

Designing and Implementing Valuation Studies in the GCLME Region

Preliminary Report on Economic Valuation of Ecosystem Services of GCLME



Outline of Presentation

- Estimates of the direct output value of goods and services for each of the relevant marine sectors of the 16 countries bordering the Guinea Current Large Marine Ecosystem (LME).
- Estimate the scale of resource rents that could be obtained from the economically optimal management of the marine resources of the case studies
- Work in progress on economic valuation of the GCLME

Functions and Attributes of GCLME to be Valued

Consumptive Use values	Non-consumptive use values	Indirect use values	Option Value and Non Use Value
Captured fish species, non-timber forest products from mangrove locations, medicinal products from mangroves	Minerals, Recreation for tourists including beach going, novel products, fuel and fiber, water transport (shipping)	Detoxification, storm protection, biodiversity regulation, ground water recharge (mangrove), nutrient cycling, air quality and climate, flood and flow control, biological support (sea birds and turtles), other ecological functions	Option Value-Biological diversity, cultural heritage Non use value-Existence value, moral conviction

Estimates of direct output value of goods and services of relevant marine sectors of GCLME

- Available methodology for estimation:
 - Direct Output Impact (DOI)- Product of physical quantities of goods and services flowing from marine activities
 - Total Economic Value (TEV): estimation of the net benefits from each nation's marine activities and sums all the benefits across all activities

Approach Used and Relevant marine sectors of GCLM

- DOI (Prices in International Market were used)
- Fisheries, some NTFP and Mining activities. Tourism and Timber were considered although actual calculations were not done.
- Data sources: FAO data sets, World Bank (World Development Indicators 2004), US Department of the Interior (2005), Oil and Gas journal Data Book (2004) Nigeria Federal Department of Fisheries, Data collected through a questionnaire from some GCLME countries made available by Dr. Ajao
- In estimation of fish landing value for the GCLME countries, landings were aggregated for 1999-2003 and market prices were used

Value of Marine Fish Landing in GCLME

Item	Values
Total Marine Fish Landing (metric tonnes)	1,221,934.4
Estimate of total value of marine fish landing in GCLME (1999-2003 Average)=	\$14,458,000,054
Estimate Illegal, Unreported, Unregulated Fishing (IUU) (30%)	\$4,337,400,016
Total Value	\$18,795,400,070

Value of Offshore Oil Production

Item	Values
Total (bbl/Day)	1,168,762
Value of Production /Day	\$81,813,340
Total (bbl/Year)	426,598,130
Total Value of Production/Year	\$29,861,869,100

Summary of Returns from Different Mining Activity

Product from Mining	Values (\$)
Sand	10,560,000
Salt	2,660,660,
Granite	98,362,110
Phosphate/Lime	243,200,000
Total	354,782,770

NTFPs

- Major NTFPs in the mangrove are Periwinkle, Rhizophora spp and Mudskipper
- Total amount realised from periwinkle= \$1,941,273,740 (Shadow Prices - market data from Nigeria adjusted to reflect exchange rate fluctuations)
- Countries are Benin, Cameroon, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria, and Sao Tome and Principe

Summary of Value of Some Outputs from GCLME

Item	Value (\$)
Marine Fishery	18,795,400,070
Offshore Oil Production	29,861,869,100
NTFP (one major)	1,941,273,740
Mining (Angola, Ghana, Guinea and Togo)	354,782,770
Total for GCLME	50,953,325,680

Estimates of Resource Rent and Effect on Fish Resource

- Estimation was done using Lange (2003) estimation procedure which estimated resource rents as total revenues minus average cost assuming a normal profit of 30 percent as one element of average cost

Scale of resource rents without and with GEF funding

Item	Artisanal (with hooks	Artisanal (with nets)	Semi industrial fishing	Trawling companies (annual/trawl er	Landing value of GCLME
Annual Rent without GEF (\$)	800.8	133	66,393.6	73,623.2	2,076,006,275
Annual Rent with GEF (\$)	968.8	233.8	79,833.6	119,579.6	3,088,066,282
Difference	168	100.8	13,440	73,623.2	1,012,060,007

Work in Progress/Planned Activities

- Valuation of non-market ecological services as to obtain TEV
- assessing the social and economic costs of the nypa palm infestation on affected communities
 - Developing a dynamic model of the biological growth of two competing coastal timber species, mangrove and nypa palm
 - Setting-up a nonlinear program that seeks to optimize the relative shares of mangrove and nypa palm in the region
 - providing estimates of the optimal distribution of species and the levels and time-paths of investment required to implement a policy that seeks to achieve the optimal distribution of species



Thank you for
Listening