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Integrated Coastal Zone Management Strategy for Ghana

Objective

Environmental degradation of coastal areas was identified as a key issue in Ghana's Environmental Action Plan.The central objective of the World Bank-assisted Integrated Coastal Zone Management (ICZM) initiative in Ghana, which commenced in 1995, was to identify economically, socially and environmentally appropriate interventions and projects in the coastal zone that improve the prospects for human development.

Background

While the districts of Ghana's coastal zone represent only about 6.5% of the land area of the country, they are home to 25% of the nation's total population.. Poverty in the coastal areas is extensive. Average welfare levels among food farmers in rural coastal areas, as estimated by the Ghana Poverty Assessment, are 12% below that in large urban centers such as Accra. Bad health, poverty and environmental degradation contribute to a vicious circle that inhibits human development in the coastal zone.

ICZM is recognized by governments, international agencies and by the donor community as a process through which coastal eco-systems and resources can be protected, developed and managed in a sustainable manner. In order for implementation to be successful, effective ICZM must be based on a clear understanding of the complexities of the relation between coastal natural resources, and the coastal population that subsists on these resources. More concretely, this understanding must relate to how specific economic, political, social and technical parameters link, in a reciprocal way, specific coastal ecosystems and specific human activities.

Participatory Process

The initiative adopted a highly participatory approach in problem and intervention identification. Inputs were sought from stakeholders at the national, regional, local and community level in a series of regional workshops that were conducted under the auspices of the Environmental Protection Agency of Ghana. Based on stakeholder inputs, a draft report was prepared identifying priorities in the coastal zone and potential interventions to remedy them. The participatory approach adopted in the problem identification and planning stage was augmented by adding some analytical rigor in an attempt to identify the most cost-effective interventions. Simple cost-effective analysis was used to identify the least-cost interventions. The preliminary findings were submitted for discussion to a range of stakeholders including those at the local level. The final report incorporating comments of stakeholders was released by the Minister of Environment, Science and Technology at a national workshop in Accra in June 1997.

Analytical Approach

The basic analytical context for the study began from the premise that one must pay attention both to "social" and "natural" conditions in the coastal zone. As a corollary to this, interventions to improve these conditions will rely on social and cultural institutions that might be most effective in addressing coastal problems. Specific macroeconomic and demographic forecasts were generated for the coastal zone that are consistent with government macroeconomic forecasts (*Ghana Vision 2020*, Government of Ghana, 1995) and with district development plans. The forecasts were disaggregated by sector and district, as well as by an urban/rural split to develop simple indicators. Simple forecasts were derived for those sectors that are potentially of greater environmental significance.

The priority environmental problems in the coastal zone that directly affect human health, economic productivity, social well being and environmental quality are portrayed using a GIS presentation in the impact zone' of the coastal zone. Using the forecasts, the Geographic Information System (GIS) presentation portrays the extent of future degradation by the year 2020, if current problems remain unaddressed and projected growth targets are met.

Key Findings

The persistence of poverty and the pervasiveness of income disparities in much of the coastal zone have important implications for economic, social and environmental security in Ghana. Poverty and environmental degradation have often been characterized as being part of a vicious circle'. In Ghana's coastal zone, it is likely that both the absolute and relative poverty levels are contributing to the degradation of the coastal ecosystem and in turn, are exacerbated by the marine and coastal degradation. While, future economic growth will improve absolute economic prospects and social conditions in some districts, the analyses and projections in the study indicate that income disparities will persist and that over one half of the coastal districts will have projected per capita income levels of less than $300 per person in 2020.

In many coastal districts in Ghana, environmental degradation has undermined basic environmental services such as water supply and land productivity. This, in turn is causing declines in health conditions and natural ecosystem productivity, loss of subsistence foods and lower incomes. Poverty resulting from the direct negative impacts on incomes has forced

individuals and their families to place a greater priority on their immediate subsistence needs. Long-term considerations such as the sustainability of the resource base have become less important. The results are seen in increased non-sustainable practices for local natural resources such as mangroves, wetlands, fisheries and water supply. The poverty and environmental degradation in the coastal zone of Ghana, has been further exacerbated because of limited land and water availability at the coastal margin.

Aggregate environmental degradation derived by providing equal weights to all of the environmental and natural resource degradation shows that environmental hotspots' appear in a number of localities. The Volta delta, the urban and peri-urban areas around Accra, the urbanized areas around Cape Coast and the westernmost districts of the Western region are all high-priority districts.

Summary of Relative Environmental Priorities from a Regional Perspective

Environmental Priority	Western	Central	GAR	Volta
Domestic sanitation	**	***	***	***
Fisheries Degradation	*	*	***	**
Wetland and Mangrove Degradation	**	*	**	**
Industrial Pollution	**	*	**	*
Erosion	*	*	*	**
Forest Degradation	**	**	*	**
Aquatic Weed Encroachment	*	*	*	*
Key: * = low (<5); ** = Moderate (5-8); *** = High (>8) ; GAR-Greater Accra Region				

From a regional perspective, the environmental priorities are shown as in Table 1 above. Many environmental problems are intimately linked to broader developmental concerns such as unplanned settlement, overpopulation, or resource use by economic activities. Two indicators that link into these development concerns are population density and general resource-use intensity, both of which are measures of direct human impacts on environmental conditions.

Towards an ICZM Strategy for Improvements in the Coastal Zone

Addressing Ghana's coastal priorities requires a concerted approach on many fronts. Interventions are required at the national, regional as well as local levels. Targeted interventions would address specific problems and institutional interventions would aim to improve the overall effectiveness of all ICZM interventions either by providing the institutional backdrop to facilitate project delivery or the means for minimizing overlaps or conflict.

Different categories of interventions are identified for 5 of the priority areas outlined in the study; i.e. domestic sanitation, fisheries degradation, wetland and mangrove degradation, industrial water pollution, and erosion. The interventions include: (a) direct investments which may comprise capital or operating financing for construction, technological improvements including appropriate technology suited to small-scale situations; (b) economic or regulatory incentives in the form of taxes, subsidies, charges, licenses for improving economic efficiency of marine and coastal resource management; (c) initiatives for increasing knowledge and awareness of decision-makers or resource users, with a view to improving the management of coastal resources; and (d) institutional or policy reforms to correct existing distortions or market failures that exacerbate environmental problems.

The summary of each intervention identified includes the following types of information: (i) the name and type of intervention; (ii) geographic focus (if any); (iii) cost summary of the intervention in terms of its net present value (NPV) and typical project duration; (iv) anticipated benefits of the intervention in terms of the population affected and the "impact" criteria used in the district profiles to score the various priorities; (v) an assessment of the cost effectiveness of the intervention; and (vi) other information relating to the risks of intervention, suggested complementary institutional or policy initiatives to mitigate risks or enhance cost effectiveness, or other observations.

For each intervention identified, a cost-effectiveness index is calculated based on the range of impacts that the given intervention might have. The methodology used for cost effectiveness analysis is multi-criteria analysis (MCA) selected as the most appropriate, due to the non-availability of data to carry out calculations based on damage functions for each type of impact. The index provides a standardized cost for the interventions in terms of impact on a population of 100,000 and then calculates the effectiveness of the expenditure based on the normalized impact across the six evaluation criteria: (i) reduction of problem extent; (ii) improved ecosystem health; (iii) improved human health; (iv) reduced risk of extinctions; (v) reduced incidence of toxic and hazardous substances; and (vi) improved economic efficiency.

Cost-Effectiveness Summary of Potential Interventions					
Interventions	**Domestic Sanitation**	**Fisheries Degradation**	**Wetland & Mangrove Degradation**	**Industrial Water Pollution**	**Erosion**
Direct Investment	small scale waste collection H	Aquaculture M	Mangrove Planting H	Centralized Treatment L	Control Structures L

	centralized waste treatment L	Fish Landing Sites H	Sensitivity Mapping H	Process Modifications - SSI H	Mangrove Planting H
	constructed wetlands M		Protected Area Acquisition H	Secure Landfills M	Planting Vegetative cover H
	large scale treatment L				
Incentives	Regulatory Enforcement H	Regulatory Reforms M	Regulatory reforms H	Regulatory reforms M	Fines illegal mining L
	Fines & User Charges H	Nearshore Licensing H	Biodiversity strategy H	Fines - Pollution M	Sand-winning licensing H
	Direct Payments/ Subsidies H		Watershed Management Plans H	Recycling incentives H	
				Subsidize Retrofits M	
Education Initiatives	Health Awareness H	Appropriate Fishing Techniques H	Government Awareness H	Industry Awareness H	Sand-winning Awareness H
	Recycling/ Re-Use H		Curriculum H	ISO 14000 Standards H	Natural Cause Awareness H
	Specialized Training H			NGO Training H	Specialized Training H
	Curriculum H				
Institutional Reforms	Small-scale Local Management H	Small scale local management H	Diversity Research H	EPA strengthening H	Land-Use Planning H
	Land-Use Planning H	Marine-Use Zoning H	MEST Biodiversity Unit H	Land-Use Planning H	CZM coordination H

	Privatization Options (study) H	CZM Coordination H	NGO support for Monitoring H	District Strengthening H	
	CZM coordination H		Traditional Regulations H	Privatization Options (study) H	
Key: CE Index: < 1= H (High); > 1 & 2.5 = M (Moderate); > 2.5 = L (Low)					

For more information on this initiative and subsequent ICZM activities in Ghana, West Africa, please refer to Indu Hewawasam, Environmental Specialist, Rm. J 3-097, Environment Group, Africa Region, World Bank, e-mail: IHewawasam@Worldbank.org.

*The participatory process referred to is described in **Africa : A Framework for ICZM, World Bank, 1996.** For copies of the publication **Towards an Integrated Coastal Zone Management Strategy for Ghana** prepared and published jointly by the Environmental Protection Agency of Ghana and the Environment Group, Africa Region, World Bank, please write to the Environmen Group, Africa Region, Rm. J3-133, World Bank, 1818 H St. N.W., Washington, D.C.20433, USA.*