



Towards Ecosystem-Based Management of the Humboldt Current Large Marine Ecosystem

TERMS OF REFERENCE

Title: Consultancy to deliver a thematic report on Socioeconomic aspects of the Humboldt Current Large Marine Ecosystem (HCLME) as part of the LME modular assessments and inputs for the GEF-HCLME Project updating of the existing Transzonal Diagnostic Analysis (TDA) dated 2003

Project: HCLME 4147
Case reference: LME-5-Chile-Nov-2012-Mod4
Duty station: Chile
Section/Unit: EMO IWC
Contract/Level: Company/University/NGO Request for Quotation
Duration: November 2012 to March 2013 (up to 30 day input during this period)
Supervisor: Michael J. Akester, Regional Project Coordinator MichaelA@unops.org
In collaboration with the Senior Project officer MarianoG@unops.org

1. General Background

The Humboldt Current supports one of the world's most productive Large Marine Ecosystems (LMEs), representing approximately 18-20% of the global fish catch and hosting globally significant biodiversity. High environmental variability in the Humboldt Current Large Marine Ecosystem (HCLME) has significant impacts on ecosystem productivity and trophic structure.

The LMEs of the world's coastal waters annually contribute \$12.6 trillion (US dollars) to the global economy (Costanza et al. 1997). The socioeconomic module emphasizes the practical application of scientific findings to managing LMEs, and the explicit integration of social and economic indicators and analyses with all other scientific assessments, to assure that prospective management measures are cost-effective. Economists and policy analysts work closely with ecologists and other scientists to identify and evaluate management options that are scientifically based and economically practical with regard to sustaining optimal socioeconomic benefits of the LME's goods and services.

The LME economic accounting paradigm requires that resource managers of the different sectors of stakeholder interests incorporate the cumulative assessments of changing ecosystem carrying capacity and productivity, fish and fisheries, pollution and ecosystem health and their effects on socioeconomic conditions and governance jurisdictions, as both additive and integrative effects on ecosystem conditions. These latter components of the LME approach to marine resources management have recently been described as the human dimensions of LMEs (Hennessey & Sutinen 2005). A framework has been developed by the Department of Natural Resource Economics at the University of Rhode Island for monitoring and assessment of the human dimensions of LMEs and for incorporating socioeconomic considerations into an adaptive



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management approach for LMEs (Sutinen et al. 2000; Juda et al. 2006, Olsen et al. 2006). A method for indexing the relationships between marine industry and socioeconomic development has been developed by Hoagland and Jin (2008) of the Marine Policy Center of the Woods Hole Oceanographic Institution.

http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=208:modulesocioeconomics&catid=48:lmemodules&Itemid=79

In addition, a range of anthropogenic activities are exerting pressure on the HCLME. In order to provide for long-term ecosystem resilience, Chile and Peru propose to advance towards ecosystem-based management (EBM) of the HCLME by formulating a strategic long-term planning framework for the identification and prioritization of actions needed to preserve and maintain HCLME ecosystem benefits and services through endorsement of a Strategic Action Programme (SAP).

The process to obtain approval of the SAP to the highest level in both countries involves a Transzonal Diagnostic Analysis (TDA) along the length of the HCLME. To carry out the analysis, the project requires the existing TDA document to be updated via a series of five thematic studies following the LME modular assessment (Fig.1).



Figure 1 Large Marine Ecosystem (LME) modular assessments for sustainable development

The initial TDA for the HCLME Region developed during Global Environment Facility (GEF) project development phase (PDF) (2002-2003), identified and analysed the priority Transzonal problems in the Humboldt Current System. The analysis included a preliminary causal chain analysis (CCA) and identification of underlying and root causes as well as a first identification of the information gaps. The four priority Transzonal problems that affect the HCLME identified in 2003 were: 1) suboptimal exploitation of fish and other living resources, 2) insufficient knowledge re the LME variability, 3) habitat degradation, and 4) biodiversity reduction linked to fisheries pressure.



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2. Justification

During the HCLME Transzonal Diagnostic Analysis (TDA) and Strategic Action Programme (SAP) Training Workshop held in Lima, 10-14 September 2012, it was agreed that the LME modular approach would be followed as outlined in the Project Document (Annex A) and that a consultant team will be hired to elaborate the five thematic studies in each country to be presented at the Causal Chain Analysis (CCA) workshop to be held in Chile March or April 2013.

The CCA statements to be produced at the 2013 workshop will also review the existing Global International Waters Assessment (GIWA)¹ study. The results will be incorporated into a final updated TDA as the technical input to the SAP.

The goal of the HCLME project is to ***advance towards a sustainably used and resilient HCLME that can maintain biological integrity and diversity and ecosystem services for current and future generations despite changing climatic and social pressures.***

3. General Arrangements and objective

Selected company/university/NGO under the supervision of the HCLME Project Regional Project Coordinator (RPC) with the assistance of the Senior Project Officer (SPO), will review the existing TDA from 2003 as well as other relevant available information and proceed with the drafting of the socioeconomic module thematic report for Chile following the modules identified in the LME modular approach shown in figure 1 above. All socioeconomic aspects of the HCLME goods and services should be included.

Objective

Based on available information and studies provide a socio-economic assessment of the HCLME area (Chile and Peru assessed independently) in terms of the LME's goods and services, that will feed the development of an updated Transboundary Diagnostic Analysis (TDA) and Strategic Action Programme (SAP) for the HCLME area.

4. Specific Duties

Selected company/university/NGO will:

1. Review the May 2003 Transboundary Diagnostic Analysis (TDA) of the Humboldt Current Large Marine Ecosystem (HCLME) and update the information presented, based on more recent studies and data. In addition to fisheries socioeconomic aspects

¹<http://www.unep.org/dewa/giwa/methodology/methodology.asp>



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and the production-value chain, the updated information will include all the socioeconomic background material pertaining to the use of the HCLME goods and services.

2. Carry out an expert analysis based on existing studies and economic evaluations of the HCLME goods and services.
3. Characterize the main actors that share the goods and services provided by the HCLME and quantify the actual economic value captured by each group.
4. Compile and analyze all relevant studies involving social and cultural aspects related to the current exploitation of resources in the HCLME. In particular, those that establish relevant sociocultural indicators that allow the measurement of existing practices. In addition the main actors' perceptions and problems encountered are of interest to the study.
5. Based on the available information, design a methodological proposal for the analysis and projection of the socioeconomic cost-benefits derived from the use of HCLME goods and services.
6. Using the results from the previous tasks (1-5 above), prepare a clear concise executive report integrating the relevant information for the valuation of the HCLME goods and services including the social and cultural impacts generated by the use of the resources. This report is in addition to the detailed descriptions for each of the activities described above.

5. Expected Outputs

1. Reports in MS Word (in English and Spanish) to be delivered by e-mail to Michael Akester MichaelA@unops.org Maria Angela Barbieri angela.barbieri@ifop.cl cc Mariano GUTIERREZ TORERO MarianoG@unops.org and Lenka LAZO LenkaL@unops.org
 - 1.1. A detailed report covering tasks 1-5 listed above and
 - 1.2. An executive report (task 6) integrating the valuation of the HCLME goods and services including the social and cultural impacts generated by the use of the resources.
2. PowerPoint presentation (English & Spanish) delivered at the March or April 2013 CCA workshop and sent by e-mail prior to the event outlining suggested changes to the Socioeconomic reports dated October 2002 and current aspects identified in 2012-13 of importance for the development of the new TDA
3. Active participation on the day of presenting the study at the CCA workshop to be held March or April in Chile.



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6. Inputs

The Regional Coordinating Unit (RCU) will provide the selected company/university/NGO with the documents listed in Annex A and provide the necessary support, if necessary, to contact government representatives or regional organizations in the search for relevant information.. Annex B refers to the table of contents for the report. Annex C contains information on the perception of ecosystem value.

7. Specific deliverables, reporting, timing and payment modality (% payment available).

- a. Selected company/university/NGO should review relevant information in the Socioeconomic module prepared during the Project Development Phase of the HCLME project with emphasis on the preliminary Transzonal Diagnostic Analysis (TDA) developed for Humboldt Current System in 2003 and brief the Regional Coordination Unit (RCU) team and Project focal point (IFOP-Chile) by **January 2013 (15%)**.
- b. Selected company/university/NGO should submit a draft report and PowerPoint presentation to the RCU and country Project focal point by **mid-March 2013 (15%)**.
- c. Selected company/university/NGO should attend the CCA workshop in Chile in March / April 2013 and present his/her socioeconomic assessment (20%).
- d. Selected company/university/NGO should prepare and submit a final report including comments made at the March / April workshop to the RCU and Project focal point (IFOP-Chile) by the end of April 2013 (50%).

8. Requirements

Interested company/university/NGO should have the following qualifications and experience which are to be listed on the UN P.11 form (sections 1-14, 16, 22, 24 (university only), 25, 26 (10 most relevant publications only) and 27 (last 3 only):

- a. University degree (Bachelor, Master or Doctorate) in a relevant subject;
- b. Demonstrable experience (>5 years) in the subject and work area (HCLME);
- c. Proficiency in both Spanish and English languages;
- d. Excellent report writing skills; and
- e. The UN P.11 form must be completed (see item 10) and sent with the proposal

9. Evaluation

There will be no final evaluation of this consultancy other than the quality assessment of reports submitted.



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9.1 Copyright:

The GEF-Humboldt project will be the owner of the information generated and will cite the author as and when the information is published.

10. Budget

Interested companies/universities/NGOs will prepare and submit a technical and financial proposal and a completed P.11 form (NB only complete the following areas on the P11 form: 1-14; 16; 22; 24 (Universities only); 25; 26 (up to 10 most relevant publications); and 27 (last 3 employers only) for each participating expert (the budget should provide an estimate based on an input of up to 30 days per study, any local travel if necessary and the attendance of a CCA workshop in in Santiago or Valparaiso Chile in March or April 2013) to the Regional Project Coordinator Michael J. Akester MichaelA@unops.org cc LenkaL@unops.org by November 30th 2012.

P.11 form can be downloaded from: <http://www.pnud.cl/vacantes/index.asp>

Annex A: List of documents provided by HCLME Project

1. 1. HCLME Executive Summary Document <http://humboldt.iwlearn.org/informacion-y-publicacion/ResumenProyectoHCLMEVolpdf.pdf>
2. HCLME PDF-B TDA thematic documents Chile & Peru <http://humboldt.iwlearn.org/informacion-y-publicacion/pagina-de-documentos-del-proyecto>
3. HCLME PDF-B TDA document May 2003 <http://humboldt.iwlearn.org/informacion-y-publicacion/TDAHumboldt.pdf>
4. TDA-SAP manual: <http://manuals.iwlearn.net/tda-sap-methodology/tda-sap-methodology-24-october> and <http://manuals.iwlearn.net/> and <http://manuals.iwlearn.net/tda-sap-methodology>
5. GIWA manual in English /Spanish and Humboldt Assessment <http://humboldt.iwlearn.org/informacion-y-publicacion/pagina-de-publicaciones-relacionadas>
7. Study of the Concept of Large Marine Ecosystems and Institutional relevance for Ecosystem-based Management and Development

<http://iwlearn.net/publications/II/study-of-the-concept-of-large-marine-ecosystems-and-its-institutional-relevance-for-ecosystem-based-management-and-development/view>
8. Documents of relevance held in the HCLME database



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Annex B: Table of Contents for socioeconomic thematic report

1. EXECUTIVE SUMMARY
2. TABLE OF CONTENTS WITH LISTS OF TABLES AND FIGURES
3. INTRODUCTION
 - 3.1 Context
 - 3.2 The Humboldt Current LME
 - 3.3 The HCLME Project
 - 3.4 Objectives of the Thematic Report
4. A SENSE OF PLACE
 - 4.1 Geographical scope
 - 4.2 Characteristics of the HCLME
 - 4.3 Climatic Features and Climate Change
 - 4.4 Natural Resources
 - 4.5 Unique Ecological Communities and Protected Areas
 - 4.6 Human resources
 - 4.7 Institutional and Legal Aspects
5. PROBLEMS RELATING TO SOCIOECONOMIC INDICATORS
 - 5.1 Introduction to the priority problems
 - 5.2 Review of the 2003 TDA documentation;
 - 5.3 Identification of the main actors dependent on and with impacts relating to the HCLME goods and services
 - 5.5 Critical analysis of existing economic valuation documentation;
 - 5.6 Critical analysis of the social documentation available
 - 5.7 Analysis of the direct and indirect impacts of HCLME resource use;
6. COMMON SHARED PROBLEMS RELATING TO SOCIOECONOMIC INDICATORS
 - 6.1 Introduction to the priority Common Shared Problems
7. LEVERAGE POINTS FOR IMPROVED SOCIOECONOMIC MANAGEMENT OF HCLME GOODS & SERVICES
8. CONCLUSIONS AND RECOMMENDATIONS

Annex C: The perception of ecosystem economic value

Different groups have different perspectives on the value of ecosystems. The economists' perspective reflects the monetary value of goods and services using private market transactions, while the ecologist is interested in the intangible value inherent in ecosystems such as watersheds protection and carbon dioxide fixation and storage amongst other aspects.

Environmental economists have gone some considerable way towards evolving the taxonomy of economic values by specifying the total value of natural environments.



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Generally, the Total Economic Value (TEV) of a resource includes the Use Value (UV) and the Non-Use Value (NUV). The UV of a resource also referred to as Total User Value is the benefit derived from the actual use or potential benefit of a resource while the NUV is the Existence Value (EV) which arises from the satisfaction of merely knowing that the asset exists, although the valuer has no intention of using it.

The UV is categorized into Direct Use Value (DUV) and Indirect Use Value (IUV) and Option Value (OV). DUV are ecosystem goods and services that are directly used by man. It can be consumptive and non-consumptive, for example, catching fish in the marine environment. DUV is determined by the contribution an environmental asset makes to current production or consumption (Munasinghe 1995). UV can be reduced by pollution or certain types of development as in the case with the HCLME. IUV are benefits that arise due to the functional services of the environment e.g. ecological functions. OV, on the other hand, is potential benefit.

It is essentially an expression of preference, a willingness to pay, for the preservation of an environment against some probability that the individual will make use of it at a later date either by oneself (option value) or by others (bequest value); for example, the value of protecting a reservoir from nearby development activities because it might be needed as a future source of drinking water for a municipality. Non-use value refers to satisfaction/benefits people derive from something just by knowing that it exists although they do not obtain any direct benefit from it.

The concept can be expressed as an equation:

$$\text{TEV} = \text{UV} + \text{NUV}$$

$$\text{TEV} = \text{DUV} + \text{IUV} + \text{OV} + \text{EV}$$

Where:

TEV = Total Economic Value

DUV = Direct Use Value

IUV = Indirect Use Value

OP = Option Value

EV = Existence Value

According to Seenprachawong (2002), the analysis of economic values of coastal and marine resources can be carried out in line with the following functions:



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(a) Ecological function: Marine, algae beds and mangroves perform many important ecological functions for man. They serve for biodiversity regulation, nutrient recycling, air quality and climate maintenance, detoxification, and natural hazard regulation. They are also valuable in providing protection against coastal erosion and coastal storms.

(b) Consumption: Plants and animals in the mangroves, algae beds and marine provide many goods which satisfy human needs. Mangroves serve as natural nurseries for the breeding of large numbers of commercially important species. Many coastal people have lived, fished, and hunted within mangroves and algae beds, deriving valuable commodities from them such as timber, fuel, medicine and food. Besides, artisanal fishermen and industrial fishing fleets exploit the marine areas for several species of fish and novel products.

(c) Aesthetic value: Coastal tourism appears to be on the rise throughout coastal cities around the world. The potential of eco-tourism is increasingly being explored in recent years.

(d) Future: The importance of conservation of the mangroves, algae beds and marine ecosystems in general, takes on an added dimension as scientists are increasingly turning to the biodiversity of the sea in their search for medical cures and unique compounds.

(e) Existence: The diverse plants and animal species in the mangroves, algae beds and marine ecosystems have a need to exist, regardless of their use to us. Some people wish to see them preserved, although they do not currently make use of them.

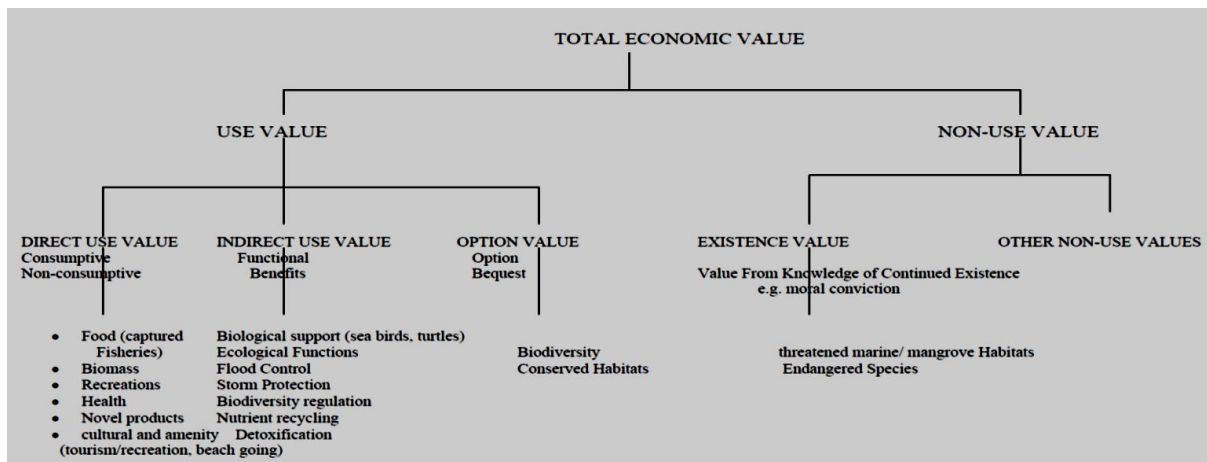


Figure 2 shows categories of Economic Value attributed to Coastal and Marine Resources



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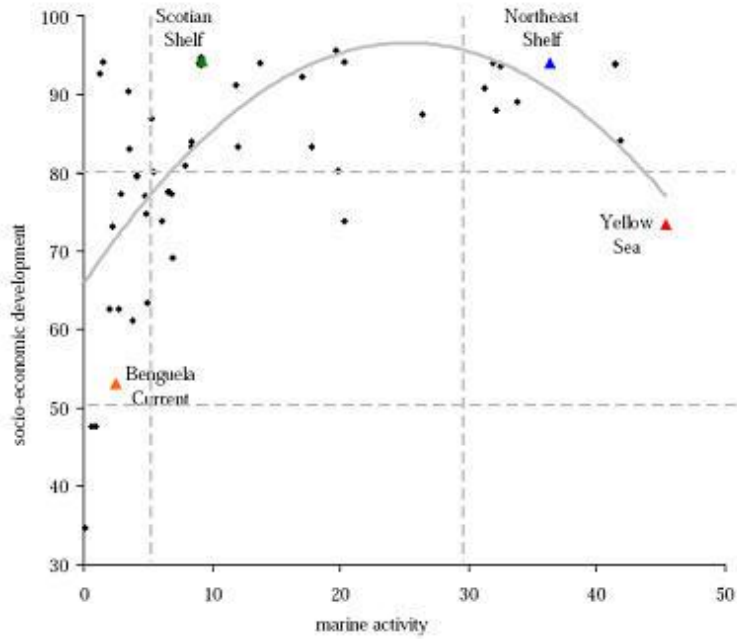


Figure 3. Intensity of activity in large marine ecosystems: indexes showing the relationship between marine industry activity and socioeconomic development. The data of four representative LME cases are labeled on the graph. From Hoagland and Jin (2008).



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OUTPUT	2012	2013				Comments	
	Dec	Jan	Feb	Mar/Apr			
Contract negotiation and signing						Agree work plan for the 30 day period with RCU and Project focal point (IFOP-Chile)	
Review the May 2003 Transboundary Diagnostic Analysis (TDA) of the Humboldt Current Large Marine Ecosystem (HCLME) and update the information presented, based on more recent studies and data. In addition to fisheries socioeconomic aspects and the production-value chain, the updated information will include all the socioeconomic background material pertaining to the use of the HCLME goods and services.						At the end of this analysis report findings to TDA-SAP working group	
Carry out an expert analysis based on existing studies and economic evaluations of the HCLME goods and services.						Progress reports will be presented to the RCU on a weekly basis and Project focal point (IFOP-Chile).	
Characterize the main actors that share the goods and services provided by the HCLME and quantify the actual economic value captured by each group.						To be presented to the TDA-SAP working group by e-mail for comment.	
Compile and analyse all relevant studies involving social and cultural aspects related to the current exploitation of resources in the HCLME. In particular, those that establish relevant sociocultural indicators that allow the measurement of existing practices. In addition the main actors' perceptions and problems encountered are of interest to the study						To be presented to the TDA-SAP working group by e-mail for comment.	
Based on the available information, design a methodological proposal for the analysis and projection of the socioeconomic cost-benefits derived from the use of HCLME goods and services.						To be presented to the TDA-SAP working group by e-mail for comment.	
Using the results from the previous tasks (1-5 above), prepare a clear concise executive report integrating the relevant information for the valuation of the HCLME goods and services including the social and cultural impacts generated by the use of the resources. This report is in addition to the detailed descriptions for each of the activities described above.							This draft will be presented in Spanish
Attend Workshop to present final draft of the national SE assessment report and accompanying briefs.							A PowerPoint presentation will be made in Spanish
Final national SE Assessment Report and Summaries for inclusion in the TDA and SAP							Final report will be presented in Spanish and English by the end of April 2013



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Project Authority (Name/Title): Michael J. Akester		Contract holder (Name/Title):	
	RPC		
Signature	Date	Signature	Date