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

REPORT

**Fourth Meeting of the Regional Task Force
on Economic Valuation**

Xuan Thuy, Nam Dinh Province, Viet Nam, 27th – 30th March 2006



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UNEP/GEF
Project Co-ordinating Unit,
United Nations Environment Programme,
UN Building, 2nd Floor Block B, Rajdamnern Avenue,
Bangkok 10200, Thailand
Tel. +66 2 288 1886
Fax. +66 2 288 1094
<http://www.unepscs.org>

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Table of Contents

1.	OPENING OF THE MEETING	1
1.1	WELCOME ADDRESS.....	1
1.2	OPENING STATEMENT BY THE REPRESENTATIVE OF NAM DINH PROVINCIAL GOVERNMENT	1
1.3	INTRODUCTION OF PARTICIPANTS.....	1
2.	ORGANISATION OF THE MEETING	2
2.1	DESIGNATION OF OFFICERS	2
2.2	DOCUMENTATION AVAILABLE TO THE MEETING	2
2.3	PROGRAMME OF WORK	2
3.	ADOPTION OF THE MEETING AGENDA	2
4.	STATUS OF THE MEMORANDA OF UNDERSTANDING AND ADMINISTRATIVE REPORTS	2
5.	AMENDMENTS TO THE VALUATION FRAMEWORK FOR LAND-BASED POLLUTION IMPACTS	3
6.	FINALIZATION OF THE REGIONAL GUIDELINES FOR ECONOMIC VALUATION AND CONSIDERATION OF A REGIONAL TRAINING COURSE ON ECONOMIC VALUATION	4
6.1	DRAFT REGIONAL GUIDELINES ON ECONOMIC VALUATION	4
6.2	REGIONAL TRAINING COURSE ON ECONOMIC VALUATION	6
7.	REVIEW OF NATIONAL DATA AND INFORMATION ON THE VALUE OF COASTAL HABITATS AND RESOURCES WITH A VIEW TO DEVELOPING “REGIONAL” VALUES AND PROVIDING INPUTS TO THE REGIONAL STRATEGIC ACTION PROGRAMME	7
8.	WORK PLAN FOR THE REGIONAL TASK FORCE ON ECONOMIC VALUATION	11
9.	ANY OTHER BUSINESS	11
10.	DATES AND PLACE OF NEXT MEETING OF THE TASK FORCE	11
11.	ADOPTION OF THE REPORT OF THE MEETING	11
12.	CLOSURE OF THE MEETING	11

List of Annexes

ANNEX 1	List of Participants
ANNEX 2	List of Documents
ANNEX 3	Agenda
ANNEX 4	Amended Frameworks and Procedures for Valuing the Impacts of Land-Based Pollution
ANNEX 5	Call for Proposals for the Training Course on Economic Valuation
ANNEX 6	Compiled Data and Information for Economic Values of Coastal Habitats
ANNEX 7	Revised Format for the Collection of Data and Information on Economic Value of Coastal Habitats
ANNEX 8	Work Plan and Schedule of the Meeting for 2006

Report of the Meeting

1. OPENING OF THE MEETING

1.1 Welcome Address

1.1.1 Dr. Sulan Chen, Expert—Social Sciences of the Project Coordinating Unit (PCU), welcomed participants and officially opened the meeting on behalf of Dr. Klaus Töpfer, the Executive Director of the United Nations Environment Programme (UNEP), Mr. Olivier Deleuze, Officer-in-Charge, Division of Global Environment Facility Co-ordination (UNEP/DGEF), and Dr. John Pernetta, the Project Director, UNEP/GEF South China Sea Project.

1.1.2 Dr. Chen noted that the Regional Task Force on Economic Valuation (RTF-E) had made significant progress on collating economic values for coastal habitats and resources since its last meeting. She highlighted that, seven MoUs were negotiated and signed last year to facilitate the transfer of funds to enable members of the Task Force to lead the task of collecting data and information. Dr. Chen noted further that, seven national reports on the economic value of coastal habitats had been received by the PCU, and subsequently circulated to Task Force members via email. Members were advised that the regional guidelines for economic valuation had been drafted, and that a key activity of the Task Force during the meeting would be the finalisation of this document for editing and publication.

1.1.3 Dr. Chen highlighted that the meeting had a very full agenda, which included review of the status of the Memoranda of Understanding (MoU) and administrative reports; amendments to the valuation framework for land-based pollution impacts; finalisation of the regional guidelines on economic valuation; and, the consideration of a regional training course on economic valuation. Dr. Chen stated that it was expected that all the outstanding six-monthly progress and expenditure reports would be finalised during this meeting by the members, with assistance from the PCU.

1.1.4 Dr. Chen noted that the Task Force had a substantial amount of work in front of it, and that, this would demand a considerable amount of work from the members both individually and collectively. In particular the Task Force would need to consider ways to consolidate and harmonise the data and information collected at the national level for regional use, and agree upon a method and related procedures to derive regional values from existing data and information to update the regional SAP. Dr. Chen expressed the hope that despite the work load the meeting would be both enjoyable and productive.

1.2 Opening Statement by the Representative of Nam Dinh Provincial Government

1.2.1 Dr. Chen invited Mr. Le Van Lich, Director of the Nam Dinh Department of Natural Resources and Environment, to address the Task Force on behalf of the Provincial Government of Nam Dinh.

1.2.2 Mr. Lich expressed appreciation on behalf of the Nam Dinh Department of Natural Resources and Environment for the opportunity to address the meeting and the decision of the group to select Xuan Thuy National Park as the site for the fourth meeting of the Regional Task Force on Economic Valuation.

1.2.3 Mr. Lich noted that recent development of Nam Dinh Province had brought many economic benefits to local communities, but there was a need to ensure best practice in coastal management. He expressed his wish for Nam Dinh Province to build closer co-operation with the UNEP/GEF in the management of coastal and marine resources in his Province.

1.3 Introduction of Participants

1.3.1 Noting and welcoming the presence of observers from local government and institutions, Dr. Chen invited participants to introduce themselves to the meeting. There followed a *tour de table* during which the meeting participants introduced themselves to the meeting. The list of participants is attached as Annex 1 to this report.

2. ORGANISATION OF THE MEETING

2.1 Designation of Officers

2.1.1 Members recalled that the Rules of Procedure (UNEP/GEF/SCS/RTF-E.1/Inf.4) for the RTF-E state, *"The Chairperson, Vice-Chairperson and Rapporteur shall hold office until the subsequent meeting of the Task Force. They shall be eligible for re-election no more than once. No officer may continue to hold office once the National Technical Focal Point terminates their membership of the Task Force for the Project."* In view of the fact that the fifth meeting of the Task Force would be convened from 21st – 24th August 2006, Dr. Chen proposed, and the meeting agreed that, the officers elected during this meeting would serve in the same office during the next meeting to ensure continuity and consistency of the work of the Task Force.

2.1.2 Members noted that during the third meeting of the Task Force, Fangchenggang, China, 18th – 21st April 2005, Dr. Noel Eusebio Oyardo Padilla, Dr. Li Kaiming, and Mr. Sy Ramony were elected as Chairperson, Vice-Chairperson, and Rapporteur, respectively.

2.1.3 In accordance with the Rules of Procedure, members were invited to nominate the officers to their present positions, or nominate other members as officers for this meeting. Since the next meeting will be held later this year, Dr. Matius Suparmoko suggested that the current officers be re-elected. This proposal was seconded by Dr. Khalid Abdul Rahim and Dr. Nuchanata Mungkung. There being no other nominations, Dr. Padilla, Dr. Li and Mr. Ramony were duly elected as Chairperson, Vice-Chairperson and Rapporteur for the meeting.

2.2 Documentation Available to the Meeting

2.2.1 Dr. Chen briefly introduced the discussion and information documents available to the meeting. The list of documents is contained in Annex 2 of this report.

2.3 Programme of Work

2.3.1 Dr. Chen briefed participants on the administrative arrangements for the conduct of the meeting, and the proposed organisation of work (UNEP/GEF/SCS/RTF-E.4/Inf.3). Dr. Chen noted that, formal sessions of the meeting would be conducted in English, and in plenary, and explained that sessional working groups might need to be formed to review empirical data and information on the economic value of the four types of coastal habitats, and associated resources.

3. ADOPTION OF THE MEETING AGENDA

3.1 The Chairperson introduced the draft provisional agenda prepared by the PCU as document, UNEP/GEF/SCS/RTF-E.4/1 and the provisional annotated agenda prepared as document UNEP/GEF/SCS/RTF-E.4/2 and invited members of the RTF-E to propose any amendments or additional items for consideration, prior to the adoption of the agenda.

3.2 No additional agenda items or amendments to the provisional agenda were proposed by the members, and the meeting adopted the provisional agenda without change. The adopted agenda is attached as Annex 3 to this report.

4. STATUS OF THE MEMORANDA OF UNDERSTANDING AND ADMINISTRATIVE REPORTS

4.1 Members recalled that upon the conclusion of the third meeting of the RTF-E, the PCU initiated the process of negotiating budgets and the signing of seven MoUs with the agencies or institutes of the members of the RTF-E.

4.2 The Chairperson reminded the members of the Task Force that the timely submission of satisfactory six monthly progress and expenditure reports was important to enable the PCU to disburse funds to the agencies or institutes of the members to support the completion of important activities of the Task Force. In this connection, the Chairperson noted that no further cash advances could be made to the designated agencies and institutes, until the receipt by the PCU of satisfactory six monthly progress and expenditure reports.

4.3 The Chairperson invited the PCU member to introduce document UNEP/GEF/SCS/RTF-E.4/4, and draw to the attention of the meeting any outstanding issues or matters requiring the attention of the RTF-E.

4.4 Dr. Chen drew members' attention to Table 1 and Table 2 of document UNEP/GEF/SCS/RTF-E.4/4, and noted that some members were behind schedule with the submission of progress and expenditure reports. She noted that the PCU was prepared to assist Task Force members in finalising outstanding reports during the course of the meeting. Dr. Chen invited members to explain any problems that had led to delays in the submission of reports, and emphasised that the PCU was willing to provide any assistance required in resolving such problems.

4.5 Mr. Ramony explained that he had sent a draft of the administrative reports to the PCU's Fund and Administration Officer, but the need for several revisions of the documents led to a delay in the finalisation of reports for Cambodia. Mr. Ramony noted that a final version of the reports had been sent to the Project Director, Dr. Pernetta, immediately prior to the meeting.

4.6 The Chairperson suggested, and the meeting agreed, that actions should be taken by the members to ensure the finalisation of all administrative reports for the period July-December 2005 during the course of the meeting.

5. AMENDMENTS TO THE VALUATION FRAMEWORK FOR LAND-BASED POLLUTION IMPACTS

5.1 The Chairperson invited the PCU Member to introduce document UNEP/GEF/SCS/RTF-E.4/6 "*Amendments to the Framework for Economic Valuation of the Impact of Land-based Pollution*" and to draw to the attention of the meeting, the comments made by the Regional Working Groups for the Habitat Sub-Components of the Project on the valuation framework.

5.2 Dr. Chen reviewed the framework developed by the RTF-E for use in valuing the impacts of land-based pollution on coastal habitats and resources, noting that the framework included: (a) a checklist of the impacts of land-based pollution on coastal habitats, specifying the types of pollutants and their specific impacts on mangroves, coral reefs, seagrass, and wetlands; (b) a framework for valuing impacts of land-based pollution on the four habitat types, categorising the various specific impacts in the checklist into three categories, i.e. productivity, amenity, and human welfare; and (c) procedures to undertake the valuation of the impacts of land-based pollution on the four habitat types, in which valuation techniques, indicators of measurement, data needed, and notes and assumptions were described for each specific impact identified in the checklist and framework.

5.3 Dr. Chen informed the meeting that the Regional Working Groups for the Habitat Sub-Components of the Project reviewed the impacts checklist, the framework, and the procedures to value land-based pollution impacts on the coastal habitats during the sixth round of meetings. Dr. Chen noted that the Regional Working Groups expressed their commendation to the RTF-E for the comprehensive and useful outputs produced. She further explained that the Regional Working Groups had provided some general comments and inquiries on ambiguities, and had also proposed changes to the original draft impacts checklist, framework, and procedures for the economic valuation of land-based pollution impacts.

5.4 Dr. Chen proceeded to review the information contained in document UNEP/GEF/SCS/RTF-E.4/6, and summarised the comments and proposed changes of the Regional Working Groups to the original draft impact checklist, framework, and procedures. She noted that Annex 1 of the document under consideration included the amended checklist, framework, and procedures for valuing the impacts of pollution on wetlands, and the original frameworks and procedures to value impacts on the other three habitat types, i.e. mangroves, coral reefs, and seagrass. Dr. Chen drew the attention of the meeting to the need to consider the comments of the Regional Working Groups and to amend the framework and procedures as considered appropriate by the Task Force.

5.5 There followed a lengthy discussion of the nature of *impacts* and the types of *impacts* of pollutants on each of the four habitat types. The meeting also recalled the differences between the impacts on productivity, amenity, and human welfare. To avoid double-counting of the value of the impacts, the meeting defined the land-based pollution impacts on productivity, amenity, and human welfare. It was agreed that the impact on productivity included the economic losses and decreased

natural productivity of a certain habitat caused by land-based pollution, the impact on amenity referred to the loss of recreational value due to land-based pollution, and the impact on human welfare was limited to that of health problems and illness caused by land-based pollution.

5.6 The Chairperson, Dr. Padilla, suggested that the Task Force first consider integrating the Regional Working Group comments into the checklist, frameworks, and procedures. Given the complexity of the task, it was recommended by Dr. Nuchanata, and agreed by meeting, that two small working groups be formed to discuss the comments and requests of the Regional Working Groups on habitats. Dr. Tridoyo Kusumastanto, Dr. Padilla, Mr. Ramony, and Dr. Nuchanata formed a working group to discuss the integration of matters raised by the Regional Working Groups on Coral Reefs and Wetlands, and Dr. Li, Dr. Suparmoko, Dr. Khalid, Dr. Nguyen The Chinh, Dr. Chen, and Ms. Nguyen To Uyen dealt with the comments from the Regional Working Group on Mangroves and Seagrass. The two groups later met in plenary to agree upon changes to the checklist, frameworks, and procedures of valuing the impacts of land-based pollution on the four habitat types.

5.7 Members of the Task Force acknowledged the scientific knowledge of the members of the habitat working groups, and agreed to adopt most of the comments provided by the working groups and make amendments to incorporate those comments. An exception was the comment made by the Regional Working Group on Wetlands to add sediment quality to water quality impacts. The Task Force did not agree with the addition of sediment to "water and sediment quality" of Table 1 as the Task Force is not interested in the impacts of contaminants on sediments but is concerned with the impacts of sediments on the biota in the habitat. The task force also agreed to add water quality to the oil and hydrocarbons and sediment sections.

5.8 With regard to an added impact of sediments proposed by the Regional Working Group on Wetlands, i.e. "change of deep position", the Task Force discussed the meaning of such an impact and it was proposed by Dr. Chen that it probably meant "change in the depth of water". The Task Force agreed to add this impact, and considered that this would have an impact on the productivity and amenity values of the concerned ecosystems.

5.9 Concerning the suggestion of the Regional Working Group on Seagrass to replace "red tides" with "harmful algal blooms", the Task Force noted that "algal blooms" was already included in the impact list. There followed a discussion on the differences between algal blooms and red tides. It was agreed that all could be grouped as algal blooms and that, such blooms have potential to impact on all coastal habitats.

5.10 Dr. Suparmoko raised a point regarding the possible impacts of contamination/tainting of aquaculture and wild fish by oil and hydrocarbons on amenity value. Dr. Tridoyo suggested that such pollution might reduce amenity value in the context of sport fishing. The Task Force agreed to include such an impact in the framework.

5.11 Dr. Padilla noted that the Regional Working Group on Seagrass had raised a query regarding the meaning of the phrase "Heavy metals affect the functions of distance, current and other physical variables" in Table 3.3 of the framework. He recommended, and the meeting agreed, that this should be re-phrased, as "the impact of heavy metal pollution is a function of distance, currents and other physical variables".

5.12 Based on the points made and agreed during the plenary session, the small working groups reconvened to amend the procedures to undertake valuation of the impacts of land-based pollution. Amendments were based on the changes made to the impact checklist and valuation frameworks. The amended checklist, frameworks, and procedures for valuing the impacts of land-based pollution are included in Annex 4 of this document.

6. FINALIZATION OF THE REGIONAL GUIDELINES FOR ECONOMIC VALUATION AND CONSIDERATION OF A REGIONAL TRAINING COURSE ON ECONOMIC VALUATION

6.1 Draft Regional Guidelines on Economic Valuation

6.1.1 Dr. Chen briefed participants on the status of the guidelines on economic valuation, noting that during the second meeting of the RTF-E, Seam Reap, 31st May – 3rd June 2004, it was agreed that a manual of procedures and techniques would be developed for use in valuing coastal habitats. Dr. Chen noted that the RTF-E considered and adopted an outline for the manual, and further agreed during its third meeting, on the responsibilities of members for drafting various sections of the manual.

6.1.2 Dr. Chen noted that Dr. Padilla had taken the lead in compiling the inputs from members, and highlighted that several members had failed to provide their inputs as agreed during the third meeting, resulting in only partial completion of the draft. Dr. Chen highlighted that the Task Force needed to consider and agree on the contents of the draft regional guidelines, and finalise the guidelines for editing and publication.

6.1.3 Dr. Padilla introduced the draft document UNEP/GEF/SCS/RTF.4/6 "*Draft Regional Guidelines for Economic Valuation*" and outlined the missing information, including the valuation framework for coral reefs and background information for the conduct of cost-benefit analyses. He pointed out the importance of including well structured examples in the guidelines, and that he would work to simplify the draft examples for an audience of non-economists, and to improve the structure of the sample computations in the guidelines. The meeting agreed that this would improve the usability of the guidelines, and agreed that more complex examples could be developed at a later date if required.

6.1.4 The Chairperson suggested that members could work during the evening to draft the incomplete sections of the guidelines. Dr. Suparmoko and Dr. Nuchanata agreed to work on the sections on the uses of coral reefs and cost-benefit analysis.

6.1.5 Following an evening working session, Dr. Nuchanata presented a conceptual framework for ordinary and extended cost benefit analysis for inclusion in the guidelines on economic valuation. Dr. Nuchanata outlined the prepared methodology for the conduct of: a financial analysis, including the calculation of annual benefits, annual costs, and annual net benefits; an economical analysis, including the calculation of ordinary benefit, extended benefits, extended costs, and extended net benefits; and described how to calculate net present value (NPV), the benefit-cost ratio (B/C ratio), and the internal rate of return (IRR) in the context of both a financial and economic analysis. She also outlined the concept of payback period and the use of sensitivity analysis.

6.1.6 Dr. Chen suggested that some of the extended benefits identified by Dr. Nuchanata, e.g. calcium, phosphorus, and potassium, should be modified for the purpose of ensuring consistency with the framework of benefits previously identified by the Task Force. Dr. Chen also suggested that the draft section on cost-benefit analysis could be improved by providing an explanation of the difference between a financial analysis and an economic analysis. Dr. Tridoyo suggested that there was a need for clearer examples of how the total economic value approach could be best integrated into the framework of cost-benefit analysis. Dr. Padilla advised that the identification of items to be included as ordinary and extended benefits should be based on the original framework, and Dr. Nuchanata agreed to make the necessary amendments in consultation with Dr. Thanwa Jitsanguan.

6.1.7 Dr. Suparmoko presented a document prepared overnight on the uses of coral reefs for inclusion in the regional guidelines. He noted the main extractive and non-extractive uses, and highlighted some of the key environmental services provided by coral reefs. Dr. Suparmoko explained the steps that should be taken to derive economic values for coral reefs, and reviewed surrogate market-based approaches, e.g. the hedonic price method, to the valuation of coral reefs. The task force reviewed this document in plenary, and Dr. Suparmoko agreed to prepare explanatory notes for the assumptions used in the example provided, and explain the hedonic pricing concept for non-economists. Dr. Suparmoko sought clarification regarding whether mathematical symbols should be used to elaborate equations in the guidelines. Dr. Padilla advised that the use of mathematical symbols should be avoided where possible.

6.1.8 Dr. Padilla proceeded to review each section of the regional guidelines and highlighted the need to address the comments and questions of the PCU on certain aspects of the guidelines. Dr. Padilla expressed his willingness to take the lead in addressing these comments and finalising the guidelines for editing and publication.

6.1.9 It was suggested by Dr. Tridoyo that an additional section should be added to address the policy implications of the economic valuation of coastal resources, and how the results of economic valuation could be integrated into policy development. He further agreed to provide inputs on this section to Dr. Padilla within two weeks of the closure of this meeting.

6.1.10 It was agreed that, Dr. Nuchanata and Dr. Suparmoko would send their completed sections on cost-benefit analysis and the valuation of coral reef uses to Dr. Padilla within a week following the completion of the meeting, and that Dr. Padilla would aim to finalise the guidelines by 14th April 2006. To assist Dr. Padilla with this task, Dr. Tridoyo and Ms. Uyen agreed to send Dr. Padilla documentation on the calculation of shadow value and contingent valuation methods.

6.2 Regional Training Course on Economic Valuation

6.2.1 The Chairperson invited Mr. Christopher Paterson, Fisheries Expert of the PCU, to introduce information document UNEP/GEF/SCS/RSTC.6-Sub-Comm "*Training Programme Developed by the Sub-Committee of the Regional Scientific and Technical Committee*". Mr. Paterson noted that the Sub-Committee of the Regional Scientific and Technical Committee had identified economic valuation as an important area in which to provide training and build capacity for project related personnel. He suggested that the Task Force could play an important role in the planning of a regional training course and national-level seminars on economic valuation by identifying: target audiences for these training activities; training topics; and experts, as well as commenting on possible implementing agencies, and by providing guidance on how materials developed by the Task Force could be utilised in training activities.

6.2.2 There followed a discussion of other regional training courses pertaining to environmental and natural resource economics and valuation, target audiences, topics for a regional training course and the potential roles of the Task Force members in the planning and conduct of training activities.

6.2.3 It was noted by members of the Task Force that some training courses were already available in this region, and efforts should be made to avoid duplication of activities, and participating countries should avoid sending the same individuals to similar courses more than once. It was noted that the Economy and Environment Programme for Southeast Asia (EEPSEA) had a training programme, and also provided funding to support training activities conducted by other institutes or agencies. It was agreed that Dr. Padilla would make contact with EEPSEA to explore potential collaboration in the development of economic valuation training activities, particularly regarding the provision of additional funding for the training course to be conducted within the framework of this project.

6.2.4 With regard to the target audience of the training course, it was agreed that the training course should be provided to demonstration site managers and other technical staff regarding the valuation of coastal resources in the demonstration sites. Considering that the Sub-Committee of the Regional Scientific and Technical Committee had decided that about 20-25 trainees might participate in the regional training course on economic valuation, the Task Force indicated that one person from each demonstration site might participate in the training course.

6.2.5 The Task Force proceeded to discuss potential topics to be included in the training course. The meeting agreed that the regional guidelines developed by the Task Force should serve as a training manual, and the topics included in the guidelines should be covered by the course, which might include:

- Introduction to coastal resource assessment
- Total economic value pertaining to coastal resources
- Survey design and the conduct of surveys
- Valuation techniques
- Cost-benefit analysis
- Economic valuation for policy development

6.2.6 In this connection, Dr. Suparmoko pointed out that, the expertise of the members of the Task Force should be fully utilised in the conduct of the training course, since the Task Force had worked for three years to develop the framework and procedures to value coastal resources.

6.2.7 The meeting further considered potential institutes and agencies for the implementation of the training course. Members of the Task Force expressed the interests in undertaking such a training course by their institutes or agencies. The meeting identified potential institutes or agencies, including the Resources, Environment, and Economics Center for Studies, Philippines; the University of the Philippines LB College of Economics and Management, Philippines; the Faculty of Economics, Kasetsart University, Thailand; Center for Coastal and Marine Resources Studies of the Institute for Tropical Coastal and Ocean, Bogor Agricultural University, Indonesia; and the Center for Environmental Research, Education and Development, Viet Nam.

6.2.8 Considering that there are multiple institutes or agencies qualified to conduct such a training course, the Task Force suggested to employ a competitive selection process, and that interested institutes or agencies should submit a proposal for the training course to the PCU. The Task Force discussed the contents to be included in the proposal, and Dr. Chen agreed to draft a "Call for Proposals for the Training Course" based on the discussion.

6.2.9 A "Call for Proposals for the Training Course of Economic Valuation" was drafted by Dr. Chen during the meeting. It was reviewed and agreed by the Task Force, and is attached as Annex 5 to this report. Members agreed to distribute the document to potential institutes and agencies upon their return to the office.

6.2.10 The meeting emphasised that the proposals should be sent to the PCU no later than 1st May 2006, and the PCU would make recommendation on the selection of the implementing agency to the Regional Scientific and Technical Committee for approval.

7. REVIEW OF NATIONAL DATA AND INFORMATION ON THE VALUE OF COASTAL HABITATS AND RESOURCES WITH A VIEW TO DEVELOPING "REGIONAL" VALUES AND PROVIDING INPUTS TO THE REGIONAL STRATEGIC ACTION PROGRAMME

7.1 Members recalled that during the third meeting of the RTF-E, it was agreed to develop a regional database of empirical economic values for coastal goods and services. Dr. Chen noted that a regional format for the collection of the required empirical data and information to build such a regional database was also adopted during that meeting, and that each expert member, on behalf of their Institutions, had agreed to collect the data and information and provide them to the PCU in the agreed format. Dr. Chen highlighted that draft country reports summarising the data and information collected to date had been received by the PCU and were provided in documents UNEP/GEF/SCS/RTF-E.4/7.Cam; 7.Chi; 7.Ind *et sequitor*.

7.2 The Chairperson invited members of the Task Force to introduce their national reports, outline problems encountered during the process of collecting the data and information, and propose possible solutions to address these problems.

7.3 Mr. Ramony introduced document UNEP/GEF/SCS/RTF-E.4/7-Cam "*Critical Review of Empirical Data (Cambodia)*". Mr. Ramony noted that data and information regarding the economic valuation of all four habitats had been collected, and explained that he had concerns about the quality of the information. He pointed out that most reports reviewed did not stipulate how the data were collected and analysed, and did not include references. Mr. Ramony stated that he would work with the focal points for the habitat sub-components in Cambodia to collect further information and data, and to update them about problems with the data. Mr. Ramony proposed that support should be provided to activities aimed at building capacity in Cambodia for the economic valuation of coastal habitats.

7.4 Dr. Li introduced document UNEP/GEF/SCS/RTF-E.4/7-Chi "*Medium-term Report of Economic Valuation for China (China)*". Dr. Li noted that he had completed the table as supplied by the PCU for mangroves, wetlands, and seagrass, and explained that the activity of data and information collection was ongoing in China and he aimed to update the information before the next meeting of the Task Force. Dr. Li pointed out that he had experienced difficulties in gathering data on the valuation of coral reefs in China, and that he hoped to be able to find some information on this in near future. Dr. Chen noted that most of the information appeared to be derived from the demonstration sites in China, and asked whether it had been possible for Dr. Li to source information from other regions, such as Hainan Province. Dr. Li explained that there is very little information for other areas.

7.5 Dr. Suparmoko introduced document UNEP/GEF/SCS/RTF-E.4/7-Ind "*Indonesia Report on Data and Information of the Value of Coastal Habitats*" and apologised for not presenting the data in the format as agreed during the third meeting. He noted that some basic data and information had been gathered for mangroves, coral reefs, and seagrass. He explained that he had discussed his valuations with the expert member, Dr. Tridoyo, and it was identified that his reported values could be adjusted using inflation rates for different years. Dr. Tridoyo noted that graduate students of Bogor Agricultural University's Center for Coastal and Marine Resources Studies had finalised more than 50

graduate theses on the valuation of ecosystem goods and services in Indonesia. He noted that he would work with Dr. Suparmoko during the inter-sessional period to extract information on habitat values from these documents.

7.6 Dr. Khalid introduced document UNEP/GEF/SCS/RTF-E.4.7-Mal "*Malaysia Report on Data and Information of the Value of Coastal Habitats*". Dr. Khalid noted that many economic valuations have been conducted in Malaysia, but they mostly relate to forests, rather than coastal habitats or resources. He pointed out that since the last meeting he had held discussions with representatives of the relevant Government ministries in Malaysia to identify existing information. He presented a summary of economic valuations of coastal resources, and noted that most of this work had been conducted on the west coast of Malaysia.

7.7 Dr. Nuchanata introduced document UNEP/GEF/SCS/RTF-E.4.7-Tha "*Thailand Report on Data and Information of the Value of Coastal Habitats*" and tabled draft summary tables of empirical data relating to the economic values of mangrove, coral reef, seagrass, and wetland extractive uses. Dr. Nuchanata pointed out that she had discussed with the focal points for the seagrass and wetland sub-components in Thailand to derive the unit prices for resources in these habitat types.

7.8 Dr. Chinh introduced document UNEP/GEF/SCS/RTF-E.4.7-Vie "Initial Progress Report of Economic Valuation of Wetlands/Mangroves in Viet Nam". He summarised values collected for coastal habitats in Ba Lat Estuary, Can Gio, and Ca Mau. He noted that in his view the estimates of Total Economic Value calculated are very conservative, since non-use values are not included due to the difficulty of estimating them. He further informed the meeting that surveys would be conducted in the coral reef and seagrass site at Phu Quoc. Dr. Chen sought clarification regarding whether the date of valuation of October 2005 reported in the draft summary tables for empirical data was the date when the data were collected or the date when the values were extracted from the literature and recorded in the tables. Dr. Chinh explained that it was the latter, and that his staff had summarised actual dates of collection that could be used to update the tables.

7.9 Dr. Padilla introduced document UNEP/GEF/SCS/RTF-E.4.7-Phi "*Philippines Report on Data and Information of the Value of Coastal Habitats*". He explained that, as in Malaysia, most valuation studies in the Philippines have been conducted on forest resources with very little attention having been paid to coastal habitats and their resources. He noted that most information and data on coastal habitats pertained to the province of Busuanga. Dr. Padilla pointed out that while many donor organisations and projects were interested in the economic valuation of habitats, it was apparent that very little support had been provided to such activities in the Philippines to date.

7.10 The Chairperson invited Dr. Chen to introduce document UNEP/GEF/SCS/RTF-E.4/8 "*Review of Empirical Data and Information Submitted by the Members of the Task Force*". Dr. Chen noted that there were a number of problems relating to the format, object of valuation, cost/net value, double counting, and sources/references for the data provided. Dr. Chen explained that, some of the submissions did not follow the agreed format, it was not possible to draw comparable data from the reports, and that the reports do not provide sufficient information to generate an acceptable regional value for coastal habitats.

7.11 Dr. Chen noted that:

- Some of the compiled data provide total economic valuations without providing information regarding what values have been included in the "total economic value". Others provide total value of certain products at the national level or in a local jurisdiction without specifying what percentage of these products are produced from the coastal habitats.
- Some of the values collected do not distinguish between the total price of valued goods and the net value of the goods. The cost of collecting or producing certain goods from the coastal habitats has not been provided in some cases.
- Nearly all data and information collected with respect to wetlands do not specify what types of wetlands have been valued, and mostly these wetlands do not exclude mangroves, coral reefs, and seagrass.
- Some reports are unclear about the sources and references of the data used or collected.

7.12 Dr. Chen noted that the document also contained some specific comments for each national report on the data and information submitted by members of the Task Force. She urged the members to review and check their data and information based on the comments provided in the document.

7.13 It was pointed out that data from inland wetland sites in China may not be used to derive regional values on coastal wetland habitats. The meeting discussed the possibilities of using the data from outside the coastal areas of the South China Sea, and agreed that when data are not available for coastal habitats bordering the South China Sea, data from other tropical coastal habitats in the region may be used to derive economic values for habitats.

7.14 Dr. Chen noted that an important task of the meeting was to review the full text of the reports from which the empirical data had been extracted in order to review their contents and formulate appropriate comparable entries on the basis of the information contained therein. Dr. Chen noted that she had provided general comments in document UNEP/GEF/SCS/RTF-E.4/8 on anomalies in the information and urged members to review their data in relation to these comments. The Chairperson invited members of the Task Force to form two working groups in order to analyse the contents of the referenced documents as a group and tabulate the information in a directly comparable manner. These working groups worked late into the evening to complete this task. The tables produced by this group were reviewed, consolidated and are attached to this report as Annex 6.

7.15 The Chairperson invited Dr. Chen to introduce document UNEP/GEF/SCS/RTF-E.4/9 containing an initial outline of a possible method to derive regional values in the case of direct extractive uses. Dr. Chen noted the proposed approach advocates the determination of regional values for each good and service independently and subsequent summation to produce a Regional Total Economic Value for habitats. Dr. Chen pointed out that the Task Force would need to discuss and agree whether or not: the "on-site" sale price for extracted goods should be taken as the "value" of the natural production, and the costs of labour assumed to be negligible under such circumstances; and discuss and agree the manner in which a coefficient could be derived to relate prices in general in each country in a comparable manner.

7.16 Several members of Task Force expressed reservations regarding (a) the use of "on-site" sale price to value natural production, and (b) the assumption that the costs of labour are negligible. Dr. Khalid suggested that typical valuation approaches define "value" as everything under the demand curve, and that by assuming the cost of labour to be negligible, the Task Force risked significantly over-estimating the value of resources. There followed a lengthy discussion on surplus value, and in order to focus the discussion, Dr. Padilla reminded the Task Force that the group was tasked with valuing ecosystem goods and services only, and the proposed assumption that the on-site sale price reflects the value of natural production seemed reasonable if the Task Force were to progress further in this activity.

7.17 In response to comments from several members regarding the calculation of values that included other variables (e.g. cost of transport, value-adding) to derive a more complete value of habitats, Dr. Padilla noted that the task at hand was to decide if the assumption that labour costs are negligible should be applied in using on-site sale price to value natural production only. Dr. Chen reminded the group that the unit net cost data collected by each of the members is market price less the cost of transport, and the members agreed that this is the data they have collected. It was agreed that efforts to derive more complete values of habitats would require a significant redirection in efforts of the Task Force.

7.18 Dr. Suparmoko noted that in practical terms, it may be very difficult to calculate all components of value under a theoretical demand curve for all resources. Dr. Tridoyo agreed, and noted that the proposed assumption was reasonable, especially given the complexities of valuing natural production only. Dr. Padilla pointed out that if the Task Force were to value the labour component associated with ecosystem goods, then any values derived for ecosystem services would not be directly comparable. He stressed that the Task Force should be aware that if a value for a good is calculated using this assumption, and subsequently used in a cost-benefit analysis, then steps would need to be taken to exclude labour cost from the opposite side of the equation. The Task Force agreed that given the nature of the problem, i.e. valuing natural production, on-site sale price could be used to "value" natural production.

7.19 Considering that the value for non-extractive uses will not include a cost of production, and in view of the fact that the cost-benefit analysis for alternative uses of the ecosystem will deduct the cost of production or investment, the Task Force decided that “unit net value” should be used to calculate the value of natural resources, regardless of the fact that this approach might undervalue the ecosystems. Members of the Task Force indicated that the data collected were unit net value, which was defined as market price minus the cost of harvesting and production.

7.20 The Task Force had a lengthy discussion regarding the value of a resource in a country that is not used by people in that country. For example, sipunculid worms are consumed only in China, with some minor use in several provinces of Viet Nam. In Indonesia, sipunculid worms are not consumed locally and may be of no short-term value to local people. They are also not exported to China. Following a lengthy debate, the Task Force agreed that in this case the unit net value of sipunculid worms in China should be transferred to other mangroves areas in the region on the condition that sipunculid worms are found in those mangrove areas to which the unit value is being transferred. The meeting agreed that a regional perspective should be taken to value the ecosystems, and that as long as a resource is valued by a group of people in the region, it should be considered as part of the regional value, beyond the consideration of national boundaries.

7.21 In the case of intra-country variation in market price, or where the value of a resource varied in different areas of a country, the meeting decided that all sample data from a country would be used in deriving a regional average value, and that a national average value might not be needed to derive a regional value.

7.22 Following that, the Task Force had a lengthy discussion regarding the method and procedures to derive a regional value of coastal habitats bordering the South China Sea. It was agreed that a regional approach should include the following steps:

- **Step 1:** Calculate a regional value for a particular function, service, or product from the ecosystem from existing data and information.
- **Step 2:** Request the Regional Working Groups for the four habitat sub-components to identify the available functions, services, products and other resources in each site bordering the South China Sea.
- **Step 3:** Transfer regional unit value for a particular function, service, or product to areas on the condition that the resources are available in those areas.
- **Step 4:** Aggregate the total value of an ecosystem by summing up the total regional value of all functions, services, or products.
- **Step 5:** Derive unit ecosystem value by dividing the total regional value of the ecosystem with the total area of that particular ecosystem.

7.23 Considering the fact that the existing data vary by years and countries, Dr. Tridoyo proposed, and the meeting agreed to adopt a three-step approach to standardise the data, as follows:

- **Step 1:** Convert all value into the real value of 2005 by using national Consumer Price Index (CPI). The equation to convert the value is: $\text{Real Value 2005} = \text{Raw Data} * \text{CPI of 2005} / \text{CPI of the year of valuation}$.
- **Step 2:** Use exchange rate for the year of valuation to convert the value into \$ US.
- **Step 3:** Use the United States CPI to standardise the value. The equation to standardise the value is: $\text{Standardised 2005 Value} = \text{\$US Value} * \text{US CPI 2005} / \text{CPI of the year of valuation}$.

7.24 It was also noted that in order to derive a regional value using the agreed method and procedures, two more parameters, i.e. national consumer price index and exchange rate, were added to the data format, which was distributed to the members of the Task Force for the next submission of data and information. This newly adopted format is attached as Annex 7 to this meeting report.

8. WORK PLAN FOR THE REGIONAL TASK FORCE ON ECONOMIC VALUATION

8.1 The Chairperson invited the PCU member to introduce document UNEP/GEF/SCS/RTF-E.4/10, *Draft Work Plan for the Regional Task Force on Economic Valuation*. Members were invited to consider, amend and agree on the work plan and timetable for the Regional Task Force. The adopted work plan for 2006 is contained as Annex 8 to this meeting report.

9. ANY OTHER BUSINESS

9.1 The Chairperson invited members to consider and discuss any additional items of business. Dr. Tridoyo informed the meeting that he and Dr. Nuchanata had tried to derive a regional value using the method and procedures agreed in Agenda item 7, and noted that some of the compiled information on values was anomalous, and that in some cases the same exchange rate had been used to convert local currency value into \$US value for different years. In this connection, he strongly urged members of the Task Force to check the data carefully and to send updated data and information, along with additional data, to the PCU with a copy to the Chairperson by mid-June 2006.

10. DATES AND PLACE OF NEXT MEETING OF THE TASK FORCE

10.1 Members were reminded that, considering the overall project work plan and the outstanding activities of the RTF-E, the Regional Scientific and Technical Committee in its sixth meeting, Batam, Indonesia, 8th-10th December 2005, decided to convene a second meeting of the RTF-E in 2006. It further decided that the tentative dates for the convening of this meeting would be 21st-24th August 2006, inclusive.

10.2 It was noted that the work of the RTF-E in deriving regional values of coastal habitats would rely on the inputs from the Regional Working Groups regarding the availability of resources in the habitat sites bordering the South China Sea to apply the technique of benefit transfer. In this connection, the next meeting of the RTF-E should be convened after the seventh round of regional working groups' meetings, the latest of which would be the seventh meeting of the Regional Working Group on Mangroves from 4th – 8th September 2006. Dr. Chen noted that the Regional Task Force on Legal Matters (RTF-L) would convene its next during 18th – 21st September 2006, and that she would consult with the RTF-L regarding the possibility to switch the dates of the next meeting of the RTF-E with those of the RTF-L, and would inform members of the outcome of this discussion by the end of April 2006.

10.3 Members proceeded to consider the place of the next meeting of the Task Force. It was then agreed that the meeting should be held in Malaysia at the project's Tun Mustapha Park coral reef demonstration site, Sabah, Malaysia, taking into consideration the decision made by the Project Steering Committee that all regional meetings should take place in potential demonstration sites. It was agreed that the Indonesia seagrass site, East Bintan, would serve as a second option for the place of next meeting.

11. ADOPTION OF THE REPORT OF THE MEETING

11.1 The Rapporteur presented the draft report of the meeting. Members were invited to consider the report and propose any amendments or changes prior to the adoption of the report. The participants reviewed the draft and amended and approved the text as it appears in this document.

12. CLOSURE OF THE MEETING

12.1 The Chairperson invited members to make any final comments and/or remarks. Members expressed their appreciation for the hard work of the Chairperson. Dr. Chen expressed the appreciation of the PCU to the Vietnamese colleagues for assistance in administrative matters relating to the meeting arrangements and thanked all participants for their hard work. The Chairperson and the Task Force wished Ms. Sriskun, all the best for her future career with UNICEF. The Chairperson thanked Dr. Chinh and Ms. Uyen for all their assistance. Dr. Khalid welcomed the Task Force to Malaysia for the next meeting.

12.2 The Chairperson officially closed the meeting at 10:50 am on the 30th of March 2006.

ANNEX 1**List of Participants****Government designated Members****Cambodia**

Mr. Sy Ramony, Chief
National Park and Wildlife Sanctuary Office
Department of Nature Conservation and
Protection, Ministry of Environment
#48 Samdech Preah Sihanouk
Sangkat Tonle Bassac, Khan Chamkarmon
Phnom Penh, Cambodia

Mobile: (855) 12 832 933
Tel/Fax: (855 23) 211 381
E-mail: ramony@online.com.kh

Indonesia

Dr. Matius Suparmoko
Faculty of Economics
Jenderal Soedirman University
Kampus Grendeng, PO. Box 109
Purwokerto 53122
Central Java, Indonesia

Tel: (62 281) 37970 (O); (62 21) 733 4623
Fax: (62 281) 40268; (62 21) 733 4623
E-mail: rmoko@cbn.net.id;
suparmoko@yahoo.com

Philippines

Dr. Noel Eusebio Oyardo Padilla
Development Management Officer V
Policy Studies Division
Planning and Policy Studies Service
Department of Environment and Natural
Resources, DENR Compound
Visayas Ave., Diliman
Quezon City, Philippines

Tel: (632) 925 1183; 929 6626-35
Fax: (632) 926 1004
E-mail: nopadilla@yahoo.com

Viet Nam

Dr. Nguyen The Chinh, Senior Economist
Dean of Faculty of Urban Environmental
Resource Economics
National Economic University
No. 207 Duong Giai Phong
Hanoi, Viet Nam

Tel: (844) 854 0376; (84) 09 1330 7559
Fax: (844) 869 8231
Email: thechinh@fpt.vn

People's Republic of China

Dr. Li Kaiming, Vice President
South China Institute of Environmental Sciences,
SEPA
7 West Yuancun Road
Guangzhou 510655
Guangdong Province
China

Tel: (86 20) 8554 1496
Fax: (86 20) 8552 4450
E-mail: kmli@scies.com.cn; k_m_li@yahoo.com

Malaysia

Dr. Khalid Abdul Rahim, Professor
Faculty of Economics and Management
University Putra Malaysia
43400 UPM, Serdang
Selangor, Malaysia

Tel: (603) 8946 7653
H/P: (60 12) 942 9090
Fax: (603) 8948 6188
E-mail: khalid@pop.jaring.my;
khalid@econ.upm.edu.my

Thailand

Dr. Nuchanata Mungkung, Lecturer
Department of Agricultural and Resource
Economics, Faculty of Economics
Kasetsart University
50 Phahonyothin Rd., Chatujak
Bangkok 10903, Thailand

Tel: (66 2) 942 8649-51 ext. 131
Mobile: (66) 06 904 2780
Fax: (66 2) 942 8047; 942 8525
E-mail: feconnm@ku.ac.th;
nuchanatam@yahoo.com

Expert Members

Dr. Tridoyo Kusumastanto
Professor of Marine Economics Policy
CCMRS - Bogor Agricultural University
Jl. Sedap Malam II/20
Taman Yasmin, Bogor 16310, Indonesia

Tel: (62 251) 624 815; (62) 81 611 33170
Fax: (62 251) 621 086
E-mail: tridoyo@indo.net.id

Local Governments

Mr. Le Van Lich, Director
Nam Dinh Department of Resources and
Environment
No. 1A Tran Te Xuong Street
Nam Dinh, Viet Nam

Tel: (84 0350) 849 338; 841 483
Fax: (84 0350) 642 100

Mr. Nguyen Van Dong, Vice Chairman
Giao Thuy People's Committee
Nam Dinh Province
Viet Nam

Tel: (84 0350) 894 635; (84 91) 3276 711

Mr. Nguyen Viet Cach
Director of Xuan Thuy National Park (Ramsar site)
Giao Thuy District, Nam Dinh Province
Viet Nam

Tel: (84 0350) 741 501, 895 125
Tel/Fax: (84 0350) 893 065
E-mail: cachxtnp@yahoo.com

Mr. Nguyen Van Phan
Local Coordinator of Nam Dinh ICZM Project
No. 1A Tran Te Xuong Street
Nam Dinh, Viet Nam

Tel: (84 0350) 865 076
Fax: (84 0350) 865 075
E-mail: iczm-nd@hn.vnn.vn

Observer

Ms. Nguyen To Uyen
Researcher
Center for Environmental Research Education and
Development (CERED)
279/24 Giang Vo Street.
Hanoi, Viet Nam

Tel: (844) 512 0632
Fax: (844) 514 1550

Project Co-ordinating Unit Member

Ms. Sulan Chen, Associate Expert
UNEP/GEF Project Co-ordinating Unit
United Nations Environment Programme
United Nations Building, 2nd Floor, Block B
Rajdamnern Nok Avenue
Bangkok 10200, Thailand

Tel: (66 2) 288 2279
Fax: (66 2) 288 1094
E-mail: chens@un.org

UNEP/GEF Project Co-ordinating Unit

Mr. Christopher Paterson, Expert - Fisheries
UNEP/GEF Project Co-ordinating Unit
United Nations Environment Programme
United Nations Building, 2nd Floor, Block B
Rajdamnern Nok Avenue
Bangkok 10200, Thailand

Tel: (66 2) 288 1116
Fax: (66 2) 288 1094
E-mail: patersonc@un.org

Ms. Sriskun Watanasab, Secretary
UNEP/GEF Project Co-ordinating Unit
United Nations Environment Programme
United Nations Building, 2nd Floor, Block B
Rajdamnern Nok Avenue
Bangkok 10200, Thailand

Tel: (66 2) 288 2608
Fax: (66 2) 288 1094
E-mail: watanasab@un.org

ANNEX 2

List of Documents

Discussion documents

UNEP/GEF/SCS/RTF-E.4/1	Agenda.
UNEP/GEF/SCS/RTF-E.4/2	Annotated Agenda.
UNEP/GEF/SCS/RTF-E.4/3	Report of the Meeting.
UNEP/GEF/SCS/RTF-E.4/4	Status of the Memoranda of Understanding and Administrative Reports.
UNEP/GEF/SCS/RTF-E.4/5	Amendments to the Framework for Economic Valuation of the Impact of Land-based Pollution.
UNEP/GEF/SCS/RTF-E.4/6	Draft Regional Guidelines for Economic Valuation.
UNEP/GEF/SCS/RTF-E.4/7.Cam	Critical Review of Empirical Data.
UNEP/GEF/SCS/RTF-E.4/7.Chi	Medium-term Report of Economic Valuation for China.
UNEP/GEF/SCS/RTF-E.4/7.Ind	Indonesia Report on Data and Information of the Value of Coastal Habitats.
UNEP/GEF/SCS/RTF-E.4/7.Mal	Malaysia Report on Data and Information of the Value of Coastal Habitats.
UNEP/GEF/SCS/RTF-E.4/7.Phi	Philippines Report on Data and Information of the Value of Coastal Habitats.
UNEP/GEF/SCS/RTF-E.4/7.Tha	Thailand Report on Data and Information of the Value of Coastal Habitats.
UNEP/GEF/SCS/RTF-E.4/7.Vie	Initial Progress Report of Economic Valuation of Wetlands/Mangroves in Viet Nam.
UNEP/GEF/SCS/RTF-E.4/8	Review of Empirical Data and Information Submitted by the Members of the Task Force.
UNEP/GEF/SCS/RTF-E.4/9	Total Economic Values of Habitats for Application at the Regional Level.
UNEP/GEF/SCS/RTF-E.4/10	Draft Work Plan for the Regional Task Force on Economic Valuation for 2006.

Information documents

UNEP/GEF/SCS/RTF-E.4/Inf.1	List of Participants.
UNEP/GEF/SCS/RTF-E.4/Inf.2	List of Documents.
UNEP/GEF/SCS/RTF-E.4/Inf.3	Programme.
UNEP/GEF/SCS/RTF-E.4/Inf.4	Value of Coastal Habitats Bordering the South China Sea, Presentation given by Dr. Tridoyo Kusumastanto for the Second Regional Scientific Conference.
UNEP/GEF/SCS/RSTC.6-Sub-Comm	First Meeting of the Sub-committee of the Sixth Meeting of the Regional Scientific and Technical Committee for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the Meeting. Bangkok, Thailand, 6 th – 10 th February 2006.
UNEP/GEF/SCS/PSC.5/3	Fifth Meeting of the Project Steering Committee for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the Meeting. Batam, Indonesia, 12 th – 14 th December 2005.

- UNEP/GEF/SCS/RSTC.6/3 Sixth Meeting of the Regional Scientific & Technical Committee for the UNEP/GEF Project “*Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand*”. Report of the Meeting. Batam, Indonesia, 8th – 10th December 2005.
- UNEP/SCS/SAP Ver. 3 Extract from *Strategic Action Programme for the South China Sea* (Draft Version 3, 24 February 1999) East Asian Seas Regional Coordinating Unit. 69pp.

Report of the 6th Round of Regional Working Group meetings are available on the project website www.unepscs.org

The following documents are provided in published copies

- UNEP/GEF/SCS/PSC.4/3 Fourth 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, 13th – 15th December 2004.
- UNEP/GEF/SCS/RSTC.5/3 Fifth 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. Fangchenggang, China, 9th – 11th December 2004.
- 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, 18th – 21st April 2005.

ANNEX 3

Agenda

- 1. OPENING OF THE MEETING**
 - 1.1 Welcome Address
 - 1.2 Opening Statement by the Representative of Nam Dinh Provincial Government
 - 1.3 Introduction of Participants
- 2. ORGANISATION OF THE MEETING**
 - 2.1 Designation of Officers
 - 2.2 Documentation Available to the Meeting
 - 2.3 Programme of Work
- 3. ADOPTION OF THE MEETING AGENDA**
- 4. STATUS OF THE MEMORANDA OF UNDERSTANDING AND ADMINISTRATIVE REPORTS**
- 5. AMENDMENTS TO THE VALUATION FRAMEWORK FOR LAND-BASED POLLUTION IMPACTS**
- 6. FINALIZATION OF THE REGIONAL GUIDELINES FOR ECONOMIC VALUATION AND CONSIDERATION OF A REGIONAL TRAINING COURSE ON ECONOMIC VALUATION**
 - 6.1 Draft Regional Guidelines on Economic Valuation
 - 6.2 Regional Training Course on Economic Valuation
- 7. REVIEW OF NATIONAL DATA AND INFORMATION ON THE VALUE OF COASTAL HABITATS AND RESOURCES WITH A VIEW TO DEVELOPING "REGIONAL" VALUES AND PROVIDING INPUTS TO THE REGIONAL STRATEGIC ACTION PROGRAMME**
- 8. WORK PLAN FOR THE REGIONAL TASK FORCE ON ECONOMIC VALUATION**
- 9. ANY OTHER BUSINESS**
- 10. DATES AND PLACE OF NEXT MEETING OF THE TASK FORCE**
- 11. ADOPTION OF THE REPORT OF THE MEETING**
- 12. CLOSURE OF THE MEETING**

ANNEX 4

Amended Frameworks and Procedures for Valuing the Impacts of Land-Based Pollution

BACKGROUND

During the third Meeting of the Regional Task Force on Economic Valuation (RTF-E) in Fangchenggang, China, 18th – 21st April 2005, the Task Force reviewed the consultant report on existing literature for the valuation of the impacts of land-based pollution, and considered alternative approaches to formulating a framework and procedures for valuing the impacts of land-based pollution on the four coastal habitat types: mangroves, coral reefs, seagrass, and wetlands, which are of concern to the UNEP/GEF South China Sea Project.

During that meeting, the Task Force developed a framework for the valuation of land-based pollution on coastal habitats, including the following components:

- A checklist of the impacts of land-based pollution on coastal habitats, specifying types of pollutants and their specific impacts on the four habitats [mangroves, coral reefs, seagrass, and wetlands];
- A Framework for valuing the impacts of land-based pollution on the four habitat types, categorising the various specific impacts in the checklist into three categories, i.e. productivity, amenity, and human welfare;
- Procedures to undertake valuation of impacts of land-based pollution on the four habitat types, in which valuation techniques, indicator of measurement, data needed, and notes and assumptions were described for each specific impact identified in the checklist and framework.

The impact checklist, the framework, and the procedures for valuing the impact on the coastal habitats were reviewed and checked by the members of the Regional Working Groups during the sixth round of meetings. In general, the Regional Working Groups expressed their appreciation to the RTF-E¹ for the comprehensive and useful outputs produced. The Regional Working Groups provided some general comments and inquiries on some ambiguities, and also proposed changes to the original draft impact checklist, framework, and procedures for the economic valuation of land-based pollution impacts.

During the fourth meeting of the Regional Task Force on Economic Valuation, the Task Force reviewed and considered the comments and proposed amendments provided by the Working Groups. The Task Force decided to adopt most of the comments and proposed changes, and proceeded to amend the checklist, frameworks, and procedures for valuing land-based pollution, based on those comments.

Table 1 is the amended checklist for the impacts of land-based pollution on coastal habitats, Table 2 is a consolidated table, the contents of which reflect the contents of the original tables 2.1-2.4 and includes the amended frameworks for mangroves, coral reefs, seagrass, and wetlands, respectively. The original tables 3.1 - 3.4 which reflected the four habitats separately have been consolidated in the present text as Tables, 3, 4 and 5 covering the valuation techniques for the impacts of land-based pollution on: productivity, amenity value, and human welfare respectively.

¹ See the meeting reports of the sixth round of Regional Working Groups' meetings: UNEP/GEF/SCS/RWG-M.6/3, UNEP/GEF/SCS/RWG-C.6/3, UNEP/GEF/SCS/RWG-S.6/3, UNEP/GEF/SCS/RWG-W.6/3 (available on project website: www.unepscs.org).

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

Types of Pollutants	Impacts	Mangroves	Coral Reefs	Seagrass	Wetlands
Heavy metals	• Water 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	v	v	v	v
Organic matter	• Water quality	-	v	v	v
Nutrients	• Eutrophication	-	v	v	v
	• Algal blooms and/or overgrowth	-	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 organisms	v	v	v	v
	• Water quality	v	v	v	v
Sediments	• Smothering of mangroves, coral reefs and seagrass	v	v	v	-
	• Reduced light penetration from increased turbidity leading to reduced primary production	-	v	v	v
	• Water quality	v	v	v	v
	• Change of water depth	v	v	v	v
	• Change of species composition of benthonic communities	v	v	v	v
POPs	• Water quality	v	v	v	v
	• Contamination of seafood	v	v	v	v
	• Reduced fish production	v	v	v	v
Solid waste (plastics)	• Smothering of organisms	v	v	v	v
	• Loss of amenity value	v	v	v	v
	• Biosorption of plasticizing agents	v	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	v
	• Loss of bio community (fish...)	v	-	v	v

Table 2 Framework for Valuing Impacts of Land-based Pollution on Coastal Habitats

Types of Pollutants	Impacts	Mangroves			Coral Reefs			Seagrass			Coastal Wetlands		
		Prod.	Amenity	Human welfare	Prod.	Amenity	Human welfare	Prod.	Amenity	Human welfare	Prod.	Amenity	Human welfare
Heavy metals	• Water quality	V	V	V	V	V	-	V	V	-	V	V	V
	• Reduced reproductive capacity in molluscs	V	-	-	V	-	-	V	-	-	V	-	-
	• Contamination of human food sources	-	-	V	-	-	V	-	-	V	-	-	V
	• Bio-accumulation	V	-	V	V	-	-	V	-	-	V	-	-
Organic matter	• Water quality	-	-	-	V	V	-	V	V	-	V	V	V
Nutrients	• Eutrophication	-	-	-	V	-	-	V	-	-	V	V	-
	• Algal blooms and/or overgrowth	-	-	-	V	-	-	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	-	-	V	-	-	V
	• Extreme spills smothering of organisms	V	V	-	V	V	-	V	V	-	V	V	-
	• Water quality	V	V	V	V	-	-	V	V	V	V	V	-
Sediments	• Smothering of benthic communities	V	V	-	V	V	-	V	V	-	V	V	-
	• Reduced light penetration from increased turbidity leading to reduced primary production	-	-	-	V	V	-	V	V	V	V	-	-
	• Water quality	V	V	-	V	V	-	V	V	-	V	V	-
	• Change of water depth	V	V	-	V	V	-	V	V	-	V	V	-
	• Change of species composition of benthic communities	V	V	-	V	V	-	V	V	-	V	V	-
POPs	• Water quality	-	-	V	V	-	-	V	V	-	V	V	V
	• Contamination of seafood	-	-	V	-	-	V	-	-	V	-	-	V
	• Reduced fish reproductive capacity	V	-	-	V	-	-	V	-	-	V	-	-
Solid waste (plastics)	• Smothering of organisms	V	V	-	V	V	-	V	V	-	V	V	-
	• Biosorption of plasticizing agent	V	-	V	V	-	V	V	-	V	V	-	V
Thermal pollution	• Reduced productivity	V	-	-	V	-	-	V	-	-	V	-	-
	• Loss of species	V	V	-	V	-	-	V	V	-	V	V	-
Bacterial contamination	• Reduced use as bathing area	-	-	-	-	V	-	-	V	-	-	V	-
	• Contamination of human food sources	V	-	V	-	-	V	-	-	V	-	-	V
Change in pH Acid Pollution	• Change of water and sediment quality	V	-	-	V	-	-	V	V	-	V	-	-
	• Loss of species (fish)	V	V	-	V	V	-	V	V	-	V	V	-

Table 3 Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Productivity of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Heavy metals	Water quality	<p>On site sale value for marketed goods using net price</p> <p>For directly used goods, use market values for equivalent goods. If not available use indirect opportunity cost approach (using wages forgone for harvesting goods)</p>	Total annual value of production for each product (US\$)	<p>For direct valuation:</p> <ul style="list-style-type: none"> • 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 • Exchange rates and the years of data collected <p>For indirect valuation:</p> <ul style="list-style-type: none"> • Price per unit for equivalent goods • Cost of material inputs • Time spent harvesting/gathering/ culturing product • Equivalent local wage for labour • On site market price of each product (before and after degradation of water quality) 	<ul style="list-style-type: none"> • 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.
	Reduced reproductive capacity	On site sale value for human food sources using net price	Loss of income due to decreased production of food sources	<ul style="list-style-type: none"> • Prices before and after pollution • Change in production before and after heavy metal pollution 	Change of productivity is caused only by heavy metals
	Contamination of human food sources	On site sale value for human food sources using net price	Drop in price due to the decrease in demand	<ul style="list-style-type: none"> • Prices before and after pollution • Quantities of products harvested, sold, given away and used (before and after) 	<ul style="list-style-type: none"> • People are aware of the polluted food sources • Market price changes reflect the changes in demand • All externalities are identified and included in the price.
	Bio-accumulation	On site sale value for marine food products	Drop in price due to the decrease of demand	<ul style="list-style-type: none"> • Prices of marine food before and after pollution 	<ul style="list-style-type: none"> • People are aware of the bio-accumulation of marine food products • Market price changes reflect the changes in demand

Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Productivity of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Organic Matter	Water quality	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\$)	<p>For direct valuation:</p> <ul style="list-style-type: none"> 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 Exchange rates and the years of data collected <p>For indirect valuation:</p> <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour On site market price of each product (before and after degradation of water quality) 	<ul style="list-style-type: none"> 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.
Nutrients	Eutrophication Algal blooms Anoxia, fish kills	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\$)	<p>For direct valuation:</p> <ul style="list-style-type: none"> 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 Exchange rates and the years of data collected <p>For indirect valuation:</p> <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour On site market price of each product (before and after degradation of water quality) 	<ul style="list-style-type: none"> 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.

Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Productivity of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Oil and hydrocarbons	Water quality	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: <ul style="list-style-type: none"> On site market price of each product (before and after release of oil and hydrocarbon) Quantities of products harvested, sold, given away (before and after) Total areas under consideration (before and after) Exchange rates and the years of data collected For indirect valuation: <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour On site market price of each product (before and after degradation of water quality) Exchange rates and the years of data 	<ul style="list-style-type: none"> 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 identified & included in the price.
	Contamination tainting of cultured products and wild fish	On site sale value of aquaculture products and wild fish	Drop in price due to the decrease in demand	<ul style="list-style-type: none"> Prices before and after pollution 	<ul style="list-style-type: none"> People are aware of the polluted food sources Market price changes reflect the changes in demand
	Extreme spills smothering of organisms	On site sale value of reduced production	Loss of income due to decreased production of food sources	<ul style="list-style-type: none"> Prices of aquaculture and wild fish Production before and after oil/hydrocarbon 	<ul style="list-style-type: none"> Change of production is caused only by oil/hydrocarbon
Sediments	Smothering of mangroves	On site sale value of reduced production	Loss of income due to decreased production of human food sources	<ul style="list-style-type: none"> Prices of aquaculture and wild fish Production before and after smothering 	<ul style="list-style-type: none"> Change of production is caused only by sediments
	Change in water depth & species composition of benthic communities	On site sale value of changed production	Changes in income due to changes in production	<ul style="list-style-type: none"> Prices of aquaculture and wild fish Production before and after increased sediment loading 	
Solid Waste	Smothering of organisms	On site sale value of reduced production	Loss of income due to decreased production	<ul style="list-style-type: none"> Prices of aquaculture and wild fish Production before and after smothering 	<ul style="list-style-type: none"> Change of production is caused only by solid wastes
	Biosorption of plasticizing agents reduced production	On site sale value of reduced production	Loss of income due to decreased production of food sources	<ul style="list-style-type: none"> Prices of aquaculture and wild fish Production before and after smothering 	<ul style="list-style-type: none"> Change of production is caused only by biosorption of plasticising agents
POPs	Water quality, reduced biological production	On site sale value of reduced production	Total annual value of production for each product (US\$)	<i>For direct and Indirect valuations see above</i>	<ul style="list-style-type: none"> 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 identified & included in the price.

Table 3 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Productivity of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Thermal pollution	Reduced production	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: <ul style="list-style-type: none"> 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) For indirect valuation: <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour 	<ul style="list-style-type: none"> 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
	Loss of species	On site price for marketed products Substitute price of non-marketed products*	Total annual value of production for each product (US\$)	For all approaches: <ul style="list-style-type: none"> Species identified before and after Quantities of equivalent products harvested, sold, given away (before and after) For direct valuation: <ul style="list-style-type: none"> On site market price of each product (before and after thermal pollution) Total areas under consideration (before and after) For indirect valuation (incl. substitute price approach): <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour 	<ul style="list-style-type: none"> 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 Substitute material acceptable Market values not distorted
pH change-acid pollution	Change in water & sediment quality, loss of spp.	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: <ul style="list-style-type: none"> 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) For indirect valuation: <ul style="list-style-type: none"> Price per unit for equivalent goods Cost of material inputs Time spent harvesting/gathering/ culturing product Equivalent local wage for labour 	<ul style="list-style-type: none"> 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
Bacterial contamination	Contamination of human food sources	On site sale value for human food sources using net price	<ul style="list-style-type: none"> Drop in price due to the decrease of demand Loss of income due to decreased demand 	<ul style="list-style-type: none"> Prices before and after contamination 	<ul style="list-style-type: none"> People are aware of the contamination of food sources Market price changes reflect the changes in demand

Table 4 Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Amenity Value of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Heavy metals	Water quality	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	Assumptions <ul style="list-style-type: none"> 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\$) Total cost value	Answers to valuation questions from survey/bidding game technique/ dichotomous choice	<ul style="list-style-type: none"> 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 heavy metals	Total cost value	<ul style="list-style-type: none"> Type of pollutants Sources of pollutants 	Technologies to clean up the pollutants are available and the cost of technologies is affordable
Organic matter	Water quality	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	Assumptions <ul style="list-style-type: none"> 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
Oil and hydrocarbons	Contamination /tainting of aquaculture and wild fish	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	Assumptions <ul style="list-style-type: none"> 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

Table 4 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Amenity Value of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Oil and hydrocarbons continued	Extreme spills smothering of organisms	Travel Cost	Annual recreational value of the site	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> • Socio-economic variables • Geographic origin • Time spent travelling • Expenditures incurred in visiting the site • Frequency and duration of visits • Number of visitor-days for the site 	Assumptions <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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
	Water quality	Replacement cost: cost to clean up oil and hydrocarbons	Total cost value	Type of pollutants Sources of pollutants Concentration level of oil and hydrocarbons	Technologies to clean up the pollutants are available and the cost of technologies is affordable
		Opportunity cost	Total value of best alternative uses	Potential alternative uses of the resources Investments in the best alternative uses	Stakeholders agree on the best uses of the resources
Sediments	Smothering of mangroves	Travel cost/opportunity cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> • Socio-economic variables • Geographic origin • Time spent travelling • Expenditures incurred in visiting the site • Frequency and duration of visits • Number of visitor-days for the site 	Assumptions <ul style="list-style-type: none"> • 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
	Water quality	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	<ul style="list-style-type: none"> • 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
	Change of water depth/species composition of benthic communities	Replacement cost: cost to dredge sediments	Total cost value	<ul style="list-style-type: none"> • Type of pollutants • Sources of pollutants • Concentration level of oil and hydrocarbons 	Cost is affordable

Table 4 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Amenity Value of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
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 (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	<ul style="list-style-type: none"> 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\$)		<ul style="list-style-type: none"> 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
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 (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	<ul style="list-style-type: none"> 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
		Loss of amenity value	Hedonic Pricing	Differences in the value of the assets/real estates of the same quality	Prices of assets and real estates in different locations
	Replacement cost: cost to clean up solid waste		Total cost value (US\$)	<ul style="list-style-type: none"> Sources of solid waste Volume of solid waste 	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 (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	<ul style="list-style-type: none"> 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
		Hedonic Pricing		Answers to valuation questions from survey/bidding game technique/ dichotomous choice	

Table 4 cont. Procedures to Undertake Valuation of Impacts of Land-based Pollution on the Amenity Value of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Bacterial contamination	Loss of amenity	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	Data from visitors survey (before and after water contamination) <ul style="list-style-type: none"> Socio-economic variables Geographic origin Time spent travelling Expenditures incurred in visiting the site Frequency and duration of visits Number of visitor-days for the site 	<ul style="list-style-type: none"> 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
	Contamination of recreational areas	Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)		<ul style="list-style-type: none"> 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
		Prevention cost	Total cost to prevent bacterial contaminati	<ul style="list-style-type: none"> Cost of constructing facilities for individual economic activities Cost of volumes of projected waste Size of impacted areas Sources of contaminants 	
Acid Pollution	Change of water and sediment quality	Travel cost: Amount of money and time spent on the site	Annual recreational value of the site (US\$)	<ul style="list-style-type: none"> 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 site) 	<ul style="list-style-type: none"> 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
	Loss of biological communities	Contingent valuation: willingness to pay for good water quality	Recreational value of the site as valued by willingness to pay by users (US\$)	<ul style="list-style-type: none"> Answers to valuation questions from survey/bidding game technique/ dichotomous choice 	<ul style="list-style-type: none"> 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 5 Procedures to Undertake Valuation of Impacts on Human Welfare of Land-based Pollution of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Heavy metals	Water quality	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	<ul style="list-style-type: none"> Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost 	<ul style="list-style-type: none"> Health and productivity can be restored to previous levels
	Contamination of human food sources	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	<ul style="list-style-type: none"> Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food Duration and cost of finding new sources of food. Transport cost of new sources of food. 	<ul style="list-style-type: none"> Equivalent and substitute food available Food consumed reaches minimum standards set by governments.
	Bio-accumulation	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	<ul style="list-style-type: none"> Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost 	<ul style="list-style-type: none"> Health and productivity can be restored to previous levels
Nutrients	Harmful algal blooms shellfish poisoning	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	<ul style="list-style-type: none"> Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food Duration and cost of finding new sources of food. Transport cost of new sources of food 	<ul style="list-style-type: none"> Equivalent and substitute food available
Oil and hydrocarbons	Water quality Contamination/ tainting of mariculture and wild fish	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	<ul style="list-style-type: none"> Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food Duration and cost of finding new sources of food. Transport cost of new sources of food 	<ul style="list-style-type: none"> Equivalent and substitute food available
Sediments	Water quality	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	<ul style="list-style-type: none"> Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost 	<ul style="list-style-type: none"> Health and productivity can be restored to previous levels
POPs	Water quality	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	<ul style="list-style-type: none"> Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost 	<ul style="list-style-type: none"> Health and productivity can be restored to previous levels
	Contamination of seafood	Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	<ul style="list-style-type: none"> Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food Duration and cost of finding new sources of food. Transport cost of new sources of food. 	<ul style="list-style-type: none"> Equivalent and substitute food available Food consumed reaches minimum standards set by governments.

Table 5 cont. Procedures to Undertake Valuation of Impacts on Human Welfare of Land-based Pollution of Coastal Habitats and Resources.

Types of Pollutants	Impacts	Valuation Technique	Indicator of Measurement	Data Needed	Notes and Assumptions
Solid waste	Bioasorption of plasticizing agents	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	<ul style="list-style-type: none"> Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost Salaries/wages for labour Duration of illness and recovery (number of days lost) Hospitalisation and treatment cost 	<ul style="list-style-type: none"> 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 Health and productivity can be restored to previous levels
Bacterial Contamination	Contamination of human food sources	Cost of illness	Total I value of lost human labour (US\$), total cost of treatment	Same as above	Same as above
		Substitute price approach: cost of sourcing food elsewhere/cost of equivalent food	Total annual cost of sourcing food from alternative sites/equivalent food	<ul style="list-style-type: none"> Quantity of food consumed Price per unit quantity of food sourced elsewhere/equivalent food Duration and cost of finding new sources of food. Transport cost of new sources of food. 	<ul style="list-style-type: none"> Equivalent and substitute food available Food consumed reaches minimum standards set by governments

ANNEX 5

Call for Proposals for the Training Course on Economic Valuation

BACKGROUND

The UNEP/GEF project entitled "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"² is a five year, multi-million dollar regional project, involving some four hundred institutions in the seven countries bordering the South China Sea, including Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The project is funded by the Global Environment Facility, and implemented by UNEP, with some 45 executing agencies in the participating countries. The overall goals of this project are: to create an environment at the regional level, in which collaboration and partnership in addressing environmental problems of the South China Sea, between all stakeholders, and at all levels is fostered and encouraged; and to enhance the capacity of the participating governments to integrate environmental considerations into national development planning.

In order to achieve the goal of building capacity in marine environmental management in the participating countries, the UNEP/GEF South China Sea Project will launch a regional training programme during 2006-2007. This programme was developed by the project's Regional Scientific and Technical Committee, and consists of six regional training courses and associated national-level seminars on:

- Management models & strategies for coral reef & seagrass ecosystems
- Mechanisms for sustainable production/use of mangrove and other wetlands
- Community-based resource management
- Establishment of fisheries *refugia*
- Economic valuation and sustainable financing
- Project design, planning & financial management

The Regional Task Force on Economic Valuation (RTF-E) during its fourth meeting in Xuan Thuy, Nam Dinh Province, Viet Nam, 27th – 30th March 2006 reviewed the regional training programme, discussed the contents of a regional course on economic valuation, considered the *modus operandi* for the implementation of such a training course, and decided to issue a call for proposals for the training course on economic valuation.

CALL FOR PROPOSALS

The UNEP/GEF South China Sea Project invites universities, research centres, and other institutes in the seven countries participating in the project to submit proposals to conduct a regional training course on the economic valuation of coastal resources. The training course should be conducted in the last quarter of 2006 or the first quarter of 2007, and the duration of the training course will be one week. The training course should be developed for the demonstration site managers or other technical staff from the project's 24 demonstration sites. The venue of the training course should be located in or near a demonstration site of the UNEP/GEF South China Sea Project.

The aim of the training course is to provide managers of the UNEP/GEF South China Sea Project's demonstration sites with an overview of introductory resource assessment and valuation techniques and their application in the context of the demonstration sites. It is expected that the course will develop the capacity of trainees to apply basic valuation techniques to value the coastal resources within the demonstration sites, and to conduct echo seminars on economic valuation in their countries. The training course should at least cover the following topics:

- Introduction to coastal resource assessment
- Total economic value pertaining to coastal resources
- Survey design and the conduct of surveys
- Valuation techniques

² Hereafter the project will be referred to as UNEP/GEF South China Sea Project.

- Cost-benefit analysis
- Economic valuation for policy development

The proposal for the training course should at least include the following content:

- Brief description of the proposed implementing institutes and coordinators;
- Aim of the course;
- Potential targeted audience;
- Proposed number of trainees;
- Proposed dates of the training course;
- Location of the training course;
- Expected outcomes;
- A detailed syllabus, including topics, potential lecturers/trainers (Curriculum Vitae), and required readings/materials.
- A program of work;
- A detailed budget for the training course, including cost of facilities, materials, transportation, remuneration for trainers/lecturers, and other related expenses.³

Interested institutes from the seven participating countries should submit the proposal via e-mail and mail by the close of business on **1st May 2006** to:

Dr. John Pernetta, Project Director
UNEP/GEF Project Co-ordinating Unit
United Nations Environment Programme
United Nations Building, 2nd Floor, Block B
Rajdamnern Avenue
Bangkok 10200, Thailand

Tel: (66 2) 288 1886
Fax: (66 2) 288 1094
E-mail: pernetta@un.org

With a copy to:

Dr. Sulan Chen, Expert – Social Sciences
UNEP/GEF Project Co-ordinating Unit
United Nations Environment Programme
United Nations Building, 2nd Floor, Block B
Rajdamnern Nok Avenue
Bangkok 10200, Thailand

Tel: (66 2) 288 2279
Fax: (66 2) 288 1094
E-mail: chens@un.org

SELECTION PROCESS AND ADMINISTRATIVE MATTERS

The Project Coordinating Unit will review all proposals and recommend a suitable implementing agency/institute to the Regional Scientific and Technical Committee (RSTC). Proponents will be informed of the results of the selection process by 30th June 2006. The Project Coordinating Unit will negotiate the signing of a Memorandum of Understanding with the selected agency/institute to facilitate the transfer of funds for the training course.

³ *The budget does not need to include the cost of trainees' travel and accommodation, because their costs will be covered through the UN daily subsistence allowance.*

ANNEX 6

Compiled Data and Information for Economic Values of Coastal Habitats

BACKGROUND

The Regional Task Force on Economic Valuation (RTF-E) was established by the Project Steering Committee (PSC) in 2002. During the first and second meetings of the RTF-E, national reports on the economic valuation of coastal habitats, submitted by focal points of the habitat component, were reviewed by the RTF-E. It was recognised that these reports lack sufficient data and information for the Task Force to generate a regional value to update the cost-benefit analysis of the Regional Strategic Action Programme.

During the fifth meeting of the Regional Scientific and Technical Committee (RSTC), Fangchenggang, 9th – 11th December 2004, and the fourth meeting of the PSC, Guilin, 13-15 December 2004, additional funds were allocated to the RTF-E to strengthen the economic valuation elements of the project. Following the decisions of the RSTC and PSC, the RTF-E in its third meeting, Fangchenggang, 18 – 21 April 2005, considered and adopted the format to collect national data and information to ensure the comparability and compatibility of the data collected, such that a regional value could be developed for use in updating the cost benefit analysis contained in the draft Strategic Action Programme. The format for the data and information is contained in Annex 6 of the report of the third meeting of the RTF-E (UNEP/GEF/SCS/RTF-E.3/3).

Upon the conclusion of the third meeting of the RTF-E, the Project Coordinating Unit (PCU) initiated the process of negotiating the budgets and the signing of seven additional Memoranda of Understanding (MoUs) with the agency or institute of the members of the RTF-E to provide fund for the collection of the data and information regarding the value of coastal habitats relevant to the project.

REGIONAL DATABASE OF ECONOMIC VALUES OF COASTAL HABITATS

The fourth meeting of the RTF-E reviewed the data and information submitted by members of the Task Force. It was noted that:

- Some of the compiled data provide total economic valuations without providing information regarding what values have been included in determining the "total economic value". Others provide total value of certain products at the national level or in a local jurisdiction without specifying what percentage of these products are produced from the coastal habitats.
- Some of the values collected do not distinguish between the total price of valued goods and the net value of the goods. The cost of collecting or producing certain goods from the coastal habitats has not been provided in some cases.
- Nearly all data and information collected with respect to wetlands do not specify what types of wetlands have been valued, and mostly these wetlands do not exclude mangroves, coral reefs, and seagrass.
- Some reports are unclear about the sources and references of the data used or collected.

The Chairperson invited members of the Task Force to form two working groups in order to analyse the contents of the referenced documents as a group and tabulate the information in a directly comparable manner. These working groups worked late into the evening to complete this task. The tables produced by this group were reviewed, consolidated and are presented in Tables 1-4.

It was noted that these data should be further examined, refined, and amplified following the fourth RTF-E meeting. The completed dataset should be made available during the fifth meeting of the RTF-E.

Table 1.1 Summary Table for empirical data relating to economic valuation of mangroves (Direct Uses).

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price	Currency	Value (per Ha)	Valuation Method
Timber								
China								
	2002	Fangchenggang	1414.50			RMB	1485206.33	Surrogate market price
Indonesia								
	2003	Kangean island	5716.00	30.76	72480	Rupiah	2229484.80	Market Price
	2003	Sikka district NTT	220.00	28.12	88880	Rupiah	2499305.60	Market Price
	2001	Kalimantan	14941.00	91.92	27440	Rupiah	2522284.80	Market Price
	1999	Segara Anakan	8975.00	17.00	10000	Rupiah	170000.00	Market Price
	1988	Sumatra	386100.00	66.00	7520	Rupiah	496320.00	Market Price
	1997	Batam Rempang and galang isalnd	16520.00	49.74	7840	Rupiah	389961.60	Market Price
	1996	Subang district	5327.00	38.00	160000	Rupiah	6080000.00	Market Price
	1991	Bintuni Bay Papua	300000.00	80.00	128000	Rupiah	10240000.00	Market Price
Philippines								
	1996	Pagbilao, Philippines	1440.00	4.00	1664	PHP	6656.00	Replacement Cost (cost of alternative lumber – coco lumber); Shadow price method
Malaysia								
	1973	Sarawak	18090.00			RM	254.81	Market Price
	1998	Kuala Selangor	379.00			RM		Market Price
	1997	Coast of Malacca	28395.00			RM	1388.30	Market Price
Viet Nam								
	2005	Balat estuary	3000.00	8.05	200000	VND	1610000.00	Market Price
	2004	CanGio	75740.00	12.25	400000	VND	4900000.00	Market Price
	2005	CaMau	5800.00	17.00	370000	VND	6290000.00	Market Price
	2005	SocTrang	1686.60	11.52	390000	VND	4492800.00	Market Price
Firewood								
Philippines								
	2004	Busuanga	1298.50	4.12	800	PHP	3296.00	Market Price
	1996	Pagbilao, Philippines	1440.00	4.00	810	PHP	3240.00	Replacement Cost/ Shadow Price Method
Thailand								
	1995	Trang	35665.28	15.62	1616.25	Baht	25245.83	Market Price
	1993	Ranong	19236.64	2.11	1616.25	Baht	3410.29	Market Price
	1993	Krabi	28273.48	1.49	1616.25	Baht	2408.21	Market Price
Viet Nam								
	2005	Balat estuary	3000.00	4.64	195000	VND	904500.00	Market Price
	2004	CanGio	75740.00	8.18	325000	VND	2657500.00	Market Price
	2005	Camau	5800.00	16.01	299000	VND	4786300.00	
	2005	SocTrang	1686.60	7.97	184615.3846	VND	1471242.60	
Poles								
Philippines								
	2004	Philippines	1298.50	0.60	200	PHP	120.00	Market Price
Charcoal								
Philippines							0.00	
	2004	Philippines	1298.50	0.45		PHP	0.00	Market Price
	1996	Pagbilao, Philippines	1440.00	0.50		PHP	0.00	Replacement Cost/ Shadow Price Method
Thailand								
	1980	Chathaburi	14.36	4213.48	1.67	Baht	34050.13	Market Price
	1980	Ranong	40.15	4262.81	1.2	Baht	19702.69	Market Price
	1980	Krabi	56.02	1900.14	1.2	Baht	12735.00	Market Price
	1980	Phang Nga	66.74	1010.85	1.1	Baht	9887.69	Market Price

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price	Currency	Value (per Ha)	Valuation Method
Leaves/palm fronds (Thatch, fodder)								
Philippines								
	2004	Philippines	1298.50	6.37		PHP		Market Price
	1996	Pagbilao, Philippines	1440.00			PHP		Shadow Price Method
Fruit/propagules								
China								
	2002	Fangchenggang	1414.50	321.69	2.4	Yuan		Market Price
Fish capture								
Philippines								
	2004	Philippines	1298.50	4.12	41.25	PHP	41.25	Market Price
	1996	Pagbilao, Philippines	1440.00	409.80	24.28	PHP	24.28	Production Cost (percentage deviation of fish sizes from market sizes to represent losses from natural mortality)
Thailand								
	1995	Trang	35665.28	18.95	30	Baht		Market Value
Malaysia								
	1998	Kuala Selangor District	379.00	3750.00				MA/TCM/CVM
	1997	Straits of Malacca	78395.00					MA/TCM/CVM
China								
	2002	Fangchenggang	1414.50					Market Price
Viet Nam								
	2005	Ba Lat estuary	2889.00	200.00	16000	VND		Market Price
	2004	Can Gio	7990.00	12000.00	10000	VND		Market Price
	2005	Soc Trang	10702.00	5000.00	10000	VND		Market Price
Crab capture								
Philippines								
	2004	Philippines	1298.50	5.24	126.00	PHP		Market Price
	1996	Pagbilao, Philippines	1440.00	694.60	7.60	PHP		Production Cost (percentage deviation of fish sizes from market sizes to represent losses from natural mortality)
China								
	2002	Fangchenggang	1414.50			Yuan		Market Price
Thailand								
	1995	Trang	35665.28	7.71	85	Baht		Market Price
Viet Nam								
	2005	Ba Lat estuary	2889.00	260.00	80	VND		Market Price
Prawn capture								
	2004	Philippines	1298.50	1.88	300.00	PHP		Market Price
	1996	Pagbilao, Philippines	1440.00	1226.90	1.00	PHP		Production Cost (percentage deviation of fish sizes from market sizes to represent losses from natural mortality)
China								
	2002	Fangchenggang	1414.50			Yuan		Market Price
Thailand								
	2003	Bangkok	192.00	793.56	54.69	Baht		Market Price

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price	Currency	Value (per Ha)	Valuation Method
Viet Nam								
	2005	Ba Lat estuary	2889.00	1500.00	70000	VND		Market Price
	2004	Can Gio	7990.00	4000.00	65000	VND		Market Price
	2005	Ca Mau	247510.00	4000.00	60000	VND		Market Price
	2005	Soc Trang	43311.00	3200.00	70000	VND		Market Price
Shellfish collection								
Thailand								
	2003	Bangkok	192.00	352.69	41.11	Baht		Market Price
Insect and larvae collection								
Worms								
	2004	Philippines	1298.50	1.13	20.00	PHP		Market Price
Oyster								
Viet Nam								
	2005	Ba Lat estuary	2889.00	12000.00	5200.00	VND		Market Price
	2004	Can Gio	7990.00	5000.00	2500.00	VND		Market Price
China								
	2002	Fangchenggang	1414.50			RMB		Market Price
Other uses (Shellfish-MUSSELS)								
	2004	Philippines	1298.50	2.62	30.00	PHP		Market Price
Other uses (Shellfish-"KIBAW")								
	2004	Philippines	1298.50	6.75	20.00	PHP		Market Price

Table 1.2 Summary Table for empirical data relating to economic valuation of mangroves (Indirect Uses)

	Date of Valuation	Location	Total Area (Ha)	Currency	Value per Ha	Valuation Method
					Local currency	
Nursery ground						
Indonesia						
	2003	Kangean island	1887.00	Rupiah	7112000	Market Price
	2003	Sikka district NTT	74.00	Rupiah	7112000	Market Price
	2001	Kalimantan	14941.00	Rupiah	720000	Market Price
	1996	Subang district	5327.00	Rupiah	2850000	Market Price
Thailand						
fish larvae	1997	Samut Sakorn	1696.00	Baht	751.78	Market Price
fish larvae	1997	Ranong	19237.00	Baht	414.23	Market Price
prawn larvae	1997	Trang	24696.00	Baht	89.03	Market Price
crab larvae	1997	Samut Sakorn	1696.00	Baht	1673.04	Market Price
crab larvae	1997	Ranong	19237.00	Baht	984.82	Market Price
crab larvae	1997	Trang	24696.00	Baht	207.11	Market Price
Costal protection						
Indonesia						
	2003	Kangean island	1708.00	Rupiah	14000000	Replacement cost
	2003	Sikka district NTT	74.00	Rupiah	14000000	Replacement cost
	2001	Kalimantan	14941.00	Rupiah	3816000	Replacement cost
	1988	Sumatra	386100.00	Rupiah	1815000	Replacement cost
	1996	Subang district	5327.00	Rupiah	3500000	Replacement cost
Thailand						
	1998	Surathanee	500.00	Baht	77775.00	Replacement cost
Carbon sequestration						
Indonesia						
	2001	Kalimantan	14941.00	Rupiah	2220080.00	Market Price
	1999	Segara Anakan	8975.00	Rupiah	282900.00	Market Price
	1989	Sumatra	386100.00	Rupiah	159400.00	Market Price
	1996	Subang district	5327.00	Rupiah	222200.00	Market Price
	1991	Bintuni BaY	300000.00	Rupiah	289825.00	Market Price
Thailand						
	1998	Surathanee	400.00	Baht	2136.81	Market Price
Option value						
Indonesia						
	2003	Pulau Derawan	44.60	Rupiah	2867680.00	benefit transfer
	2001	Kalimantan	14941.00	Rupiah	123760.00	benefit transfer
	1996	Subang district	5327.00	Rupiah	115200.00	benefit transfer
	1991	Bintuni BaY	300000.00	Rupiah	37500.00	benefit transfer
	1989	Sumatra	386100.00	Rupiah	37500.00	benefit transfer
Existence value						
Indonesia						
	2001	Kalimantan	14941.00	Rupiah	5559760.00	CVM
	1996	Subang district	5327.00	Rupiah	6291000.00	CVM
	1989	Sumatra	386100.00	Rupiah	6291000.00	CVM

Table 2 Summary Table for empirical data relating to economic valuation of coral reef.

	Date of Valuation	Location	Total Area (Ha)	Volume of products (per ha)	Unit Net Price	Currency	Value (per ha)	Valuation Method
Extractive Use								
Fish (food and aquarium fish)								
Malaysia	1996	Straits of Malacca	78395			US\$	130.24	Market Price
Philippines	2004	Philippines	464090	1,547,000 mt	50/kg	PHP	23.81	NPV
Thailand	2001	Krabi	32899.52	1,547,000 mt		Baht	3,838,353.50	
Building materials								
Indonesia	2003	Kangean, Sikka	7,400	4,000		Baht	34,401.00	Replace cost
Non-Extractive Use								
Tourism/ Recreation						USD	4.83	Expenditure Cost
Malaysia	1996	Straits of Malacca	78395					
Philippines	2004	Philippines	464090	30,200	126	USD	13,842.00	TCM
Environmental Services								
Beach protection								
Malaysia	1996	Straits of Malacca	78395			USD	416.1	TCM
Philippines	2004	Philippines	464090	30,200	126	USD	4.83	Expenditure Cost

Table 3 Summary Table for empirical data relating to economic valuation of seagrass.

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price	Currency	Value (per ha)	Valuation Method
Extractive Use								
Fish (food and aquarium fish)								
Malaysia	1996	Straits of Malacca	78395			USD	134	Market price
China	2003	Hepu	540	513.7kg		RMB	1,214	Market price
Food								
China	2003	Hepu	540	7,600kg		RMB	569	Market price
Handicraft								
China	2003	Hepu	540	230kg		RMB	478	Market price
Environmental Services								
Egg turtles places								
Thailand	2000	Phungnga, Phuket	34,993.37	32500000	0.0075196	Baht	244,385.63	CVM
Biological Diversity Services								
Biological diversity								
Malaysia	1996	Straits of Malacca	78395			USD	38	CVM

Table 4 Summary Table for empirical data relating to economic valuation of wetlands.

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price	Currency	Value (per ha)	Valuation Method
Extractive Use								
Timber								
China	2004	Jilin	36,100	14,150kg	0.15	RMB	256.34	Market price
	2005	Hebei	36,600	1502kg	4.5	RMB	815.45	Market price
Leaves/ Thatch								
China	2005	Daxing'anling	1,055,471	1060.5kg	0.5	RMB	64.04	Market price
Fish								
Malaysia	1996	Straits of Malacca				USD		M A / TCM / CVM
China	2005	Daxing'anling	1,055,471	0.63kg	11.68	RMB	0.89	Market price
	2005	Hebei	36,600	862kg	7.39	RMB	769.49	Market price
Thailand	2005	Samut songkram	2,409	3.84	85	Baht	326.75	Market price
Wildlife								
China	2005	Daxing'anling	1,055,471	0.05	80	RMB	0.44	Market price
	2004	Jilin	36,100	0.8	10000	RMB	956.82	Replacement price
Thailand	1989	Phatthalung, Nakhon Si Thammarat, Songkhla	45,700			Baht	95.84	Replacement cost
Fruits								
China	2005	Daxing'anling	1,055,471	197.7	8	RMB	191	Market price
Non-Extractive Use								
Tourism/ Recreation								
Thailand	1989	Phatthalung, Nakhon Si Thammarat, Songkhla	45,700			Baht	2,761.27	TCM
	2001	Ranong	31,500			Baht	212.21	TCM
	2005	Samut songkram	2,409			Baht	880.37	TCM

ANNEX 7

Revised Format for the Collection of Data and Information on Economic Value of Coastal Habitats

	Date of Valuation	Location	Total Area (Ha)	Volume (per ha)	Unit Net Price ⁴	Currency ⁵	Value (per ha)	National CPI ⁶	Exchange Rate	Valuation Method ⁷
Timber										
Reference A										
Reference B										
Reference C										
Firewood										
Reference A										
Reference B										
Poles										
Charcoal										
Leaves/palm fronds (<i>Thatch, fodder</i>)										
Fruit/propagules										
Bark (<i>tanning & dyes</i>)										
Medicine										
Sap (<i>sugar, alcohol, Acetic acid</i>)										
Wood tar										
Fish capture										
Crab capture										
Prawn capture										
Shellfish collection										
Insect and larvae collection										
Worms										
Wildlife										
Zooplankton										
Jellyfish										
Honey & wax										
Algae										
Other uses (specify)										

⁴ . Unit net price is the market price minus harvesting and production cost.

⁵ . Currency used in original studies, references or publications.

⁶ . The CPI and exchange rate data relate to the year of valuation.

⁷ . The valuation methods should include details of prices used.

ANNEX 8

Work Plan and Schedule of the Meeting for 2006

Table 1 Work Plan for the Regional Task Force on Economic Valuation for 2006.

Year	2006												
	Month	1	2	3	4	5	6	7	8	9	10	11	12
Fourth and Fifth RTF-E Meetings													
1. Development of a framework and procedures to value the impacts of land-based pollution													
TO BE COMPLETED DURING THE 4TH RTF-E MEETING													
2. Development of an economic valuation manual for use in the demonstration sites and pilot activities													
2.1	Draft to be completed during the 4 th RTF-E meeting			x						x			
2.2	Members' inputs to Dr. Padilla			X									
2.3	Draft circulated to the consideration of the Regional Working Groups			x									
2.4	Comments from Regional Working Groups members				x								
2.5	Revision of the manual based on the comments from Regional Working Groups												
2.6	Final editing and clearance of the manual by the PCU								x				
3. Development of a regional database of empirical economic values to derive regional values of coastal goods and services													
3.1	Consolidate data into regionally agreed formats (4 th RTF-E meeting)			x									
3.2	Agree upon the procedures for standardising data and deriving regional values			x									
3.3	Further amplification of data and information (between 4 th and 5 th meetings)												
3.4	Compilation of demonstration site data						x						
3.5	Submission of new version of national report on data and information of economic value						x						
3.6	Members' collection of national CPI for the years of data collected and the year 2005 (Chairperson will collect US CPI)												
3.7	Inputs from the regional working groups regarding the availability of certain resources/functions/services/products (To be completed by the four habitat regional working groups)												
3.8	Standardise data and information										x		
3.9	Deriving regionally acceptable values										x		
4. Regional Training Course													
4.1	Distribution of the "Call for proposals" by members												
4.2	Submission of proposals						01 May						
4.3	Selection of implementing agency						30 June						
4.4	Selection of trainees												
4.5	Circulation of training materials (handouts, valuation manual, and other materials)												
4.6	Conduct of the training course												
5. Inputs to the updating of the Strategic Action Programme													

