## OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

## DISCLAIMER



## FAIR USE POLICY



## CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

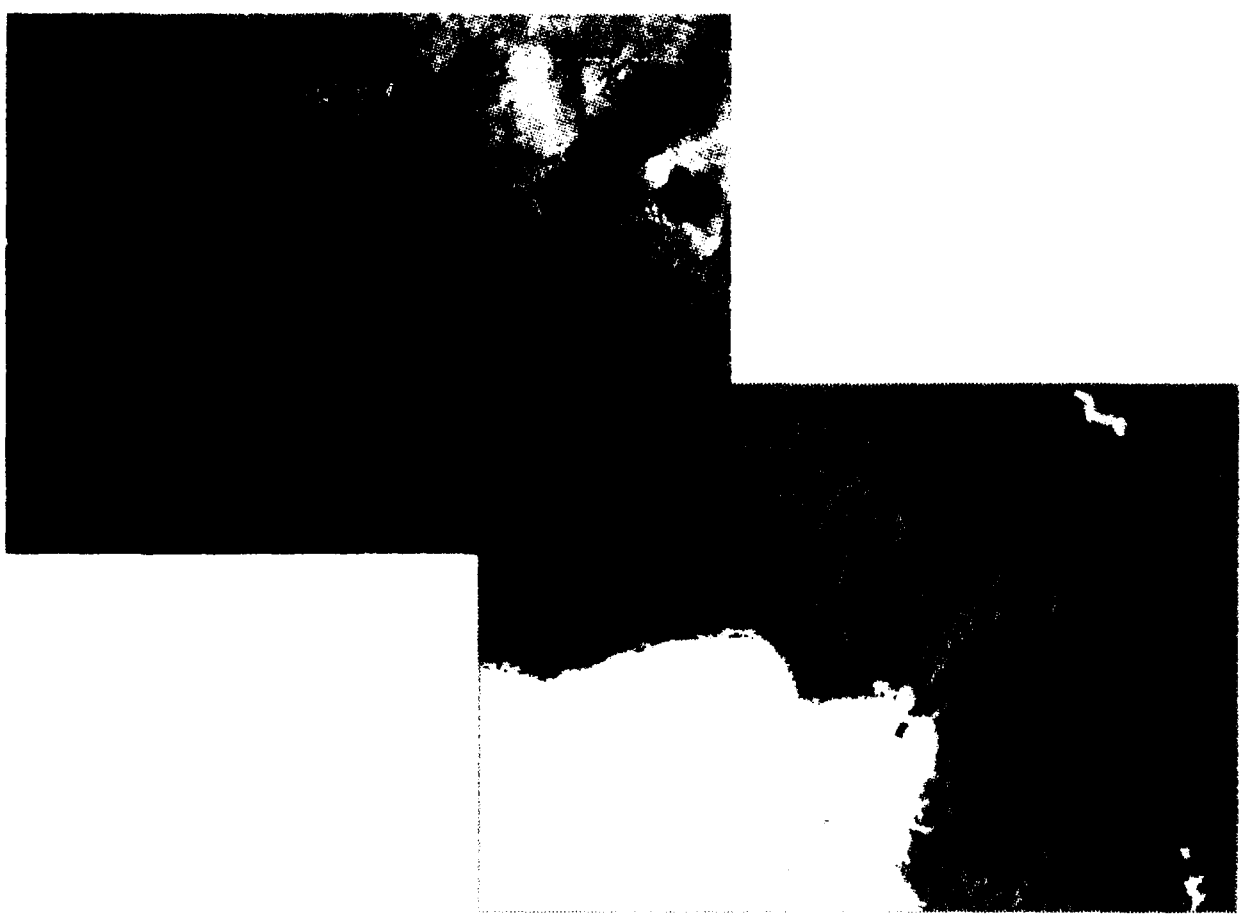
For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

# Water Pollution Control and Biodiversity Conservation in the Gulf of Guinea (LME): Project Management Consultancy

**PROJECT No. EG/RAF/92/G34**



***FINAL REPORT*** **OCTOBER 1996**

**Natural Resources Institute, University of Greenwich**

# EXECUTIVE SUMMARY

**Annexes**

*Annex 1: Terms of Reference for Consultancy*

*Annex 2: Current Project Objectives, Outputs and Activities*

*Annex 3: Proposed Reformulation of Project Objectives*

*Annex 4: GEF Strategic Action Programme Exercise*

*Annex 5: Indicators to Verify Progress*

*Annex 6: Project Management Structure*

*Annex 7: Interactive Computer Based Project Management Plan*

*Annex 7a: Existing work plan presented in MS Project*

*Annex 7b: Revised schedule to group tasks and show linkages in MS Project*

*Annex 7c: Proposed structure for development of a hypothetical LME Management Programme in MS Project*

# EXECUTIVE SUMMARY

This report presents the conclusions of the Project Management Consultancy to the project *"Water Pollution Control and Biodiversity Conservation in the Gulf of Guinea Large Marine Ecosystem"* (referred to in the report as the GOG/LME Project). The short consultancy had a multiple brief to review aspects of both the objective framework as well aspects of day-to-day management (Terms of Reference are supplied under Annex 1).

The study has developed through three stages of consultation:

- the first involved a series of meetings in-country with participating institutions and agencies, as well as meetings with NGOs, government departments and donors concerned with, but not incorporated in project activities;
- the second was a workshop involving senior staff representing all major national and regional stakeholder institutions, as well as the international financing and management agencies (UNDP and UNIDO);
- the third, following distribution of the draft report, has been a review of the written responses received.

## Background:

1. The project approach has been based on a relatively new and potentially extremely useful ecologically based concept of the *Large Marine Ecosystem* (or LME). Management of these ecosystem units is expected to bring greater benefits than piecemeal sectorally based interventions.

2. The project is funded by the *Global Environment Facility* (GEF), within the context of its support to international efforts to achieve benefits in two of its priority areas - biodiversity conservation and collaborative management of international waters. Under the criteria that GEF has developed for funding such water-body based operational programmes, GEF focuses on efforts to achieve better management of the environment and directs its funds to those actions that involve incremental costs (over and above baseline national programmes) to address issues of transboundary importance.

3. Having evolved from two separate initiatives which both predate the recently clarified GEF Operational Strategy, the project project interventions were defined without the benefit of a formal strategic framework.

4. It is to address this perceived limitation that the consultants have proposed that the GEF finances the preparation of a Strategic Action Plan, providing the coordinating framework into which this modified project can be placed in association with other existing national and international development initiatives, and presenting prioritised management interventions for additional external funding.

## Strategic Action Programme

5. The rationale for the proposed modifications to the present project design are based on the following critical premise:
*GEF recognises that international waters programmes are complex, involving numerous sectors with national and international management requirements; as such the GEF expects that participating countries will prepare a Strategic Action Programme (SAP)*

*that will establish priorities for future management interventions, based on critical transboundary water related environmental issues.*

6. GEF support may be provided to the stakeholder countries to assist in the preparation of the Strategic Action Programme;
*further GEF funds may then be made available for support to those prioritised management interventions identified within the SAP*[1].

7. The SAP will include agreements between participating countries to carry out certain joint activities, and possibly more significantly to commit regular development assistance from national implementing agencies in support of the international waters projects. In addition the SAP will include commitments to minimum country baseline activities, as well as specific project interventions.

## Preparation of an SAP

8. If the need for an SAP is accepted, based on the above analysis, then the GEF should be approached to provide additional funds for the exercise. The present project budget, as agreed with the participating countries, does not provide adequate slack to allow for the financing of an SAP without prejudging which project components would not be financed as future priority activities.

9. It is proposed that the SAP process should be initiated within six months, and would involve the majority of the existing project participants, as well as a wider group of stakeholders representing resource managers and resource users within the region.

10. Clearly the LME project participants would remain key players in the process of formulating the SAP, providing much of the ecological information on which the management priorities will be based. However, in recognition of the critical nature of this input, the consultants have recommended that this be carried out as a formal exercise, rather than as an *ad hoc* process. The project would therefore be expected to prepare a full report within six months, providing the baseline characterisation of the "State of the Health of the LME". This would include comparative assessments of the fragility of components of the ecosystem, and the seriousness of threats to their continued functioning[2].

11. The SAP process could be expected to be completed within six months of being initiated, and in addition to proposing priority management interventions, would provide the framework for coordination of the existing national and international programmes dealing with the marine basin catchment.

12. The SAP would identify specific management projects that would be eligible for further GEF financing arrangements, and prepare additional project proposals for GEF consideration.

---

[1] As with all GEF financed programmes, grants and concessional funds are provided to developing countries for international waters projects and activities that aim to protect the global environment. Specifically the GEF "...might then fund the incremental cost of priority elements of the SAP that address the transboundary priorities." Ref: ***Operational Strategy of the Global Environment Facility***. Washington, DC. February 1996.

[2] Although much of this information has been gathered in the report prepared in August 1995 (The State of the Coastal and Marine Environment of the Gulf of Guinea), the report is a set of separate national profiles with differing emphasis and scope according to national priorities. The proposed report needs to go beyond this, to ensure that national profiles are comparable in terms of coverage, and that the national views are brought together and incorporated into an ecosystem wide overview.

## Coordination of GOG/SAP Projects

13. The role of the SAP is to develop a framework within which disparate sectoral projects can be prioritised with reference to a common theme, the improved management of a shared environmentally sensitive resource.

14. The management of this shared resource is guided by national commitments to existing international conventions and specifically by regional agreements to priorities for joint management of a common property.

15. The formulation of the SAP is not the completion of the project prioritisation and planning exercise. The SAP becomes a permanent forum for coordination of regional international waters interventions, typically managed by a permanent secretariat. Information on project interventions and achievements needs to be channelled back to the secretariat to improve coordination and to modify project interventions in the light of experience within the region.

16. The composition of the secretariat would be determined as part of the development of the SAP, but it would be expected to report to a steering committee that could have a very similar composition to the existing project steering committee.

17. The modified existing project would therefore come under the coordination of a permanent SAP body, rather than act in the role of coordinator for the wider (prioritised) management initiatives that could be expected to come under the framework of the SAP.

## Future Role of the LME Project

18. If the SAP process is initiated, then much of the existing project efforts will be aimed at supporting the development of the SAP over the next twelve month, initially in preparation of the health of the environment report, and then as contributors to the planning process.

19. Following the publication of the SAP, the project would be expected to focus it's research and monitoring activities on those management aspects that have been identified under the SAP as having a high priority. This is likely to result in modifications to the present activities, with a possible expansion of activities to include additional management aspects.

20. However, given that the primary function of the majority of the present project participants is research and monitoring, it is assumed that most of the prioritised management interventions will be presented as projects for funding directly through the management agencies.

21. The future role of the project is therefore expected to focus on providing research and monitoring support to other programmes, rather than implementing direct management interventions within the project. It would be expected to support projects funded both nationally and internationally, and including non-GEF projects within the SAP framework. The modified immediate project objectives could be redefined as follows:

- Preparation of a report indicating "The State of the Health of the Gulf of Guinea Large Marine Ecosystem"; presented at the start of the process of formulation of the SAP;
- Defining key environmental indicators that should be monitored in support of prioritised management interventions[3]; and

[3] The GEF monitoring guidelines suggest the use of three levels of monitoring: Pressure, State and Response. Pressure includes resource exploitation, pollution and habitat destruction. State deals with assessments of the

- Establishing a sustainable monitoring capacity within existing institutions, capable of providing timely information to managers and decision makers focusing on priority management requirements.

22. These modifications to the project objectives should not be seen as a response to an un-achievable short term goal, but as a means of precisely defining the project role with respect to management, allowing further investment in priority management interventions to take place.

### Involvement of Additional Countries

23. The present group of participating countries was identified on the basis of the assessment of the extent of the LME, as it was understood at the time of project identification. The exclusion of Togo from the original group was, at the time, a political decision.

24. However, the ecological definition of the extent of the LME is still under debate, and could be rationally extended both to the south and to the west of the present group of countries.

25. The precise definition of which countries should be included is not, at this stage, seen to be a limitation of the validity of the project. The GEF operational strategy specifically acknowledges that even if only several of a larger number of coastal countries wish to address LME management priorities, then the process of formulating a Strategic Action Programme is still valid. The process of preparing the SAP can be used as a key incremental step in promoting awareness of management issues in neighbouring countries that are not directly involved from the beginning, leading to their inclusion at a later stage.

### Project Management Structure:

26. As a regional project addressing transboundary concerns, effective participation of country stakeholders is a key issue. Although the highest level of stakeholder participation in the project - the Ministerial committee - has yet to be convened, the Steering Committee, on which all member countries are represented has already proven to be dynamic and ready to take responsibility for the project direction, as demonstrated by the August 95 meetings. and would be an appropriate forum for considering and adopting changes in the framework.

27. Priority should be given to reinforcing national structures and institutions; most management actions will be taken on a national basis even for the 'good' of the LME. In this context the team felt that the establishment of a permanent Regional Co-ordination Centre is a lower priority than strengthening national institutions; in any case creating a permanent institution was not appropriate under the present short term project. In the execution of project funded activities, as much responsibility as possible should be given to the groups of national specialists implicated in each sector - in the design, execution and delivery of outputs; at the same time the resources for these activities should be allocated as directly as possible to be used under the responsibility of the groups concerned.

28. However, it is not felt that resources are inappropriately allocated to the Project Co-ordination office. The project is complex, involving a great deal of facilitation to

---

ecological status and trends in the system. Response deals with the management interventions in controlling resource exploitation, pollution and habitat degradation. The present monitoring programme is aimed primarily at monitoring the "state" of the environment.

effectively bring together the important stakeholders; the role of project co-ordinator is justified as is that of the five Programme assistants posted to member countries. Some readjustments are proposed in the light of the experience of the project co-ordinator, as is a recommendation to reactivate a compromise solution for assisting CRO to complete the extension of its own office/lab facilities, in order to create sufficient space to house the project for its duration.

29. It is suggested that the project work towards simpler, more direct lines of communication through one single focal point per country; it is the responsibility of national environmental management agencies to promote and maintain national networks of stakeholders concerned by the LME, which if successful would be more durable than lines of communication fostered by a project.

30. In proposing a computer based management tool to assist the officers responsible for the programming of activities and use of resources, the consultants have chosen an 'off the shelf' package - MSProject. This has been installed and demonstrated on the computer of the project.

# A Introduction

## *a. Background to Project Management Consultancy.*

1. Although the GOG/LME Project only effectively started one year ago in May 1995, its initial conception dates back several years and the document itself was signed over 2 years ago. Since that time there has been considerable evolution in the situation on the ground; the environmental sector in the region in particular has been going through a dynamic period, with an increase in awareness of some of the environmental problems facing the region, strengthening of institutional structures, the preparation of National Environmental Action Plans and new funding opportunities. GEF has acquired considerable experience with large regional waters projects, clarifying its goals and establishing proven procedures for their implementation. The present consultancy intervenes against this background, to assess the possible need for refocusing or restructuring of the Project in the light of the changed situation, including the following issues:

- a perceived tendency towards a centralised regional co-ordination role which may not be appropriate in the context of the aim to achieve more effective co-operation and collaboration between the specialised institutions of the region;
- the project has started with the adhesion of just five of the countries bordering the GOG/LME; achieving the management objectives would require the co-operation of all the countries concerned;
- in the process of refining the definition of project activities it has become apparent that the budget will not suffice to cover all the costs of activities now proposed (see Tilly, 1995 in which proposed activities amount to almost double the existing allocation[1]);
- many activities/projects related to the LME environment have commenced in the region since the project was written; closer integration is needed to avoid duplication and maximise the impact of the project;

2. The detailed responsibilities of the mission are contained in the Terms of Reference for the Mission (annex 1); these can be resumed as;

- recommendations for adjustment to the strategic approach, immediate objectives and framework of the project as expressed in the current prodoc;

[1] Tilly, J: "Evaluation of the Industrial Component of the Gulf of Guinea Large Marine Ecosystem Project", Report of UNIDO Mission, August 1995 (ECODIT)

- recommendations on the present project management structure;
- recommendations for the inclusion of 'non-member' countries bordering the LME;
- proposal of an interim workplan integrating the work plan adopted by the Steering Committee;
- consideration of the possibility of reducing project duration and reducing the cost of the project management mechanisms, as ways of meeting budgetary constraints;
- proposal of a computer based tool for the planning, monitoring and supervision of the large number of activities of this complex project;
- definition of a series of indicators that can be used to measure progress of the project, both in the short term (six months) and for the full project term (three years)

3. The field phase of the consultancy took place from the 12/5/96 to 6/6/96, and included visits to all member countries - Côte d'Ivoire, Ghana, Benin, Nigeria and Cameroun. The field mission was organised by the project at very short notice, and the mission team acknowledges with much appreciation the efforts made by project collaborators and other national officials to receive and inform team members during their short field visits in the region. These efforts are confirmation of the great interest that stakeholder countries have in furthering the progress of the GOG/LME project.

4. The present consultancy is not one of evaluation or audit of the GOG/LME project. The field contacts and review of project documentation by the mission make it clear that there exists an appreciable level and depth of expertise in relevant specialities in the region; further technical support is provided by specialised agencies such as NOAA, UNIDO, ORSTOM, etc.. Consequently, the mission considers it unnecessary to make comment on details of individual activities (planned or in implementation phase), all of which could make contributions towards knowledge or management of the LME.

5. The mission emphasises its appreciation of the fact that the project co-ordinator and the team of national and international collaborators of the project have been able to initiate a large number of activities in a comparatively short time. This is a positive start to a complex project, and regardless of any adjustments that are eventually proposed by the Steering Committee, should provide the basis for a dynamic future.

### *b. Stakeholders Viewpoints*

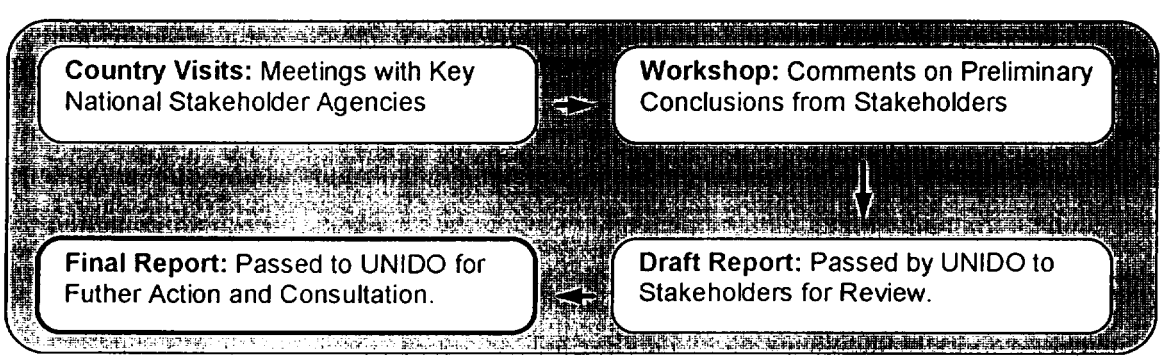
1. The Terms of Reference stress four issues that have been highlighted as critical focus points for the consultancy process. The first issue raised was the need to solve regional problems not through the creation of new regional institutions, but through "*...cooperation and coordination of activities carried out by a wide range of institutions in each nation...*".

2. From the point of view of the implementation of any proposals put forward from this consultancy, the implications are clear: ***unless the conclusions of the consultancy are accepted by the majority of the stakeholders, the necessary cooperation to implement the recommendations will not be forthcoming.*** This is particularly important in that the TORs also indicate that there are a number of areas of where there could be potential conflict among the stakeholders, specifically the perceived need to expand the programme to cover other nations, while balancing the present budget to cover the existing range of activities.

3. The purpose of the consultancy process was to ensure that the points of view of the country stakeholders in the project were fully made known to the mission team, so that they might be properly considered in the final proposals. However, the objective of the consultancy was not to resolve all issues, but to recommend a strategy for developing the project that would accommodate changes that have taken place in the institutional structures of participating countries and projects, against the experiences learned through the implementation of the GOG project and other large regional international projects. Clearly the acceptance and subsequent implementation of the recommendations will depend on the ability of the stakeholders to reach a compromise solution that will fulfil the larger part of their requirements.

4. The consultancy process was carried out in three stages: visits to all the present stakeholder countries and meetings with staff from key agencies; a workshop to present and discuss the interim mission statement prepared before the team left the region; and finally responses to the draft report presented to UNIDO and distributed by UNIDO to the stakeholders.

**Figure A-1 Consultation Process**




### (i) National Level Consultation

1. Members of the consultancy team visited all signatory countries. As previously indicated both the mission and the country visits were arranged at short notice, and as a result the meetings with the concerned agencies were to a large extent *ad hoc* arrangements and therefore could not be comprehensive. Despite this, in most cases meetings were arranged with representatives of the NFPAs and some, if not all of the NFPIs. In addition, meetings were arranged with other environmentally concerned agencies and NGOs.

2. One problem which became immediately apparent was that many of the agencies visited were not fully briefed of the purpose of the mission, or if the NFPA had had prior notification, then the details had not been provided to the staff participating in the consultation at the NFPIs. The result of this was that the majority of meetings with associated but non-participating institutions were only arranged after the mission had arrived in the country. However, there were advantages is this less focused approach; in many cases discussions extended beyond the functioning of the project *per se*, to the functioning of the project within the wider framework of institutions responsible for environmental management within the country.

3. The outcome of this national level consultation was a set of responses from the different stakeholder institutions within the country, rather than a coordinated single national response to a predefined series of questions. Clearly these responses could not be expected to be wholly consistent, reflecting the different interests and priorities of the participating institutions, and in some cases the competing needs within institutions. The interim mission statement was therefore based on the consultants evaluation of this set of responses

### (ii) Abidjan Workshop - Discussion of Interim Mission Statement

1. Towards the end of the field phase of the project, a workshop was held on the 3 - 4 June 1996 in Abidjan to discuss the work of the mission. Participants from the focal point institutions of each country were present; although this was not a steering committee meeting, many of the participants have also been country representatives on that committee.

2. The workshop was specifically arranged to provide a forum in which the stakeholders, both participating countries, project management and donor agencies, could present a consolidated view to the consultants. To some extent this was successful in that a summary of reactions was prepared, point for point, as a response to the interim mission statement. The critical points that were debated included the reformulation of project objectives, the initiation of the Strategic Action Plan Process, the provision for additional countries (specifically Togo) and project management structures.

3. The mission suggested that the objectives specified in the Project Document as signed were not the most appropriate framework to meet current criteria for GEF funding. It was the assumption of the consultants that the stakeholders recognised and accepted the need for some adjustment in the project structure and required assistance firstly in the redefinition of the objectives framework for the project and secondly assistance in prioritising and merging current activities and adjusting projected activities to best meet the modified framework.

4. It was made clear to the Consultants that the assumption that stakeholders recognised that there might be a need to modify the project was not correct. The stakeholders represented at the Workshop consider that the present framework of objectives is appropriate. It was also made clear that the present project structure had been negotiated and signed at senior ministerial level, and that any substantive changes would also need to be discussed at that level. It was also noted that in the opinion of the majority of the national stakeholders, the review was an external one commissioned by the donor agencies and not an internal project review that could fit into the

normal process of evaluation and adjustment of project progress. Despite this apparent *impasse*, the workshop was prepared to discuss many of the proposals put forward by the consultants.

**Table A 1 Summary of Stakeholder Concerns Expressed at the Workshop**

| Area of Concern | Agencies/Country | Comments |
|---|---|---|
| Prioritisation of Transboundary Issues | UNDP, Nigeria, Ghana | GEF guidelines clearly indicate that regional priority should be given to addressing transboundary issues. The participants indicated that all aspects of the project address transboundary issues, and therefore the prioritisation exercise had been carried out. |
| Project Objectives, Workplans and Indicators | Nigeria, NOAA, Project Director, UNIDO, Ghana, Benin | Project objectives have been signed and agreed at ministerial level, and hence can not be changed. However, the project retains a degree of flexibility in the workplan, which can be adjusted in view of changing circumstances, including budget constraints, at the annual steering committee meetings. Once the workplan has been fixed, then indicators can be set. |
| Initiation of an SAP | Nigeria, Ghana, Cameroon | Eventually accepted by the majority of participants, as long as the process would not interfere or delay present agreed project activities, and would be funded from additional sources. |
| Research vs. Monitoring | NOAA | Stated that although their key responsibility remained in supporting the management of marine resources of economic and ecological significance to the USA, their focus of attention on the GOG LME was in "...comparative studies to improve a firm science base for LME management...", hence directly supporting local initiatives. |
| Monitoring vs. Management | Nigeria, Ghana | There could be no justification for changing the structure of the present project, which had been signed and agreed. If additional activities were required, i.e. further support of management interventions, then further funds must be allocated rather than reallocated from agreed activities. |
| Project Management Structure | NOAA, Nigeria, Ghana, UNDP, Benin, Cameroon | The concept of activity centres, as sectoral focal points was accepted, however the NFPIs should be maintained with their present status, as should the NFPAs. In addition there is a need for national level LME committees or steering groups, again supported by the project. Annual high level meetings are essential for maintaining commitment to the project - as such cost considerations are secondary. |
| Regional Centre | Nigeria, Ghana, Benin, Cameroon, Project Director, Côte d'Ivoire | The need for a permanent regional centre was justified as this project would only be the start of a permanent regional cooperation for LME management; and would be required to hold and support management data transfer. A regional centre would avoid the need for duplicating resources. The present facilities were inadequate. |
| Interagency Coordination | FAO, Ghana, UNIDO, Nigeria, | While duplication of activities should be avoided, some level of duplication must remain in recognition of territorial rights and hence overlapping needs. |

### (iii) Stakeholders Response to the Draft Report

1. Following the completion of the draft report, copies were passed to UNIDO (French and English versions). UNIDO then distributed copies to the stakeholders, requesting comments. Responses were addressed or copied to UNIDO and forwarded to NRI. Written responses were received from UNDP, the Project Coordinator Office, UNIDO[2], NOAA, Benin and Ghana. The main areas of concern are summarised in Table AA.2. However, it is accepted that the majority of stakeholders felt that their concerns had been adequately expressed at the workshop,

## *c. Proposed Changes to Project Framework*

1. The Consultants accept that recommendations based on the assumption that the stakeholders recognised a need for substantive changes, would appear to imply criticism of current project activities. This criticism was neither intended nor could it be justified within the existing project framework.

2. Nevertheless in order to meet their terms of reference, the consultants feel that it is both necessary and appropriate to review the objectives framework presently used by the project. The consultants consider that the broad definition of the project's immediate objectives as presently defined is a fundamental problem, that will be increasingly recognised as the difficulties of prioritising current activities and of identifying objectively verifiable indicators of real project progress within the present objectives framework, become apparent. In response to this issue, a modified objectives framework is proposed which can be used to prioritise current and planned activities and makes better use of resources using GEF criteria.

3. The Consultants recognise that under the present agreed project framework there is no requirement or obligation by Project management or Stakeholders to consider such a modified framework. However, they wish to stress that such modification should prove more beneficial to Stakeholders in the long term than minor adjustments to improve the status quo.

***It must be stressed that the function of this consultancy was to "consult"; this does not mean that the conclusions will reflect all the viewpoints of the stakeholders. Their views have been considered as key elements of recommendations which are based on a wider impartial review of the project, it's objectives and role with respect to regional requirements and donor perspectives.***

---

[2] The TORs specifically indicated a concern that "...the current project budget is insufficient to cover the costs...". The consultants were requested to provide details of expenditure and an assessment of where overexpenditure could become a problem. The consultants were unable to obtain detailed cost breakdowns, as the donor agency accounting system operates on pre-defined budget lines and not by activity. As a first step, ehe assessment would require the UNIDO finance section to rework their accounting records.

## Table A.2 Summary of Stakeholder Responses to the Draft Report

| Area of Concern | Agencies | Comments |
|---|---|---|
| Budget Allocations for Present Work Programme | UNDP, UNIDO, Ghana | The consultants have not been provided with a detailed breakdown of either past or proposed expenditure, and as a result no precise qualitative analysis of possible overexpenditure can be made. Of particular concern was the possibility of reducing high level consultative meetings, which were felt to be necessary to maintain donor/host involvement. |
| Indicators of Project Progress | UNDP | The consultants have, where appropriate, followed the GEF monitoring guidelines for International Waters Projects. The consultants proposed a set of indicators of progress for the project with modified objectives, and milestones for the present and modified project outputs. |
| Change in Project Structure | UNIDO, Ghana | The proposed change in project structure is designed to place the project within the framework of a strategic action plan. As a result the LME project emphasis is expected to remain monitoring, but in support of management interventions with additional funding allocated. |
| Research vs. Monitoring | NOAA | The clarification of the differences between research and monitoring are helpful; monitoring remains a tool for management, with two components, baseline evaluation and monitoring the impact of management. The present monitoring programme needs to be summarised as the baseline study 'State of the Environment', a critical input to the SAP. |
| SAP Strategic Action Plan Concepts and Structure | UNIDO, NOAA, Benin | Many of the references to the GEF SAP are based on draft GEF guidelines. The stakeholders could be provided with final copies through UNDP. The concept of an SAP has been widely accepted, particularly if it leads to the direction of further funds to LME interventions. Benin indicated that the current Coastal Master Plan could be reformulated to become a component of the SAP. |
| State of the Environment Study | UNIDO, Benin | The proposed study will be based largely on the available materials. Benin stressed the need to include additional socio-economic and demographic studies. |
| Project Phasing/Timing | UNIDO, Benin | The period of six months to prepare the 'State of the Environment' report has been allocated to allow for delays and timing conflicts with other work requirements; similarly the period of 12 months has been allocated for mobilisation. Clearly the process could be shortened. |
| Complimentary Projects | UNIDO | The list of projects provided by the consultancy can not be exhaustive, new projects are coming on-stream while existing ones are completed. In the majority of cases, related projects are implemented through associated or actively participating institutions. It should be an on-going process for the project to prepare lists and maintain contacts. |
| National Focal Point Agencies & National Focal Point Institutions | NOAA, Benin, Ghana | The consultants proposed a streamlined management structure, effectively the clarification of the lead role of a single NFPA, supported by activity groups (effectively regional working groups of national collaborating institutions). The participating countries approved on the emphasis on supporting national institutions rather than the creation of new regional structures. |
| Additional Participating Countries | NOAA, Ghana | The present project structure allocates roughly the same resources and responsibilities to all participating countries. The cost of including additional countries has been calculated on a pro-rata basis. This could be rationalised with closer examination of national capacities. |

## B GEF Strategies and Policies for LME Projects

### *a. The Large Marine Ecosystem as a basis for development*

1. The project approach has been based on a relatively new and potentially extremely useful ecologically based concept of the Large Marine Ecosystem (or LME). This concept identifies discrete geographical areas of ocean and coastal waters which can be distinguished on the basis of distinct bathymetry, hydrography, productivity and trophically dependant populations. These are generally large areas of 200,000 $km^2$ or more; they are mostly subject to increasing stress from intense renewable resource exploitation, water pollution and coastal zone damage etc...

2. Management of these areas as distinct ecosystem units is expected to bring greater benefits than relying on insufficiently co-ordinated sectorally based management efforts. Monitoring of the ecosystem as a whole is a basic element of this, and will aim to distinguish between natural variability of the system (e.g. of fisheries stocks) and those variations that are anthropogenic (e.g. directing management response to those impacts on fisheries that are caused by human activity and which are potentially 'manageable'). Many other stresses will be better understood in the context of the whole LME, such as wetland habitat loss in one area affecting the fisheries in another area, or an industrial point source of polluting waste discharge affecting water quality in another part of the system.

3. The concept of an LME, plus the added dimension in the case of the Gulf of Guinea of a large number of countries bordering on the LME and concerned by aspects of its management, make this situation particularly complex - with a very wide diversity of sectoral problems and of corresponding measures needed to address these environmental problems.

4. Although the LME includes coast and ocean, many of the stresses have their origins around the edges; in the case of the Gulf of Guinea LME most of the urgent problems facing the countries are linked closely to the coastal areas, and are typically diverse. Many are land-based: poor management of watersheds draining into the Gulf, bringing heavy sediment load and various polluting materials; urbanisation in coastal towns and cities leading to high levels of urban and industrial waste discharge into lagoons and sea; loss of wetland habitat important to fisheries; coastal erosion caused by human actions etc.. Other sectors of importance include offshore/inshore oil and gas exploitation; polluting discharge from shipping; over-exploitation of specific fisheries stocks etc...

5. The project document defines the extent of the Gulf of Guinea LME as stretching from Côte d'Ivoire to Gabon - total of 9 countries including Sao Tome and Principe. However, as knowledge of the ecosystem processes increases this will probably have to be treated flexibly.

Other definitions of the Gulf of Guinea LME have been proposed[3]; this proposes a system stretching from Guinea to Gabon - a total of 13 countries, but which also identifies an important subsystem of involving four countries (Côte d'Ivoire, Ghana, Togo and Benin). Management of any of these units will only be achieved by close international co-operation.

6. The adoption of the large marine ecosystem approach, recognises the inherent complexities of the system. Progress in this context can only be made if stakeholders in general, and project management in particular, have a clearly understood basis on which to decide priorities. Prioritisation of interventions will be crucial at all stages of development with such a broad basis

### *b. GEF and a strategic approach to LME based projects*

1. The project is funded by the Global Environment Facility (GEF), within the context of its support to international efforts to achieve benefits in two of its priority areas - biodiversity conservation and collaborative management of international waters. In supporting international waters projects or programmes, the GEF seeks to implement comprehensive, ecosystem-based approaches to the management of the environment. The LME concept is clearly consistent with this approach.

2. As the GEF has gained experience with programmes in this sector over the past few years, it has been able to clarify the criteria that are used to develop interventions which qualify for funding from the facility. GEF focuses on efforts to achieve better **management** of the environment of the target water-body. Although activities of monitoring and evaluation of ecosystem health are recognised as being important, these should be designed in direct support of requirements of managers of the ecosystem environment.

3. Management of the LME is composed of both national efforts by each individual country stakeholders in the ecosystem, as well as of international efforts where they are necessary for effective intervention or where they can multiply benefits through integration. GEF policy is to primarily direct its funds to those interventions that involve **incremental costs** (over and above baseline national programmes) to address **issues of transboundary importance**.

4. International waters are among the most a complex project situations, with many different types of stakeholder potentially involved, requiring many different types of intervention. Typically, development objectives will take years or decades to achieve, and can only be tackled successfully if individual actions are taken within a clear strategic framework. In this way all actions can be focused, complementary and additive. A strategic analysis of this kind is now a

---

[3] Binet. D. and Marchal. E. "The Large Marine Ecosystem of Shelf Areas in the Gulf of Guinea: Long Term Variability Induced by Climatic Changes". 1993

prerequisite for any GEF support in such a complex situation as international waters. This takes place during the preparation of a *Strategic Action Programme (SAP)*.

5. The SAP analyses the existing state of the LME and its management, identifies the main problems and their causes, prioritises the issues for future management and lays out the steps to be taken to achieve the overall development objective (annex 4; figs 1 and 2).

6. It is above all a framework within which all the components needed to achieve the overall goal can be described. Individual initiatives relating to LME management, whether national and country-driven or internationally supported, should fit into this framework. This provides the opportunity to co-ordinate between the diverse range of agencies and activities, to avoid duplication and ensure complimentarity. The SAP preparation process also identifies which actions would meet GEF criteria and for which GEF funding would be appropriate, co-ordinating these within the framework.

### c. *The SAP process*

1. GEF policy would require that projects are developed within the framework of a Strategic Action Programme (SAP), including the following three stages:

i. Analysis of Priority Transboundary Environmental Problems

ii. Analysis of National Environmental and Economic Policies and Interventions

*leading to:*

iii. Establishment of Clear Priorities for addressing Transboundary and Sectoral Issues.

The final stage includes identifying key activities in the following areas:

- Priority Preventative and Remedial Actions;
- Cross-cutting Issues and Linkages to Other Focal Areas;
- Institutional Strengthening and Capacity Building Needs;
- Stakeholder Involvement and Public Awareness Activities; and
- Programme Monitoring and Evaluation.

2. The set of interventions have to be prioritised and the minimum required (*baseline*) set of activities have to be identified that can be accomplished with the available domestic and international funding. The incremental costs to the baseline funding, relating to global concerns, would then clearly become a priority for GEF funding.

### (i) Monitoring and evaluation programme within SAP

1 Programme Monitoring and Evaluation is seen as being an integral component in support of the management of prioritised preventative and remedial actions, and the GEF assumption is that a monitoring programme is developed as part of a complete (GEF) project cycle. However, given the limited experience of the management of LME programmes, the World Bank Guidelines recognise that international waters projects are often required to develop, test and build capacity for implementation of ecosystem based monitoring and evaluation strategies, rather than merely implement standardised procedures. In some cases the programme may be initiated as part of project preparation, to provide baseline characterisation, and with the capacity building carried out during project implementation. However ***the emphasis of the monitoring programme remains the support of the development of environmental policy and management programmes***, not as an end in itself.

## C Present Project Status and Development Framework

### *a. Preparation of the GOG/LME Project*

1. The Project GOG/LME - "Water Pollution Control and Biodiversity Conservation in the Gulf of Guinea Large Marine Ecosystem" EG/RAF/92/G34 - is presented in a UNDP project document (prodoc) signed in 1994 by representatives of collaborating agencies and stakeholder countries. This document defines the project's immediate objectives, activities, budgets and structure for co-ordination and project supervision. Funding sources are detailed in the document and include, as well as UNDP/GEF as the principal source of funds, participation in kind from NOAA of the United States, and contributions in kind from member countries. This is the document that forms the basis for project implementation.

2. At the time of the preparation of the proposal for the GOG/LME project, the present criteria of the GEF were not fully established. GEF did not undertake the preparation of a Strategic Action Programme - (SAP) before funding the present project, and consequently the project activities are not fitted into a strategic framework for the regional management of the LME as would now normally be required in the case of a project of this kind. The complexity of the environmental sector and the emphasis put by GEF on aspects of international management of the environment, have demonstrated the importance of a strategic view to the success of any such initiative addressing problems in international waters.

3. The Consultants recognise that in the absence of such a framework, this project was designed with a broad approach appreciating the need to include many essential elements of a strategic view - including for example scientific research and environmental monitoring,

management mechanisms, governance, socio-economic impacts, pollution inventories, control of land based sources of pollution. Not all these aspects are developed in sufficient detail in the prodoc, however, for the project to have a measurable impact on problems facing the region.

4. The preparations for the project began over five years ago, and the definition of project objectives has a chequered history. The GOG/LME project developed from a sequence of consultations in the region, during which two distinct regional project approaches concerned with the environment of the Gulf of Guinea were promoted and proposed by particular stakeholders for GEF funding.

**"Industrial Water Pollution Control in the Gulf of Guinea Large Marine Ecosystem"**

**"Implementation of a Core Monitoring Program in the Gulf of Guinea Large Marine Ecosystem"**

5. These different approaches were subsequently 'rationalised' and drawn together into the single project under the present title "Water Pollution Control and Biodiversity Conservation in the Gulf of Guinea Large Marine Ecosystem". The two elements above have given rise to two of the immediate objectives of the prodoc. The remaining objectives concern institutional strengthening and capacity building, and integrated data management.

### *b. Status of Project Implementation*

1. Project execution began in May 1995 with the arrival of the Project Co-ordinator. Initial contacts with institutions in member countries established the links between them and the project, and it was from this basis that the project was able to commence its activities with the collaboration of member stakeholder countries. During this initial settling in period, the Project Co-ordinator identified the need for a thorough review of project activities in the light of the prevailing situation, and in August 1995 an initial meeting of the Steering Committee was convened.

2. In August 1995 a major review exercise was undertaken involving the holding of a succession of meetings of the Working Group, Drafting Sub Groups of the Working Group, and the Steering Committee. The subgroups took a modular approach to considering the elements of the work plan. The modules established were: fish survey, productivity, contaminant sources and effects, capacity building and equipment, non governmental organisations, and integrated coastal area management and GIS.

3. This resulted in a revised list of 36 activities which were recommended to the Steering Committee; these were adopted and enshrined in the Work Plan, Time Table and Budget produced in August 1995. The latter lists a total of 55 activities, and includes 'non scientific'

activities linked to project management (annex 2; tables 3 and 4). The original prodoc specified a total of 85 activities (annex 2; tables 1 and 2). Possibly because the prodoc was not developed on the basis of a distinct logical analysis, a revision of the framework of objectives and outputs was not undertaken at the same time as this re-prioritisation of the activities. The subsequent documentation of recommended activities is not presented in the same manner as the prodoc; consequently, it is not clear how the Steering Committee intended these changes to affect the planned outputs and immediate objectives of the project expressed in the prodoc, if at all.

4. The latter point is crucial when addressing the issue of defining indicators for the monitoring of project performance (in attaining its objectives) or of project milestones (in delivering planned outputs).

5. During this first year of implementation, a significant proportion of the planned project activities were launched by the project, and despite a number of delays linked to the logistics of starting up the project these activities have made progress. Country stakeholder support has been good, and made an important contribution to this progress.

6. Progress in some activities might have been more positive if adjustments made to the project activities during 1995 had not led to a degree of incomprehension within UNIDO, between the project co-ordinator and headquarters backstopping staff. Although this was clearly an important management issue facing the project between 1995 and 1996, and was still so when the terms of reference of the present consultancy were drafted, the issue has now been largely resolved by UNIDO. The mission therefore has no detailed comment to make on this issue, although it is still a factor that should be considered during an eventual project evaluation.

7. Finally, there is the possibility that in adopting such a wide range of activities as is implied in the current objective framework, the sheer complexity of project management and the number of individual activities of an extremely varied nature will render the project ineffective as it moves constantly from one to another. The current activities involve state of the art oceanographic science, promotion of public awareness to a wide range environmental problems, direct involvement in the economics of industrial processes, promotion of networking between a wide range of management and scientific institutions - to cite just a few of the varied interventions that the project is called upon to do. Of course they can all be linked under the LME concept, but would be more effectively executed by specialised project structures.

8. The present Project Management Consultancy intervenes just one year after the arrival of the Project Co-ordinator. As would be expected of any new project establishing itself, most of the actions undertaken in that time are almost all at an early stage. We would reiterate that this consultancy was not assigned tasks of formal evaluation or audit and, indeed, it would not be appropriate to do this so soon after the beginning of the project.

### c. *Objective Framework of the Project defined in prodoc*

1. The current objective framework of the project is the one expressed in the prodoc. As a result of the adoption of the two themes cited above, the Development Objective adopted by the project is broad, although it has the advantage that it can accommodate these two major thrusts which make up the project:

**"To protect and restore the health of the Gulf of Guinea Large Marine Ecosystem and its natural resources."**

2. It is a goal that is both long-term and very wide ranging in the nature of actions that would be required to achieve it. In its scope, this is an objective that would be appropriate as the development goal of a full Strategic Action Programme for the LME. However, a SAP would have been able to identify a range of project initiatives as stepping stones to achieving that objective, and would assign focused immediate objectives to each project.

3. The definition of the present project's objectives, developed outside the framework of a Strategic Action Plan, lacks a degree of clarity that would ideally be expected in a GEF Large Marine Ecosystem Project, since it aims to cover the full breadth of the strategic approach including baseline survey, monitoring, management response and preparation of future project initiatives.

4. Immediate objectives define the state that project sets out to reach during its planned duration. From an analysis of its expressed immediate objectives (annex 2, box 1) this project not only sets out to achieve an initial description of the LME during its life of four years, but certain immediate objectives (in particular objective 4) go much further in developing management responses, and from there expect a measurable impact in terms of an improvement in the health of the Gulf of Guinea large marine ecosystem as a result of the management improvements induced by the project. This is in fact not possible, a judgement confirmed by reviewing the proposed activities which clearly only expect the project to take the initial, sometimes small, steps towards some of these goals. In terms of measuring the success of the project, there is a danger of being seen to fall short of the declared immediate objectives, since indicators of progress to that objective will not be satisfied at the time of an evaluation. Broad objectives also make it difficult to make any prioritisation when faced with choices and options during project lifetime.

5. Although certain of the project activities and outputs do involve issues of transboundary significance, this has not been used as an explicit basis for prioritising the activities of the project.

6. It could be argued that many of the difficulties that the project has confronted have their basis in the original design, and would have been less critical if the objectives which had been set had been less broadly ambitious - for instance in the case of:

- Inadequate budget provision for proposed activities;
- Basis for prioritisation of actions is not a clear part of framework;
- Co-ordination of a complex variety of activities, lack of clarity in their definition resulting in radical redesign of work plans;
- Difficulty in defining precise objective indicators of progress, since the project is unlikely to achieve the full extent of objectives as described;
- Difficulties between executing agency and field staff, deriving from lack of comprehension over the perception of whether or not spending proposals are appropriate, when these are not precisely defined in budgets or workplans;
- Activities based on scientific research have become dominant in the project, but it is not always clear how they can be linked to management priorities and interventions which will achieve the overall goal assigned to the project;

7. The consultants were requested to consider the minimal activities required to adequately achieve the project objectives as stated in the project document, as a possible means of reducing budget requirements. In fact in order to achieve the stated objectives it would be necessary to increase the activities of the project, especially in developing environmental management response to the data produced by the monitoring system being established as a result of currently planned activities. Clearly the project will need to define more modest goals in order to rationalise use of its budgetary resources.

### *d. Current emphasis of project activities.*

1. The project has stated objectives that include both establishment of "monitoring capacity" and the development of management capacity within the large marine ecosystem, while at the same time addressing the problems of point sources of industrial and urban pollution.

2. However, the emphasis placed on each the differing objectives both as a result of the initial project design and as a result of the immediate stakeholders interests, has tended to marginalise the longer term management issues, while concentrating on the perceived need for characterisation of the ecosystem resource base as a precursor to any real development of improved management structures (annex 4; fig 3). Very simply, the ecosystem research elements

have been given priority both in project design and execution, and later justified on the basis that further information is needed before moving into real management support[4].

3. The degree to which this has occurred is open to dispute, but the initial budgetary allocations support this analysis.

**Table C 1. Planned Use Of Budget Resources By The Project**

| Item | % of Total Budget * | % of Intervention Budget ** |
|---|---|---|
| **PROJECT MANAGEMENT:** | | |
| General Administration and Support (including non specific training and meetings) | 37% | - |
| **PROJECT INTERVENTIONS:** | | |
| ***Policies, Strategies and Management Institutions*** | 4% | 5% |
| Objective 1 Strengthened Institutional Capacities to Prevent and Remedy Pollution - Includes part of Objective 2 Integrated Information Management System (GIS) | | |
| Objective 5 Develop National and Regional Policies and Strategies for the Long Term Management and Protection of the LME | | |
| ***Monitoring*** | 50% | 80% |
| Objective 3 Establish Comprehensive Programme for Monitoring and Assessment of the health of the LME - Includes Most of Objective 2 'Integrated Information Management System (GIS)' and relevant equipment and training of Objective 1. | | |
| ***Management of Point Sources of Pollution*** | 9% | 15% |
| Objective 4 Prevent and Control Land Based Sources of Industrial Pollution | | |

* *Total budget allocated in the project document.*

** *Intervention budget - excludes the mangement costs estimated at 37% of project costs.*

[4] The stakeholders priorities were very clearly presented at the discussion workshop held in Abidjan on June 3-4 1996; NOAA stated that their primary interest was in research, in support of their mandate which includes the characterisation of, and advice for management of the Gulf of Mexico Marine Ecosystem; similarly the some participants stated that the project was there to support research and that management could come later, by implication in another project.

4. Under the original project design, during the project period most progress will occur in the area into which the majority of project attention is being directed:

   - *Objective 3: Establish a comprehensive programme for monitoring and assessment of the health and productivity of the Gulf of Guinea Large Marine Ecosystem.*

5. However, following on from the initial design, the project has already undergone changes as a result of the first steering committee meeting in August 1995, which introduced new activities with associated changes to the budget. Since then it has become increasingly clear that some of the proposed activities will exceed their original allocated budget and that the discrepancies in budgetary allocation are unlikely to be met from within the present total budget. As a result it is understood that there will be need to prioritise activities and hence by implication, *although specifically **not** stated*, leading to changed outputs and immediate objectives.

6. The consensus of the stakeholders was that this prioritisation exercise was the duty of the steering committee, and would be carried out in August or September 1996.

## D Recommendation for a SAP Framework for the Gulf of Guinea LME

1. The Consultants are of the opinion that although the GOG/LME project has already started, it is still essential to undertake the planning of a full strategic framework and to produce a SAP (Strategic Action Programme).

2. This would be a new initiative funded by the GEF, separate from the GOG/LME project (annex 4; fig 4). It would be an important exercise not only for the future of the present GEF project, but also an essential catalyst for creating the necessary co-operation between the many national and international interventions with impact on the LME. The SAP exercise would start within 6 months and provide an 'umbrella' framework under which the GOG/LME project would be a single element with a specified objective in keeping with GEF criteria, in this case providing information from its monitoring programme.

3. Although guidelines used by World Bank/GEF specify the need for a SAP prior to defining project initiatives, in this case it would be acceptable for the SAP exercise to run concurrently with GOG/LME project. It can be expected that both would benefit from the existence of the other.

4. There would be benefit to the quality of the SAP, since the project would be an important resource during the exercise, in particular in its role of preparing a baseline description of the LME. The GOG/LME project has made noticeable progress in promoting official awareness of

the LME principles among the scientific community of the region, and has developed a network of contacts with regional experts that would be a vital resource for designing an effective SAP.

5. This SAP exercise would provide the opportunity to **focus** the activities of the GOG/LME on a tighter more restricted objective, more in tune with the emphasis and resources of the present project structure, and closer to the priority concerns of the GEF. This would bring a number of benefits to current stakeholders and project management of the GOG/LME project - a reduced array of activities, possibility to focus resources on completion of priority activities, successful achievement of set objectives enhances perspectives for continued funding. It would also address the issues of longer term continuity of project activities and regional co-ordination, and provide a framework through which to promote and justify new initiatives for funding.

6. The SAP would be planned with the involvement of a more wide ranging group of 'stakeholders' than is the case with the GOG/LME project. It would be inclusive of all countries bordering the LME, and who are therefore implicated in issues of transboundary importance to the LME environment. Co-operative mechanisms for maintaining the SAP process would have to be established to ensure continued co-ordination of management activities.

7. The SAP would also be an opportunity to associate, within a co-operative planning phase, as many as possible of the various agencies - both national and international - who are backing existing and planned initiatives/projects with significant impact on the LME environment or critical parts of it. It may be appropriate to hold a conference of donors and international agencies during the planning process to promote the SAP.

8. There is considerable interest in the region in the environmental sector, and many new initiatives are being promoted which have an impact on the LME. While it is not appropriate to attempt to propose an exhaustive list of these, the wide range of potential participants in the negotiation of a SAP can be illustrated by some examples. These include: other GEF projects (e.g. "Control of aquatic macrophytes and integrated watershed management in Côte d'Ivoire", "Environmental management in the Niger Delta"), World Bank projects (e.g. concerned with institutional strengthening of environmental agencies, or funding of structures for sewage discharge into open coastal waters), regional fisheries projects and legal protocols and treaties (e.g. the BDRM database analysis, FAO supported regional fisheries bodies), bilateral projects (e.g. Projet Ivoiro-Belge. "Lutte contre la pollution maritime et lagunaire par les hydrocarbures") etc...

9. Particular mention should made in this context of the WACAF programme. This programme, partly supported through a co-ordinating unit of UNEP/FAO, is a formal institution created as a consequence to the Abidjan Convention of 1981. Although it covers a wider geographical area than the GOG/LME project, all the member countries of the GOG/LME project are signatories to WACAF. This programme shares many objectives with the

GOG/LME project as illustrated by two of its current proposals: WACAF/11 - "Integrated Watersheds And Coastal Areas Management Planning And Development Of The West And Central African Region"; WACAF/GEF draft project proposal (WACAF/17) - "Preparation of a regional review of land based sources of pollution and activities affecting the marine, coastal and associated freshwater environment".

10. Although it is the closest to a permanent regional structure concerned with the marine environment, it lacks sufficient funding, and was often criticised to the mission as being ineffective. Nevertheless it would have an important role to play in negotiating a SAP.

## E The Role of the GOG/LME Project within a SAP for the Gulf of Guinea LME

1. A number of initiatives, both as part of regular national programmes or internationally funded projects, would be described within a strategic framework, all of which would contribute in a co-ordinated way to the final objective (annex 4; fig 4). The current project would have specific role to play within this overall framework. It is a regional project, and as such has certain specific characteristics. A regional project supporting essentially national activities or programmes would have been designed with less emphasis on the regional co-ordination, with resources going directly to the member countries to facilitate national activities.

2. A GEF project of this kind, which is promoting international collaboration, aims to foster effective networking between countries in the GOG region, between sectors concerned with the LME health, and between scientific specialists in the region. Priority is given to activities that will address the most urgent issues with transboundary consequences.

### *a. LME Programme Monitoring Objectives*

1. If it is accepted that the major thrust of the project, both as set out in the original design and as perceived by the stakeholders, is the establishment of a monitoring system, then project monitoring and evaluation will be primarily aimed at evaluating the ***effectiveness of the Establishment of an Ecosystem Wide Monitoring and Evaluation Programme***.

2. The parameters for the Project Monitoring Programme then become relatively clear, as the World Bank/GEF have very explicit guidelines on what would constitute an effective Ecosystem Monitoring Programme. The guidelines describe two levels of indicators:

- Performance Indicators; and
- Process Indicators.

3. Given the stated long term objectives of all LME programmes in arresting environmental degradation or enhancing environmental quality, the performance indicators must be considered as being ***environmental performance indicators*** (EPIs) which measure the overall programme contribution to achieving a solution to specified environmental problems or issues[5]. The monitoring programme established by the project should therefore seek to define and assess these environmental performance indicators.

4. However, in recognition of the long term nature of many environmental changes as well as the capacity to manage these changes, and as a step in monitoring the progress towards achieving the long term environmental objectives, the guidelines suggest the use of ***process indicators***. These extend beyond the obvious milestone indicators of project progress to include an assessment of the ***success*** of capacity building exercises, human resource development and stakeholder involvement to support the long term management goals.

### *b. Pressure State Response*

1. Although the specific problems being addressed by a programme will differ from one LME to another, they can all be placed within a consistent monitoring framework based on the Pressure State Response analysis developed by OECD[6]. This framework attempts to respond to three queries:

- Pressure: what are the human activities that are causing change?
- State: what biological or physical indicators show change in the status of the environment as a result of these activities?
- Response: what changes in policy and management interventions are being undertaken to counteract environmental problems, and how effective are they?

2. Within the Pressure:State:Response framework, performance indicators can be used as an indicator of the progress towards Response. One of the "responses" is in itself the ***establishment*** of an effective monitoring programme providing the required information to managers and policy makers, to enable them to improve their response.

---

[5] The mandate of the GEF specifically deals with the incremental costs of developments that have global implications in addition to national impacts. Within the context of the LME, this means that the focus will be on priority issues that have transboundary effects.

[6] OECD. *Environmental Indicators*. Paris OECD 1994.

## Table E.1: Pressure State Response Indicators for LMEs [7]

### Key Environmental Indicators relevant to Large Marine Ecosystem Projects

#### Pressure Indicators

1) Fishing pressure/resource exploitation:

- trends in reported fish catch as a function of fishing effort
- monitoring of sources of overexploitation;
- fishing vessel fleet trends
- inventory of selected components of the fish community;

2) Pollution inputs to LME:

- volumes and impacts of nutrient loading in coastal waters of the LME as measured by satellite or coastal water sampling
- volumes and impacts of land-based inorganic effluent identified as major contributing factor to declining ecosystem health as measured by existing discharge standards
- -- Inventory of polluting industries;
- -- Monitoring of point and non-point sources of pollution
- volumes and impacts of ship discharged waste

3) Habitat destruction:

- rates of coastal zone habitat loss, based on satellite data analysis
- coral reef habitat loss

#### Environmental State Indicators

1) Assessment of broader ecosystem health

- inventory of selected ecosystem health indicators, using agreed physical, chemical and biological indices
- monitoring trends of ecosystem degradation

2) Monitoring changes in biodiversity composition, fish stock populations and LME ecosystem communities (e.g., trends or changes in long- term productivity and sustained economic yield of resources' within the LME, recovery of depressed benthic communities of indicator organisms).

#### Response Indicators

1) Efforts at prevention and control of land-based sources of pollution:

Selection of demonstration areas for mitigation actions;

- Initiation of mitigation actions;
- Feasibility assessment of waste management actions;
- Development of effluent standards;
- Initiation of incentive programs for pollution reduction;
- Strategic plan for waste management;

2) Efforts at prevention and control of resource overexploitation

Establishing fish catch quotas;

- Reduce fishing activities during critical spawning or migratory periods during the year; and
- Enforcement actions against overfishing.
- Feasibility assessment of fisheries management options;
- Development of fisheries sustainability standards;
- Initiation of incentive programs for fishing effort reduction; -
- Strategic plan for fisheries management.

3) Efforts at prevention and control of habitat degradation

- Inventory of selected habitats;
- Monitoring of sources of habitat degradation;
- Initiation of mitigating results;
- Feasibility assessment of fisheries management options;
- Development of habitat sustainability standards;
- Initiation of incentive programs for habitat improvement;
- Strategic plan for habitat management.

---

[7] Monitoring and Evaluation Guidelines for World Bank GEF International Waters Projects, Washington DC Oct 1995 (based on OECD Environmental Indicators, Paris, OECD, 1994)

3. From the indicators suggested as being appropriate for inclusion within an LME monitoring programme (Table E.1), it is clear that the majority of monitoring interventions can only be defined once the various management interventions are prioritised and implemented as part of the wider LME programme under the SAP.

4. The monitoring programme being established under the present project agreement, given the lack of the SAP framework, **can only address one component of the overall LME monitoring programme, the development of Environmental State Indicators**.

### *c. Redefined Project Objective:*

1. The logical conclusion is that the present project activities are, and should be concentrated on the development of institutional capacity to provide Environmental State Indicators for additional programmes that will need to be developed within a SAP. If there is no development of a programme of management interventions within a SAP, then it would be difficult to justify GEF funding for this project.

2. The project outputs required in the short term (six months) should, however, be expanded to specifically include the characterisation of the present state of the health of the Gulf of Guinea LME, which is necessary as an input into the development of a SAP, as part of the analysis of the priority of transboundary environmental problems. This will effectively be the first of the Environmental State reports that would become a regular output of an established monitoring programme.

3. If this is accepted, then the project management should redefine the project to concentrate on those activities that will lead to outputs aimed at addressing a single objective:

- ***The establishment of a sustainable monitoring and evaluation programme to provide critical environmental indicators of the state of health of the Gulf of Guinea large marine ecosystem.***

4. Even this limited goal has to be approached indirectly, as the first stage is to identify those critical indicators that will become the basis for the monitoring of the health of the LME.

5. There are three immediate objectives that should be expected to be achieved during the present agreed funding period.

- Characterisation of the Baseline State of Health of the Gulf of Guinea LME: indicating critical aspects subject to degradation as a result of poor management of transboundary issues, presented as part of the development of the SAP.

- Identification of Key Indicators of the Health of the Ecosystem: aimed at addressing the informatio needs of prioritised transboundary issues.

- Establishment of Sustainable Monitoring Capacity: based on the collection of data on key indicators, using existing national level institutional capacity enhanced through project interventions, and funded both through confirmed national and regional agreements, and if necessary and practical through confirmed long-term financial and technical support of external agencies

6. The project becomes a sub-project of a SAP, established in advance and to some extent in support of the development of the main programme.

### *d. Setting of indicators for project monitoring*

1. The Terms of Reference require that the consultants define a set of indicators "that can be objectively and quantitatively used to measure progress towards achievement of the project's.... immediate objectives".

2. These indicators would be in addition to the "milestones" identified as indicators of progress towards the achievement or completion of project tasks (activities) and outputs. The milestone indicators will be part of the clarified schedule of project activities (annex 7) and will generally recorded as a project report. The additional indicators of project progress will be established as part of the improved project management structure. These will be defined on the basis of the formulation of new objectives; as argued in *Section a.* (above), these will essentially be process indicators.

#### (i) Indicators within redefined objective framework of a SAP sub-project

1. Going back to the *project monitoring* requirements: all World Bank/GEF projects are expected to include project monitoring to promote effective use of project resources to achieve project objectives. In this case the project objective can be summarised as primarily capacity building, and as a result the indicators of achievement, or of project progress, will be primarily process indicators.

2. The milestones marking detailed products resulting from activities will remain much the same as for the original broader project framework, including those milestones indicating the

[8] World Bank, 1995. *Monitoring and Evaluation Guidelines for World Bank - GEF International Waters Projects.*

stages towards the delivery of project resources to end-users, as well as the delivery of the regular and specific project report outputs.

3. The following indicators could be used to measure the achievement of the project in relation to the three reformulated objectives.

- **Objective 1: Characterisation of the Baseline State of Health of the LME**

4. The first indicator is a milestone. The immediate objective would be shown to have been achieved through the production of a regional **"State of the Environment" report**. This would combine the national assessments as well as all available regional and global data sources into a holistic overview[9]. It would include an assessment of the vulnerability of components of the system, and the present and projected threats as shown by identified perturbations and specifically critical transboundary management problems.

5. Progress would be measured by a process indicator, which would be the **demonstration of the usefulness of this information contained in the report**; the quality of the product would effectively be judged by the use to which it is put by the planners in preparing the SAP. If the information is presented in a manner that is accessible to the planners, and can be linked to (socio-) economic costs, then a prioritised set of interventions can be justified.

- **Objective 2: Identification of key environmental indicators**

6. Following this baseline characterisation, the role of the monitoring programme becomes the provision of regular data to show changes in the system related to prioritised management initiatives, resulting from both natural events and changes in human management.

7. To achieve the second immediate objective, key physical environmental indicators will need to be identified that will show changes in advance of their becoming irreversible as a result of human mis-management of the system.

8. The primary indicator of achievement will again be a **milestone report**. This will define clearly the set of required key environmental indicators, along with minimum acceptable scope and frequency of measurements, and the analysis and interpretation that will be necessary to bring it into a form that is accessible to decision makers. The report will specify the responsibilities of the agencies involved and the reporting structures that will have to be established.

---

[9] This is implicitly a component of the original project design, "Output 3.7 ...to analyse and integrate the collected data and subsystems of the LME. *and* ...to translate the results of this programme into a useable form for decision makers.".

9. The process indicator will be the **acceptance of the identified key indicators as part of the long-term monitoring proposal by the stakeholders** within the SAP and the identification of the resources that are necessary to implement the programme.

- **Objective 3: Sustainable Monitoring Programme of the State of the Environment**

10. Once the key environmental indicators have been specified, then the responsible agencies will need to be identified, along with their present national and regional commitments and present support structures. In most cases it is unrealistic to expect national government agencies to take on these responsibilities within their present budgetary constraints; national based implementation of regional programmes will probably need to identify additional resources to be fully effective.

11. The SAP will have to **negotiate an agreed protocol** between the stakeholders guaranteeing funding for the programme, with provisions for future review if the monitoring programme requires changes or is proving inadequate for supporting management, policy and strategy decisions. The protocol would be the principal milestone of achievement.

12. The final evaluation would take place after the present financing period has been completed. This would review the work undertaken by the state of the environment programme, under the funding protocols negotiated within the SAP framework, and the use that is made of the information in addressing regional and national priority transboundary issues. In this case the process indicator will be a measure of the **functionality of the system at the time of the review**.

13. Although these three primary objectives logically follow in sequence, in practice the process of development of an agreed sustainable monitoring system becomes iterative. The stakeholders need to participate in the process of selecting responsible agencies and key indicators, if they are to be expected to make financial commitments to their collection and analysis.

### (ii) Indicators in the context of the current framework

1. If the donors and the Project Steering Committee do not adopt a reformulated objective framework, the current objectives will remain valid and will be the framework against which project progress will have to be measured. On the basis of the defined outputs expressed in the prodoc., it is possible to propose appropriate indicators or milestones of delivery of these specific outputs (annex 5).

2. However, qualitative project progress towards its main development objective in particular will be virtually impossible to measure during the project lifetime, in the terms used in the document - protection and restoration of the ecosystem. Incremental progress to parts of the

immediate objectives will be made, but there will also be difficulties in defining indicators that measure the full achievement of these immediate objectives.

### e. *Evolution of project workplan - activities/expected outputs*

1. If the donors and the principal project stakeholders represented on the Steering Committee accept the approach recommended by the consultants, to focus the objectives of the project within a broad strategic framework, then it will be necessary to develop equally focused outputs and activities to achieve the objectives of the project framework proposed above.

2. From the adoption of the above project objective framework, it is proposed that a period of six months elapse before the SAP planning and consultation process formally begins (annex 4; fig 4). The SAP planning process would last approximately six months. The current project would then conclude its final phase of activity under a fully approved SAP framework.

3. Under a reformulation of the development objective/immediate objectives as proposed, the main thrust of the current activities would be maintained (annex 2), and the project would preserve the core of its current workplan for the next 12 months, notably in the project's existing priority areas in monitoring and information management.

4. In the initial period of six months there would be one important difference of focus: the requirement to produce a milestone initial baseline characterisation - or "**State of the Health of the LME**" report (Immediate Objective 1). This would be primarily based on existing data and knowledge in the region plus any new data generated by the start of the SAP planning exercise. Already the project has laid the basis for networking in most of the specialist sectors concerned with its current workplan - mangroves, lagoon contaminants, productivity, living resources etc... Over this period of six months, a primary focus for each of these sectoral groups would be to participate in the production of the report bringing the information together at various levels - national sectoral, regional sectoral, regional/ecosystem integrated etc... The completed report would provide an initial assessment of the situation of the LME, on which the SAP would base its analysis and prioritisation.

5. One clear problem remains with the achievement of this objective: who is responsible for carrying out this integration of data? The original project document identifies a number of focal point institutions as critical to the monitoring programme, each with specific sectoral monitoring tasks. This concept has been continued through the recent move towards the designation of activity centres and sectoral working groups. The integration was provided for through annual working meetings of scientists and experts.

6. There does not appear to be a lead agency required to carry out this task, nor any real attempt to create this capacity within an associated institution. It would be appropriate to consider designating a lead agency which has a broad range of expertise, to organise the

preparation of the report and co-ordinate the various sectoral, national and regional contributions.

7. From delivery of the baseline report, the SAP planning process would continue for a planned six months. During this period the project would continue to strengthen the monitoring capacities of the institutions of the region. Activities would be orientated towards identifying the key indicators needed for the management of the important (transboundary) issues being identified during the SAP (Immediate Objective 2). On completion within 12 months of a reformulation, the SAP would re-prioritise the monitoring programme to support the specific requirements of the existing or planned management initiatives identified during the SAP planning process.

8. Activities relating to Integrated data management and GIS, currently awaiting action, should be initiated as soon as possible. Although within the short term horizons of 6 months and 12 months the outputs of these activities will still be in development, an initial database and GIS based on existing regional data could prove to be useful tool for the SAP, and demonstrate a useful data sharing mechanism for the region.

9. Under the reformulation of the objective framework, some parts of the current project would not receive the same emphasis. This would be the case for a major part of the activities leading to objective 4 of the existing prodoc. (relating to land based sources of industrial pollution). The existing output under this objective, which relates to the inventory of sources of land based industrial and urban pollution, has been started by a consultant; this activity should be completed (as an important input to the SAP planning). The remainder of the activities under this objective would be reviewed under the SAP, and if assessed as a priority - which is likely - would be retained as one of the initial management initiatives. It would also be the priority management intervention most likely to be ready to for immediate funding; already the relevant consultant's report specifies the need for more funds than are available for this activity under the GOG/LME project. UNIDO should be in a position to initiate the substantive parts of this management oriented activity within 12 months of the reformulation.

10. It may be beneficial to programme the convening of the Meeting of Ministers to be able to consider any eventual proposal for reformulation of objectives made by the Steering Committee, and at the same time launch the SAP planning process for the LME of the Gulf of Guinea, which will only be successful if supported by the political will at this high level.

# F Current Project Management Issues

## *a. Project management structure*

1. This section addresses the management structure of the project within its present framework, which is still the basis for implementation of the project; a revised framework would require a similar management structure, although adjustments might be needed to improve its relevance to the new circumstances. The present project structure is defined by the prodoc. (annex 6, fig 1).

2. As a GEF supported regional project which aims to foster international collaboration to achieve management of transboundary concerns in the LME environment, a key element for the success of the project will be the effective participation of the major country stakeholders in the project management structure.

3. The aim should be to develop a structure that is based on clear lines of communication, is not unnecessarily costly to support, and devolves as much responsibility as possible for co-operation and action to the various stakeholders of the region who collaborate with the project on specific activities, whether policy-makers, managers or scientific institutions. The latter approach will contribute to the durability of project efforts, both by ensuring maximum direct national involvement in project design and execution, and by avoiding a loss of momentum at the end of the project when the 'temporary' regional project co-ordination mechanism disappears.

## *b. Stakeholder participation*

### (i) Project supervision and direction

1. The principal organ for providing guidance, supervision and control of the project is the Project Steering Committee. This committee refers recommendations and policy issues to a high level Committee of Environment Ministers. It is advised by a Working Group and sub-Groups on which a range of technical specialists are invited to sit.

2. The Project Steering Committee, on which all member countries are represented, has already proven to be dynamic and ready to take responsibility for the project direction, as demonstrated by the August 95 meetings. The mission confirms that this is an appropriate forum for involving member countries in the running of the project. It is also a forum that would be asked to consider the adoption of changes in the framework, along the lines of those proposed in the present report.

3. It is perhaps less clear that the PSC can be as effective in its assigned functions of 'ensuring co-ordination of activities of various implementing organisations' and in 'devising regional policies and strategies'. The committee is primarily focused on its 'own' project, and members of the committee are generally also personal stakeholders as collaborators in specific project activities. It may be that a more objective and inclusive forum for promoting co-operation between independent initiatives could be devised under the SAP, which would associate other potential stakeholders at that level right from its creation.

4. Cost is a factor to consider. The planned frequency of meetings of the Committee of Ministers ('to meet once per year') and of the Project Steering Committee ('to meet at least twice a year') may not be the most cost effective, nor may they all be necessary. A reduced frequency of about half the planned number of meetings could be sufficient; in practice this corresponds to the number of meetings that have in fact been held by the project.

**(ii) Participation of other countries bordering on GOG/LME.**

1. From the standpoint of the ecosystem concept on which the project is based, the logical approach to achieving LME management must be to ensure that all the countries bordering on the LME geographical area have the opportunity to co-ordinate their management efforts. This confirms the view expressed in the prodoc. and in subsequent documentation, that the eventual adhesion of at least four other countries is necessary (Togo, Sao Tome and Principe, Equatorial Guinea, Gabon). Nevertheless, it is inevitable that any such adhesion would have consequences on the funding of the project, for which a budget has been agreed between the donors and the five founder member countries. This constraint is probably sufficient to justify putting off the extension of membership, until such time as further funding is obtained. It is probably also true that the addition of extra members would add too much complexity and diversity, at a time when the project is at an early (learning) stage of developing the appropriate mechanisms and methodologies.

2. The planning phase of a SAP, would be the particularly appropriate time to include other member countries in the formal discussion on the future management of the Gulf of Guinea LME. The eventual engagement of the other countries in this project or other projects concerning the LME, would be considered within the SAP negotiations.

3. Togo should be seen as special case in view of its geographical location at the centre of the LME area. The mission also notes the previous contacts with representatives from Togo, in which both the project Steering Committee and the Togolese government have expressed the wish for Togo to join the project.

4. Nevertheless, the addition of Togo would have significant budgetary implications. A decision would have to be made on whether Togo could join as a "full member", or would

follow the project only as an observer. Between these two options there would be a significant difference in budget required, and that would probably be the most important factor in the decision. Full membership of Togo could require extra funds of approx. $400,000; this is based on a pro rata estimate of variable costs over the remaining three years of those budget items linked to the participation of countries (meetings, training, equipment, consultants time and travel, staff etc..).

5. The Project Co-ordinator should detail the cost to the project of the two options for consideration by the Project Steering Committee. A memorandum of understanding could be prepared outlining the extent of the participation proposed to Togo, which would be a basis for authorising expenditure for Togolese participation. This could be submitted to the Committee of Ministers for approval at its next meeting.

### (iii) Linkages between national institutions and the project

1. There are a number of links between the Project management and the stakeholder countries (annex 6; fig 2). The prodoc proposes two focal points per country: National Focal Point Agencies (NFPA) and National Focal Point Institutes (NFPI). In each country there are also two specifically designated individuals within the project structure: the National Project Director, who is an employee of the government, and the Project Programme Assistant, who is an employee of the project.

2. Already the project has adjusted this structure to make it more relevant to the actual situation on the ground. In particular, there is a recognition that the LME concept will involve a number of specialised scientific institutions in each country, and that an effective local network is much more important than developing favoured contacts with a particular institute. This has led to the move to create National Project Steering Committees which bring together the major national stakeholders in LME management.

3. There is a case to further evolve these committees into National LME Committees, as appears to be the case in at least one member country. The distinction may appear subtle, but these would be set up as permanent national entities rather than being linked only to the existence of a project, and would represent a formal network of institutions concerned with LME management. This would have two advantages. Firstly, as nationally "owned" entities they would continue to function beyond the life of the project. Secondly, although initially driven by the project and supported by the Project Programme Assistant, they could become an objective forum for co-ordination of other relevant national initiatives and projects, something which might be difficult if the committee was specifically project linked.

4. In a revised linkage between the project and stakeholder countries, the lines of communication would be simplified by emphasis on a single focal point - the NFPA, through

which there would be links to the wider range of national stakeholders associated in the National LME Committee

### *c. Regional Project Co-ordination*

1. The terms of reference which describe the background to the present review, expresses some disquiet about concentration of powers towards a regional co-ordination centre, which would be counter productive towards achieving the project's objectives.

2. In this context it is important to underline a distinction between regional project co-ordination (a temporary mechanism for the duration of the project) and an objective to create a permanent institution that would function as a Regional Co-ordination Centre for LME management. Some confusion still surrounds the use of the term of Regional Co-ordination Centre in the prodoc.; in early drafts of the project the term is in fact used to describe a permanent installation of a new institution - however the same term was retained in some passages, although the project is only committed to a temporary mechanism for regional project co-ordination.

3. At this stage of development of the management of the LME environment, the consultants recommend that over-riding priority should be given to reinforcing national structures and institutions. Most management actions in the region will continue to be taken on a national basis - even for the 'good' of the LME. This will require co-operation and networking between nations, but also most importantly between stakeholders within nations; a need for strong capable national institutions is a first necessity.

#### (i) Project Co-ordination

1. The project management structure includes an office with a co-ordination role within one of the principal oceanographic institutions of the region - Centre de Recherches Océanographiques of Abidjan. The Project Co-ordinator plays a pivotal role in this structure; primarily responsible for the day to day management of the project, and for the timely delivery of project outputs, the Project Co-ordinator, assisted by a small staff, maintains close links with the various stakeholders

2. The present regional project co-ordination arrangements do not appear to be unnecessarily emphasised in the management structure. The project is a complex one, requiring close attention to organisational detail if it is going to be effective in a situation where communications and basic logistics are known to be problematic. The roles of a Project Co-ordinator and of the Project Programme Assistants are justified and necessary for the timely delivery of project outputs; they can be interpreted as facilitating collaboration between stakeholders of the region.

3. Nevertheless, the project is becoming involved in activities being executed in the different member countries; while there is an evident requirement for the project to supervise the correct use of its resources, opportunities should be sought to decentralise responsibility for furthering these activities wherever possible. These could include more use of national experts in promoting regional networking, more in-country responsibility for use of resources, and more use of sub-contracting of activities where this is appropriate.

4. There is justification in the Project Co-ordinator's proposal for some strengthening of the regional project co-ordination team through a re-description of posts. The current support team consists of the Project Co-ordinator, a Secretary, an Administrative Assistant and a driver. The proposed revised team would be made up of: Project Co-ordinator, Personal Assistant/Secretary (part of role of present secretary and part of role of present Administrative Assistant), and a Programme Assistant (with a technical background; this person would assume part of role of present AA, and provide programme support to Project Co-ordinator - currently provided by the Programme Assistant assigned to the Côte d'Ivoire). This proposal would require one additional low grade post of typist for office support. The revised team would better reflect the ensemble of activities of regional co-ordination, with emphasis on the diverse tasks of technical programme supervision on a regional basis. The Programme Assistant to Côte d'Ivoire should be retained within the ivoirian NFPA to play the planned role of linkage with national stakeholders.

### (ii) Role of Project Programme Assistants

1. The Programme Assistants are employees of the project, posted to each of the institutions where the National Project Director is located - in general the NFPA. Their existence is well justified by the two main roles they play on behalf of the project.

2. They facilitate the logistics of project intervention in the field - organisation of project visits (consultants, Project Co-ordinator, national trainees and workshop participants etc..), organisation of project funded workshops and training sessions, delivery of project equipment etc..

3. They also facilitate the process of local networking between the various national stakeholders in the LME management process, including support for the national project steering committee or National LME Committee.

4. Posted to national structures, they work with very few resources, since generally the host structure is short of funding and in the short term at least often not in a position to provide all the resources needed, until national budgets are negotiated by host structure. Even in the current constrained budget situation consideration should be given to making some resources available to facilitate the day to day interventions of these PAs.

### (iii) Project premises (temporary)

1. The arrival of the Project Co-ordinator in May 1995 was two years later than expected when CRO accepted to host the project on its premises. As a result, the physical premises originally allocated to the project had since been occupied by another project. The project team have been integrated into the suite of offices of the Director of CRO, but this is only a temporary arrangement of some inconvenience to the project but particularly unsatisfactory for the Directorate of CRO. An initiative by the host structure to build extra office space for CRO, which could be used to house the project, has run into problems which have been well documented elsewhere. Considering that the budget appropriation procedures for investment in buildings in Côte d'Ivoire would normally take up to two years to complete, a compromise solution allowing an immediate start of construction was proposed. This involved CRO, which has more immediate access to operational funds, requesting a loan from the UNDP project to complete the building; the loan could be repaid during the life of the project by CRO paying for certain budget items that would otherwise have been supplied and funded by the project to Côte d'Ivoire e.g. scientific consumables, telecommunications costs etc...

2. In view of the continuing problems in completing CRO's new offices, UNIDO should assess if it is possible to find a formula to re-activate the proposed compromise, which originally appeared acceptable to all parties but which has been halted by difficulties in formulating the procedures of reimbursement. It is understood that the goal is for the new office space to be fully funded by the Côte d'Ivoire, who would then be in a position to provide the premises as described in the project document.

### (iv) Regional Co-ordination Centre (permanent)

1. The issue of the creation of a permanent Regional Co-ordination Centre is important. Through the reports of various meetings, confirmed by the consultants' discussions with representatives of the stakeholder countries, the majority of the representatives have expressed the wish to see a permanent Regional Co-ordination Centre be set up for the joint management of the Gulf of Guinea LME.

2. The project, for which there is only short term funding, with no further funds yet planned for a follow up phase, has not included the establishment of a permanent centre as one of its objectives. The emphasis of project objectives has been on strengthening of national capacities.

3. The Regional Co-ordination Centre is an issue that can be considered during the preparation of a SAP, where the implications of the cost of construction and equipment, and most importantly the annual operational costs can be addressed. The justification for a Regional Centre will be principally judged by the support given to it by its stakeholders; a major argument against such initiatives is that in the past the structures have not lasted because they lack the

necessary support and hence have no assurance of financial support for the their long term survival. However, the main argument advanced for a Centre points out the ephemeral nature of most project interventions and the how experience has shown that this has often led to the knowledge gained being lost again when projects are wound up. The mission concludes that it would be preferable to continue to concentrate initially on strengthening national institutions, reinforcing their capacity to tackle substantive issues to further LME management; the conception of suitable long term structures for regional co-ordination would flow out the progress made on these issues.

4. It is evident that a regional institution of this kind could only be created on the basis of long term legal institutional commitments between the interested countries. This is not yet the case for the current project. In this context it should be noted that the Abidjan Convention has provided the legal basis for the creation of a regional programme - termed WACAF - which is partly supported by UNEP/FAO. There are many conceptual similarities, and the WACAF programme shares some of the objectives of the GOG/LME project. One of the proposals of WACAF (WACAF 10) is the creation of a Regional Co-ordination Unit in Abidjan which has been the subject of an agreement with the Côte d'Ivoire. Although the geographical coverage is not the same, there is obvious overlap, and WACAF participation in the SAP preparation would be essential.

### *d. Management of Project Field Activities*

#### (i) Promotion of sectoral collaboration (activity groups)

1. The project includes a wide range of activities, many of which involve specialists and institutions in different sectors. In seeking to better focus on the practical aspects of furthering these activities, the project designates those involved in various ways according to the situation - Activity Centres, Modules, Sub-working groups, Operational teams, Sub-projects etc... These designations generally group the specialists of a particular (sub)sector. The remarks made below propose to use the term 'activity group'; this is used in a generic sense for all these different groups concerned with the follow through of practical activities and is not intended to confuse or replace the terms already established.

2. The designation of 'activity groups' appears to have succeeded in encouraging stakeholder involvement in design and planning of individual activities. However, this involvement tends to be concentrated on the periodic project gatherings (training workshops, consultants etc..). The question of achieving practical progress on the designated programme in between these sessions is not always fully addressed.

3. The project could focus to a greater degree on the sectoral 'activity groups' which have formed around specific activities, and which are expected to provide data and other outputs during the project duration. This will directly benefit the project by reinforcing the effective regional networking of specialist groups, with priority given where possible to collaboration on trans-boundary issues. Networking at this specialist level will an important element of the project.

4. 'Activity groups' could assume increased responsibility in the execution of the relevant elements of the project programme in-between workshops, reinforcing stakeholder participation and commitment. Groups could be responsible for:- preparation of a detailed agreed plan for the follow through of activities between project workshop sessions; proposing deadlines for reporting progress to the Project Co-ordinator and ensuring individual country preparedness (quality control) for next workshop; responsibility for ensuring that national data sets are compiled to deadlines for exchange and delivery to regional database. Individual regional experts would be designated within the groups to drive the networking process (as chairmen or other designation); project email networks would be an important tool to be used by chairmen in maintaining network contact.

5. These groups would also have formal responsibility for preparing annual (?) regional analysis of LME situation in each sector, as well as a crucial contribution to make in establishing the baseline 'State of Health' report.

**(ii) Support to intersessional activities of sectoral 'activity groups'**

1. A key approach for the project is to seek to improve capacity utilisation - whether in terms of national expertise or material resource capacity. Evidently the situation varies from country to country, and from sector to sector, and there will have to be procedures to assess those existing capacities to ensure that project resources are as additional. Within the activity groups, there are cases where there are well trained core staff, but the operational resources are not sufficient for supporting regular national programmes, and so it is difficult to assume that it will be possible to achieve additional regional activities on time.

2. 'Activity groups' would also take responsibility for the identification and justification of resources needed for the execution of the agreed plan; these would have to be approved by the Project and the Steering Committee within the limits of the budget. Resources requested would have to satisfy certain guidelines set by the Steering Committee and would be subject to strict prioritisation.

3. Project resources used in this context would be oriented towards facilitating regional collaboration on regional objectives, such as: regional travel by **national experts** with specific responsibilities within activity group, use of small international group sessions (rather than

'plenary' workshops) at institutes for data pooling/analysis and preparation of state of LME reports for activity, field activities to complete data acquisition for regional analysis.

4. Once the plans and required resources have been agreed, it will be most efficient to decentralise their management as much as practicable. Funds could be made available through local UNDP offices, in the same way that the Project now proposes for certain funds being made available for consumables.

#### (iii) Use of sub-contracts

1. Use of sub-contracts would be a logical extension to the principle outlined above. Some activities/outputs are already planned for execution as sub-contracts - e.g. Training modules by NOAA, or GIS preparation. Other cases might also be identified where institutes in the region are sufficiently strong to undertake delivery of project outputs on the basis of a sub-contract - e.g. institutes of the calibre of Activity Centres, or other specialist teams in the region such as ORSTOM, UNEP etc.

2. Provided that the sub-contractors are working to well defined terms of reference, this is one way of reducing the commitment to centralised regional co-ordination. If the contract is awarded to a regional institution, this process is also a means for increasing regional stakeholder engagement, and ensuring that regional institutions can provide long term support to the LME management effort.

### *e. Interactive Computer Based Project Management Plan*

1. The TORs call for the provision of an interactive computer based project management plan. Clearly the definition of a final plan will have to be based on an agreed project framework. This includes agreement on objectives, which in turn then define the sets of activities and outputs that will lead to those immediate objectives. The project management structure, including cooperating agencies and activity groups can then be specified.

2. The present project status is one of flux, with a continual process of review of activities and outputs leading to changes in the project management requirements. The first changes were proposed at the Working Group and Steering Committee meetings in August 1995. Further changes are expected by the project participants as a result of the 1996 Steering Committee meetings. Additional changes may occur if the conclusions of this consultancy are accepted.

3. Once a project management structure has been accepted, a full computer based project management plan can be developed. In the meantime, the consultants have installed a computer management programme, as a tool to improve the capacity of the present project coordination

unit to manage the existing sets of project activities. The consultants have installed a programme called MS Project.

4. This is an 'off the shelf' software package, available in both english and french, which can be easily adapted for use by the project co-ordination office in Abidjan, as well as in member countries if this is considered appropriate. It can render a number of services to project management including time scheduling, critical linking of activities, ensuring correct sequential implementation of activities, allocation of resources to activities. Use of the software can assist in project design, in particular in making quicker and clearer adjustments to overall design or to workplans. It can usefully demonstrate how budgetary constraints, as experienced now by the project, can affect the planning of different activities.

5. The package has been installed on the project computer in Abidjan. It has been installed without customisation, as the precise needs of the programme environment will determined as a result of actual use by project staff. Although the activities of the current workplan have been included in one of the management databases installed with the package, project staff will have to refine this with the addition of detail scheduling and especially of detailed resource allocation to each activity. Regular updating must be a feature of the use of the software.

## *Annex 1: TERMS OF REFERENCE OF CONSULTANCY*

tor2.gog

TERMS OF REFERENCE

FOR

ANNEX

PROJECT MANAGEMENT CONSULTANCY

# WATER POLLUTION CONTROL AND BIODIVERSITY CONSERVATION IN THE GULF OF GUINEA LARGE MARINE ECOSYSTEM (LME)

EG/RAF/92/G34

## 1. Aim of the Project

**To develop an effective regional approach to address the problem of pollution of waters and associated degradation of critical habitats of the Gulf of Guinea Large Marine Ecosystem (LME).**

## 2. Background

**A full set of documentation, including the project document, will be submitted separately to the companies submitting proposals.**

**Project activities commenced in May, 1995. Basic operational structures and staff are now in place, and these are currently grappling with the execution of the project components. At the same time, the project document is now 2 years old and the situation on the ground has evolved considerably since the project document was written. Also, the GEF has now acquired considerable experience with large regional international waters projects. In particular, four key aspects have been recognized which may affect the implementation of the Gulf of Guinea project:**

a) **regional problems are not resolved by the creation of new regional institutions, but by the cooperation and coordination of activities carried out by a wide range of institutions in each nation, i.e. there is a need for cooperation and networking both within and between nations. Although this need is recognized to a certain extent within the project document for the Gulf of Guinea project (through development of the use of shared information as a means for coordination) there is a tendency to assign wide powers to the Regional Coordination Centre. This has been further reinforced by evolution within the project towards a powerful "director" of the centre, implying a "regional director". This may be counter-productive towards achieving the programme's objectives.**

b) the current project document involves only some of the nations bordering the Gulf of Guinea. Hence, coordinated management of the Gulf as a whole, which is fundamental to the LME concept, cannot be achieved within the existing project structure; and

c) in addition, the current project budget is insufficient to cover the costs of the full range of activities foreseen in the project budget, including the full range of meetings proposed and activities under various outputs.

d) in the period since the project document was written, many other related activities have commenced in the region. To be fully effective and efficient, the project must properly integrate with these other on-going activities.

In order to address these issues, some refocussing, and possibly restructuring, of the project is required. There is a need, while continuing to focus on existing project actions in the five participating countries, to simultaneously involve the other countries bordering the Gulf of Guinea in both monitoring and planning for the LME as a whole. This will be undertaken with a view to their possible subsequent full participation in an expanded range of activities incorporating all countries bordering the Gulf of Guinea.

3. Contractor's Responsibilities

The contractor shall perform a review of the project as it is now designed and currently being executed, and of the current field situation. Based on this, the contractor shall undertake the following specific duties:

a) recommend how the project's existing immediate objectives, structure and strategic approach should be adjusted to better respond to current circumstances. This should include a recommendation as to whether or not the present project management structure, with its working groups and steering committee, is the most efficient and effective mechanism for guiding the project. As well, it should contain recommendations as to how the project could best include the other countries bordering the Gulf of Guinea, both within the short-term and in the long term with a view to ultimately achieving full inclusion. Budgetary implications of the latter should also be included. In undertaking the above, cnsideration should also be given to the optimum duration of the project, with a view to the possibility of condensing this, and the present institutional structure controlling and guiding the project.

b) Any long-term changes to the immediate objectives, structure and strategy will take time to effect. Therefore, it is necessary to assist the project co-ordinator to develop an interim project management plan integrating the work plan recently passed by the Steering Committee.

The project consists of a large number of inter-related activities. In order to ensure efficient use of project resources, and that the project activities are fully achieved within schedule, it will be necessary to carefully plan all of these activities, and to ensure that they can still be undertaken within the present budgetary allotment. In undertaking this, consideration will be given to the minimal activities required to adequately achieve the project objectives as stated in the project document. Such a plan would enable the project co-ordinator and all interested parties including future collaborators and potential donors to effectively monitor the progress and achievements (or set backs) in project implementation. The expert shall obtain detailed information from the project co-ordinator, and associated experts on project activities. The expert shall use this information plus appropriate soft-ware packages to develop an interactive computer-based project management plan including the following aspects:

* system description
* event logic diagram
* operational plan, including time scheduling, resource allocation, responsible parties
* critical path plan for each major objective

The project management plan should be in a format which the project co-ordinator and all interested parties can use to initiate and monitor progress (or setbacks) in the implementation of all project activities.

c) Define a series of indicators that can be objectively and quantitatively used to measure progress towards achievement of the project's five immediate objectives. These indicators must NOT be indicators of outputs but indicators of real progress towards the project objectives. These indicators, in combination with the project management controls of 3(b) above, must be able to show within a period of six months or less if the project is successfully moving towards meeting its objectives or not.

The indicators developed must be effective during both the period of implementation of the interim project management plan as defined under

3(b) above as well as in the long-term should the recommendations under 3(a) above be adopted.

d) to prepare a report on the above in both French and English. This should be in three parts:

1) specific recommendations to the Steering Committee on revisions to the existing immediate objectives, strategy and structure of the project, with budgetary implications of these

2) the interim project management plan

3) the recommended indicators of project performance as developed under 3(c) above.

4. Contractor's Services

For the performance of the obligations outlined above, the contractor shall make available a minimum of 3.0m/m of experts' services.

The total duration of the work shall not exceed 1.5 months.

For the performance of his obligations, the contractor shall use the services of qualified experts in the specific area of expertise as required. However, the team shall include, at a minimum, competence in the following areas:

1) strategic environmental planning on a regional basis

2) project management techniques - to focus on the work plan and the development of scheduling and indicators

3) institution and capacity building expertise - to advise on the linkages required to develop co-operation amongst the participating countries, and to determine if the present project management structure is the most effective mechanism for achieving this

4) LME management-expertise in the development, execution and evaluation of regional environmental projects, ideally with relevant institutions in the region

5) management and control of land-based sources of marine pollution, particularly from industrial sources

6) CZM - experience in guiding and controlling coastal development and conservation

7) information/GIS systems

8) familiarity with the aims and projects of the GEF.

The contractor shall be supported in their work by a LME scientist/oceanographer from NOAA, who shall provide scientific input to the team, and by industrial pollution control expertise from UNIDO.

In addition to the above, the contractor shall provide the services of such personnel and facilities as may be necessary for supporting the project team. The project team will have the capability to operate fluently in both the French and English languages.

5. Documents required to be submitted with the tender

The tenderers are requested to submit the following documents in English:

* An explanation of the approach proposed for carrying out the obligations of the contract

* A description of the particular experience and references of the tenderer in this field

* Individual curricula vitae of the experts who will be responsible for the implementation of the project. The tenderer's team will be led by one person who will assume full responsibility on behalf of the tenderer and be the sole UNIDO interlocutor. He/she will be given the necessary power to commit the sub-contractor in the framework of the present project.

* A quotation for the requested services

## *Annex 2: CURRENT PROJECT OBJECTIVES, OUTPUTS AND ACTIVITIES*

**Annex 2: Box 1: - Project Objectives (from original project document - prodoc)**

**DEVELOPMENT OBJECTIVE**

**To protect and restore the health of the Gulf of Guinea Large Marine Ecosystem and its natural resources.**

***Immediate Objective 1***: Strengthen regional institutional capacities to prevent and remedy pollution of the Gulf of Guinea LME and associated degradation of critical habitats

***Immediate Objective 2***: Develop an Integrated Information Management and Decision-Making Support System for Environmental Management

***Immediate Objective 3***: Establish a comprehensive programme for monitoring and assessment of the health of the Gulf of Guinea LME

***Immediate Objective 4***: Prevent and control land-based sources of industrial and urban pollution

***Immediate Objective 5***: Develop national and regional strategies and policies for the long-term management and protection of the Gulf of Guinea LME

## Annex 2: Table 1 - PROJECT IMMEDIATE OBJECTIVES AND OUTPUTS (prodoc)

*Immediate Objective 1*: **Strengthen regional institutional capacities to prevent and remedy pollution of the Gulf of Guinea LME and associated degradation of critical habitats**

**1.1 Output 1:** A network of scientific and monitoring institutions equipped for monitoring and assessment of the LME
**1.2 Output 2:** Scientific and technical personnel at CRO and NFPI trained to carry out the project monitoring and assessment programme
**1.3 Output 3:** Personnel of government regulatory and management agencies trained in environmental assessment and management techniques related to pollution control and resource management
**1.4 Output 4:** Enhanced capacity of NGOs to participate in environmental management and to generate public awareness

*Immediate Objective 2*: **Develop an Integrated Information Management and Decision-Making Support System for Environmental Management**

**2.1 Output 1:** Regional environmental information management system, including a multi-purpose Geographic Information System (GIS)
**2.2 Output 2:** A multi-purpose GIS data base assembled from known national and international electronic sources and relevant scientific literature
**2.3 Output 3:** "Manager's Version" GIS data base for National Focal Point Agencies

*Immediate Objective 3*: **Establish a comprehensive programme for monitoring and assessment of the health of the Gulf of Guinea LME**

**3.1 Output 1:** Integrated monitoring programme design for the Large Marine Ecosystem
**3.2 Output 2:** Mangrove survey
**3.3 Output 3:** Pollution monitoring programme in coastal lagoons
**3.4 Output 4:** Monitoring programme for nearshore waters and sediments
**3.5 Output 5:** Living marine resource survey programme
**3.6 Output 6:** Plankton survey programme
**3.7 Output 7:** LME working meetings to develop ecosystem health indices

*Immediate Objective 4*: **Prevent and control land-based sources of industrial and urban pollution**

**4.1 Output 1:** Inventory and assessment of industrial pollution
**4.2 Output 2:** Case studies for demonstration of industrial waste treatment and management
**4.3 Output 3:** Feasibility study of urban sewage waste management
**4.4 Output 4:** Development of a strategic plan outlining options for industrial and urban pollution control

*Immediate Objective 5*: **Develop national and regional strategies and policies for the long-term management and protection of the Gulf of Guinea LME**

**5.1 Output 1:** National and regional guidelines for integrated coastal zone management planning
**5.2 Output 2:** Financial support mechanisms for CRO, NFPIs, NFPAs an NGOs for long-term continuation of LME monitoring and environmental management activities
**5.3 Output 3:** Mechanisms for regional policy and strategy formulation and implementation

## Annex 2: Table 2 - PROJECT ACTIVITIES (abbreviated from prodoc)

*IMMEDIATE OBJECTIVE 1*:

**1.1 Output 1**

1.1.1 Activity 1: Checklist of laboratory equipment needed for water analysis.
1.1.2 Activity 2: Inventory of resources of National labs, specifications of additional equipment required
1.1.3 Activity 3: Procurement of laboratory equipment

**1.2 Output 2**

1.2.1 Activity 1: Analysis of institutional functions, staffing levels and training needs
1.2.2 Activity 2: Design and produce a modular training package. Training of trainers in use of package
1.2.3 Activity 3: Prepare the training plan
1.2.4 Activity 4: Participation of two national specialists in relevant international conferences

**1.3 Output 3**

1.3.1 Activity 1: Training in industrial process technologies
1.3.2 Activity 2: Training of personnel in environmental management techniques and regulatory instruments for industrial pollution control
1.3.3 Activity 3: Training of personnel in integrated coastal resources planning and management techniques (component linked to 5.1 Output 1).
1.3.4 Activity 4: Participation in relevant conferences see 1.2.4, Activity 4, above.

**1.4 Output 4**

1.4.1 Activity 1: Assess and support NGO participation in project activities directed at environmental management and policy, and promotion of public awareness of environmental pollution.

*IMMEDIATE OBJECTIVE 2*:

**2.1 Output 1**

2.1.1 Activity 1: Investigate available hardware and software
2.1.2 Activity 2: Design, configure and specify the system for information management system / GIS. Design computer-based training module for use of GIS
2.1.3 Activity 3: Procure and install the required hardware and software for information management
2.1.4 Activity 4: Create a multi-purpose GIS data base

**2.2 Output 2**

2.2.1 Activity 1: Identify appropriate existing GIS data bases, hard copy maps, and data
2.2.2 Activity 2: Input relevant data into the GIS data base and produce a preliminary "electronic" atlas of the region
2.2.3 Activity 3: Use the data base in preparing analyses for LME management

**2.3 Output 3**

2.3.1 Activity 1: Compile five national GIS data bases (sub-sets of the Gulf of Guinea LME data base) and transfer to national managers
2.3.2 Activity 2: Provide short training courses as part of ICAM workshops.
2.3.3 Activity 3: Provide guidance on integration of this data base into existing national government GIS systems
2.3.4 Activity 4: As funds for a complete GIS system are identified, transfer of the complete Gulf of Guinea LME data base to national managers

*IMMEDIATE OBJECTIVE 3*:

**3.1 Output 1**

3.1.1 Activity 1: Design a hierarchically structured monitoring and assessment programme for the Large Marine Ecosystem;
3.1.2 Activity 2: Review the Large Marine Ecosystem monitoring and assessment programme and establish harmonized work plans.

**3.2 Output 2**

3.2.1 Activity 1: Survey the mangrove systems to determine level of degradation
3.2.2 Activity 2: Compilation of data in the regional data base and GIS.
3.2.3 Activity 3: Analysis data to determine criteria for site restoration.
3.2.4 Activity 4: Meeting to discuss the survey and recommend appropriate restoration programme
3.2.5 Activity 5: Promote public awareness with NGO participation about mangrove degradation and restoration.
3.2.6 Activity 6: Recommend sites requiring restoration and enhancement. Identify funding.

**3.3 Output 3**

3.3.1 Activity 1: Identification of sources, types and quantities of industrial and urban and/or combined waste entering the lagoons.
3.3.2 Activity 2: Fellowship training programme for staff to carry out water and sediment sampling, and analysis, inter-calibration and data assessment. (see 3.4 Output 4 below)
3.3.3 Activity 3: Quarterly sampling of water and sediments at 10 to 15 fixed sites in each lagoon and 3 to 5 sites in the nearshore waters fronting the lagoon outlets.
3.3.4 Activity 4: Analysis of collected water samples
3.3.5 Activity 5: Quarterly biological surveys of 3 to 5 fixed sites in the lagoons
3.3.6 Activity 6: Analysis of pesticides and heavy metals in selected species.
3.3.7 Activity 7: Data into the regional data base and GIS
3.3.8 Activity 8: Evaluation of data to identify major resource management concerns. Recommendations for further research and management actions.

**3.4 Output 4**

3.4.1 Activity 1: Preparation of a detailed survey and sampling programme
3.4.2 Activity 2: Organization of training programme for the staff to carry out sampling, analysis and inter-calibration.
3.4.3 Activity 3: Sampling coastal waters and sediments.
3.4.4 Activity 4: Definition of detailed procedures for laboratory analysis, and analysis of the collected samples.
3.4.5 Activity 5: Annual inter-calibration for comparability of results from different laboratories.
3.4.6 Activity 6: Data entry into the regional GIS data base and assessment of water quality.
3.4.7 Activity 7: Analysis of samples to classify the coastal waters for their suitability for various uses.
3.4.8 Activity 8: Identify major resource management concerns for nearshore waters; make recommendations for mitigation and recovery.

**3.5 Output 5**

3.5.1 Activity 1: Provide the equipment to carry out the marine resource survey.
3.5.2 Activity 2: On-the-job training of the necessary staff
3.5.3 Activity 3: Organize a programme of marine resource surveys, for approximately 20 days each year, including: Bottom and pelagic trawl surveys; Towed bioacoustics survey; Collections of sediment for contaminant loading analysis.
3.5.4 Activity 4: Prepare inventories of organisms collected to quantify biodiversity.
3.5.5 Activity 5: Examination of fish for evidence of pollution effects.
3.5.6 Activity 6: Analysis of samples to identify contaminant loading and pollution stress.
3.5.7 Activity 7: Investigation of fish age and growth to assess overfishing.
3.5.8 Activity 8: Assessment of data collected by the bioacoustics survey to monitor changes in biomass.
3.5.9 Activity 9: Entry of survey data into the regional data base and GIS.
3.5.10 Activity 10: Identify major resource management concerns about the health and productivity of nearshore waters.

**3.6 Output 6**

3.6.1 Activity 1: Provide equipment to carry out the plankton survey.
3.6.2 Activity 2: Train staff to carry out the plankton survey.
3.6.3 Activity 3: Carry out sampling by means of CPR/UOR towed by ships of opportunity
3.6.4 Activity 4: Training of staff in analysis and interpretation of CPR/OUR survey data
3.6.5 Activity 5: Assessment of survey results to identify major resource management and ecosystem health issues.

3.7 **Output 7**

3.7.1 Activity 1: Convene annual review to analyze and integrate the collected data and assessments of the sub-systems of the LME; develop and apply indices of diagnostic characteristics of the status of the Gulf of Guinea LME and express these in a usable form for decision makers.

*IMMEDIATE OBJECTIVE 4:*

**4.1 Output 1**

4.1.1 Activity 1: Inventory of polluting industries:
4.1.2 Activity 2: Input data into regional GIS.
4.1.3 Activity 3: Selection of industries to be monitored.
4.1.4 Activity 4: Monitoring industrial pollution from 100 selected industrial facilities.
4.1.5 Activity 5: Dissemination of Results to decision makers in the relevant governmental authorities, industries and NGO's.

**4.2 Output 2**

4.2.1 Activity 1: Select suitable industrial sites in participating countries for implementation of the demonstration projects.
4.2.2 Activity 2: Recommend the appropriate process modifications and/or methodology for waste treatment and management at the selected demonstration sites.

**4.3 Output 3**

4.3.1 Activity 1: Select urban area for a feasibility study of urban sewage waste management.
4.3.2 Activity 2: Conduct field survey of sewage volume, infrastructure and avenues of discharge into coastal water.
4.3.3 Activity 3: Report the feasibility assessment which lays out options for the management of sewage waste to reduce pollution of coastal waters.

**4.4 Output 4**

4.4.1 Activity 1: Define effluent standards. Develop a rationale for transforming these into acceptable regional standards.
4.4.2 Activity 2: Prepare preliminary effluent standards at three levels (degrees of stringency)
4.4.3 Activity 3: Develop an incentive programme for industrial and urban pollution reduction.
4.4.4 Activity 4: Develop an overall strategic plan outlining various options for industrial, urban, and combined urban/industrial pollution control.

*IMMEDIATE OBJECTIVE 5:*

**5.1 Output 1**

5.1.1 Activity 1: Coastal Resources Management Workshop in each country to develop a series of draft recommendations for action by each government.
5.1.2 Activity 2: Regional Coastal Resource Management Workshop to identify issues and actions that might benefit from a regional approach.
5.1.3 Activity 3: Senior-level Coastal Zone Management Policy and Strategy Meetings to prepare regional policies and strategies

**5.2 Output 2**

5.2.1 Activity 1: Secure the participation of Governments in estimated recurrent costs associated with this project over the next 20 years.
5.2.2 Activity 2: Assess financial mechanisms to generate funds to pay recurrent costs associated with project activities
5.2.3 Activity 3: Establish a trust fund or other such arrangement to assist Governments.

**5.3 Output 3**

5.3.1 Activity 1: Policy and Strategy Meetings for senior-level staff of ministries and agencies responsible for environmental and natural resource management and pollution control
5.3.2 Activity 2: The policies and strategies will be reviewed and discussed at ministerial-level meetings indicating the national governments' commitment to improving the health of the Gulf of Guinea Large Marine Ecosystem.

total 85 activities

## Annex 2: Table 3: - ACTIVITIES/WORKPLAN ADOPTED BY STEERING COMMITTEE AUGUST 1995

Fisheries/living resources

1a. Training session in Accra Ghana
1b. Training in living resources survey techniques including bioacoustics
1c. Study tour
1d. Training in Accra. Travel of regional experts.
1e. Purchase of fish survey equipment.
1f. Resources surveys particularly for stock assessment. Cost for fuel and sundries used in vessels.

Productivity

2a. Training in plankton survey techniques.
2b. Continuous plankton recorder/Undulating Oceanographic Recorder; instruments electronics training.
2c. Training in zooplankton identification.
2d. Purchase of expendable supplies for the deployment of CPR/UOR for plankton survey and oceanographic measurements in water column.
2e. Establishment of transects for the two ships of opportunity in 1996.
2f. Collection of first plankton samples using SAHFOS in August 1995
2g. Procurement of remote sensing and satellite imageries related to plankton productivity.
2h. Procurement of plankton sampling and laboratory equipment.
2i. Deployment of CPR/UOR to measure productivity as well as biological characteristics of water column.
2j. Procurement of CPR/UOR for plankton monitoring and measurement of environmental characteristics.

Contaminant sources and effects studies

3a. Study of mangroves and effects of pollution.
3b. Study design for pollution monitoring in lagoons.
3c. Regional meeting to consider setting effluent standards.
3d. Investigation of pollution in lagoons and other coastal areas in all participating countries.
3e. Case studies on treatment and management of industrial wastes (four units) and co-treatment on municipal and industrial wastes (one unit).
3f. Development of training modules on monitoring of industrial pollution, industrial pollution management, environment economics..
3g. Regional workshop on standardisation of methodologies for pollution studies.
3h. Purchase of satellite imageries for mangrove studies.

Equipment

4a. Purchase of expendable equipment including scientific consumable supplies.
4b. Purchase of non-expendable lab. equipment for the focal point institutes and the regional centre.

NGO

5a. Support to NGOs for awareness generation and dissemination of information.

ICAM/GIS

6a. Design of GIS modules and tests at CRO and other National Centres.
6b. Identification of needs for hardware and software at the national level.
6c. Make operational GIS at national and regional levels.
6d. ICAM situation analysis at the national level.
6e. Organisation of target oriented workshops for policies, strategies, and actions at national levels.
6f. Regional consultation on information. Situation analysis and definition of methodological approach.
6g. Regional consultation on results from planning phase and design of common concerns.
6h. Elaboration of ICAM programme and project profiles at the national level in concert with UNEP.
6i. Purchase of computer equipment for the regional information network and GIS database.

total: 36 activities.

**Annex 2: Table 4: - Activities in Workplan, Timetable and Budget prepared in August 1995**

| | |
|---|---|
| 1 | Set Up RCC |
| 2 | Prepare Public Awareness Brochure |
| 3 | Inventory of Available Resources/Check List of Necessary Equipment and Consumables |
| 4 | Establish Project Newsletter |
| 5 | Make Functional RCC and Focal Point; Determine Tasks and Needs; Hire Local Staff |
| 6 | Establish and Consolidate NGO Network Intra and Internationally |
| 7 | Prepare Country Status Reports (State of the Marine Environment) |
| 8 | Create a Directory of Institutions and Individuals Relevant to the Project |
| 9 | First Working Group; Design of LME Monitoring Programme; Definition of Training Plan and Schedule |
| 10 | First Steering Committe Meeting; Project Ealuation; Approval of Work Plan |
| 11 | Establish Technical Publication Series |
| 12 | Survey of Land Based Sources of Pollution (Industrial Pollution) |
| 13 | Procurement of Fish Survey Equipment |
| 14 | Procurement of CPR |
| 15 | Support to NGOs for Awareness Generation and Dissemination of Information |
| 16 | Study of Mangroves and Effects of Pollution |
| 17 | Study Design for Pollution Monitoring in Lagoons |
| 18 | Investigation of Pollution in Lagoons and Other Coastal Areas |
| 19 | Purchase of Satellite Imagery for Mangrove Studies |
| 20 | Establish Email network between countries |
| 21 | Preliminary Desing of ICAM Framework |
| 22 | Fish Trawl Training Planning Workshop (Accra) |
| 23 | Purchase of Expendable Equipment |
| 24 | Purchase of Non-expendable Equipment |
| 25 | Project Management Workshop; Elaboration of Project Monitoring and Evaluation Strategies |
| 26 | Training in Plankton urvey Techniques |
| 27 | CPR Electronic Training |
| 28 | Training in Zooplankton Identification |
| 29 | Collection of Plankton Samples (SAHFOS August 1996) |
| 30 | Regional Workshop on Standardisation of Methodologies for Pollution Studies |
| 31 | Identification of Hardware and Software Needs (GIS) |
| 32 | National ICAM Analysis |
| 33 | Design of GIS Modules |
| 34 | Meeting of the Ministers of the Environment |
| 35 | Participation in International Conferences |
| 36 | ICAM Regional Consultation (with IOC ICZM Workshop Conakry) |
| 37 | Training in Marine Survey Techniques (Incl. Bioacoustics) |
| 38 | Marine Resources Survey Support (Costs) |
| 39 | Marine Resources Survey Study Tours |
| 40 | Establishing Transects for Ships of Opportunity |
| 41 | Procurement of Satellite Images for Plankton Productivity |
| 42 | Purchase of expendable supplies for CPR |
| 43 | Case Studies on Treatment/Management of Waste |
| 44 | Deployment of CPR |
| 45 | Workshop Oceangraphic Survey, Living Resources Assessment, ICZM, Plans and Regulation |
| 46 | Purchase of Computer Equipment for Regional Information Network and GIS |
| 47 | Development of Training Modules |
| 48 | Make Operational Regional and National GIS |
| 49 | Elaboration of (National) ICAM and Country Profiles (with UNEP) |
| 50 | Regional Consultation on ICAM; Proposal for Regional ICAM Strategy |
| 51 | Regional Meetings to set Effluent Standards |
| 52 | Organisation of National Workshops for Policies, Strategies and Action (ICAM) |
| 53 | Preparation of Draft National ICAM |
| 54 | Study of Sustainable Financial Mechanisms |
| 55 | Series of Senior Coastal Zone Management, Policy and Strategy Regional Workshops |

## *Annex 3: PROPOSED REFORMULATION OF PROJECT OBJECTIVES*

**Annex 3: Box 1: - Proposed Reformulated Objectives for Project**

**Project Objective: The establishment of a sustainable monitoring and evaluation programme to provide critical environmental indicators of the state of health of the Gulf of Guinea Large Marine Ecosystem.**

***Immediate Objective 1.*** Characterisation of the baseline State of Health of the Gulf of Guinea LME: indicating critical aspects of environmental management with transboundary consequences, presented as part of the development of the SAP.

***Immediate Objective 2.*** Identification of key indicators of the health of the ecosystem, aimed at providing the information required for the management of prioritised transboundary issues by regional stakeholders of the Gulf of Guinea LME.

***Immediate Objective 3.*** Establishment of a sustainable monitoring capacity, based on the collection of data on key indicators by existing national institutions enhanced through project interventions, and funded by national and regional agreements, with long-term financial and technical support of external agencies where appropriate.

**Annex 3: Table 1: - Integration of existing programme of outputs into a reformulated objective framework.**

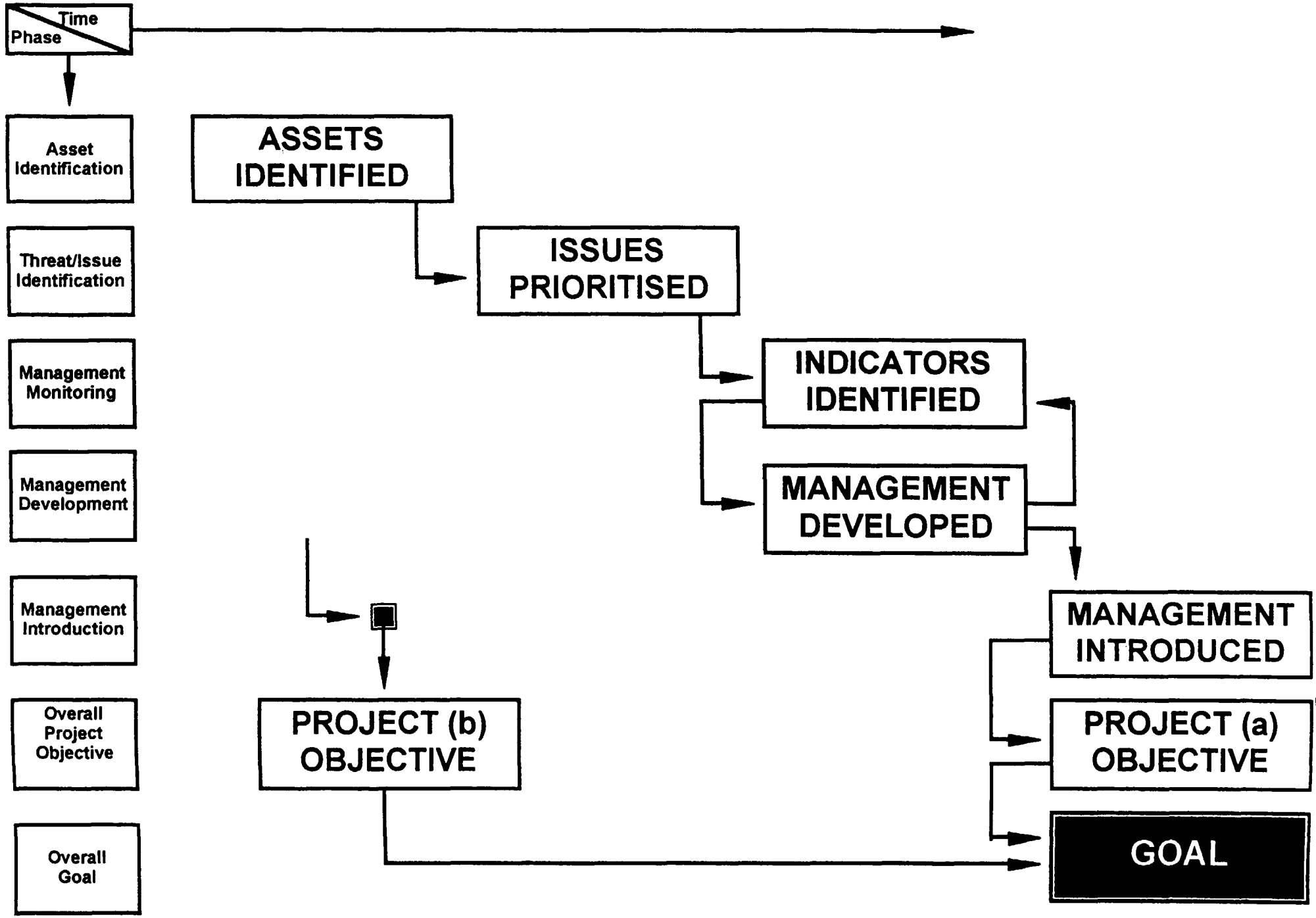
| Original Project Immediate Objectives And Outputs (prodoc) | Possible integration[1] into redefined objective framework[2] |
|---|---|
| ***Immediate Objective 1:*** | |
| **1.1 Output 1:** A network of scientific and monitoring institutions equipped for monitoring and assessment of the LME | 3 |
| **1.2 Output 2:** Scientific and technical personnel at CRO and NFPI trained to carry out the project monitoring and assessment programme | 3 |
| **1.3 Output 3:** Personnel of government regulatory and management agencies trained in environmental assessment and management techniques related to pollution control and resource management | 3 |
| **1.4 Output 4:** Enhanced capacity of NGOs to participate in environmental management and to generate public awareness | - |
| | |
| ***Immediate Objective 2:*** | |
| **2.1 Output 1:** Regional environmental information management system, including a multi-purpose Geographic Information System (GIS) | 1,3 |
| **2.2 Output 2:** A multi-purpose GIS data base assembled from known national and international electronic sources and relevant scientific literature | 1,3 |
| **2.3 Output 3:** "Manager's Version" GIS data base for National Focal Point Agencies | 1,3 |
| | |
| ***Immediate Objective 3:*** | |
| **3.1 Output 1:** Integrated monitoring programme design for the Large Marine Ecosystem | 2,3 |
| **3.2 Output 2:** Mangrove survey | 2,3 |
| **3.3 Output 3:** Pollution monitoring programme in coastal lagoons | 2,3 |
| **3.4 Output 4:** Monitoring programme for nearshore waters and sediments | 2,3 |
| **3.5 Output 5:** Living marine resource survey programme | 2,3 |
| **3.6 Output 6:** Plankton survey programme | 2,3 |
| **3.7 Output 7:** LME working meetings to develop ecosystem health indices | 1,3 |
| | |
| ***Immediate Objective 4:*** | |
| **4.1 Output 1:** Inventory and assessment of industrial pollution | 1 |
| **4.2 Output 2:** Case studies for demonstration of industrial waste treatment and management | - |
| **4.3 Output 3:** Feasibility study of urban sewage waste management | - |
| **4.4 Output 4:** Development of a strategic plan outlining options for industrial and urban pollution control | - |
| | |
| ***Immediate Objective 5:*** | |
| **5.1 Output 1:** National and regional guidelines for integrated coastal zone management planning | - |
| **5.2 Output 2:** Financial support mechanisms for CRO, NFPIs, NFPAs an NGOs for long-term continuation of LME monitoring and environmental management activities | 3 |
| **5.3 Output 3:** Mechanisms for regional policy and strategy formulation and implementation | - |

[1] Adoption of current outputs under a redefined project objective framework is only a provisional exercise and must be subject to a full analysis of the logical framework once the objectives are adopted. The above table is proposed to illustrate how the outputs of the current workplan might be integrated; individual activities in some outputs in the table may contribute to achieving other objectives than indicated e.g. all data gathering activities would contribute to objective 1..

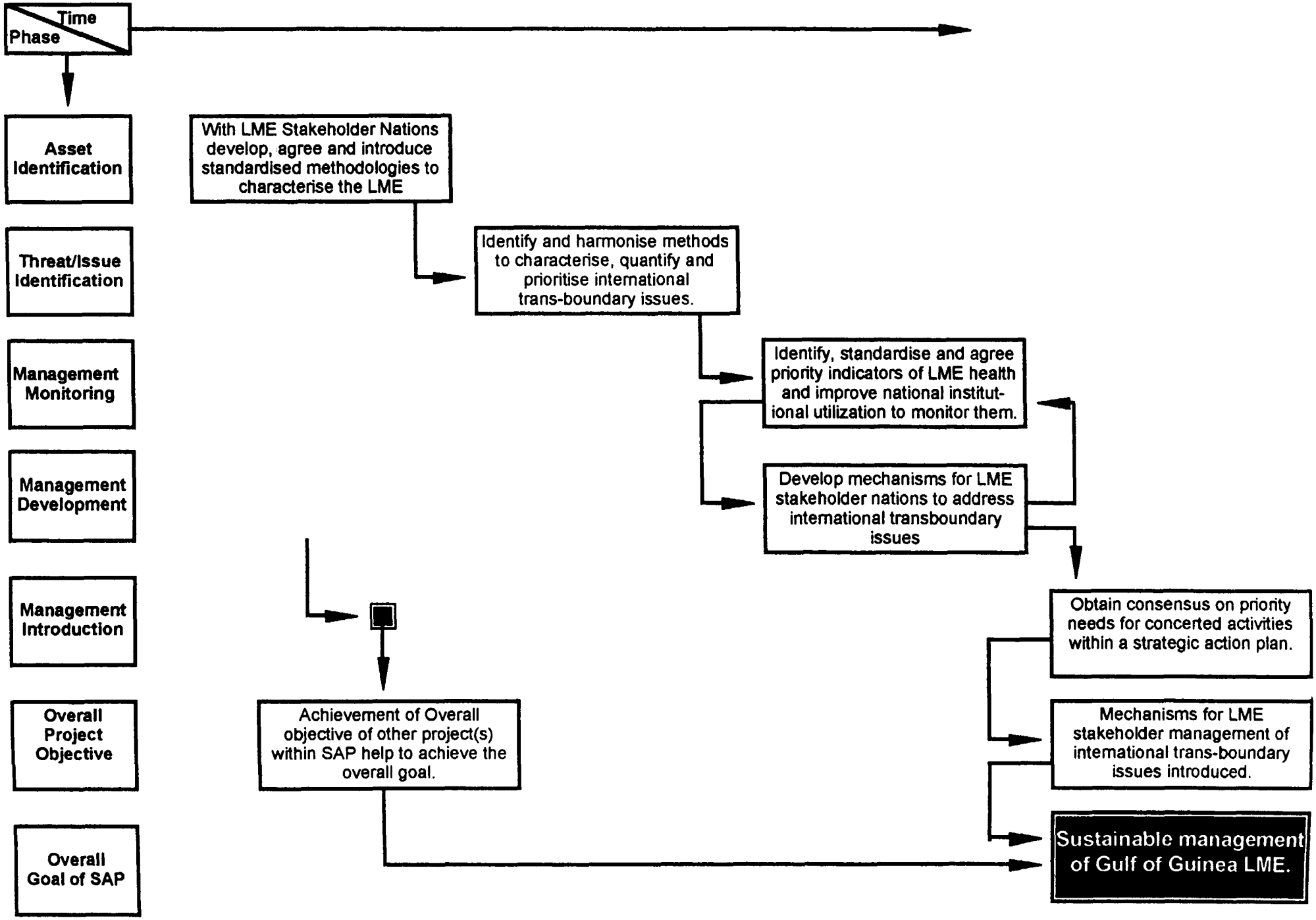
[2] 1, 2 and 3 refer to the reformulated objectives expressed in annex 3, box 1.

## *Annex 4: GEF SAP EXERCISE*

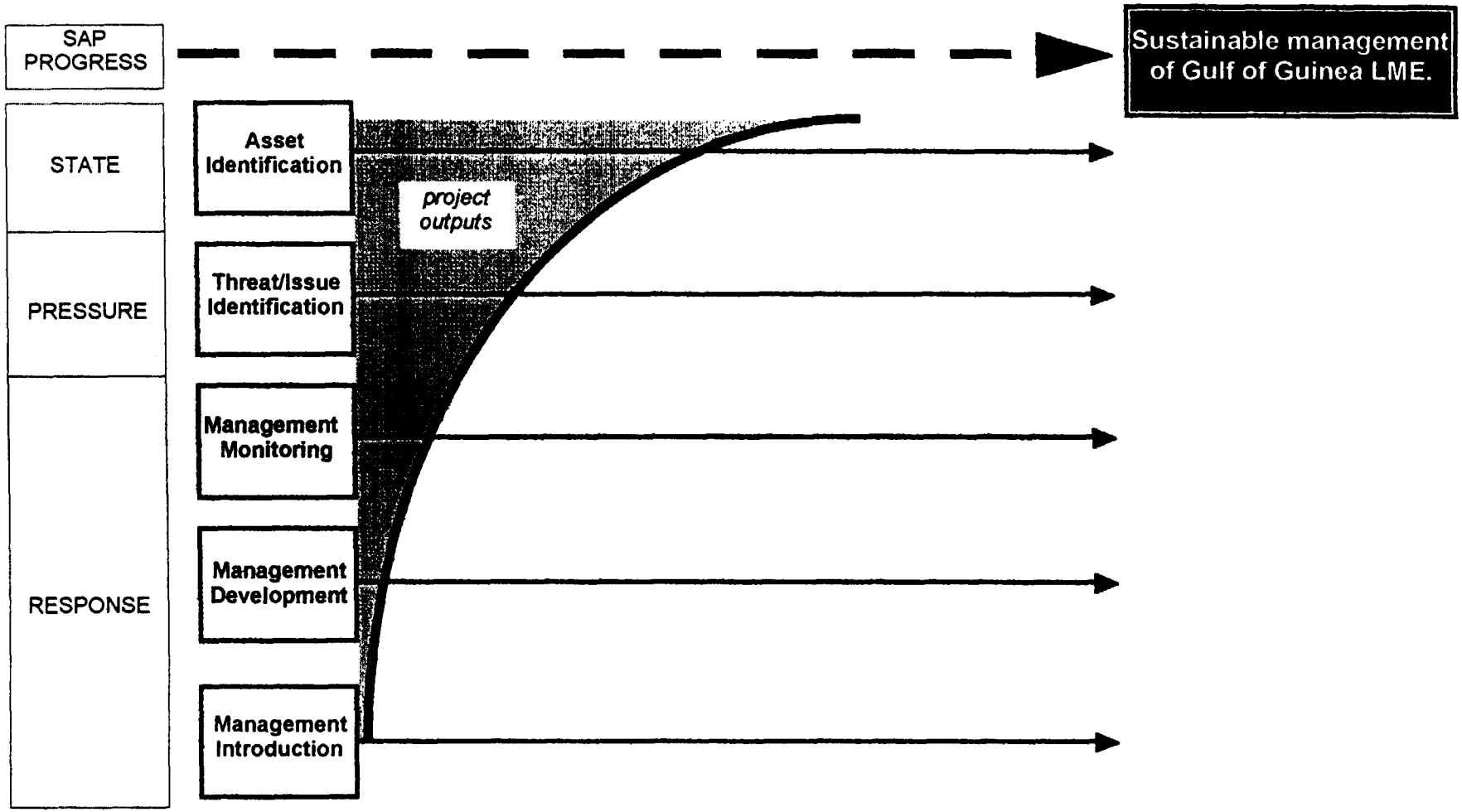
Annex 4: Figure 1: PHASING OF COMPONENT OBJECTIVES LEADING TO OVERALL GOAL OF SAP

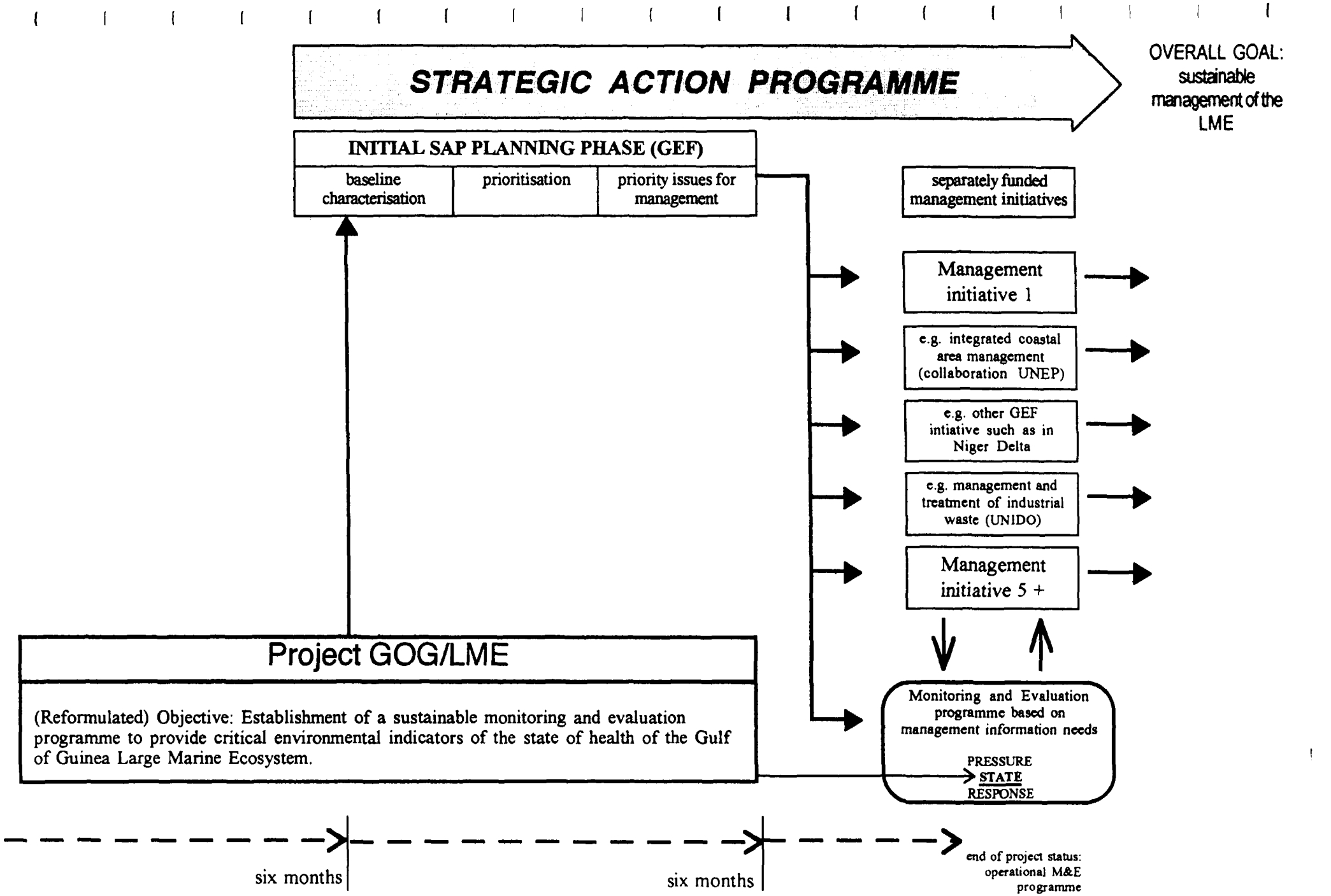


**Annex 4: Figure 2: - PHASING OF COMPONENT OBJECTIVES LEADING TO OVERALL GOAL OF A PROJECT WHICH ADDRESSES MECHANISMS FOR MANAGEMENT OF TRANSBOUNDARY ISSUES**



## Annex 4: Figure 3: - CONTRIBUTION OF PROJECT OUTPUTS TO ACHIEVING OVERALL GOAL






**Annex 4: Figure 4: GOG/LME Project (with reformulated objective) running concurrently with planning phase of SAP**

## *Annex 5: INDICATORS TO VERIFY PROGRESS (prodoc framework)*

## Annex 5: Table 1: - INDICATORS TO VERIFY PROGRESS TOWARDS PROJECT IMMEDIATE OBJECTIVES AND OUTPUTS (prodoc)

***Immediate Objective 1*: Strengthen regional institutional capacities to prevent and remedy pollution of the Gulf of Guinea LME and associated degradation of critical habitats**

**1.1 Output 1:** A network of scientific and monitoring institutions equipped for monitoring and assessment of the LME
**1.2 Output 2:** Scientific and technical personnel at CRO and NFPI trained to carry out the project monitoring and assessment programme
**1.3 Output 3:** Personnel of government regulatory and management agencies trained in environmental assessment and management techniques related to pollution control and resource management
**1.4 Output 4:** Enhanced capacity of NGOs to participate in environmental management and to generate public awareness\

| **Type of Indicator** | | **Description** | **Timing**[1] | **milestone in workplan (see annex)** |
|---|---|---|---|---|
| Indicators of Output or Milestones | 1.1 | - publication of accurate baseline assessment of existing lab/monitor capacity | 1 | |
| | | - documentation defining extra equipment needed to carry out activities to achieve project related outputs | 1 | |
| | | - equipment delivered in time for implementation of activities | 1 | 120 |
| | | - project related activities using supplied equipment implemented on time; reporting of progress, including use of equipment; | 1,2,3 | |
| | 1.2 | - publication of training needs assessment in sufficient detail to measure impact of project training activities | 1 | 124 |
| | | - training programme adopted by steering committee | 1 | |
| | | - training modules prepared and delivered | 1 | 128 |
| | | - training programme implemented according to numbers/content/timing | 1,2 | |
| | | - final assessment of impact of training highlighting new capacity (where possible proven by activities/outputs achieved by trained personnel) | 3 | |
| | 1.3 | - training programme implemented according to numbers/content/timing | | |
| | 1.4 | - inclusion of a range of NGOs in national networks concerned with LME management; instances where input from NGOs has influenced design of project activities; instances where NGO involvement has provided data not otherwise accessible to government; | 1,2,3 | |
| | | - instances where the project has provided resources which have increased the impact of the NGO on the community | 2,3 | |
| Progress[2] Indicator (project management) | | - project outputs, as defined by appropriate indicators, delivered regularly on time | 2,3 | |
| | | - trained personnel, through effective regional networking, satisfactorily achieve the outputs of immediate objective 5; | 3 | |
| Progress Indicator (state of ecosystem) | | - Institutions demonstrating actual prevention and remedy of monitored pollution events, through a measurable impact on ecosystem Response[3] indicators | N/A | |

[1] Timing 1: withing 6 months, or already achieved
Timing 2: between 6 months and end project
Timing 3: end of project status
N/A: no measurable impact during the project duration

[2] Distinguishes indicators by the terms used in the TOR

[3] World Bank Draft Guidelines for Monitoring and Evaluation for World Bank-GEF International Waters Projects 1995

*Immediate Objective 2*: **Develop an Integrated Information Management and Decision-Making Support System for Environmental Management**

**2.1 Output 1:** Regional environmental information management system, including a multi-purpose Geographic Information System (GIS)
**2.2 Output 2:** A multi-purpose GIS data base assembled from known national and international electronic sources and relevant scientific literature
**2.3 Output 3:** "Manager's Version" GIS data base for National Focal Point Agencies

| Type of Indicator | | Description | Timing | ref workplan in annex |
|---|---|---|---|---|
| Indicators of Output or Milestones | 2.1 | - publication of assessment and design and specs for information system, and design of GIS training module<br>- hardware/software installed and made operational<br>- creation of database / GIS integrating existing data and all data produced during the life of the project | 1<br>1<br>2,3 | |
| | 2.2 | - sub contractor delivers to specifications a regional GIS database composed initially of existing data layers<br>- production of a relevant electornic 'atlas' | 1,2 | |
| | 2.3 | - GIS databases installed in national management institutions and used by trained personnel | 2,3 | |
| Progress Indicator (project management) | | - information delivered regurlarly by responsable regional institution and used by national managers<br>- managers use information in efforts to respond to problems identified in the data analysis | 3 | |
| Progress Indicator (state of ecosystem) | | (the creation of data management system itself will not impact on the ecosystem) | N/A<br>N/A | |

*Immediate Objective 3*: **Establish a comprehensive programme for monitoring and assessment of the health of the Gulf of Guinea LME**

**3.1 Output 1:** Integrated monitoring programme design for the Large Marine Ecosystem
**3.2 Output 2:** Mangrove survey
**3.3 Output 3:** Pollution monitoring programme in coastal lagoons
**3.4 Output 4:** Monitoring programme for nearshore waters and sediments
**3.5 Output 5:** Living marine resource survey programme
**3.6 Output 6:** Plankton survey programme
**3.7 Output 7:** LME working meetings to develop ecosystem health indices

| Type of Indicator | | Description | Timing | ref workplan in annex |
|---|---|---|---|---|
| Indicators of Output or Milestones | 3.1 | - report presenting design of a structure monitoring and assessement programme<br>- preparation of a series of harmonized work plans | 1,3 | |
| | 3.2 | - reports on state of mangrove, contributing to annual LME reports of 'State of Health'<br>- regular annual updates of data incorporated into regional data base and GIS<br>- report identifying sites for restoration and sources of funding | 1,2 | |
| | 3.3 | - reports on state of lagoon contamination, contributing to annual LME reports of 'State of Health'<br>- regular annual updates of data incorporated into regional data base and GIS | 1,2 | |

| | | | | |
|---|---|---|---|---|
| | 3.4 | - reports on coastal waters and sediments, contributing to annual LME reports of 'State of Health'<br>- regular annual updates of data incorporated into regional data base and GIS<br>- report classifying coastal waters for their suitability for uses | 1,2 | |
| | 3.5 | - reports on state of marine resources, contributing to annual LME reports of 'State of Health'<br>- regular annual updates of data incorporated into regional data base and GIS | 1,2 | |
| | 3.6 | - reports on state of plankton and productivity, contributing to annual LME reports of 'State of Health'<br>- regular annual updates of data incorporated into regional data base and GIS | 1,2 | |
| | 3.7 | - annual review reports reviewing the status of the Gulf of Guinea Large Marine Ecosystem | 2,3 | |
| Progress Indicator (project management) | | - monitoring system provides data on pressure/state/response indicators, prioritised on the basis of management interventions<br>- demonstration that evaluated data is transferred to and used by managers | 2,3<br><br>3 | |
| Progress Indicator (state of ecosystem) | | (establishment of the monitoring system will not in itself have an impact on the state of the environment) | N/A<br><br>N/A | |

*Immediate Objective 4*: **Prevent and control land-based sources of industrial and urban pollution**

**4.1 Output 1:** Inventory and assessment of industrial pollution
**4.2 Output 2:** Case studies for demonstration of industrial waste treatment and management
**4.3 Output 3:** Feasibility study of urban sewage waste management
**4.4 Output 4:** Development of a strategic plan outlining options for industrial and urban pollution control

| **Type of Indicator** | | **Description** | **Timing** | **ref workplan in annex** |
|---|---|---|---|---|
| Indicators of Output or Milestones | 4.1 | - report of inventory of polluting industries<br>- data on inventory and monitoring of pollution impact supplied to regional data base and GIS | 1,2 | |
| | 4.2 | - report indicating selection of sites and methodologies for waste management | 2 | |
| | 4.3 | - report of survey on selected urban area with sewage pollution problem<br>- completed feasability assessment for management of sewage waste in coastal waters | 2<br><br>2 | |
| | 4.4 | - report for adoption by member states proposing effluent standards<br>- report with design for incentive programme for industrial pollution reduction<br>- report with strategic proposals for industrial/urban pollution control | 2<br>2<br><br>3 | |
| Progress Indicator (project management) | | - industrial sites having adopted pollution reducing strategies<br>- adoption of effluent standards by member states, enforcement of legal controls<br>- data from monitoring will have contributed to the adoption of a | 3<br>3<br><br>3 | |

| | | | | |
|---|---|---|---|---|
| | | strategy for pollution control | | |
| Progress Indicator (state of ecosystem) | | - stable or decreasing levels of industrial or urban pollution, as shown by data provided on key indicators | 3 | |

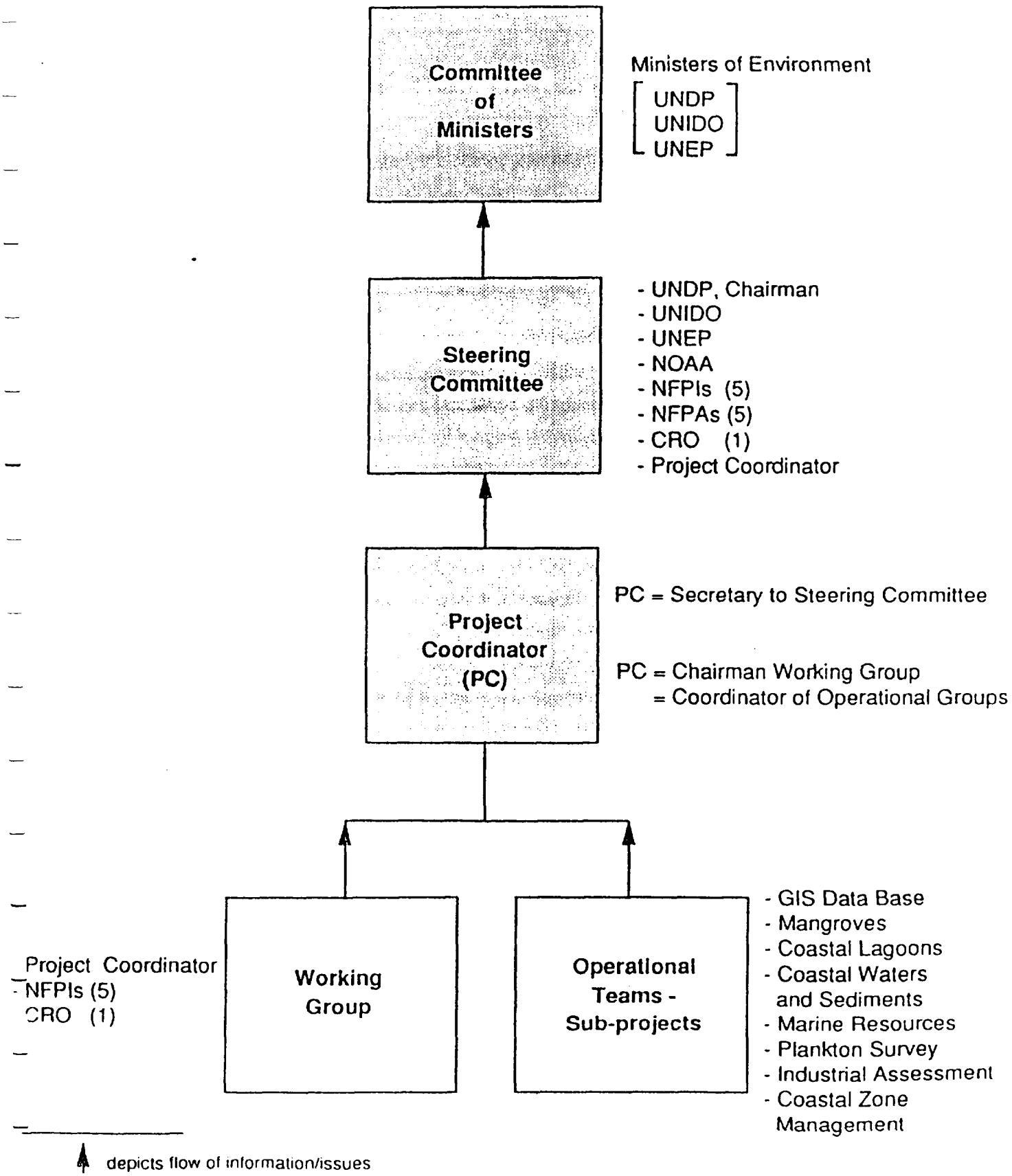
*Immediate Objective 5*: **Develop national and regional strategies and policies for the long-term management and protection of the Gulf of Guinea LME**

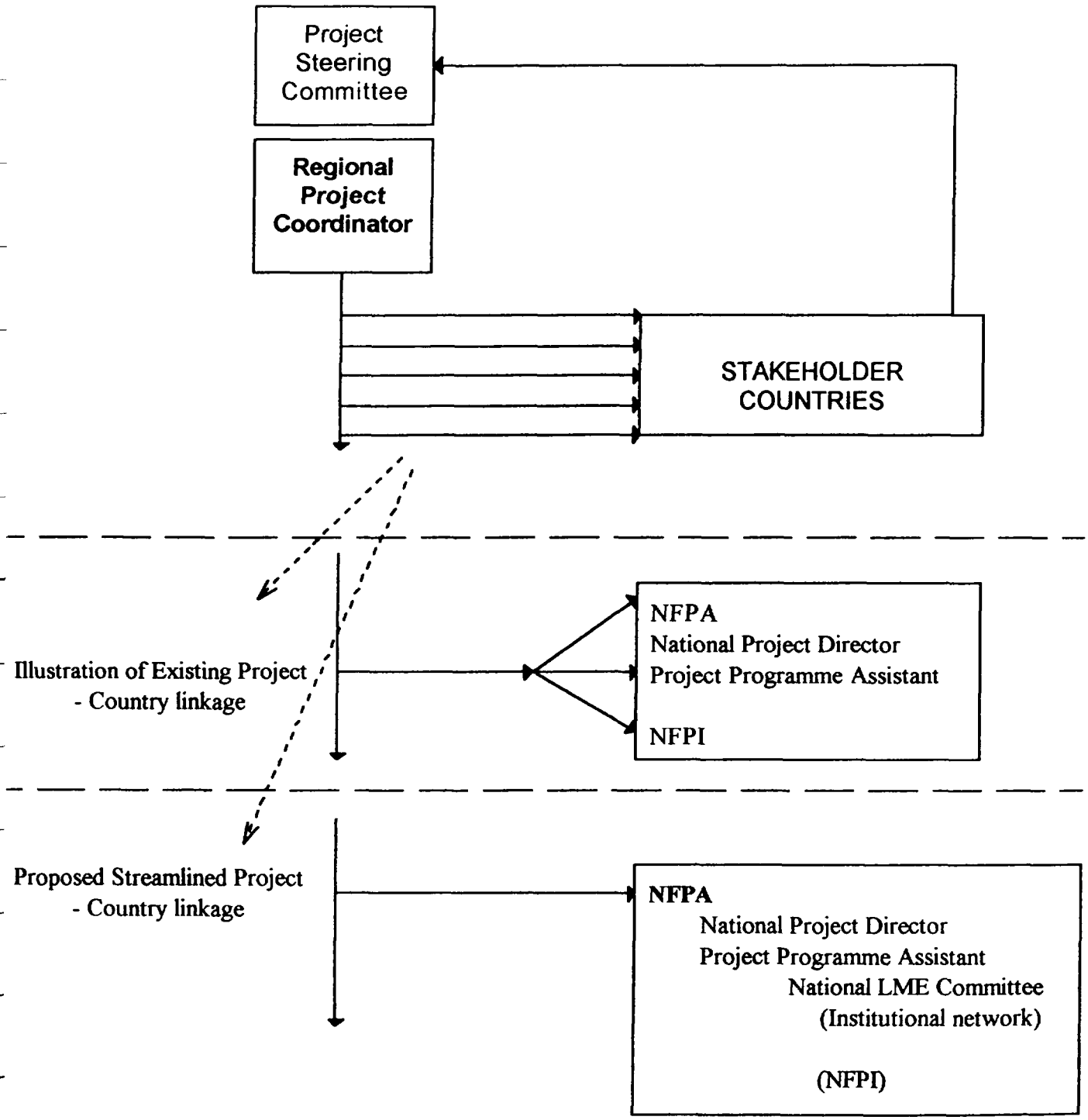
**5.1 Output 1:** National and regional guidelines for integrated coastal zone management planning
**5.2 Output 2:** Financial support mechanisms for CRO, NFPIs, NFPAs an NGOs for long-term continuation of LME monitoring and environmental management activities
**5.3 Output 3:** Mechanisms for regional policy and strategy formulation and implementation

| **Type of Indicator** | | **Description** | **Timing** | **ref workplan in annex** |
|---|---|---|---|---|
| Indicators of Output or Milestones | 5.1 | - documents containing guidelines for ICAM at both national and regional level | 1,2 | |
| | 5.2 | - report identifying financial support mechanisms and sources of project funding | 3 | |
| | 5.3 | - adoption of mechanisms by member states | 3 | |
| Progress Indicator (project management) | | - achievement of a binding agreement between member states for the cooperative management of the LME | 3 | |
| Progress Indicator (state of ecosystem) | | - (strategies and policies are not necessarily implemented, so it is not possible to assume an impact on the ecosystem) | N/A | |

## *Annex 6: PROJECT MANAGEMENT STRUCTURE*

# PROJECT MANAGEMENT STRUCTURE






**Annex 6: Figure 2: Proposed Evolution of Project - Country Linkage.**

*Annex 7: Interactive Computer Based Project Management Plan*

*Annex 7a: Existing work plan presented in MS Project*

*Annex 7b: Revised schedule to group tasks and show linkages in MS Project*

*Annex 7c: Proposed structure for development of a hypothetical LME Management Programme in MS Project*

## Interactive Computer Based Project Management Plan

The Terms of Reference of the Project Management Consultancy specifically included the development of an interactive computer based project management plan (based on an appropriate software package) which would include the following aspects:

- system description;
- event logical diagram;
- operational plan, including time scheduling, resource allocation and responsible parties; and
- critical path plan for each major objective.

The TORs therefore deal here with two very different aspects of project management, a changed "plan" relating to project outputs and operations, if seen as a requirement for improved project performance, and the provision of software as a tool to improved project management.

The provision of project management software alone will not enhance project performance, but it does present a tool allowing improved capacity to plan and monitor project activities and related expenses, independently of whether there are changes to project structure. However, the provision of a tool does not mean it will be effectively used.

### 1. Project Management Plan

Clearly the management of the project must be defined by the project structure, which in turn should be defined by the project objectives and the management requirements of those activities leading to the achievement of those objectives.

The use of logical framework analysis, now generally a requirement for project development, starts with objectives, moving down to the definition of inputs and activities needed to achieve them. Conversely project management software tends to assume that this has been adequately assessed and then start from the opposite end, with subtasks leading to outputs and then to objectives.

A final project management plan can not, therefore be devised until a final project framework has been established. Various scenarios have been presented both during the consultancy to the stakeholders, and in this report. This annex includes three analyses presented as time/activity schedules:

- The existing project schedule - as developed by the project manager following the August 1995 meetings (Annex 7a);
- A revised project schedule showing linkages between activities and project activities and outputs, but still covering the full set of project activities over the original time period of four years (Annex 7b); and

- An ideal project schedule for a GEF/LME project based on the development of prioritised management interventions dealing with international transboundary issues. (Annex 7c)

If the consultancy proposals for the revised project objectives are accepted, then a new project management plan will have to be drawn up with the full participation of the stakeholders[1].

## 1.1 Project Management Plan: Improved Present Project Structure

The present project structure has not been evolved from within the framework of an LME Strategies Action Plan. It could however, in the future, be adapted to act as a component within a Strategic Action Plan. Until this has been negotiated, the present project structure and objectives are likely to be only subject to minor alterations, largely as a crisis response to changes generated from within the implementation of the project activities.

A modified project structure was presented to the regional project office and then further developed to reflect their present views of the project objectives and tasks.

The following adjustments could be justified within the present project framework:

1. The present set of activities defined as institutional strengthening in the project document, need to be separated into those addressing management requirements of National (and Regional where appropriate) and those supporting the monitoring programme. Training and equipment should be subdivided and re-assigned to support specific objectives, in most cases this will mean reallocation to Monitoring Support
2. Further rationalisation of the present project structure would remove the Information Management component (GIS) as an end in itself, and subdivide the outputs into provision of capacity to National Management Institutions, and provision of capacity to the research institutions under monitoring support.
3. The monitoring support could be separated into environmental base-line characterisation and monitoring in support of management. In addition the acceptance of regional monitoring standards and analytical techniques should be included here.
4. Regional agreements on effluent standards should probably be redefined to come under regional strengthening.

---

[1] The consultants prepared a series of project management plans for discussion with the stakeholders, based on changes to the project framework. However, as a revised management plan depends on the acceptance of a revised project framework by the stakeholders, no further progress was made. The workshop participants clearly stated that this was not on the agenda, although it could possibly be introduced at the next steering committee in August or September 1996.

### 1.1.1 Project Costs

Where possible costs have been assigned to previous, on-going and proposed tasks, based on available materials. However, the full assignation of costs to tasks will have to await a detailed budgetary breakdown from **UNIDO** of all existing disbursements and commitments, itemised back to specified tasks and budget lines.

The resulting set of defined outputs and secondary outputs, tasks and sub-tasks will clearly require further development, and will need to be redefined in conjunction with a full review of the project budget based on the present patterns of expenditure and projected expenditure on project components. It is clear that, with increasing costs and additional activities being proposed, the project will have to make some decisions on future priorities for base-line environmental characterisation, monitoring and management support. The project management tool can assist in the process of redefining project objectives, outputs and tasks.

| Summarised Present Objectives | Grouped Tasks or Activities |
|---|---|
| N/A | Regional Project Management |
| 1. Strengthen Regional Institutional Capacities to Prevent and Remedy Pollution | Institutional Structures<br>Institutional Strengthening<br>Training and Equipment<br>Provision of GIS Planning Capacity |
| 2. Develop Integrated Information Management and Decision Making Support System for Environmental Management | N/A |
| 3. Establish Comprehensive Monitoring System | Monitoring Support<br>Marine Resource Monitoring<br>Primary Production Monitoring<br>Mangrove Monitoring<br>Lagoon Pollution Monitoring |
| 4. Prevent and Control Land Based Sources of Industrial and Urban Pollution | Management and Treatment of Industrial Waste<br>Including establishment of Regional Standards |
| 5. Develop National and Regional Strategies and Policies for Long-Term Management and Protection | Regional and National ICAM Strategy and Policy |

### 1.1.2 Implementation of Improved Project Management Plan

The tool for the improved project management of the present project has been developed with project staff. A provisional revised project structure has been defined, within the present framework of project objectives and a preliminary allocation of resources established.

The tasks associated with project management, coordination and prioritisation of project activities, and reporting to stakeholders, are already carried out to a greater or lesser degree according to the requirements of the stakeholders. However, for greater internal efficiency, a more regular and detailed system must be developed for planning and monitoring project activities by project management, whether there are changes to project design or not.

A number of changes have already been proposed to the project management structure, and some have been implemented to different levels within participating countries. The changes affect responsibilities for implementing and managing activities at national level.

Within the project coordination office, the coordinator proposes to recruit one additional programme assistant (as a separate post to the national programme assistants). Much of the routine, but highly demanding project management activities could be then passed to the assistant, leaving the coordinator free to deal with the technical issues.

Once the revised structures have been agreed between the stakeholders, then the details of the timing of project management activities can be arranged, as well as the possibility of transferring the project management tasks and tools to national levels.

## 2. Project Planning and Management Software Microsoft® Project Version 4.0 for Windows™

The Consultants have provided and installed Microsoft Project at the Regional Coordination Office[2]. The version provided is the English edition of version 4.0; it may be considered necessary to provide a French version if the routine management duties of entering actual resource use and timing of activities is delegated to a non-bilingual member of staff.

The programme is capable of being customised to provide a unique environment tailored to a specific project requirement. At one level this can be the creation of a user defined set of menus and toolbars, simplified to include only those items necessary for the defined project procedures.

The application has been installed without customisation, as the precise needs of the programme "environment" can only be determined as a result of the actual use by the project staff, and their determination of their reporting requirements.

---

[2] The terminology used in this annex corresponds closely with the "American" terminology used in the software manuals, and in the help files of the programme. This is to provide some degree of congruence between these proposals and the programme software support.

The following sections apply to the use of the software within the present project design and management structure, and to any modifications or restructuring that takes place. As a matter of principle, the more clearly defined the project structure at the outset, the easier it becomes to manage a project. The software can assist in project design as well as subsequent management, and as such should be used to help in defining any future changes in project objectives and outputs, activities (*"Tasks"* in Project) and milestones (indicators of completed outputs).

The following sections have been arranged to correspond to the specific requests in the terms of reference.

## 2.1 System Description

The project (the GOG LME Project) is best described in terms of the proposed or revised immediate objectives. At the next level, the key outputs should be defined, with sub-sets of tasks linked to the achievement of each of these outputs.

In addition there will be one set of tasks which is not directly linked to the achievement of the overall project objectives, general project management and support tasks. These should be limited as much as possible and, as an example, should not include any training except for project management, project reporting, language training or other activities that can not be ascribed to a specific objective.

Effectively the system should be set up as an *outline*, with major headings being the immediate project objectives, and a hierarchy of activities leading to these objectives. This will however, require some readjustment of the original project activities, with a few tasks re-assigned to correspond more closely with their immediate objectives[3].

## 2.2 Event Logical Diagram: PERT Chart.

The programme provides a number of views of project structures. Linkages between project tasks are best shown using a PERT Chart (Programme Evaluation Review Technique), which graphically represents the relationships between tasks, without the added complexity of the time dimension.

This view provides the *best overview* in terms of defining project relationships at the time *of initial project design*, and can show where new and additional tasks fit in, or deleted tasks obstruct the flow of activities towards achieving goals.

However, for most purposes it is expected that the project will use the Gantt Chart View, effectively the Schedule of Activities represented as lines on a bar chart, plotted against a horizontal timescale.

---

[3] As an example, recognised at the Workshop held in Abidjan in June, the original project activities defined in the signed project document as leading to *Output 1. 1 A network of scientific and monitoring institutions equipped for monitoring and assessment of the LME* should be moved to join those activities leading to the achievement of the *Immediate Objective 3 Establish a comprehensive programme for monitoring the and assessment of the health of the Gulf of Guinea LME*

[3] The bar chart system developed by Henry L. Gantt, and generally accepted as the standard way to depict the sequence and timing of project activities within project proposal documents.

## 2.3 Operational Plan

The operational plan includes the details of implementation of the management system, as well as the specifics of the software requirements. Comments on implementation of an improved project management plan are given above.

However from the point of view of the software, the details that have to be specified, include time schedule and allocation of resources and costs.

The standard opening screen for Project is the Gantt Chart[4], the bar chart showing a list of tasks and the scheduled start and finish of tasks.

### 2.3.1 Time Scheduling

The chart has two components, to the left a column giving on each line a description of the task (activity) or sub-task grouped into primary and secondary outputs, that should be then grouped to correspond to stated project objectives. Additional columns give ***start*** and ***finish*** dates and ***duration*** for each task, recalculating the third component from any changes in the other two. For project tracking, additional columns should be included for ***actual*** start, finish and duration.

Task can be linked both interactively by dragging and pointing to linkages, and by entering task linkages in the column marked Predecessor. The following linkages are possible:

- Start to Finish; the most common linkage - analysis can not start until equipment has been provided;
- Finish to Finish; two tasks need to end together, generally as a combined input to a Start to Finish third task or Milestone, such as the provision of equipment and the development of a training programme, before on the job training can commence;
- Start to Start; two tasks have to start simultaneously, such as the two components of a combined analytical programme; and finally
- Lagtime; the time between completing one task and commencing the next; in terms of this project this would most commonly be a review period of a project document, purchase order or other task requiring either internal or external assessment before continuing to the following stage.

### 2.3.2 Baseline and Interim Schedules

Although the project schedule has been defined as if it were a simple blue-print project, given the need to adapt project activities to changing demands and in line with increasing knowledge of the resource base resulting from previous project activities, this schedule will change. This is a result of both internal and external perturbations.

In view of this the original project schedule should be considered as the *base line project* proposal, which will change throughout the project lifetime both as a result of

under and over estimates in the time required for completion of tasks, and more significantly as a result of changes in the programme design proposed at the annual Steering Committee Meetings. Throughout the project period, actual task start and finish dates can be entered and compared to the original projected schedule, any dependent tasks will be automatically rescheduled as a result of changes to predecessor tasks. The changes can be visually displayed on a single Gantt Chart, as time lines can be split to show projected and actual periods.

Given the annual re-programming exercise that can be expected to take place, following Steering Committee meetings or other project planning exercises, the project management may consider the need to store changed actual and future projected schedules as *interim schedules.* Up to five interim schedules can be stored and compared to previous interim schedules or to the original base line schedule.

It is recommended that the project management store an interim schedule following changes to the project outputs and tasks agreed between the project stakeholders and the managing and financing agencies.

### 2.3.3 Resource Allocation

Project management have two main tasks in Resource Allocation, the description of the resources used or assigned to a particular task, and the definition of the cost of that resource assigned to an agreed project budget line.

Resources include both human resources (primarily consultant's fees), materials such as purchased equipment, operating costs which includes both equipment operating costs and field expenses, and travel and subsistence.

In most cases resource allocation will be relatively simple; conflicts in resource allocation will be fairly obvious as the majority of activities include equipment, personnel and consultants assigned to a particular task or set of consecutive tasks, rather than working with parallel tasks operating on shared resources.

Where consultants are brought in to supervise a specified set of activities, it is recommended that the consultant is included as a separate "sub-task" below that activity to which can be assigned the consultants fees and travel and subsistence.

The costs of resource use can be accrued at either the start of a task, or at the end of a task or prorated, based on the percentage of the task that has been completed. For the purposes of project management (as opposed to the specific requirements of monthly budget management dealt with by UNIDO and UNDP), it is suggested that ***all costs are accrued at the start of a task,*** as at this time the expenditure has been committed and the remaining available budget for any time line correspondingly changed.

The column "code" should be used to record the UNDP/UNIDO budget line, additional fields can be added if the budget lines need to be further grouped.

As with the timing of tasks any changes in actual or projected resource allocation can be stored as part of the interim schedule, and compared to original projections.

### 2.3.4 Task Responsibility

Finally, an additional text column should be added to the task information, which should be used to define the primary responsibility for supervising/reporting on each task. Project management need to clearly define this responsibility, which may differ from the strict protocol of project reporting through the National Focal Point Agencies.

It is recommended that where tasks are carried out by any national or regional activity centre, ***the senior staff member*** of that centre involved in the task **is *identified and assigned reporting responsibility*** (which may not imply financial responsibility if funds are directed through other agencies).

The same procedures should be followed if a task or set of tasks are subcontracted to other agencies or to private companies.

### 2.3.5 Project Tracking

Project tracking involves both monitoring schedules and monitoring costs ( and resource use). Effectively this combines both comparisons indicated above, the review of the actual project progress against either the baseline or an interim project schedule and the review of actual costs against the baseline or interim projected costs, which are then in turn compared to the initial or redefined overall budget line allocations.

In terms of time project management is particularly looking for slippages and patterns of slippages that may affect the timing of future project tasks. This is best analysed on the Gantt Chart where the physical over-run of tasks are shown adjacent to their proposed schedule.

Cost (and resource use) tracking is generally best done with the use of the variance tables. These indicate the variation between baseline costs and actual costs in tabular form, and can indicate where project budgets for other similar projected tasks are likely to be exceeded. In addition variance tables can be used to show the differences between baseline and actual start and finish dates and projected and actual duration.

## 2.4 Critical Path

*The critical path,* defined as a set of *critical tasks* which if delayed will result in the project not achieving a primary or secondary output within a given time, can be displayed most clearly on the Gantt Chart. The procedure is very simple, and involves selecting a default *format for critical tasks,* which are automatically identified by the programme.

In a more schematic form, the critical path can be displayed on the PERTT Chart.

As a the project proceeds, and as schedules are adjusted to correspond to actual events, the critical path may change, and non-critical tasks may become critical. This is particularly the case where finish to finish tasks are involved.

The main criteria for defining the critical path to reach the major project objectives is that the objectives are themselves adequately defined, with clearly specified primary

outputs that are reached through linked secondary outputs which are reached through a number of sets of scheduled tasks.

The present set of primary project objectives as given in the project document, are broadly defined and are not always supported by the associated project activities, or even outputs. As a result, the use of critical path analysis on the previous and modified sets of tasks indicates the lack of structure of the project, with the majority of tasks either floating without links into an overall project output, or continuing for the four year project period and stopping without reaching a definable conclusion.

If, following agreement of the stakeholders, the structure of the project is tightened, with more clearly attainable project objectives and primary and secondary outputs, and sets of tasks leading to those outputs, then the use of critical path analysis can become an active project management tool. Very simply, either a task must constitute the achievement of a specified secondary output, or it must be linked to a set of tasks leading to the achievement of a secondary output. All secondary outputs should be linked to reach a primary output.

## 2.5 Milestones: Indicators of the Completion Sets of Tasks

The programme defines a milestone as a task with a duration of zero. For the purposes of management of this project, the majority of milestones will be reports on completed sets, or sub-sets of tasks. These become the documentary evidence of completion of stages towards achieving project outputs, and will act as the primary materials for subsequent project evaluation.

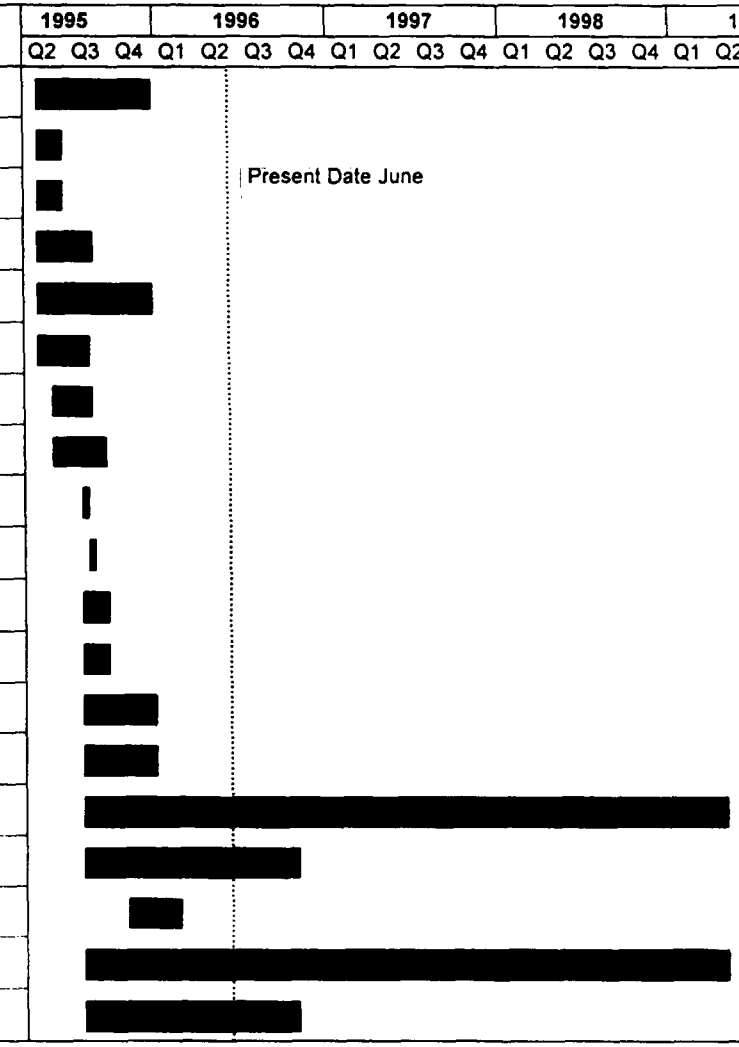
Milestones are not indicators of project performance, and in many cases even the reports themselves, as generated from within the project, are not objectively judged in terms of quality.

The milestones will include regular reports generated as a result of the improved monitoring programmes assisted through project interventions, and annual project management reports, as well as reports on single or intermittent project activities, such as the completion of a training workshop. Other milestones will include completion reports for the provision of services or equipment to collaborating and stakeholder agencies, both from the supplier, and in terms of acceptance of the quality of the services from the recipient. Similar reports must be required for all subcontracts.

***Annex 7a: existing work plan presented in MSPROJECT***

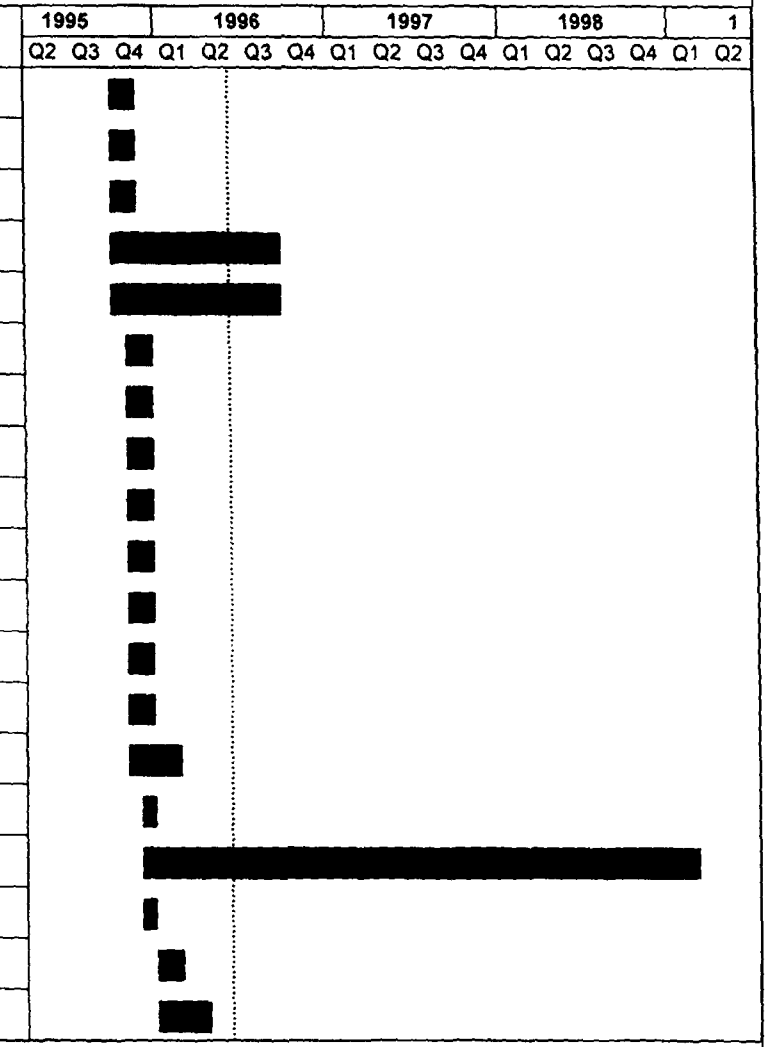
**Schedule of Activities - August 1995** As defined in the Proposed 1995 Work Plan and Budget

| ID | Task Name |
|---|---|
| 1 | Set Up RCC |
| 2 | Prepare Public Awareness Brochure |
| 3 | Inventory of Available Resources/Check List of Necessary Equipment and Consumables |
| 4 | Establish Project Newsletter |
| 5 | Make Functional RCC and Focal Point; Determine Tasks and Needs; Hire Local Staff |
| 6 | Establish and Consolidate NGO Network Intra and Internationally |
| 7 | Prepare Country Status Reports (State of the Marine Environment) |
| 8 | Create a Directory of Institutions and Individuals Relevant to the Project |
| 9 | First Working Group; Design of LME Monitoring Programme; Definition of Training Plan and Schedule |
| 10 | First Steering Committe Meeting; Project Ealuation; Approval of Work Plan |
| 11 | Establish Technical Publication Series |
| 12 | Survey of Land Based Sources of Pollution (Industrial Pollution) |
| 13 | Procurement of Fish Survey Equipment |
| 14 | Procurement of CPR |
| 15 | Support to NGOs for Awareness Generation and Dissemination of Information |
| 16 | Study of Mangroves and Effects of Pollution |
| 17 | Study Design for Pollution Monitoring in Lagoons |
| 18 | Investigation of Pollution in Lagoons and Other Coastal Areas |
| 19 | Purchase of Satellite Imagery for Mangrove Studies |



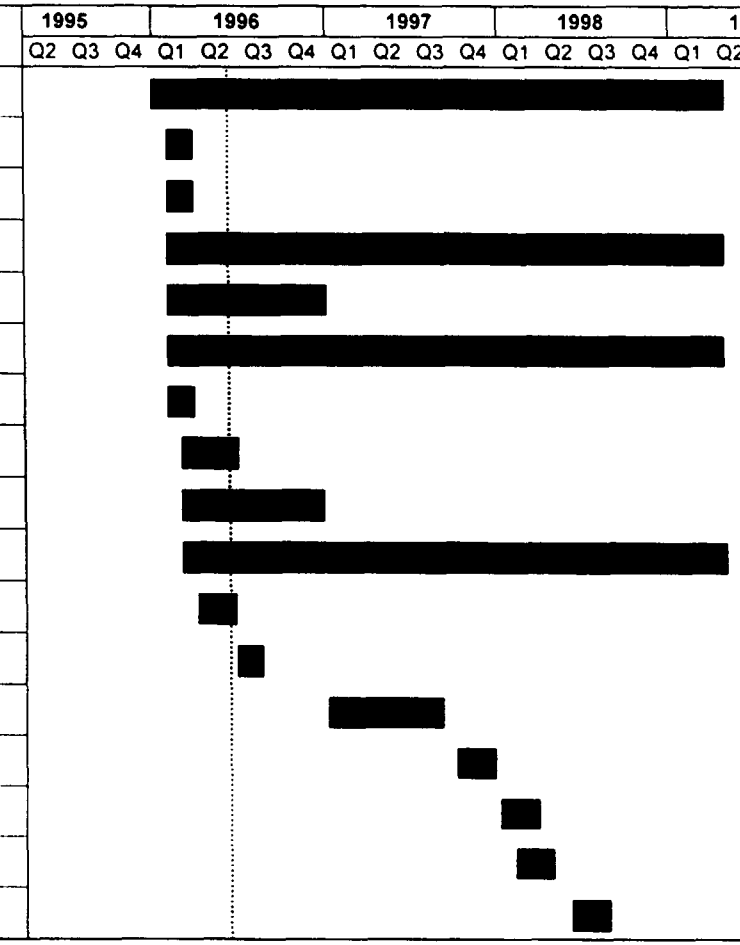
**Schedule of Activities - August 1995** — As defined in the Proposed 1995 Work Plan and Budget

| ID | Task Name |
|---|---|
| 20 | Establish Email network between countries |
| 21 | Preliminary Desing of ICAM Framework |
| 22 | Fish Trawl Training Planning Workshop (Accra) |
| 23 | Purchase of Expendable Equipment |
| 24 | Purchase of Non-expendable Equipment |
| 25 | Project Management Workshop; Elaboration of Project Monitoring and Evaluation Strategies |
| 26 | Training in Plankton urvey Techniques |
| 27 | CPR Electronic Training |
| 28 | Training in Zooplankton Identification |
| 29 | Collection of Plankton Samples (SAHFOS August 1996) |
| 30 | Regional Workshop on Standardisation of Methodologies for Pollution Studies |
| 31 | Identification of Hardware and Software Needs (GIS) |
| 32 | National ICAM Analysis |
| 33 | Design of GIS Modules |
| 34 | Meeting of the Ministers of the Environment |
| 35 | Participation in International Conferences |
| 36 | ICAM Regional Consultation (with IOC ICZM Workshop Conakry) |
| 37 | Training in Marine Survey Techniques (Incl. Bioacoustics) |
| 38 | Marine Resources Survey Support (Costs) |



**Schedule of Activities - August 1995** As defined in the Proposed 1995 Work Plan and Budget

| ID | Task Name |
|---|---|
| 39 | Marine Resources Survey Study Tours |
| 40 | Establishing Transects for Ships of Opportunity |
| 41 | Procurement of Satellite Images for Plankton Productivity |
| 42 | Purchase of expendable supplies for CPR |
| 43 | Case Studies on Treatment/Management of Waste |
| 44 | Deployment of CPR |
| 45 | Workshop Oceangraphic Survey, Living Resources Assessment, ICZM, Plans and Regulation |
| 46 | Purchase of Computer Equipment for Regional Information Network and GIS |
| 47 | Development of Training Modules |
| 48 | Make Operational Regional and National GIS |
| 49 | Elaboration of (National) ICAM and Country Profiles (with UNEP) |
| 50 | Regional Consultation on ICAM; Proposal for Regional ICAM Strategy |
| 51 | Regional Meetings to set Effluent Standards |
| 52 | Organisation of National Workshops for Policies, Strategies and Action (ICAM) |
| 53 | Preparation of Draft National ICAM |
| 54 | Study of Sustainable Financial Mechanisms |
| 55 | Series of Senior Coastal Zone Management, Policy and Strategy Regional Workshops |

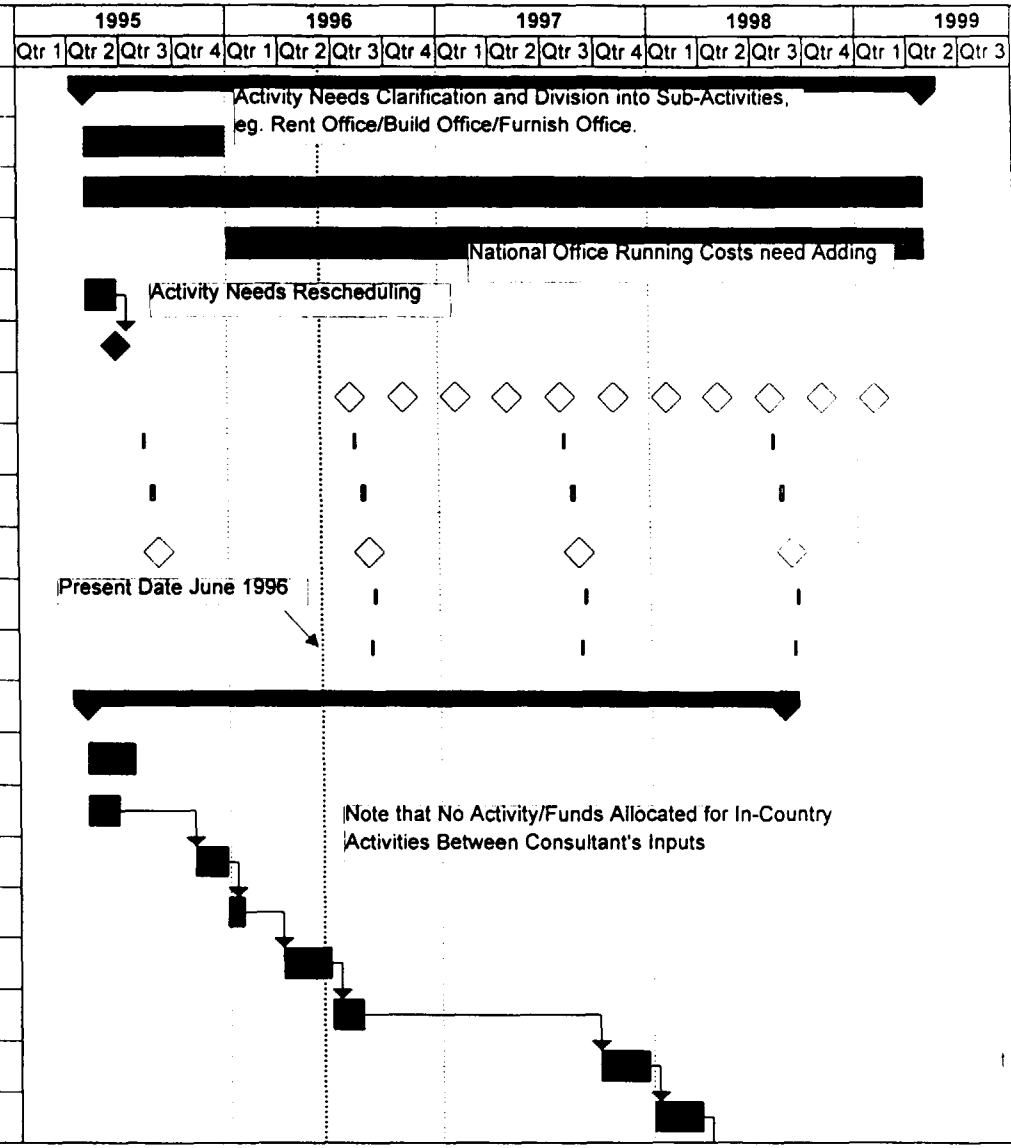


***Annex 7b: revised schedule to group tasks and show linkages in MSPROJECT***

## Schedule of Activities - Revised to Group Tasks and Show Linkages

Indicative Draft Prepared with the Regional Coordination Office June 1996

| ID | Task Name |
|---|---|
| 1 | **Regional Project Management** |
| 2 | Set Up RCC |
| 3 | Project Coordination and Management |
| 4 | National Coordination and Management |
| 5 | Prepare Public Awareness Brochure |
| 6 | ***Published and Distributed*** |
| 7 | **Quarterly Newsletter** |
| 19 | **Annual Working Group Meetings** |
| 24 | **Annual Steering Committee Meetings** |
| 29 | **Annual Reports** |
| 34 | **Tripartite Review** |
| 38 | **Meeting of the Ministers** |
| 42 | **Regional and National ICAM Strategy and Policy** |
| 43 | Prepare Country Status Reports (State of the Marine Environment) |
| 44 | Preliminary Design of ICAM Framework |
| 45 | Preliminary National ICAM Problem Analysis |
| 46 | ICAM Regional Consultation (with IOC ICZM Workshop Conakry) |
| 47 | National ICAM Problem and Strategy Analysis (with UNEP) |
| 48 | Regional Consultation on ICAM; Proposal for Regional ICAM Strategy |
| 49 | National Workshops to Agree ICAM Policies, Strategies and Action |
| 50 | Preparation of Draft National ICAM |




Note: Resource/Cost Allocation Incomplete - Additional Milestones Required for Progress/Completion

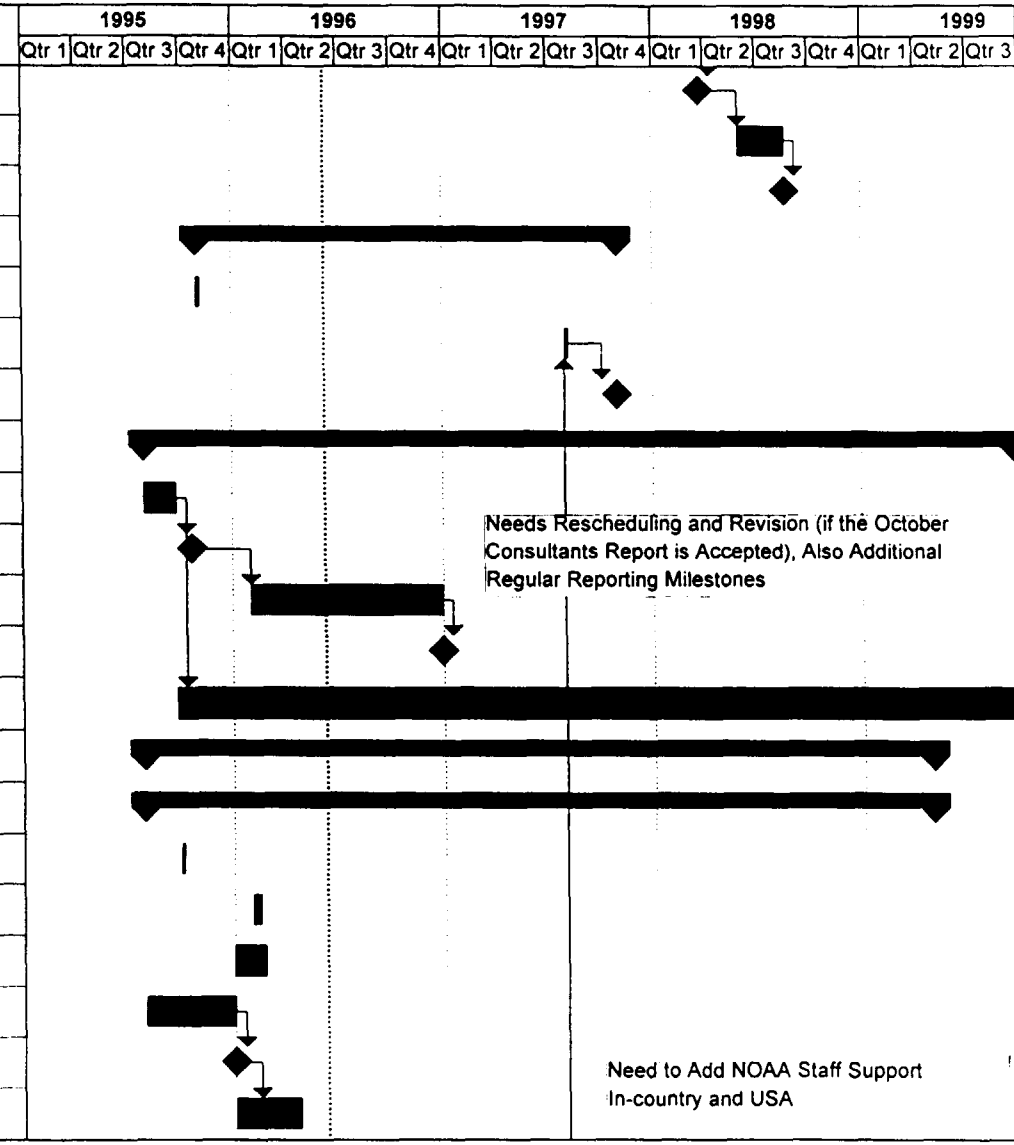
Task | Summary | Regular Report

Milestone | Regular Task

## Schedule of Activities - Revised to Group Tasks and Show Linkages

Indicative Draft Prepared with the Regional Coordination Office June 1996

| ID | Task Name |
|---|---|
| 51 | ***Draft National ICAM Policies Presented to Governments*** |
| 52 | Regional Strategy and Policy Workshop |
| 53 | ***Regional Strategic Action Plan Accepted*** |
| 54 | **Regional Standards - Quality and Methodology** |
| 55 | Regional Workshop on Standardisation of Methodologies for Pollution Studies |
| 56 | Regional Meeting to set Effluent Standards |
| 57 | ***Regional Effluent Standards Accepted as National Requirements*** |
| 58 | **Management and Treatment of Industrial Waste** |
| 59 | Survey of Land Based Sources of Pollution (Industrial Pollution) |
| 60 | ***Inventory of Land Based Sources of Pollution Published*** |
| 61 | Case Studies on Treatment/Management of Waste |
| 62 | ***Costed Plans for a Waste Management/Treatment Works Presented in Each Country*** |
| 63 | Bi-annual Pollution Sampling |
| 64 | **Monitoring Support** |
| 65 | **Marine Resource Monitoring** |
| 66 | Fish Trawl Training Planning Workshop (Accra) |
| 67 | Regional Workshop Including Living Resources Assessment Component |
| 68 | Training in Marine Survey Techniques (Incl. Bioacoustics) |
| 69 | Procurement of Fish Survey Equipment |
| 70 | ***Fish Survey Equipment Installed and Operative*** |
| 71 | Marine Resources Survey Support (Costs) |




Note: Resource/Cost Allocation Incomplete - Additional Milestones Required for Progress/Completion

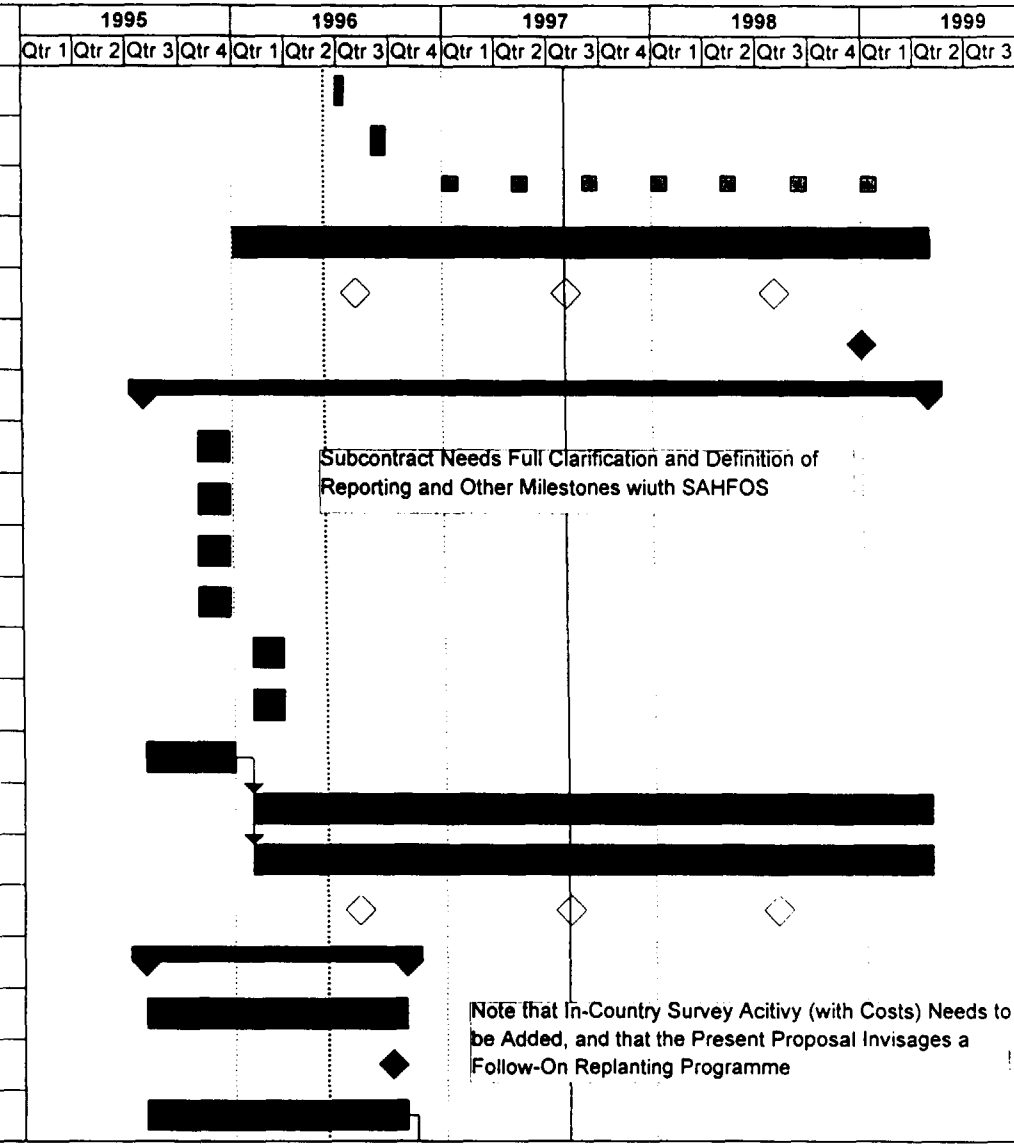
Task | Summary | Regular Report ◇

Milestone ◆ | Regular Task

## Schedule of Activities - Revised to Group Tasks and Show Linkages

Indicative Draft Prepared with the Regional Coordination Office June 1996

| ID | Task Name |
|---|---|
| 72 | Trawl Survey Cruise July 1996 |
| 73 | Trawl Survey Cruise September 1996 |
| 74 | **Regular Trawl Survey** |
| 82 | Marine Resources Survey Study Tours |
| 83 | ***Annual Assessment of Fish Resources*** |
| 87 | ***Report on Critical Biodiversity Sites Published*** |
| 88 | **Primary Production Monitoring** |
| 89 | Collection of Plankton Samples (SAHFOS August 1996) |
| 90 | Training in Zooplankton Identification |
| 91 | Training in Plankton Survey Techniques |
| 92 | CPR Electronic Training |
| 93 | Establishing Transects for Ships of Opportunity |
| 94 | Procurement of Satellite Images for Plankton Productivity |
| 95 | Procurement of CPR |
| 96 | Purchase of expendable supplies for CPR |
| 97 | Deployment of CPR |
| 98 | ***Annual Assessment of Productivity*** |
| 102 | **Mangrove Monitoring** |
| 103 | Purchase of Satellite Imagery for Mangrove Studies |
| 104 | ***Draft Mangrove Map Published*** |
| 105 | Study of Mangroves and Effects of Pollution |




Note: Resource/Cost Allocation Incomplete - Additional Milestones Required for Progress/Completion

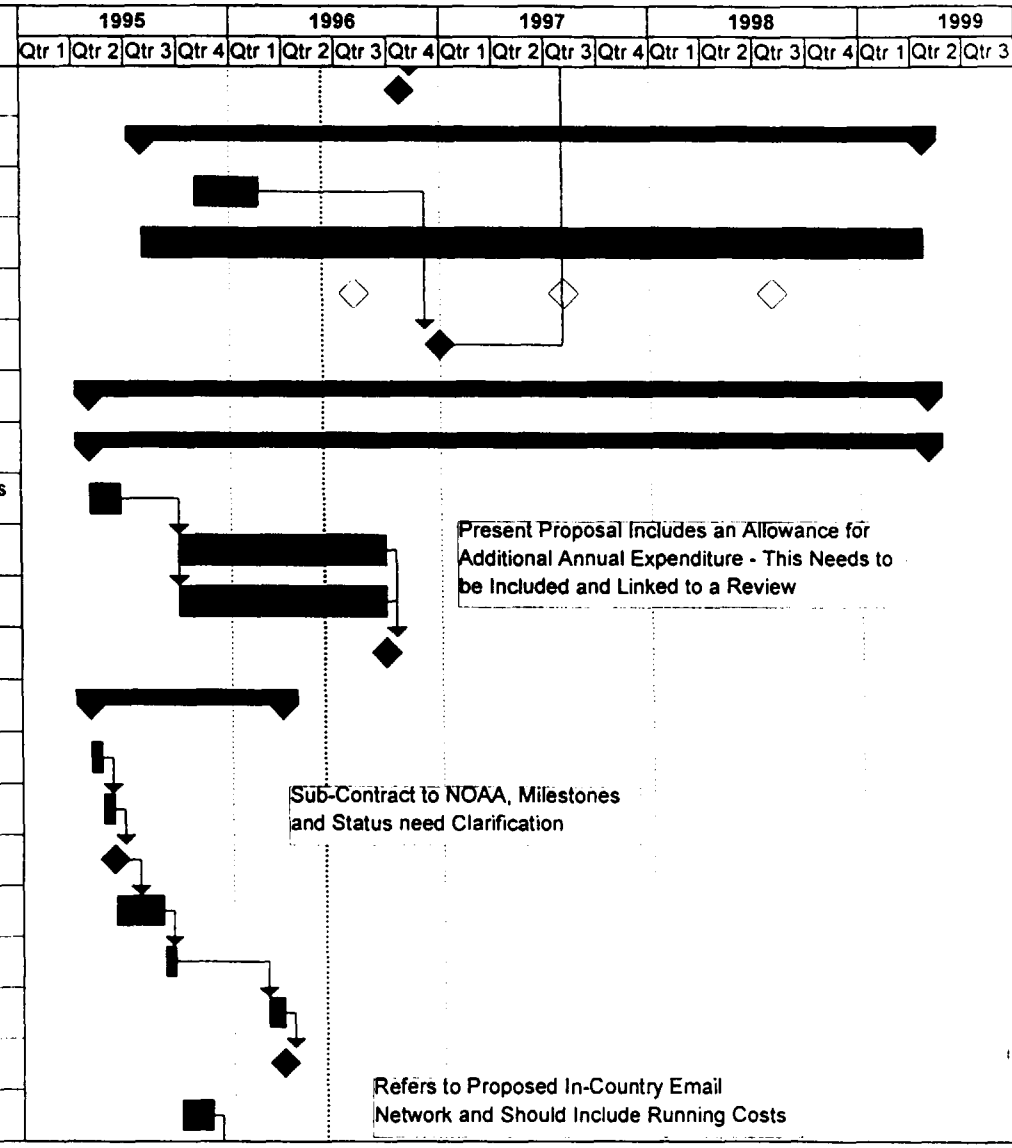
Task | Summary | Regular Report

Milestone | Regular Task

## Schedule of Activities - Revised to Group Tasks and Show Linkages

Indicative Draft Prepared with the Regional Coordination Office June 1996

| ID | Task Name |
|---|---|
| 106 | ***Revised Mangrove Distribution and Disturbance Map Published*** |
| 107 | **Lagoon Pollution Monitoring** |
| 108 | Study Design for Pollution Monitoring in Lagoons |
| 109 | Investigation of Pollution in Lagoons and Other Coastal Areas |
| 110 | ***Annual Report on Lagoon and Coastal Contaminant and Source Status*** |
| 114 | ***Proposal for Effluent Standards*** |
| 115 | **Institutional Strengthening** |
| 116 | **Training and Equipment** |
| 117 | Inventory of Available Resources/Check List of Necessary Equipment and Consumables |
| 118 | Purchase of Expendable Equipment |
| 119 | Purchase of Non-expendable Equipment |
| 120 | ***Equipment Installed in Institutions*** |
| 121 | **Bi-lingual Training Modules** |
| 122 | Assessment of Institutional Functions |
| 123 | Assessment of Capacity and Definition of Training Needs |
| 124 | ***Publication of Training Needs Assessment*** |
| 125 | Design of Training Modules |
| 126 | Design of Training Plan |
| 127 | Installation of Training Modules in Institutes |
| 128 | ***Training Modules Installed in Institutions*** |
| 129 | Establish Email network between countries |




Note: Resource/Cost Allocation Incomplete - Additional Milestones Required for Progress/Completion

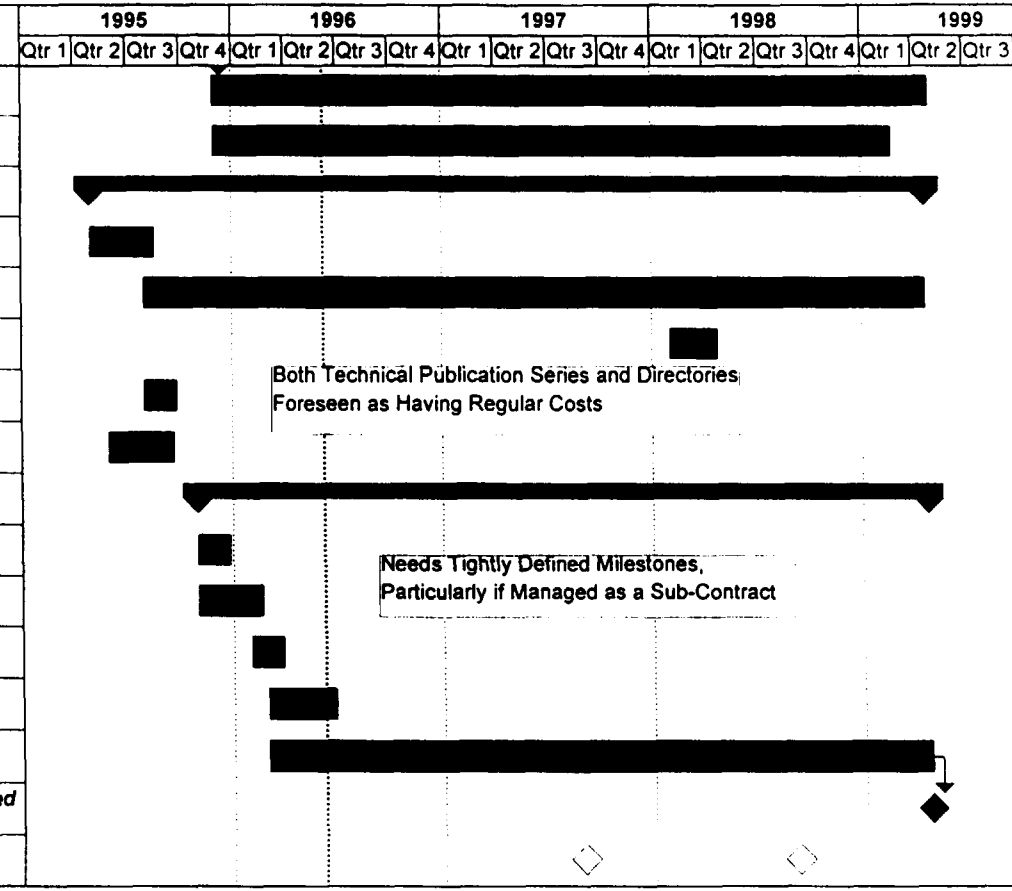
Task | Summary | Regular Report

Milestone | Regular Task

## Schedule of Activities - Revised to Group Tasks and Show Linkages

Indicative Draft Prepared with the Regional Coordination Office June 1996

| ID | Task Name |
|---|---|
| 130 | Email Connections Operating between Countries |
| 131 | Participation in International Conferences |
| 132 | **Institutional Structures** |
| 133 | Establish and Consolidate NGO Network Intra and Internationally |
| 134 | Support to NGOs for Awareness Generation and Dissemination of Information |
| 135 | Study of Sustainable Financial Mechanisms |
| 136 | Establish Technical Publication Series |
| 137 | Create a Directory of Institutions and Individuals Relevant to the Project |
| 138 | **Provision of GIS Planning Capacity** |
| 139 | Identification of Hardware and Software Needs (GIS) |
| 140 | Design of GIS Modules |
| 141 | Regional Workshop includind GIS |
| 142 | Purchase of Computer Equipment for Regional Information Network and GIS |
| 143 | Make Operational Regional and National GIS |
| 144 | ***Regional and National Managers Version of GIS Installed, Initial Data Set Provided*** |
| 145 | ***Annual Update of Spatial Data*** |




Note: Resource/Cost Allocation Incomplete - Additional Milestones Required for Progress/Completion

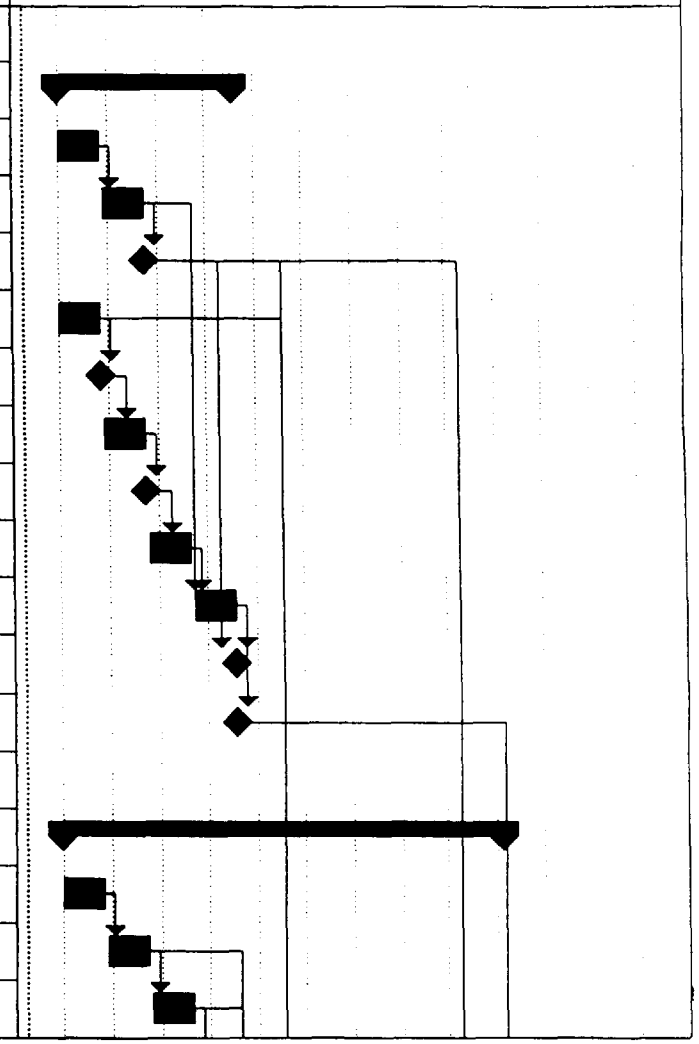
Task | Summary | Regular Report

Milestone | Regular Task

***Annex 7c: proposed structure for development of a hypothetical LME Management Programme in MSPROJECT***

**Development Objective: Sustainable Management of The Gulf of Guinea Large Marine Ecosystem**
**Project Objective: Develop Mechanisms for LME Management of International Trans-Boundary Issues Based on Consensus amongts LME Stakeholder Nations**

| ID | Objectives; Outputs and Activities |
|---|---|
| 1 | **Immediate Objective 1: With LME Stakeholder Nations Develop, Agree and Introduce Standardised Methodologies to Characterise the LME** |
| 2 | **Introduction of Standardised Methodologies Based on Initial Understanding of LME Assets and Processes** |
| 3 | Collation of Existing Knowledge on the LME Assets |
| 4 | Develop Model of LME Functionment |
| 5 | ***Working Hypothesis of LME Function and Synthesis of Existing Knowledge Published and Disseminated*** |
| 6 | Consult Primary Stakeholders on Information Needs to Characterise Ecosystem Primary Assets |
| 7 | ***Prioritised List of Information Needs (eg Productivity, Fish and Fisheries, Biodiversity)*** |
| 8 | Reconcile New Measurements Required with Methods Used at Present |
| 9 | ***Methodologies Prioritised and Coordinated*** |
| 10 | Training on New Methods of Measurement and Testing in LME |
| 11 | Incorporation of Test Data in LME Model and Data Base |
| 12 | ***Initial Characterisation and Prioritisation of Large Marine Ecosystem Assets and Main Sources of Variation Published and Disseminated*** |
| 13 | ***Methodologies Accepted and Monitoring Requirements Defined*** |
| 14 | **Immediate Objective 2: Within the LME, Identify and Harmonise Methods to Characterise, Quantify and Prioritise International Trans-Boundary Issues** |
| 15 | **Initial Characterisation and Prioritisation of International Trans-Boundary Issues** |
| 16 | Collation of Existing Knowledge of Current and Future Trans-Boundary Threats in the LME |
| 17 | Assess Trans-Boundary Threats in Terms of Disbenefits |
| 18 | Negotiate Consensus on Priority of Trans-Boundary Issues |

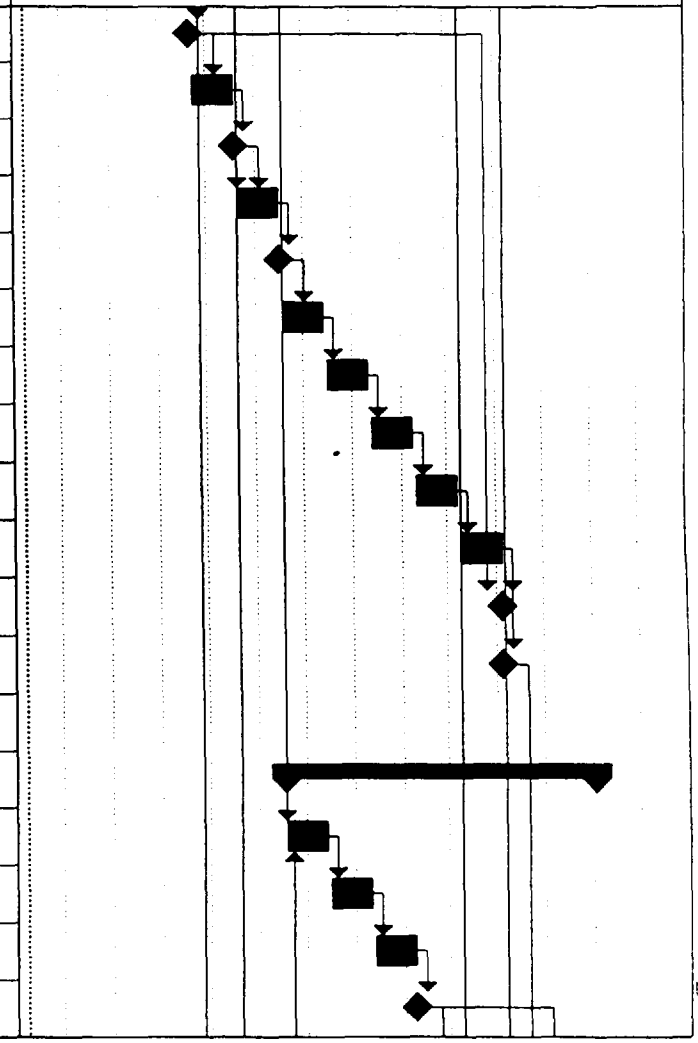


Time Scale Not Defined | Task | Milestone ◆ | Summary

**Proposed Structure for the Development of an LME Management Programme within the Context of a Strategic Action Plan** Sheet 1

**Development Objective: Sustainable Management of The Gulf of Guinea Large Marine Ecosystem**
**Project Objective: Develop Mechanisms for LME Management of International Trans-Boundary Issues Based on Consensus amongts LME Stakeholder Nations**

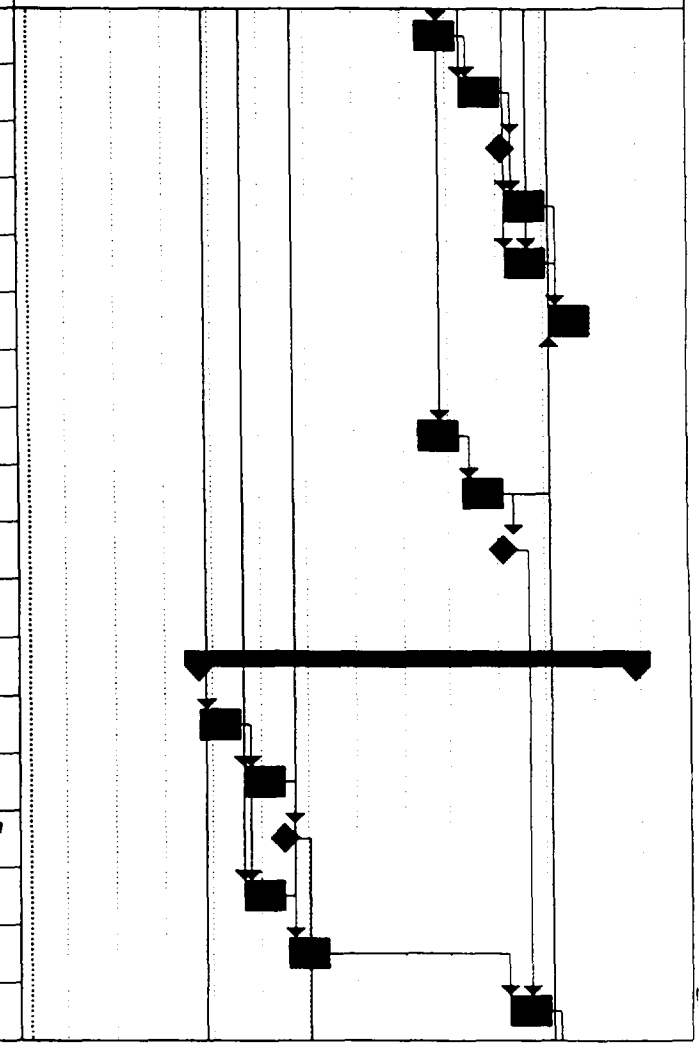
| ID | Objectives; Outputs and Activities |
|---|---|
| 19 | ***Working Hypothesis of Degree and Scale of Threat, and Synthesis of Existing Knowledge Published and Disseminated*** |
| 20 | Negotiate Consensus on Best Indicators of Priority Threats |
| 21 | ***Set of Priority Indicators of Threat Accepted*** |
| 22 | Identify Existing Case Studies to Quantify Disbenefits of Trans-Boundary Threats, and Synthesise to Provide a Ranked Overview |
| 23 | ***Critical Case Studies Reassessed and Combined, Published and Disseminated*** |
| 24 | Identify Practical and Compatible Methods for Quantifying the Impact of Trans-Boundary Threats (eg WHO, WACAF) |
| 25 | Compare Different Methods and Data Used to Measure and Monitor Indicators of Priority Threats |
| 26 | Seek Consensus on Harmonisation of Cost-Effective Monitoring of Priority Threats |
| 27 | Training on New Methods of Threat Assessment and Testing in LME |
| 28 | Prepare Cost-Effective Prioritised Monitoring Plan |
| 29 | ***Update of Compiled Threat Data*** |
| 30 | ***Methodologies Accepted and Monitoring Requirements Defined and Prioritised*** |
| 31 | **Immediate Objective 3: With Stakeholder Nations Identify, Standardise and Agree Priority Indicators of the Health of the LME and Improve National Institutional Utilisation to Monitor Them Using International Trans-Boundary Criteria** |
| 32 | **Coordinated System Established to Monitor Priority International Trans-Boundary Indicators of LME Health** |
| 33 | Assess Information Needs of Likely Decisions for Management of the LME Assets and Trans-Boundary Threats |
| 34 | Assess Capacities of Participating Institutions to Manage (Complex) Digital Data Sets |
| 35 | Assess National Data Policy and Data Processing Strategies of Participating Institutions and Develop an LME Data Exchange Network |
| 36 | ***Legal Agreement on Modalities of Data Exchange (Including Security Issues) and Priority Hardware, Software and Training Requirements for Effective Capacity Utilisation*** |



Time Scale Not Defined | Task | Milestone ◆ | Summary

**Development Objective: Sustainable Management of The Gulf of Guinea Large Marine Ecosystem**
**Project Objective: Develop Mechanisms for LME Management of International Trans-Boundary Issues Based on Consensus amongts LME Stakeholder Nations**

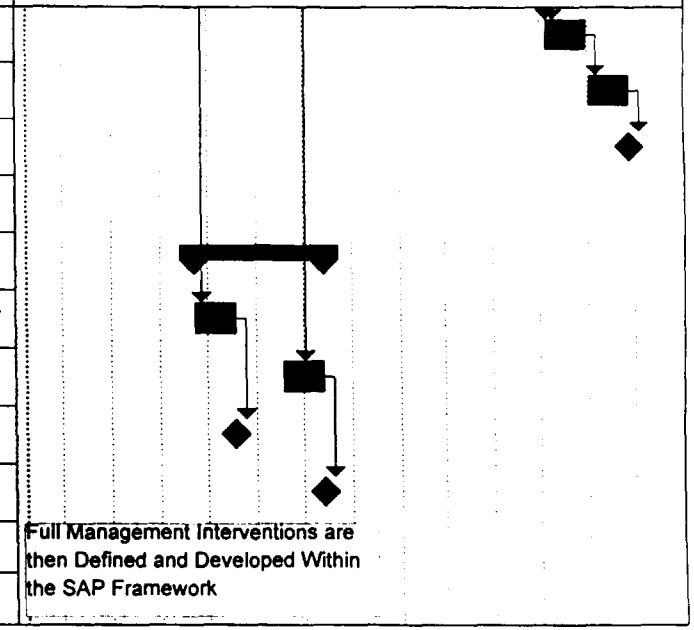
| ID | Objectives; Outputs and Activities |
|---|---|
| 37 | Define and Prioritise LME Data Sets and Dissemination Modalities |
| 38 | Contract Out Development of Initial LME Data Base from Readily Available Coarse Scale Data Sets |
| 39 | ***Initial LME Data Set Created and Disseminated*** |
| 40 | Assist in Identified Training and Enhancement Priorities, to Merge Existing Data into LME Data Sets |
| 41 | Define Priority LME Health Indicators |
| 42 | Assist Prioritised Monitoring Systems through Lead Institutions, with Data Exchange and Regional Analysis through Identified Reporting Pathways, Focussed on Trans-Boundary Issues |
| 43 | Assist Monitoring Programme |
| 44 | Develop Managers Decision Support System |
| 45 | Delliver Support System to Managers, and Provide Training |
| 46 | ***Management Support Data Systems in Place*** |
| 47 | **Immediate Objective 4: Develop Mechanisms within the Existing Framework for LME Stakeholder Nations to Address International Trans-Boundary Issues** |
| 48 | **Framework Established for Resolution of International Trans-Boundary Issues between LME Stakeholder Nations** |
| 49 | Identify Existing Legal Mechanisms to Address Priority Trans-Boundary Issues |
| 50 | Identify Constraints in Existing International Legal Mechanisms to Address Agreed LME International Trans-Boundary Priority Issues |
| 51 | ***Present a Report on Legal Constraints to National Governments for Consideration within a Strategic Action Plan*** |
| 52 | Identify Existing National Institutions, Policy, Planning, Regulatory and Management Structures to Meet Legal Committments with Respect to Priority International Trans-Boundary Issues |
| 53 | Propose Mechanisms and Clarify Responsibilities at the National Level for Realising Opportunities and Alleviating Constraints to Effective Resolution of International Trans-Boundary Issues |
| 54 | Obtain Agreement to, and Provide Support for Implementation of Proposed Mechanisms |



Time Scale Not Defined | Task | Milestone | Summary

**Development Objective: Sustainable Management of The Gulf of Guinea Large Marine Ecosystem**
**Project Objective: Develop Mechanisms for LME Management of International Trans-Boundary Issues Based on Consensus amongts LME Stakeholder Nations**

| ID | Objectives; Outputs and Activities |
|---|---|
| 55 | Introduce Formal Lines of Communication to Meet Obligations Specified in the International Framework |
| 56 | Identify Financial Support Mechanisms for Sustained Monitoring and Management of Priority Assets and Threats to Meet Existing national and International Legal Committments |
| 57 | ***Rationalised Mechanisms within Participating Countries for Planning and Management of Resources Related to Trans-Boundary Issues*** |
| 58 | **Immediate Objective 5: Obtain Consensus on Priority Needs for Concerted Activities Within a Strategic Action Plan** |
| 59 | **Programme of Prioritised and Concerted National and International Activities Defined within the SAP** |
| 60 | Define Future Concerted Actions Necessary to Address Priority Issues within the Existing International Legal Framework. |
| 61 | Propose Changes to the Legal Framework for Consideration within a Strategic Action Plan |
| 62 | ***Proposals Presented to National Stakeholders for Concerted Future Interventions*** |
| 63 | ***Proposals Presented to National Stakeholders for New or Strengthened Legal Frameworks to Address Priority Trans-Boundary Issues*** |
| | |
| | |




Time Scale Not Defined | Task | Milestone ◆ | Summary

# *Annex 8: ASPECTS OF INTEGRATED DATA MANAGEMENT AND GIS*

## Aspects of Integrated Data Management and GIS

1 **Introduction.** Within the GoG/LME project good information management [data generation, processing, integration, organisation, synthesis, dissemination and uptake] and its best use is of fundamental importance. In the original project document, decision support, information management and exchange of data sets are all identified as high priority activities. It is emphasised (immediate objective 2) that in order to understand the ecosystem, and monitor and manage its health, an essential requirement is effective integration of local data sets within the LME as a whole.

2 **To date,** little progress has been achieved with this important activity. Since the main purpose of a regional project (rather than parallel sets of independent national activities) is to be better able to address trans-boundary issues, it is of fundamental importance to the success of the project that data integration and information management issues be addressed appropriately and soon within the lifetime of the project. The purpose of these notes is to try and assist this activity forward along cost effective lines

3 Examination of documents available and discussions with participants suggests that while project management intends to augment the capacity of participating research institutes for in situ data processing using PC/GIS, the issue of integration at LME scale has been subsumed as part of the assumed role and purpose of the ill-defined 'regional centre' in Ivory Coast. There is need to go further than this if project objectives are to be achieved

4 **The Problem:** Mankind's collective technical capacity to generate large quantities of data is growing very rapidly: this is the global data explosion, one aspect of the information revolution. It is very easy to become overwhelmed with data in any large complex project like the GoG / LME. While our capacity to process data into information is also growing (but not quite so rapidly), effective integration of multiple diverse and after incomplete data sets covering multiple variables in several countries with different methods and standards is not trivial: it requires forethought as to present and likely future needs for information, foresight as to the way technologies are changing, and very good organisation, co-ordination and management of data and information.

5 **Traditional solution:** The old fashioned or 'mainframe' approach to information problems of this kind is to try and centralise data processing and integration of information. While such an approach does have certain advantages, it also suffers from being expensive, slow and often ineffective, especially if participating groups are reluctant to contribute their data sets for whatever reason. Sustaining this approach would be very difficult, even with long term commitment by all the countries concerned because outputs from such institutions rarely match the inputs necessary..

6 **More Modern Approach:** A more appropriate solution, given the rapidly expanding power of PC computers and PC-GIS would be:

6 **More Modern Approach:** A more appropriate solution, given the rapidly expanding power of PC computers and PC-GIS would be.

a) **Data processing:** To encourage a maximum of *in situ* data processing by those who know best the circumstances under which the basic data was collected [while ensuring that they have access to LME scale data sets for perspective].

b) **Meta-data base:** Develop a meta-database (i.e., distributed data sets with central index of all data sets available) of all data sets pertinent to the GoG / LME.

c) **Dissemination and exchange**: Collate and distribute LME scale information to all participating institutions so that analysis of local data sets can be undertaken within the perspective of the whole LME. This is particularly important for developing trust and effective exchange of the many the data sets generated by all participants including NOAA related activities.

d) **Standards:** Harmonisation of data standards while important, is difficult to impose at regional scale. Attempts need be made towards this objective. Co-operation can be encourage by effective data distribution (above) making the advantages of standardisation evident to all concerned.

e) **Integration:** Lead institutions, given better access to the growing range of data sets becoming available at LME scale, will be able to analyse and integrate data on a more or less continuous basis, enabling the transition from research to management response to be more smooth and effective.

7 **LME Resource Scale:** It is important that this regional project specifically addresses regional/trans-boundary issues. There are two steps the project should consider taking that are fundamental a] to understanding and monitoring the health of the whole LME, b] to the analysis and management of local data sets and c] to prioritisation of issues in the perspective of the whole resource. These steps, which do not appear to be included in current activities, are:

a) obtaining access to current NOAA POES satellite data for the larger LME area.
b) developing and disseminating background data sets for the larger LME area.

8 Current NOAA satellite data: The extent and nature of ocean upwelling in the LME is not well understood, but is a very important factor controlling primary productivity. [A recent project is Lake Malawi showed that a one week upwelling event in the northern quarter of the Lake doubled primary productivity for that whole year]. Upwelling can easily be monitored everyday over the whole LME and beyond using sea surface temperature data from the NOAA Polar operational environmental satellites. [There is evidence to suggest that the South Africans know more about the occurrence of upwelling events in the GoG than anyone in West Africa through effective use of this powerful data source]. Such data can be obtained over Internet from the NOAA Satellite Active Archive or caught directly from the satellite. [This data is effectively free. Receivers to obtain the full 1.1 km resolution data direct from the satellite onto PC are not expensive]. Having the daily 'synoptic' view of the LME

showing upwelling events and other variables is not only uniquely valuable for understanding mechanisms and giving the larger perspective, but also allows locally collected surface data sets to be set in the larger context and extrapolated and/or interpolated over larger areas with greater confidence. It is important that the project participants secure easy access to sources of current data from NOAA POES as part of the remote sensing component of the project (and not only historic CZCS data as suggested in project documents).

9 Background Data Sets: Much 'free' data already exists in global and regional data sets pertinent to the larger GoG LME area (which includes all the river catchments feeding into the Gulf). The project should seek a local agent capable of retrieving as much of this data as possible, putting it into standard data format on PC, and disseminating on suitable (virus free) electronic media to all participating institutions, as soon as possible. These background data sets (say 1:million scale, platte carre, 0°N to 20°N / 10°W to 15°W) would provide invaluable reference for participatory scientists to understand better the nature and scale of influences on the whole resource. It would also enhance standardisation and data exchange objectives if the LME scale data sets were supplemented with local and project supplied data, fitted to the same projection / format, collated and distributed at 6-monthly intervals. [The project will need to identify priority needs for LME scale data amongst its participants and seek the service of someone who knows about the availability of free data sets to advise on best methodology/ approach. Such data sets might initially include catchments, vegetation, land use, river flow regimes, climate, demographic and infrastructural information as well as historic LME normals, and become more specialised but not over-precise during the course of the project.]

10 In parallel, a meta-data base (or index) of all pertinent data sets held by participating institutions and other organisations (e.g., through AFRICAGIS) needs to be developed so that participants can determine where to find the detailed data that best meets their particular needs.

**Conclusion**

11 If the project fails to get a good grip on data processing and 'information management' soon, it will not be able to achieve its objectives.

12 Development of a 'regional data centre' is most unlikely to contribute anything during the lifetime of the project and will be very difficult to sustain (i.e., cost ineffective).

13 The project, while continuing along its present path towards supporting distributed data processing should take early steps to establish:

a) a meta data base covering all project activities and related data
b good access to current NOAA POES data for the LME
c) collection and distribution of existing data for the larger LME region
d) standards, protocols and methods for effective exchange and presentation of data / information within the GoG/LME

14 The project co-ordinator will need to take good advice in implementing activities towards the objectives of the project and incorporating the kind of ideas expressed above. Changes in information technology and data availability are very rapid and it is vitally important that the ways that information [produced by all the project activities] will ultimately be used is given priority consideration in any such activity. Progress to date does not lend confidence that this is always appreciated.

jbw lmcanex1

**NATURAL RESOURCES INSTITUTE**
**Central Avenue**
**Chatham Maritime**
**Chatham**
**Kent ME4 4TB**
**United Kingdom**

**Telephone**
**National 01634 880088**
**International 44 1634 880088**
**Fax**
**01634 880066/77**
**Internet http://www.nri.org**
**Telegrams**
**NRI Chatham**