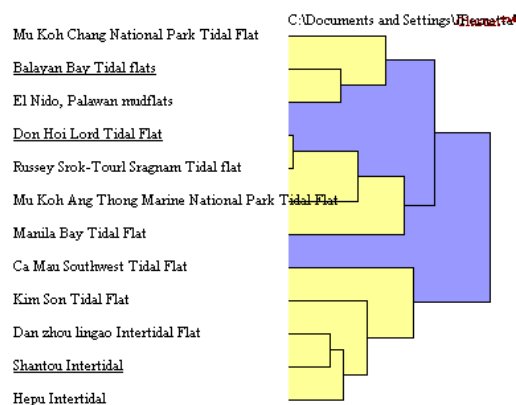
**Table 2** Revised data set for Tidal Flats.

Site	Area (ha)	Total no. fish	Total no. birds	No. wetland types	No. migratory sp.	Site specific endemic sp.
Mu Koh Chang National Park Tidal Flat	65,000	11	72	1	16	M
Don Hoi Lord Tidal Flat	2,490	3	18	2	12	M
Mu Koh Ang Thong Marine National Park Tidal Flat	10,200	75	53	1	13	M
Balayan Bay Tidal flats	75,000	M	25	2	20	15
Manila Bay Tidal Flat	30,000	M	25	3	20	10
El Nido, Palawan mudflats	54,303	M	26	2	10	1
Ca Mau Southwest Tidal Flat	60,711	147	171	2	27	3
Kim Son Tidal Flat	12,620	132	140	3	54	5
Dan zhou lingao Intertidal Flat	806	149	157	3	101	21
Hepu Intertidal	3,951	227	193	3	137	27
Shantou Intertidal	1,435	213	179	3	100	15
Russey Srok-Tourl Sragnam Tidal flat	4,890	10	9	2	3	2

**Figure 4** Cluster Analysis based on z transformation of the data contained in Table 2.



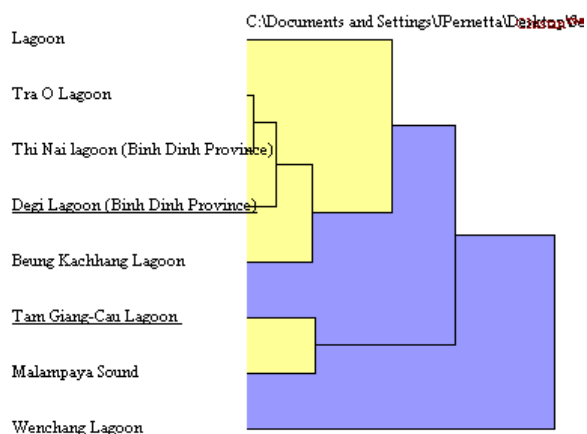
**Figure 5 Cluster Analysis based on z transformation of the data contained in Table 2 with Endemic species removed.**



**Table 3 Revised data set for Lagoons.**

Site	Area (ha)	Total no. fish	Total no. birds	No. wetland types	No. migratory sp.	Site specific endemic sp.
<b>Lagoon</b>						
Tam Giang-Cau Lagoon	21,600	171	73	3	35	5
Tra O Lagoon	2,000	67	55	3	25	3
Malampaya Sound	24,500	156	26	<b>3</b>	10	<b>0</b>
Degi Lagoon (Binh Dinh Province)	1,600	105	40	2	25	2
Thi Nai lagoon (Binh Dinh Province)	5,000	119	37	3	25	2
Wenchang Lagoon	218	227	193	3	137	20
Beung Kachhang Lagoon	4,503	17	12	<b>2</b>	4	1

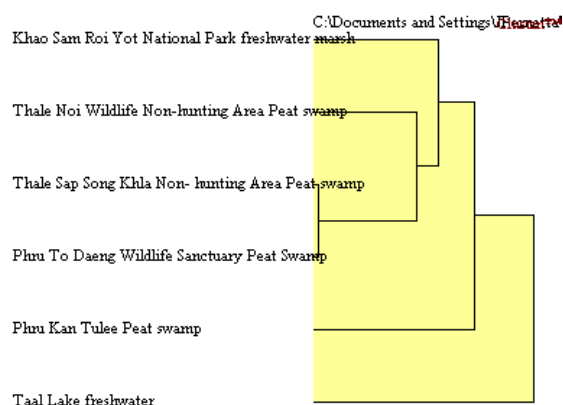
**Figure 6 Cluster Analysis based on z transformation of the data contained in Table 3.**



**Table 4**      **Revised data set for swamps.**

Site	Area (ha)	Total no. fish	Total no. birds	No. vascular plant sp.	No. resident mammal sp.	No. wetland types	No. migratory sp.
<b>Non-peat swamp</b>							
Khao Sam Roi Yot National Park freshwater marsh	9,808	34	<b>150</b>	<b>M</b>	14	3	M
Taal Lake freshwater	65,720	242	24	26	0	1	76
<b>Peat swamp</b>							
Thale Noi Wildlife Non-hunting Area Peat swamp	45,700	30	202	260	7	2	60
Thale Sap Song Khla Non- hunting Area Peat swamp	36,467	106	143	25	M	2	63
Phru To Daeng Wildlife Sanctuary Peat Swamp	20,120	42	194	14	61	2	21
Phru Kan Tulee Peat swamp	140	29	47	35	16	1	6

**Figure 7**      **Cluster Analysis based on z transformation of the data contained in Table 4.**



## ANNEX 6

### Training and Capacity Building Needs Assessment

#### BACKGROUND

Training and capacity building were originally envisaged, in the Project Brief of the UNEP/GEF South China Sea Project, as an important part of the project. Part of the overall goals of the project is “to enhance the capacity of the participating governments to integrate environmental considerations into national development planning.”<sup>2</sup> Therefore, funds were allocated to a variety of activities designed to build capacity and effect the training required to achieve the goals and objectives of the project.

The training and capacity building activities were originally conceived as being undertaken within each component and sub-component of the project, and in support of the substantive activities. Regarding demonstration sites, training and capacity building have been always foreseen as being integrated into the operation of the demonstration site and pilot activities. It was originally envisaged that the demonstration sites would have become operational early in 2004, however it became apparent in late 2003 and early 2004 that the capacity within the Specialised Executing Agencies with respect to budgeting and financial planning was limited. Consequently, considerable effort has been expended by the limited staff of the PCU in working individually with project proponents in developing budgets and financial plans that are sufficiently rigorous and accurate to be acceptable within the framework of the project. Since it is envisaged that all demonstration sites will become operational prior to the second regional scientific conference in November 2005, it is also envisaged that the training and capacity building activities should commence simultaneously.

To ensure maximum benefits achieved with limited funding for capacity building in this region, the PCU designed a questionnaire to assess the situation and needs of training and capacity building related to the needs of managing the project activities, and marine environmental management in general for this region.

#### THE QUESTIONNAIRE

The purpose of this questionnaire survey is to elicit the opinions of Regional Working Group members individually and collectively regarding:

- **The key areas** in which:
  - (a) capacity development has occurred at the national and regional level through the participation of Specialised Executing Agencies (SEAs) (and partner organisations) in the Project,
  - (b) needs for capacity development exist in terms of fulfilling project objectives and outcomes, and which
  - (c) SEAs are most dependent on stakeholder involvement (or sub-contracting of partner organisations) to complete project tasks;
- **The types of tasks** that:
  - (a) SEAs are most capable of performing,
  - (b) SEAs can most readily obtain support from other organisations at the national level to assist in the successful completion of, and that,
  - (c) SEAs are most capable of assisting other SEAs/organisations at both the national and regional level complete;
- **The main outcomes** which have been achieved by the project to date, and which of the lessons learned merit reinforcing at both national and regional levels; and
- **How the available training allocation can be used** in developing a training programme that will best assist in fulfilling project objectives and outcomes, which include successful execution of the demonstration sites, completion of the National Action Plans and regional Strategic Action Programme, and developing the longer-term sustainability of the project;

<sup>2</sup> UNEP. 2001. *Project Brief for the UNEP/GEF Project entitled: Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand*. pp. 4.

- ***How the experiences of the demonstration projects and pilot activities can be best disseminated*** throughout the region in order to foster best-practice in habitat management.

The questionnaire included fourteen questions. Based on the tasks included in the original MoU and amendments to the MoU, questions 1-3 attempt to seek information regarding capacity needs to carry out activities in the original MoU, including 1) capacity built, 2) capacity need, 3) partnerships. Questions 4-6 assess the three aspects of capacity building needs to carry activities included in the amended MoU. Questions 7-14 were designed to assess SEAs' views on: 7) value of the memorandum of understanding, 8) site selection process, 9) national benefits from project management framework, 10) regional outcomes from the project management framework, 11) long-term sustainability needs, 12) use of the training budget, 13) wetlands demonstration sites, and 14) existing capacity building/training initiatives.

## **RESULTS OF THE QUESTIONNAIRE**

The questionnaire was distributed to members of the RWG-W prior to the meeting, and members were requested complete the questionnaire for consideration during the meeting. The results of the analysis are included in Table 1-14 in this annex.

**Table 1**      **Tasks in the original Memoranda of Understanding in which capacity has been built<sup>3</sup>.**

Project Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Capacity Built	Rank	Capacity Built	Rank	Capacity Built	Rank	Capacity Built	Rank	Capacity Built	Rank	Capacity Built	Rank	Capacity Built	Rank	No. Countries	
Chair and convene National Wetland Committee	yes	5	yes	1					yes	10	yes	5	yes	6	5	27
Serve as a member of the National Technical Working Group	yes	3	yes	5					yes	1	yes	4	yes	2	5	15
Act as member of the Regional Working Group	yes	2	yes	4			yes	10	yes		yes	3	yes	3	6	22
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	yes	1	no						yes		yes	2	yes	4	4	7
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	yes	0	no						yes		yes	1	yes		4	1
Provide data and information to the RWG and/or the RSTC	yes	8	yes	6			yes	8	yes		yes	10	yes	10	6	42
Review and update existing information relating to the component	yes	9	yes	8					yes	9	yes	9	yes	9	5	44
Assemble a national meta-database	no		no				yes	7	yes	5	yes	8	yes	8	4	28
Summarise all existing national legislation	no		no						yes	8	yes	7	yes		3	15
Review criteria in use for decision making with respect to future uses	yes	2	yes	3					yes	7	no		yes	1	4	13
Prepare criteria for use in site selection	yes	10	yes	2					yes	6	yes		yes		5	18
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats	yes	5	yes	9			yes	9	yes	3	yes		yes	5	6	31
Develop a National Wetland Action Plan	yes	6	yes	10					yes	4	yes	6	yes	7	5	33
Guide IMC re SAP implementation			no						no		no		no		0	0
Promote the National Action Plan among stakeholders	yes	8	no						no		yes		yes		3	8
Prepare and submit Demonstration Site proposals	yes		yes	7					yes	2	yes		yes		5	9

<sup>3</sup> No more than 10 tasks can be selected. A score of 10 indicates most capacity has been built in carrying out the task, and one (1) least.

**Table 2 Tasks in the original Memoranda of Understanding for which capacity was needed from outside the SEA<sup>4</sup>.**

Project Memoranda of Understanding Task Areas	Capacity Needs	Rank	Capacity Needs	Rank	Capacity Needs	Rank	Capacity Needs	Rank	Capacity Needs	Rank	Capacity Needs	Rank	Capacity Needs	Rank	no. Countries	Total
Chair and convene National Wetlands Committee	no		no				no		no		no		no		0	0
Serve as a member of the National Technical Working Group	yes	2	no				yes	9	no		no		no		2	11
Act as member of the Regional Working Group	yes	3	no				no		yes	6	yes	2	yes		4	5
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	yes	4	no				yes	10	no		yes	3	yes	7	4	24
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	yes	7	yes	8					no		yes	4	yes	5	4	24
Provide data and information to the RWG and/or the RSTC	yes	7	no				yes	7	no		yes	5	yes	6	4	25
Review and update existing information relating to the component	no		no				no		no		yes	6	yes	9	2	15
Assemble a national meta-database	no		yes	7			no		yes	7	no		yes	10	3	17
Summarise all existing national legislation	no		yes	6			no		no		no		yes	8	2	14
Review criteria in use for decision making with respect to future uses	yes	5	yes	10			yes	8	no		yes	10	yes	1	5	34
Prepare criteria for use in site selection	no		no				no		no		no		yes	3	1	3
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats	yes	9	no				no		yes	8	yes	1	no		3	10
Develop a National Wetland Action Plan	yes	10	no				no		yes	9	yes	9	yes	4	4	23
Guide IMC re SAP implementation			no				no		no		yes	8	no		1	8
Promote the National Action Plan among stakeholders	yes	8	yes	9			no		no		yes	7	yes	2	4	26
Prepare and submit Demonstration Site proposals	no		no				no		yes	10	no		yes		2	10

<sup>4</sup> No more than 10 tasks can be selected. A score of 10 indicates the task needs capacity building most, and one (1) least.

**Table 3 Tasks in the original Memoranda of Understanding for which your SEA/Institution depended upon a network of national level partners<sup>5</sup>.**

Project Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	no. countries	
Chair and convene National Wetlands Committee	m		no				no		no		no		no		0	0
Serve as a member of the National Technical Working Group	no		no				no		no		no		no		0	0
Act as member of the Regional Working Group	no		no				no		yes	3	no		no		1	3
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	no		no				yes	10	no		no		no		1	10
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	no		no				yes	9	no		no		no		1	9
Provide data and information to the RWG and/or the RSTC	no		no				no		no		yes	9	yes	8	2	17
Review and update existing information relating to the component	no		no				no		yes	10	yes	10	yes	10	3	30
Assemble a national meta-database	no		yes	9			no		yes	2	yes	7	no		3	18
Summarise all existing national legislation	no		yes	10			no		yes	7	yes	8	yes	6	4	31
Review criteria in use for decision making with respect to future uses	no		no				yes	8	yes	6	yes	5	no		3	19
Prepare criteria for use in site selection	yes	6	no				no		yes	5	no		no		2	11
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats	yes	7	no				no		yes	8	no		no		2	15
Develop a National Wetland Action Plan	yes	9	no				no		yes	9	yes	6	yes	7	4	31
Guide IMC re SAP implementation	yes	8	no				no		no		no		no		1	8
Promote the National Action Plan among stakeholders	yes	10	no				no		no		no		yes	9	2	19
Prepare and submit Demonstration Site proposals	no		no				no		yes	4	no		no		1	4

<sup>5</sup> No more than 10 tasks can be selected. A score of 10 indicates the greatest need of assistance to complete the task, and one (1) the least needing assistance.

**Table 4 Existing Capability of your SEA/Institution with respect to completing the tasks in the Amended Memoranda of Understanding<sup>6</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	no. Countries need	
Chair and convene National Wetlands Committee	yes		yes				yes		yes		yes		yes		0	0
Serve as a member of the National Technical Working Group (NTWG)	yes		yes				yes		yes		yes		yes		0	0
Act as member of the Regional Working Group (RWG)	yes		yes				yes		yes		yes		yes		0	0
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	yes		yes				yes		yes		yes		yes		0	0
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	yes		yes				no	7	yes		yes		yes		1	7
Provide data and information to the RWG and/or the RSTC	yes		yes				yes		yes		no		no	7	2	7
Maintain the national meta-database	no		no	9			yes		no	3	no		no	8	5	20
Update criteria used for decision making with respect to future uses of marine habitats	no		no	6			no	5	no	2	no		yes		5	13
Update data contained in the Regional GIS	no		no	10			no	4	no	1	no	1	no	9	6	25
Work with the Regional Task Force on Legal Matters regarding national legislation and the preparation of a regional directory of legislation and best practices	no	1	no	8			yes		yes		no	2	yes		3	11
Work with the Regional Task Force on Economic Valuation regarding national level economic valuation of Wetlands	no	3	yes				no	6	yes		no	3	yes		3	12
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats for publication in early 2007	no	2	yes				no	3	no	4	no	4	no		5	13
Further develop the preliminary National Wetlands Action Plan	yes		yes				yes		no	9	yes		yes		1	9
Critically review from the national perspective, the targets and goals set by the draft SAP, and prepare concrete proposals concerning actions at the national level required to meet these targets	no	4	no	7			yes		no	7	no	5	yes		4	23

<sup>6</sup> No more than 10 tasks can be selected. A score of 10 indicates the task needs greatest need of assistance, and one (1) least need.

**Table 4 cont. Existing Capability of your SEA/Institution with respect to completing the tasks in the Amended Memoranda of Understanding<sup>7</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	Existing Capacity	Rank	no. Countries need	
Based on the criteria and ranking processes for the selection of sites of national and regional significance, prepare and submit proposal(s) for the coral reef specific site(s) to be adopted by the government for sequential intervention	no	5	yes				yes		no	6	no	6	yes		3	17
Guide IMC re SAP implementation	no		yes				no	9	yes		yes		yes		2	9
Promote the NAP and SAP among stakeholders	no	7	yes				yes		yes		yes		yes		1	7
Facilitate the process of formal government approval of the NAPs	no	6	no	5			no	8	yes		no	7	no	10	5	36
Complete any outstanding tasks, listed in articles 5.i to 5.xvi of the original MoU.	no		yes				yes		no	8	yes		yes		2	8
Manage & execute the activities planned for demonstration sites as approved in the operational plan.	no	9	yes				-		no	10	no	8	yes		3	27
Co-ordinate national involvement in the regional programme for co-ordination, dissemination of experiences, and personal exchange between demonstration sites	no	8	yes				no	10	yes		no	9	yes		3	27
Prepare and submit additional Demonstration site proposals	no	10	yes				yes		no	5	no	10	yes		3	25

<sup>7</sup> No more than 10 tasks can be selected. A score of 10 indicates the task needs greatest need of assistance, and one (1) least need.

**Table 5 National Network's Capacity to support your SEA/Institution with respect to the tasks in the Amended Memoranda of Understanding<sup>8</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	no. countries	
Chair and convene National Wetlands Committee	no		yes	6			yes	2	yes		yes		no		4	8
Serve as a member of the National Technical Working Group (NTWG)	no		no				no		no		yes		no		1	0
Act as member of the Regional Working Group	no		no				no		no		yes		no		1	0
Ensure that the NCRC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	no		yes	7			yes	3	no		yes		no		3	10
Ensure that the NCRC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	no		yes	8			yes	7	no		yes		no		3	15
Provide data and information to the RWG and/or the RSTC	yes		no				no		no		yes		yes	5	3	5
Maintain the national meta-database	yes		yes	5			no		yes	1	yes		yes	6	5	12
Update criteria used for decision making with respect to future uses of marine habitats	yes		no				no		yes	6	yes	6	no		3	12
Update data contained in the Regional GIS	yes		yes	4			no		yes	7	yes	3	yes	7	5	21
Work with the Regional Task Force on Legal Matters regarding national legislation and the preparation of a regional directory of legislation and best practices	yes		yes	9			yes	8	no		yes	2	no		4	19
Work with the Regional Task Force on Economic Valuation regarding national level economic valuation of Wetlands	yes		yes	10			yes	9	no		yes	1	no		4	20
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats for publication in early 2007	yes	5	no				yes	6	yes	8	yes		no		4	19

<sup>8</sup> No more than 10 tasks can be selected. Tasks were assigned with scores from ten (10) for which it is most difficult to get assistance nationally, down to one (1) for which it is comparatively easy to find assistance nationally.

**Table 5 cont. National Network's Capacity to support your SEA/Institution with respect to the tasks in the Amended Memoranda of Understanding<sup>9</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	Partner-ships	Rank	no. countries	
Further develop the preliminary National Wetlands Action Plan	yes	1	no				no		yes	2	yes		yes	8	4	11
Critically review from the national perspective, the targets and goals set by the draft SAP, and prepare concrete proposals concerning actions at the national level required to meet these targets	yes		no				yes	5	yes	5	yes		yes	9	5	19
Based on the criteria and ranking processes for the selection of sites of national and regional significance, prepare and submit proposal(s) for the coral reef specific site(s) to be adopted by the government for sequential intervention	yes	4	no				no	4	yes	4	yes		no		3	12
Guide IMC re SAP implementation	yes	8	no				yes		no		yes	8	no		3	16
Promote the NAP and SAP among stakeholders	yes	9	no				yes		yes		yes	9	yes	4	5	22
Facilitate the process of formal government approval of the NAPs	yes	10	no				yes		no		yes	10	yes	10	4	30
Complete any outstanding tasks, listed in articles 5.i to 5.xvi of the original MoU.	yes	7	no				yes		no		yes		no		3	7
Manage & execute the activities planned for demonstration sites as approved in the operational plan.	yes	6	no				yes		yes	10	yes	7	no		4	23
Co-ordinate national involvement in the regional programme for co-ordination, dissemination of experiences, and personal exchange between demonstration sites	yes	2	no				no	10	yes	9	yes	5	no		3	26
Prepare and submit additional Demonstration site proposals	yes	3	no				no	1	yes	3	yes	4	no		3	11

<sup>9</sup> No more than 10 tasks can be selected. Tasks were assigned with scores from ten (10) for which it is most difficult to get assistance nationally, down to one (1) for which it is comparatively easy to find assistance nationally.

**Table 6 Capacity of your SEA/Institution to assist other SEAs/organisations at the national and regional level with respect to the tasks in the Amended Memoranda of Understanding<sup>10</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	no. countries	
Chair and convene National Wetlands Committee	yes	10	no				yes		no		no		no		2	10
Serve as a member of the National Technical Working Group (NTWG)	yes	9	no				yes	2	no		yes	9	no		3	20
Act as member of the Regional Working Group (RWG)	yes	8	no				yes		no		yes	10	yes	1	4	19
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the NTWG (to PSC)	yes	7	no				yes	4	no		no		no		2	11
Ensure that the NWC serves as an effective source of Scientific and Technical advice to the RWG (to RSTC)	yes	6	no				yes	3	no		no		yes	7	3	16
Provide data and information to the RWG and/or the RSTC	yes	5	yes	10			no		yes	1	no		no		3	16
Maintain the national meta-database	no		no				no		no		no		no		0	0
Update criteria used for decision making with respect to future uses of marine habitats	no		yes	5			yes		yes	6	no		yes	2	4	13
Update data contained in the Regional GIS	no		no				no		no		no		no		1	0
Work with the Regional Task Force on Legal Matters regarding national legislation and the preparation of a regional directory of legislation and best practices	yes	2	no				yes	5	no		no		yes	6	3	13
Work with the Regional Task Force on Economic Valuation regarding national level economic valuation of Wetlands	yes	1	no				yes	6	no		no		yes	8	3	15
Assist the RWG in preparing a regional synthesis of data and information, together with a review of threats for publication in early 2007	no		yes	6			yes	8	yes	8	yes	8	yes	5	5	35
Further develop the preliminary National Wetlands Action Plan	yes	3	yes	7			yes		yes	3	no		yes	10	5	23

<sup>10</sup> No more than ten tasks can be selected. 10 indicates the easiest task to assist others, and 1 the most difficult to assist others.

**Table 6 cont. Capacity of your SEA/Institution to assist other SEAs/organisations at the national and regional level with respect to the tasks in the Amended Memoranda of Understanding<sup>11</sup>.**

Amended Memoranda of Understanding Task Areas	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	Capacity to assist Others	Rank	no. countries	
Critically review from the national perspective, the targets and goals set by the draft SAP, and prepare concrete proposals concerning actions at the national level required to meet these targets	no		yes	8			yes		yes	9	no		yes	3	4	20
Based on the criteria and ranking processes for the selection of sites of national and regional significance, prepare and submit proposal(s) for the Wetlands specific site(s) to be adopted by the government for sequential intervention	no		no				no		yes	10	no		no		1	10
Guide IMC re SAP implementation	no		no				no		no		no		no		0	0
Promote the NAP and SAP among stakeholders	no		no				yes	10	yes	7	no		no		2	17
Facilitate the process of formal government approval of the NAPs	no		no				yes	9	no		no		no		1	9
Complete any outstanding tasks, listed in articles 5.i to 5.xvi of the original MoU.	no		no				no		no		no		no		0	0
Manage & execute the activities planned for demonstration sites as approved in the operational plan.	no		no				no		yes	4	no		no		1	4
Co-ordinate national involvement in the regional programme for co-ordination, dissemination of experiences, and personal exchange between demonstration sites	no		yes	9			yes	1	yes	5	yes	7	yes	9	5	31
Prepare and submit additional Demonstration site proposals	yes	4	no				yes	7	yes	2	no		yes	4	4	17

<sup>11</sup> No more than ten tasks can be selected. 10 indicates the easiest task to assist others, and 1 the most difficult to assist others.

**Table 7 Use of Memoranda of Understanding<sup>12</sup>.**

Categories of outcome	Cambodia		China		Malaysia		Philippines		Indonesia		Thailand		Viet Nam		Region no. countries	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank		
Increased stakeholder involvement at National level	yes	1	yes	1			yes	5	yes	5	yes	4	yes	3	6	19
Better Project Planning, Financial and Task Management	yes	4	yes	3			yes	4			yes	5	yes	2	5	18
Development of Databases and Information Sharing	yes	5	yes	5			yes	2			yes	3	yes	4	5	19
Improved Coordination of Institutions at the National Level	yes	2	yes	4			yes	3			yes	2	yes	5	5	16
Increased Capacity for NAP and SAP development	yes	3	yes	2			yes	1	yes	4	yes	1	yes	3	6	14
Other																

**Table 8 Site selection process<sup>13</sup>.**

Achievements associated with the site selection process used	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region no. countries	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank		
Establishment of a Scientifically Sound and Transparent Process for Site Selection	yes	1	yes	4			yes	4	yes	5	yes	4	yes	5	6	23
Regional Agreement on the Process for Determining Priorities objectively.	yes	3	yes	5					yes	3	yes	5	yes	2	5	18
Stakeholder Involvement in Decision-Making and Information Sharing	yes	2	yes	2					yes	2	yes	3	yes	1	5	10
Stakeholder Support of Outcomes and Selected Demonstration Sites	yes	4	yes	1					yes	1	yes	2	yes	3	5	11
Process suitable for application in other situations including national ranking	yes	5	yes	3			yes	5	yes	4	yes	1	yes	4	6	22
Other																

<sup>12</sup> Five (5) indicates the most important, and one (1) the least important.

<sup>13</sup> Five (5) indicates the most important, and one (1) the least important.

**Table 9 Outcomes of the management framework at the national level<sup>14</sup>.**

Outcomes of the management framework at the national level	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	no. countries	
Collaboration between national specialist coral reef Institutions	yes	1	yes	5			yes	4	yes	4	yes	3	yes	4	6	21
Collaboration between Institutions with different specialisations (other than Wetlands)	yes	3	yes	3			yes	5	yes	3	yes	5	yes	5	6	24
Inter-ministry, government department and sector co-operation	yes	2	yes	4					yes	2	yes	2	yes	2	5	12
Wider stakeholder involvement in-country	yes	4	yes	1					yes	5	yes	1	yes	3	5	14
Increased frequency of communication between the SEA and Environment Ministry	yes	5	yes	2			yes	3	yes	1	yes	4	yes	1	6	16
Other																0

**Table 10 Outcomes of the management framework at the regional level<sup>15</sup>.**

Regional Outcomes	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	no. countries	
Collaboration between Institutions in different countries	yes	4	yes	4					yes	5	yes	5	yes	1	5	19
Clear separation of Science from Policy in decision making	yes	1	yes	3			yes	4	yes	1	yes	2	yes	2	6	13
Teamwork and participatory decision making	yes	3	yes	5					yes	3	yes	4	yes	4	5	19
Sense of Project Ownership among participating countries	yes	2	yes	1					yes	4	yes	3	yes	3	5	13
Transparency of Management	yes	5	yes	2			yes	5	yes	2	yes	1	yes	5	6	20
Other																

<sup>14</sup> Five (5) indicates the most important, and one (1) the least important.

<sup>15</sup> Five (5) indicates the most important, and one (1) the least important

**Table 11 List of long-term sustainability needs of the Project<sup>16</sup>.**

Longer-term sustainability needs of the UNEP/GEF South China Sea Project	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region no. countries	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank		
Maintenance of national and regional consultative network	yes	4	yes	4			yes	5	yes	5	yes	5	yes	4	6	27
Maintenance of demonstration site activities	yes	3	yes	2					yes	4	yes	3	yes	1	5	13
Capacity Development for Demonstration Site Planning and Management	yes	1	yes	3					yes	3	yes	2	yes	2	5	11
Strengthened Mechanism for Sharing of Experiences/Information	yes	2	yes	5					yes	1	yes	4	yes	3	5	15
Strengthened Project and Financial Planning Management Capabilities	yes	5	yes	1					yes	2	yes	1	yes	5	5	14
Other																0

**Table 12 Use of the Training Budget<sup>17</sup>.**

Use of Training Budget	Cambodia		China		Malaysia		Indonesia		Philippines		Thailand		Viet Nam		Region no. countries	Total
	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank	yes/no	Rank		
<b>Build Capacity to Preserve the Regional Consultative Mechanism</b>	yes	1	yes	2					yes	3	yes	2	yes	5	5	13
<b>Disseminate project outcomes and experiences throughout the region</b>	yes	4	yes	5			yes	5	yes	2	yes	4	yes	4	6	24
<b>Specific Group Training courses (please provide details)</b>	yes	2	yes	4			yes	4	yes	5	yes	3	yes	1	6	19
Wetland valuation		6		2				5		4		5		3		20
Wetland monitoring and assessment		5		6				3		5		6		4		23
Wetland wise use		3		1				6		6		3		6		22
Wetland restoration		4		5				1		2		4		5		17
Financing mechanism		1		4				2		3		1		1		11
Wetland CEPA		2		3				4		1		2		2		12
<b>Individual Training (please provide details of who is to be trained and in what)</b>	yes	3	yes	3			yes	3	yes	4	yes	1	yes	3	6	17
Wetland monitoring	loc. Gov.	4	stu.	4				1	PO	1	junior st	3	loc.gov. & VEPA	3		16
Policy enforcement	Mana. Site & central gov	1	Mana.	1				2	mana.	4	site Mana.	1	central gov.	1		10
Silvo-fishery and eco-tourism	loc. Gov. & stu.	2	stak.	2				3		3	loc.gov	2	loc. Gov & Junior st	4		16
Community base management	loc. Gov. & stu.&Mana site	3	NGOs	3				4	loc. Gov.	2	junior st & loc. NGOs	4	site Mana & NGOs	2		18
<b>Building Capacity within Demonstration Sites for Income Generation</b>	yes	5	yes	1					yes	1	yes	5	yes	2	5	14

<sup>16</sup> Five (5) indicates the most important, and one (1) the least important.<sup>17</sup> The higher score means more important.

**Table 13 National and regional prioritisation of the key demonstration activities needed to provide examples of best practice in Wetland management for the region.**

<b>Key demonstration activities to provide examples of best practice in wetlands management</b>	<b>National Priority</b>	<b>Regional Priority</b>
<b>Cambodia</b>		
Best practice on techniques of wetland inventory	5	3
Best practice on reporting system from the site level to central level	2	2
Best practice on bird survey technique	3	4
Best practice on guideline for process of development of management plan for long term	4	5
Best practice on patrolling technique	1	1
<b>China</b>		
Cross-sectoral management	5	4
Community-based management	4	3
Monitoring and evaluation of wetland	3	5
<b>The Philippines</b>		
Compatible Livelihood activities	4	3
Biodiversity Monitoring System (wetlands)	3	4
Participatory management	5	5
Policy enforcement	2	2
<b>Thailand</b>		
Demonstrations protected area co-management agreements	1	1
Demonstration of alternative sustainable livelihood options to local communities	4	4
Increasing on the ground and decision making participation in wetland management	3	3
Demonstrations of community-based eco-tourism in support of wetland conservation	5	5
Demonstrations of management planning linked to, and responsive to, biological monitoring	2	2
Conflict management		
<b>Viet Nam</b>		
Demonstration of biodiversity and environment protection mechanism	5	3
Demonstration of estuary wetlands sustainable use	4	5
Demonstration of co-management between site local-government and Institute and National Environment Department	3	4

**Table 14 Existing capacity building and training initiatives for (a) wetlands management (WM) and (b) general coastal and marine resource management (CMRM) at both national and regional levels.**

Capacity building/training initiative	Lead Organisation	Focus on WM or CMRM	National (N) or Regional (R)
<b>Cambodia</b>			
Training on coastal zone management	MoE/DANIDA	CMRM	N
Capacity building and public awareness	CEMP-MoE	CMRM	N
Integrated Community Development Programme	CISDSE	CMRM	N
Strengthening the national institutions	MoE/Danida	CMRM	N
Fresh water wetlands management			
<b>China</b>			
Training on ecological function and services of wetland	Sun yat-sen University	WM	N
Training on the monitoring and economic evaluation of wetland	Sun yat-sen University	WM	N
<b>The Philippines</b>			
Coastal Resource Management ( topics: coastal resource certification, mangrove reforestation, environment friendly livelihood, coastal law enforcement, advocacy on solid waste management; by request)	Coastal and Marine Management Office	CMRM	National
Biodiversity Monitoring System (wetlands; by request)	Protected Areas and Wildlife Bureau	WM	National
Coral Reef Monitoring	Protected Areas and Wildlife Bureau & Marine Environment Research Foundation	CMRM	National
<b>Thailand</b>			
Joint Management of Protected Areas (JOMPA)	Department of National Park	CMRM	N
Management of Protected Wetlands (MPW) Project	Office of Natural Resources and Environmental Policy and planning	WM	N
Training Course on "Wetland Ecology and Management in the Lower Mekong Basin"(3-4 weeks course, organized annually since 2003, for mid-level government staff and junior researchers and lecturers of wetland related agencies and 8 university members of the Network in 4 countries - Cambodia, Laos, Thailand and Viet Nam, using important wetland sites in 4 countries for fieldworks and demonstration sites)	The University Network for Wetland Ecology and Conservation Trainings in the Mekong Region (for detailed information : <a href="http://www.en.mahidol.ac.th">http://www.en.mahidol.ac.th</a> , or contact Dr Sansanee Choowaew, Faculty of Environment and Resource Studies, Mahidol University)	WM	R
International Training Course on "Tropical Wetlands Management" (4 weeks course, organized annually since 2005, for mid-level government officers working in wetlands management in countries under the Colombo Plan)	Mahidol University in collaboration with The Colombo Plan Secretariat and Thailand International Development Cooperation Agency (TICA), Ministry of Foreign Affairs, sponsored by The Royal Thai Government	WM	R
<b>Viet Nam</b>			
Training on ICZM	VNU and Inwent, Germany	CMRM	N
Training on Aquaculture Planning	MoF and DANIDA	CMRM	N

## **ANNEX 7**

### **Valuing the Impacts of Land-Based Pollution on Wetlands**

#### **Background**

During the first meeting of the Regional Task Force on Economic Valuation (RTF-E), Phuket, Thailand, 11<sup>th</sup> -13<sup>th</sup> September 2003, the Task Force agreed on a framework to value coastal habitats in the South China Sea. The Regional Working Group on Land-based Pollution subsequently sought assistance from the Task Force in formulating a framework for the valuation of the impacts of land-based pollution. During the second meeting of the Regional Task Force on Economic Valuation, held in Siem Reap, Cambodia, 31<sup>st</sup> May – 2<sup>nd</sup> June 2004, it was agreed that the Project Co-ordinating Unit would commission on behalf of the Task Force a literature review of existing studies of the economic valuation of the impacts of land-based pollution.

In July 2004, the Project Co-ordinating Unit engaged a consultant and two drafts of the report were circulated to members of the Task Force for their comments before the finalisation of the report.

During the Third Meeting of the RTF-E in Fangchenggang, China, 18<sup>th</sup> – 21<sup>st</sup> April 2005, the Task Force reviewed the consultant report on existing literature, and considered alternative approaches to formulate a framework and procedures to value the impacts of land-based pollution on coastal habitats, including mangroves, coral reefs, seagrass, and wetlands.

#### **Framework and Procedures to Value Impacts of Land-based Pollution on Coastal Habitats**

The framework and procedures to value the impact on wetlands were reviewed and checked by the members of the RWG-W during the sixth meeting. The meeting agreed that the types of pollutants, to some extent, determined the types of impacts on the coastal habitats, hence it was important to identify types of pollutants and their impacts on coastal habitats. The RWG-W reviewed and adopted the framework and procedures to value the impact of land-based pollution on wetlands.

Table 1 provides a checklist of possible impacts of various pollutants on coastal habitats relevant to the UNEP/GEF South China Sea Project, mangroves, coral reefs, seagrass and wetlands. Noting that the impacts of land-based pollution on coastal habitats were complex and intertwined, the RWG-W agreed with the Task Force's decision to narrow down the scope of impacts for economic valuation, and to consider three types of impacts, i.e. productivity, amenity and human welfare. Table 2 provides a framework for valuing the impacts of land-based pollution on the four coastal habitats, in terms of productivity, amenity and human welfare. Table 3 outlines procedures to value the impact of land-based pollution on wetlands.

**Table 1 Checklist of the Impacts of Land-based Pollution on Coastal Habitats.**

Types of Pollutants	Impacts	Mangroves	Coral Reefs	Seagrass	Wetlands
Heavy metals	Water and sediment quality	v	v	v	v
	Sediment quality	v	v	v	v
	Reduced reproductive capacity in molluscs	v	v	v	v
	Contamination of human food sources	v	v	v	v
	Bio-accumulation				
Organic matter	Water quality	-	v	v	v
Nutrients	Eutrophication	-	v	v	v
	Algal blooms	-	v	v	v
	Red tides	-	v	v	v
	Anoxia – fish kills	-	v	v	v
	Fish shellfish poisoning	-	v	v	v
Oil and hydrocarbons	Contamination/tainting of aquaculture and wild fish	v	v	v	v
	Extreme spills smothering of organisms	v	v	v	v
Sediments	Smothering of coral reefs and seagrass	-	v	v	-
	Reduced light penetration from increased turbidity leading to reduced primary production	-	v	v	v
	Change of deep position				
	Change of sediment quality				
POPs	Water quality	v	v	v	v
	Contamination of seafood	v	v	v	v
	Reduced fish production	-	v	v	v
Solid waste (plastics)	Smothering of organisms	-	v	v	v
	Loss of amenity value	-	v	v	v
Thermal pollution	Reduced productivity	v	v	v	v
	Loss of species	v	v	v	v
Bacterial contamination	Loss of amenity value	v	v	v	v
	Contamination of human food sources	v	v	v	v
Acid Pollution	Change of water and sediment quality	V			V
	Loss Bio community (fish...)	v			v

**Table 2 Framework for Valuing Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Wetlands		
		Productivity	Amenity	Human welfare
Heavy metals	Water and sediment quality	v	v	v
	Reduced reproductive capacity in molluscs	v	-	-
	Contamination of human food sources	-	-	v
	Bio-accumulation	v	-	-
Organic matter	Water quality	v	v	v
Nutrients	Eutrophication	v	v	-
	Algal blooms	v	v	-
	Red tides	v	v	-
	Anoxia – fish kills	v	-	-
	Fish shellfish poisoning	-	-	v
Oil and hydrocarbons	Contamination/tainting of aquaculture and wild fish	-	-	v
	Extreme spills smothering of organisms	v	v	-
Sediments	Smothering of coral reefs and seagrass	v	v	-
	Reduced light penetration from increased turbidity leading to reduced primary production	v	-	-
	Change of deep position			
	Change of sediment quality			
POPs	Water quality	v	v	v
	Contamination of seafood	-	-	v
	Reduced fish production	v	-	-
Solid waste (plastics)	Smothering of organisms	v	v	v
	Loss of amenity value		v	
Thermal pollution	Reduced productivity	v	-	-
	Loss of species	v	v	-
Bacterial contamination	Contamination of human food sources	-	-	v
Acid Pollution	Change of water and sediment quality			
	Loss Bio community (fish...)			

**Table 3 Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
<b>Productivity</b>					
<b>Heavy metals</b>	<b>Water quality</b>  <b>Reduced reproductive capacity in fish species (e.g. molluscs)</b>  <b>Bio-accumulation</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after) Quantities of products harvested, sold, given away and used (before and after) Total areas under consideration (before and after) Concentration level of heavy metals  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected.
<b>Organic matter</b>	<b>Water quality</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after degradation of water quality) Quantities of products harvested, sold, given away and used (before and after degradation of water quality) Total areas under consideration (before and after) Concentration level of organic matter  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected.
<b>Nutrients</b>	<b>Eutrophication</b>  <b>Algal blooms</b>  <b>Red tides</b>  <b>Anoxia – fish kills</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after) Quantities of products harvested, sold, given away and used (before and after) Total areas under consideration (before and after) Concentration level of nutrients  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected.

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
<b>Oil and hydrocarbons</b>	<b>Extreme spills smothering of organisms</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after spills/ release of oil and hydrocarbon) Quantities of products harvested, sold, given away (before and after spills/release of hydrocarbons) Total areas under consideration (before and after) Concentration level of oil and hydrocarbons  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected.
<b>Sediments</b>	<b>Reduced light penetration from increased turbidity leading to reduced primary production</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after increased turbidity) Quantities of products harvested, sold, given away and used (before and after increased turbidity) Total areas under consideration (before and after) Volume of suspended sediment in the water  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected
<b>POPs</b>	<b>Water quality  Reduced fish reproduction ability</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after) Quantities of products harvested, sold, given away and used (before and after) Total areas under consideration (before and after) Concentration level of POPs  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected.

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

<b>Types of Pollutants</b>	<b>Impacts</b>	<b>Valuation Technique</b>	<b>Indicator of Measurement</b>	<b>Data Needed</b>	<b>Notes and Assumptions</b>
<b>Solid waste (plastics)</b>	<b>Smothering of organisms</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after solid waste contamination) Quantities of products harvested, sold, given away and used (before and after solid waste contamination) Total areas under consideration (before and after) Volume of solid waste  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected
<b>Thermal pollution</b>	<b>Reduced productivity</b>	On site sale value for marketed goods using net price  For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)	Total annual value of production for each product (US\$)	For direct valuation: On site market price of each product (before and after thermal pollution) Quantities of products harvested, sold, given away and used (before and after thermal pollution) Total areas under consideration (before and after) Water temperature  For indirect valuation: Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour	Values prior to the impact to be determined. Market price can be adapted to account for seasonal and other price changes. Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted). All externalities are identified and included in the price. Exchange rates and the years of data collected

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
	<b>Loss of species</b>	On site price for marketed products	Total annual value of production for each product (US\$)	<p>For direct valuation:  On site market price of each product (before and after thermal pollution)  Quantities of products harvested, sold, given away (before and after)  Total areas under consideration (before and after)  Water temperature</p> <p>For indirect valuation:  Price per unit for equivalent goods  Cost of material inputs  Time spent harvesting/gathering/ culturing product  Equivalent local wage for labour  Water temperature</p>	<p>Values prior to the impact to be determined.  Market price can be adapted to account for seasonal and other price changes.  Market price represents true market value within a competitive market at equilibrium (i.e. prices are not distorted).  All externalities are identified and included in the price.  Exchange rates and the years of data collected.</p>
		Substitute approach: Price of products/raw materials*	Total cost of sourcing products/raw materials from other sites	<p>For substitute price approach:  Price of equivalent goods  Quantities of equivalent products harvested, sold, given away (before and after)  For all approaches:  Species identified before and after</p>	Substitute of product/raw materials available and acceptable Market prices used in valuation are not distorted
<b>Amenity</b>					
<b>Heavy metals</b>	<b>Water quality</b>	<p>Travel cost: Amount of money and time spent on the site</p> <p>Contingent valuation: willingness to pay for good water quality</p> <p>Replacement cost: cost to clean up pollutants</p>	<p>Annual recreational value of the site (US\$)</p> <p>Recreational value of the site as valued by willingness to pay by users (US\$)</p> <p>Total cost of clean-up US\$)</p>	<p>Data from visitors survey  Socio-economic variables  Geographic origin (before and after water contamination)  Time spent travelling (before and after water contamination)  Expenditures incurred in visiting the site (before and after water contamination)  Frequency and duration of visits (before and after water contamination)  Number of visitor-days for the site (before and after water contamination)  Concentration level of heavy metals  Answers to valuation questions from survey/bidding game technique/ dichotomous choice</p> <p>Types of heavy metals  Sources of heavy metals  Level of concentration of heavy metals</p>	<p>Access to the site is available to all  Visits have a single purpose  Demand function relationship can be specified  No factors aside from travel cost influence site use  Market prices used in valuation are not distorted</p> <p>Subjects understand choices offered and give meaningful and honest answers  Subject have sufficient information to give informed choices  Sample is representative and captures the full spectrum of users who value the site  No free riders  No strategic bias/influences  Technologies to clean up the pollutants are available and the cost of technologies is affordable</p>

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
<b>Organic matter</b>	<b>Water quality</b>	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after water contamination) Time spent travelling (before and after water contamination) Expenditures incurred in visiting the site (before and after water contamination) Frequency and duration of visits (before and after water contamination) Number of visitor-days for the site (before and after water contamination) Concentration level of organic matters	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences
		Replacement cost: cost to clean up pollutants	Total cost of clean-up (US\$)	Type of pollutants Sources of pollutants Concentration level of pollutants	Technologies to clean up the pollutants are available and the cost of technologies is affordable
<b>Nutrients</b>	<b>Eutrophication Algal blooms Red tides</b>	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after eutrophication) Time spent travelling (before and after eutrophication) Expenditures incurred in visiting the site (before and after eutrophication) Frequency and duration of visits (before and after eutrophication) Number of visitor-days for the site (before and after eutrophication) Concentration level of nutrients	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences
		Replacement cost: cost to clean up nutrients	Total cost of clean-up (US\$)	Type of pollutants Sources of pollutants Concentration level of pollutants	Technologies to clean up the pollutants are available and the cost of technologies is affordable

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Oil and hydro-carbons	Extreme spills smothering of organisms	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after oil spill) Time spent travelling (before and after oil spill) Expenditures incurred in visiting the site (before and after oil spill) Frequency and duration of visits (before and after oil spill) Number of visitor-days for the site (before and after oil spill) Concentration level of oil and hydrocarbons	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences
		Replacement cost: cost to clean up the oil spill	Total cost of clean-up (US\$)	Type of pollutants Sources of pollutants Concentration level of pollutants	Technologies to clean up the pollutants are available and the cost of technologies is affordable
Sediments	Increased difficulty of transportation in wetlands	Replacement cost: cost to clean up sediments	Total cost of clean-up (US\$)	Level of sedimentation Sources of sedimentation	Technologies to clean up the pollutants are available and the cost of technologies is affordable
POPs	Water quality	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after water contamination) Time spent travelling (before and after water contamination) Expenditures incurred in visiting the site (before and after water contamination) Frequency and duration of visits (before and after water contamination) Number of visitor-days for the site (before and after water contamination) Concentration level of POPs	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
		Replacement cost: cost to clean up pollutants	Total cost of clean-up (US\$)	Type of pollutants Sources of pollutants Concentration level of pollutants	Technologies to clean up the pollutants are available and the cost of technologies is affordable
Solid waste (plastics)	Smothering of organisms	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after solid waste contamination) Time spent travelling (before and after solid waste contamination) Expenditures incurred in visiting the site (before and after solid waste contamination) Frequency and duration of visits (before and after solid waste contamination) Number of visitor-days for the site (before and after solid waste contamination)	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences
		Replacement cost: cost to clean up plastics	Total cost of clean-up (US\$)	Volume of wastes Sources of wastes	Technologies to clean up the pollutants are available and the cost of technologies is affordable
Thermal pollution	Loss of species	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey Socio-economic variables Geographic origin (before and after) Time spent travelling (before and after) Expenditures incurred in visiting the site (before and after) Frequency and duration of visits (before and after) Number of visitor-days for the site (before and after) Water temperature	Access to the site is available to all Visits have a single purpose Demand function relationship can be specified No factors aside from travel cost influence site use Market prices used in valuation are not distorted
		Contingent valuation: willingness to pay for good vegetation	Recreational value of the site as valued by willingness to pay by users (US\$)	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	Subjects understand choices offered and give meaningful and honest answers Subject have sufficient information to give informed choices Sample is representative and captures the full spectrum of users who value the site No free riders No strategic bias/influences

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
		Replacement cost: cost to visit other areas to see the species	Total cost of going to alternative sites (US\$)	Distance of other sites Cost of going to the site	Alternative location comparable/ accessible Market price used in valuation are not distorted
<b>Human Welfare</b>					
<b>Heavy metals</b>	<b>Water quality</b>	Cost of illness  Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total value of lost human labour (US\$) and total cost of hospitalisation and treatment  Total annual cost of sourcing food from alternative sites/equivalent food	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people  Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food	Health and productivity can be restored to previous levels Types of water use can be identified  Substitute food acceptable Market prices used in valuation not distorted
	<b>Contamination of human food sources</b>	Cost of illness  Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total value of lost human labour (US\$) and total cost of hospitalisation and treatment  Total annual cost of sourcing food from alternative sites/equivalent food	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people  Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food	Health and productivity can be restored to previous levels Market price used in valuation are not distorted  Substitute food acceptable Market prices used in valuation not distorted
<b>Organic matter</b>	<b>Water quality</b>	Cost of illness	Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost	Health and productivity can be restored to previous levels Market prices used in valuation not distorted
<b>Oil and hydrocarbons</b>	<b>Contamination/ tainting of aquaculture and wild fish</b>	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food  Cost of illness	Total annual cost of sourcing food from alternative sites/equivalent food  Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food  Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people	Substitute food acceptable Market prices used in valuation not distorted  Health and productivity can be restored to previous levels Market prices used in valuation not distorted
<b>POPs</b>	<b>Water quality</b>	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food	Substitute food acceptable Market prices used in valuation not distorted

**Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on Wetlands.**

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
		Cost of illness	Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people	Health and productivity can be restored to previous levels Market prices used in valuation not distorted
	<b>Contamination of human source food</b>	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food	Substitute food acceptable Market prices used in valuation not distorted
		Cost of illness	Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people	Health and productivity can be restored to previous levels Market prices used in valuation not distorted
<b>Solid waste (plastics)</b>	<b>Breeding ground for disease</b>	Cost of illness	Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people	Health and productivity can be restored to previous levels Market prices used in valuation not distorted
		Clean-up cost	Total cost of cleaning up solid waste	Amount of solid waste	
<b>Bacterial contamination</b>	<b>Contamination of human food sources</b>	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food	Substitute food acceptable Market prices used in valuation not distorted
		Cost of illness	Total value of lost human labour (US\$), and total cost of hospitalisation and treatment	Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Number of affected people	Health and productivity can be restored to previous levels Market prices used in valuation not distorted

**Table 1      Preliminary Work plan for 2004-2007.**

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Table 1 cont. Preliminary Work plan for 2004-2007.

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