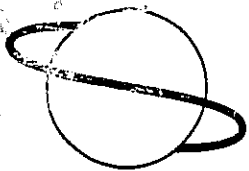


Int. Waters / Projects / GIWA 99/0061



GEF

MOHAMED T. EL-ASHRY
CHIEF EXECUTIVE OFFICER
AND CHAIRMAN

UNEP
Global GEF GEOPR. Office Facility
RECEIVED
ACTION NO REQUIRED YES
- 8 JAN 1999
WHAT.....
WHO.....
WHEN COMPLETED.....
CIRCULATE NO December 29, 1998
FILE IN **GIWA**

Dear Council Member:

UNEP, as the Implementing Agency for the project entitled, *Global: Global International Waters Assessment project*, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNEP procedures.

Over the next four weeks, the Secretariat will be reviewing the project document to ascertain that it is consistent with the proposal included in the work program approved by the Council in October 1997, and with GEF policies and procedures. The Secretariat will also ascertain whether the proposed level of GEF financing is appropriate in light of the project's objectives.

If by January 26 1999, I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member's view the project is not consistent with the Instrument or GEF policies and procedures, I will complete the Secretariat's assessment with a view to endorsing the proposed project document.

Sincerely,

Mohamed T. El-Ashry
Chief Executive Officer and
Chairman

Attachment: *Global International Waters Assessment project*

cc: Alternates, Implementing Agencies, STAP

AWESOME



United Nations Environment Programme

برنامج الأمم المتحدة للبيئة • 联合国环境规划署
PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT • PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE
ПРОГРАММА ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

GEF CO-ORDINATING OFFICE, P.O. Box 30552 Nairobi, Kenya • Tel: [254 2] 624165 • Fax: [254 2] 5808259

RECEIVED

98 DEC 21 PM 12:59
GEF SECRETARIAT

Mohamed T. El Ashry,
Chief Executive Officer and Chairman,
Global Environment Facility Secretariat,
1818 H Street NW,
Washington DC 20433 USA

December 5th 1998

Dear Mohamed,

I have pleasure in enclosing herewith the internal UNEP Project document for the Global International Waters Assessment approved by the GEF Council in November last year.

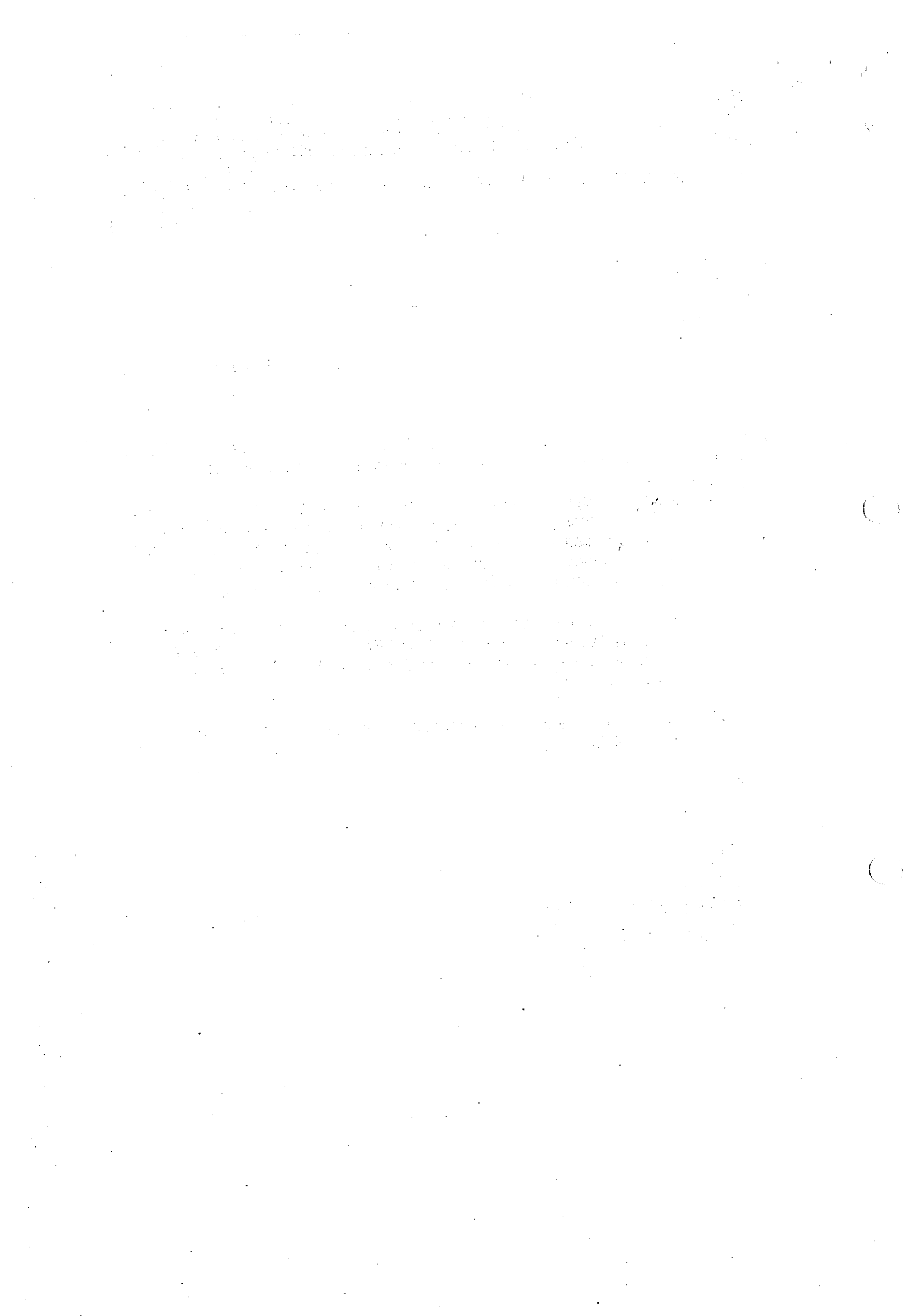
The full appraisal for this project has now been completed and agreements reached that secure the required level of co-financing set by the GEF Secretariat at the time of its inclusion in the Work Programme. I am pleased to be able to inform you that negotiations with additional donors and co-financiers are on-going and that discussions would indicate that significant additional sums in both cash and in-kind are likely to be committed in the near future.

The document addresses all the concerns raised by the GEF Council members during their discussion, and those raised by the STAP Roster Expert Review. The document is, in the view of UNEP, now ready for circulation to the GEF Council members for final clearance in accordance with agreed procedures.

We hope that clearance may be effected in order that this important activity may commence as promptly as possible.

Sincerely,

Ahmed Dloghraf,
Executive Coordinator
UNEP GEF Co-ordination Office.



**UNITED NATIONS ENVIRONMENT PROGRAMME
PROJECT PROPOSAL
SECTION 1 – PROJECT IDENTIFICATION**

1.1 Title of Subprogramme: Environmental Assessment and Early Warning

1.2 Title of Project: Global International Waters Assessment

1.3 Project Number: GF/

1.4 Geographical Scope: Global

1.5 Supporting Organisation: University of Kalmar, Sweden

1.6 Duration of Project: 50 months
Commencing: November 1998
Completion: December 2002

1.7 Cost of Project: (Expressed in US \$)

	US \$	%
Cost to the Environment Fund: in cash ¹	272,000.00	2.1
In kind	580,000.00	4.4
Cost to the GEF Trust Fund	6,495,000.00	49.3
Cost to counterpart contributions ²	4,618,000.00	35.1
Cost to the Supporting Organisation ³	1,200,000.00	9.1
Total cost of the Project⁴	13,165,000.00	100.0

Signatures:

For the University of Kalmar

For the Environment Fund of UNEP

Örn Taube
Vice Chancellor
University of Kalmar

Edmundo Ortega, Chief,
Budget & Fund Management Service,
UNON.

Date:

Date:

¹ Release of these funds is conditional upon availability of financial resources see sub-paragraph 7.5 of this document.

² These in cash and kind contributions are not administered by UNEP. See section 7.4 for details.

³ Valuation of the in kind contribution for the provision of institutional infrastructure.

⁴ Grand Total is lower than in the budget of the GEF Project brief submitted to the Council, due to the fact that the valuation of the Infrastructure provided by the Supporting Organization is lower than originally anticipated. See Table 2 B (page 12) for a revised budget.

GEF PROJECT BRIEF COVER PAGE
AS APPROVED BY THE GEF COUNCIL MEETING NOVEMBER 1997

Project Title:	Global International Waters Assessment (GIWA)
Implementing Agency:	United Nations Environment Programme (UNEP)
Country:	Global
Host Country:	Sweden
Country Eligibility:	Not applicable
GEF Focal Area:	International Waters, with relevance to aquatic biological diversity
Operational Programs:	Operational Programs 8, 9 & 10 (with particular relevance to the Regional/Global Technical support component of OP 10) and relevance to Operational Program 2
Project Linkage to National priorities:	see paragraph 1.4
Executing Agencies:	UNEP in collaboration with the University of Kalmar, Sweden, GESAMP ⁵ , SCOPE ⁶ , ACOPS ⁷ , WWC ⁸ , ICSU ⁹ , NOAA ¹⁰ and other Regional Intergovernmental Bodies and National Institutions

Summary of Project Rationale, Objective and Expected main outcomes

Rationale:

Lack of an International Waters Assessment comparable with that of the IPCC¹¹, the Global Biodiversity Assessment, and the Stratospheric Ozone Assessment, is a unique and serious impediment to the implementation of the International Waters (IW) Component of the GEF, since there exists no basis on which to identify areas of global priority for GEF intervention. There is a need for a globally coherent incremental study of transboundary water issues, based on the many existing, but thematically narrow studies at national, regional and global levels. The GEF is in a unique position to facilitate such a study by assembling groups of specialists at a regional level following comparable methodologies to investigate the ecological status of international waters and the causes of degradation. From the different regional and sub-regional assessments a global picture will emerge.

Objective:

The overall objective is to develop a comprehensive, strategic framework for the identification of priorities for remedial and mitigatory actions in international waters, designed to achieve significant environmental benefits, at national, regional and global levels.

Expected Outcomes:

Strategic information for GEF use at a programmatic level through the provision of a framework for the identification of regional and global priority areas for the consideration of the GEF and its partners in the focal area of international waters, and decision making concerning appropriate management interventions, including identification of more sustainable approaches to the use of water and its associated resources. Preparation of approaches for the elucidation of incremental cost analyses, and protocols for the conduct of causal chain and transboundary diagnostic analyses in GEF-IW projects. Increase in leveraged co-financing.

Incremental costs and Total Budget	(US \$ million)
Total Project Cost:	US \$ 14,119,000
GEF Grand Total Cost (including PDF):	US \$ 6,785,000
GEF Financing:	US \$ 6,495,000
Co-financing:	US \$ 7,334,000
Other Associated Financing:	
Baseline financing (estimated):	US \$ 12,500,000
	US \$ 200,000,000 ¹²

IA Contacts: Executive Co-ordinator, UNEP/GEF Co-ordination Office.

⁵ Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection supported by the International Maritime Organization (IMO); the Food and Agriculture Organization of the United Nations (FAO); the Intergovernmental Oceanographic Commission (IOC) of UNESCO; the World Meteorological Organization (WMO); World Health Organization (WHO); the International Atomic Energy Agency (IAEA); the United Nations Division for Ocean Affairs and the Law of the Sea; and the United Nations Environment Programme (UNEP).

⁶ Scientific Committee on Problems of the Environment (of ICSU);

⁷ Advisory Committee on Protection of the Sea

⁸ World Water Council

⁹ International Council of Scientific Unions

¹⁰ National Oceanic and Atmospheric Administration of the US Department of Commerce

¹¹ Intergovernmental Panel on Climate Change

¹² This estimated baseline includes the cost of data and information from past assessments. The costs of ongoing global sectorial and thematic assessments are estimated at 15 million US \$. Costs of ongoing national, sub-regional and regional assessments that may contribute to GIWA are not included (Section 8 and Annex 1).

1. Background

1.1 A GEF objective in the International Waters focal area is *"to contribute primarily as a catalyst to the implementation of a more comprehensive, ecosystem-based approach to managing international waters and their drainage basins as a means to achieve global environmental benefits"*. The present proposal addresses the issues of priority setting within the context of the International Waters Portfolio of the GEF and seeks to elucidate the societal causes of water-related issues and problems.

1.2 The GEF Operational Strategy identifies four major areas of concern relating to International Waters, including: *degradation of the quality of transboundary water resources; physical habitat degradation; introduction of non-indigenous species; and excessive exploitation of living and non-living resources*. Whilst these major concerns are, if not universal then at least widespread, their extent and relative importance varies considerably from geographic region to region. The Operational Strategy states that *"GEF's activities will focus on seriously threatened waterbodies and the most imminent transboundary threats to their ecosystems"*. It also identifies certain problems including persistent organic pollutants (POPs), thought to be of global significance but requiring further assessment. Deciding on which waterbodies and which threats should receive priority attention is difficult in the absence of a comprehensive assessment of the ecological status of international waters and related causes of degradation.

1.3 At its fourth meeting in Nairobi, 15-17 February 1996, the GEF Scientific and Technical Advisory Panel (STAP) noted that: *"Lack of an International Waters Assessment comparable with that of the IPCC, the Global Biodiversity Assessment, and the Stratospheric Ozone Assessment, was a unique and serious impediment to the implementation of the International Waters Component of the GEF"*. STAP further noted that *"While there exist a number of assessments of separate aspects of International Waters, there is no holistic assessment of the kind needed to develop an intergovernmental consensus on priorities for action by the GEF"*.¹³ Subsequently during the sixth STAP session, in Amsterdam, 9-12 September 1996, it was agreed that there is a necessity for a region by region assessment of water systems which, taken together, would place these issues within a global context. In the absence of an overall, comprehensive, global assessment of the nature, extent, and distribution of particular issues and problems affecting international waters, and their societal causes, the strategy for GEF in the International Waters portfolio lacks adequate criteria for priority setting. Selection of projects in this portfolio to date has been undertaken in the absence of a clear understanding of the global priorities for action and information concerning the optimum sites for maximising global environmental benefits.

1.4 The urgent need for an assessment of the causes of environmental degradation has been highlighted in recent international fora such as the **UN Special Session on the Environment (UNGASS) 23 June 1997**, where commitments were made regarding the work of the UN Commission on Sustainable Development (UNCSD) on freshwater in 1998 and seas in 1999. In two recent international Declarations, the **Potomac Declaration on Oceans and Security (Washington, D.C., May 21, 1997)**, and the **Stockholm Statement on Interaction of Land Activities, Freshwater and Enclosed Seas (Stockholm, August 14, 1997)**, specific emphasis was placed on the need for a assessment which examines the root causes of degradation of the transboundary aquatic environment and options for addressing them. In his recent speech to the UN General Assembly, the Secretary General, Mr. Kofi Annan noted the achievements of GEF and the need to replenish the fund. He also stressed the importance of UNEP's role *"as the forum for development of international policy, law and negotiation and implementation of co-operative arrangements to deal with environmental issues, as a bridge between science and policy-making"*. In the light of all of these developments, this assessment would appear to be both appropriate and timely.

1.5 The GEF is in a unique position to facilitate such an assessment by assembling groups of specialists at a regional level following compatible methodologies to investigate the ecological status of international waters and the causes of degradation. From the different regional and sub-regional assessments a global picture will emerge. The challenge faced by GIWA though timely, is onerous. In effect, GIWA, through the GEF should be in a position to provide technical

¹³ UNEP/GEF/STAP/4/6

information necessary to support much of the political dialogue undertaken within the forum of the UNCSO as a follow-up to initiatives such as UNGASS.

2. Project Rationale and Objective

2.1 Lack of an International Waters Assessment comparable with that of the IPCC, the Global Biodiversity Assessment, and the Stratospheric Ozone Assessment, is a unique and serious impediment to the implementation of the International Waters (IW) Component of the GEF, since there exist no basis on which to identify areas of global priority for GEF intervention. There is a need for a globally coherent incremental study of transboundary water issues, based on the many existing, but thematically narrow studies at national, regional and global levels.

2.2 The overall objective is to develop a comprehensive strategic assessment that may be used by GEF and its partners to identify priorities for remedial and mitigatory actions in international waters, designed to achieve significant environmental benefits, at national, regional and global levels.

2.3 To meet this objective the project aims to produce a fully comprehensive and integrated Global International Waters Assessment, encompassing the ecological status of and causes of environmental problems of transboundary freshwater basins and their associated coastal and ocean systems. The GIWA will undertake this from the perspectives of: water quality and quantity; associated biodiversity and habitats; their use by society; the societal causes of the regionally identified issues and problems; and scenarios of future conditions based on projections of demographic, economic and social changes associated with the process of human development.

3. Baseline Course of Action

3.1. The most recent comprehensive global assessment of the environmental problems of the Oceans is that published by GESAMP¹⁴ in 1990. The recently completed Comprehensive Freshwater Assessment (1997), undertaken by relevant UN organisations and the Stockholm Environment Institute at the request of the UNCSO, provides an overview of freshwater resources and their present use. This assessment provides scenarios of the probable situation in 2025, based on existing driving forces of change and as such is the first assessment in this area to take a forward looking approach. However it is inadequate in the assessment of transboundary freshwater basins and associated transboundary groundwaters.

3.2 Several thematic assessments and compilations of data relevant to the GEF International Waters portfolio are available or planned by the FAO, IOC, IUCN, WWF, UNEP, World Bank, SCOPE, GESAMP, GEMS, IGBP/LOICZ¹⁵, and World Water Council, amongst others, whilst numerous regional and sub-regional assessments of freshwater and marine problems are available, including the transboundary diagnostic analyses completed to date within the framework of GEF project activities. On-going regional assessments of the impact of land-based activities on the marine environment are also being conducted within the framework of the GPA/LBA¹⁶. A preliminary bibliography prepared during the PDF-B phase lists several hundred relevant assessments and access points for meta-data catalogues and holdings, providing a substantial basis on which to build a comprehensive global assessment of International Waters issues and problems.

3.3 Past assessments have generally lacked the holistic, systems approach advocated by the GEF, since they have concentrated on specific issues such as biodiversity, or have treated freshwater independently of the associated marine and coastal systems. Assessments tend to be sectorial and it has been difficult to achieve a holistic approach with the existing international institutional structures. Such activities will continue in the absence of the overarching framework that will result from this project which is itself an incremental activity that is unlikely to be initiated without the intervention of the GEF.

¹⁴ GESAMP: State of the Marine Environment. UNEP/RSRS No. 115, UNEP 1990.

¹⁵ Food and Agriculture Organization of the United Nations; Intergovernmental Oceanographic Commission of UNESCO; IUCN - The World Conservation Organization; World Wildlife Fund; Global Environment Monitoring System (of UNEP); International Geosphere-Biosphere Programme, Land Ocean Interactions in the Coastal Zone.

¹⁶ Global Programme of Action for the Protection of the Marine Environment from Land-based Activities

4. Alternative Course of Action

4.1 Description of the GEF Intervention

4.1.1 The geographic scope of the project is **global with a defined regional focus**. It is anticipated that governments having interests in transboundary fresh waters (both surface and subsurface) and marine waters and their dependent resources will participate through **involvement of national scientific and technical experts, managers and policy makers**.

4.1.2 The scientific and technical scope of the project is primarily defined by the **linkage between transboundary freshwater and marine systems**, but encompasses other issues relating to freshwater and marine systems separately. The substantive scope of the project includes an integrated assessment of the environmental, managerial, scientific, legal, social and economic aspects of water related environmental problems.

4.1.3 GIWA is **not foreseen as primarily a data gathering exercise**. It will gather only that information required to complete a stepwise, iterative analysis of transboundary water-related problems and their causes. This information **will be used to generate scenarios** reflecting continuation of current practices, and adoption of environmentally sustainable alternatives. The analysis requires a broad base of information from the physical and social sciences, that accounts for the geographical and geopolitical peculiarities of countries and regions and reflects the different rates of change in social, cultural and economic practices characterising the process of "human development".

4.1.4 On the one hand, GIWA must conduct a **globally coherent assessment of the ecological status of transboundary waters**. On the other, it will probe **societal causes** of the identified issues whether or not these are geographically located on the rivers or seas themselves. It will quantify some of the hidden environmental costs or externalities of existing domestic, industrial, agricultural and transport practices and compare prevailing practices with more environmentally, socially and economically, sustainable approaches.

4.1.5 Specifically, the scope of the project will encompass the completion of: a regional (region by region) assessment of the ecological status and causes of degradation of transboundary water systems, including cross-cutting elements of widespread practices; assessment of societal causes of identified major concerns and principal issues; up-to-date, issue-related global reviews of selected issues of relevance to International Waters; a global overview of inter-regional transboundary issues in the area of international waters; and scenarios of future trends and state of the aquatic environment and resources under various planning bounds of social and economic change and development

4.2 GIWA Activities Leading to Expected Outcomes and Results

4.2.1 The pre-project preparatory phase

4.2.1.1 This phase, **already completed**, had the main objectives of defining the thematic analytical scope of GIWA and establishing the operational geographic units of assessment, the documents available from this phase are listed in Annex I. The first expert group examined internationally recognised water-related environmental issues with transboundary consequences at the regional or global levels (Annex II); identified the primary socio-economic forces causing water related environmental degradation (Annex III); and developed a matrix illustrating the interactions between the major concerns and principal issues (Annex IV). The group was able to evaluate suitable approaches for examining the status and causes of the identified problems through a "causal chain approach" and demonstrate how alternatives and options for subsequent action involving the GEF may be identified (Annex V). The approach is applicable, with small variants, to all types of international waters: seas; rivers; lakes; and groundwaters. It needs to be extended to examine uncertainties, policy options and barriers to addressing the causes, but the power and utility of the methodology are amply illustrated.

4.2.1.2 The second expert group developed the geographical framework for GIWA. The task was to divide the world into a series of areas, based upon a mix of environmental, biogeographical and geopolitical factors which seemed the most appropriate for the purposes of this project. The main determining factor was the integrity of each unit in terms of encompassing

the major causes and effects of environmental problems associated with each transboundary water area, whether river basin, groundwater, lake or sea. In many cases a drainage area and associated marine basin (often a Large Marine Ecosystem) were the most appropriate units. Sixty six of these sub-regions were identified and grouped into nine Regions, for the convenience of project management only. **The 66 sub-regions will be the basic units of assessment of GIWA and are listed in Annex VI.**

4.2.1.3 In order to illustrate the plausible utility of GIWA's analytical approach, a preliminary table (Annex VII) was developed as an indication of the potential regional importance of each of the major water-related environmental concerns and principal issues identified by the first expert group. This table provides a means of scoping the full assessment and will be further developed during execution of GIWA, through the iterative analysis of quantitative information and scientific reviews, gradually becoming more objective and detailed in its geographical coverage.

4.2.2 The Establishment of the GIWA network and development of an assessment protocol¹⁷

4.2.2.1 The network established to accomplish the work of GIWA (**the GIWA network**) will consist of national experts and institutions, regional and global collaborating bodies organised around the geographic units of assessment and grouped into nine major regions. A preliminary list of possible collaborating agencies is provided in Annex VIII. Wherever and whenever possible existing regional and thematic networks will be used. Overall co-ordination of the work of the participating individuals and institutions will take place through **Focal Points** for each of the sub-regions who will participate in the work of **Nine Regional Task Teams**, of (between 10 and 15 members) supported and assisted by a **Core Team** of (between 4 and 6) full-time specialists covering both regional and thematic concerns. The Core Team will be advised by, and report to, a **Steering Group** of (between 12 and 15) senior scientists and representatives of the major co-sponsoring organisations. Individual members of the Core Team will function as links to, and focal points for, one or more of the Regional Task Teams. During the first three months, the primary task of the Core Team will be to build upon the work undertaken during the preparatory phase, establish the major components of the network and prepare recommendations concerning the establishment of the components of the GIWA network, for consideration by the Steering Group.

4.2.2.2 The first meeting of the Steering Group, will be convened within four months from commencement of the project to agree upon the **principal components of the GIWA Network**, namely the composition of the Regional Task Teams, and the regional organisations hosting the Task Teams. The network is intended to be "open-ended", to consist, at least in part of a network of networks and is expected to grow according to the needs and in-kind contributions of sponsors and participants. During the subsequent six months, the Core Team will convene the necessary expert consultations for the completion of a preliminary **GIWA Assessment Protocol** and will convene first meetings of all Regional Task Teams to review the protocol. They shall also draw upon the experience of the regional teams in order to design an approved methodology for conducting causal chain analyses to examine societal root causes of water related environmental problems and guidelines for the conduct of transboundary diagnostic analyses - a primary GIWA product applicable to GEF IW projects particularly in the GEF Operational Programme 8. In addition, the expert consultations will identify the needs for establishment of **Thematic Task Teams** and should also identify needs for case studies where strictly necessary, particularly in the socio-economic domain. The Thematic Task Teams may need to meet twice during the first year in order to assist the Core Team with the development and finalisation of the assessment protocols. The Regional Task Teams, will convene once during the first year and working closely with the Core Team shall complete the initial products of GIWA by the end of project year one.

4.2.2.3 **The anticipated products at the end of year one are:** a global network of collaborating institutions/organisations and individuals in governmental and non-governmental organisations; a meta-data catalogue of existing/completed projects in all regions; a GIWA assessment protocol including an agreed methodology for conducting causal chain analyses to examine societal root causes of water related environmental problems, an agreed methodology for conducting transboundary diagnostic analyses at regional scales; detailed approaches to the

¹⁷ See section 8. Institutional Framework for detailed information on the various components of the GIWA Network

application of incremental cost analysis in International Waters projects; a preliminary analytical tool for the analysis of the ecological status of water-related environmental issues and their societal causes (this will subsequently be a component of all TDAs).

4.2.3 The analytical phase of GIWA

4.2.3.1 During the second twelve months the national experts and institutions shall **gather and analyse the information**, necessary for applying the GIWA assessment protocol at the sub-regional level. They will be assisted in this task by the Regional Task Teams, the Core Team and where necessary the Thematic Task Teams. Based on the products of the sub-regional assessments, the Thematic and Regional Task Teams, together with the Core Team shall commence, and as far as possible complete the regional level assessments. This process will be designed in an iterative manner in order to review the quality and relevance of the information gathered and to ensure comparability and compatibility of the analyses. There will be differences in the approach required in each region as some regional studies have already consolidated the information required by GIWA, whereas others have very scarce and fragmented information.

4.2.3.2 **GIWA products** resulting from these activities will include: regional meta databases and bibliographies to be issued on CD ROM; contributions to the Internet site prepared by IW-learn; approximately 66 sub-regional reviews of the transboundary ecological status and major water related concerns and principal issues, including analyses of their causes; published guidelines for preparation of a causal chain analysis for use in GEF regional level transboundary diagnostic analyses; guidelines for the application of transboundary diagnostic analyses in GEF IW projects particularly in the GEF Operational Programme 8; and regional reviews of issues and their societal causes for widespread dissemination.

4.2.3.3 Of particular concern during this phase will be the information requirements for socio-economic analyses as these will be the major driving forces built into the possible scenarios. A major task will be to dis-aggregate existing data (generally assembled on the basis of geopolitical divisions and without regard to their relationship to the environment and the distribution of natural resources) and regroup it according to environmentally relevant geographical areas describing transboundary systems. A **Thematic Economic Task Team** will be established to: oversee this work; provide advice and assistance to some regions; and to ensure consistency in the application of the GIWA assessment protocol. Simultaneously the Core Team, assisted by the Thematic Task Teams will develop the draft methods and approaches to be used during the predictive and policy options analysis phase.

4.2.3.4 It is anticipated that the **Regional Task Teams** will need to meet an average of two times during the analytical phase. Much of the work will depend on day-to-day electronic mail communications established by the Regional Task Team members and the individual experts working at national level. It is hoped that some of the GIWA donors may be prepared to establish scholarships at relevant postgraduate research departments in order to provide additional dedicated intellectual input to the GIWA process. In addition to the meetings of the Regional Task Teams, there will be a number of **Thematic Task Team** meetings in which experts from the regional groups, and outside specialists will meet together, in order to: discuss progress with implementation; facilitate improved quality of GIWA products; and to bring peer pressure to bear on any team that is performing inadequately. The participation of experts from established international bodies such as ICSU and GESAMP will be essential in this work. The expertise needed to cover transboundary freshwater, marine, coastal and groundwater issues as well as societal causes of degradation and driving forces of change, cannot presently be found within any single international body.

4.2.3.5 The GIWA Core Team shall ensure that the necessary support is provided to the Regional and Thematic Task Teams during this phase of the project. They shall facilitate the provision of additional expertise to regions requiring such support and actively promote GIWA to additional potential donors.

4.2.3.6 The Thematic Task Teams in collaboration with the Core Team, shall begin the elaboration of a series of global reviews based on the outcomes of the work of the UNCSO. These will be developed through integration of information from the regional studies and historical information and will be completed and published in the third year of GIWA. In some cases, these reviews will be based upon existing programmes/reviews conducted by the

contributors to GIWA. The work of existing bodies will not be duplicated and GIWA will serve to provide added value where possible.

4.2.4 The predictive/policy options analysis phase

4.2.4.1 During the third year of GIWA, dedicated to scenario development and policy options analysis, the work of the Task Teams and the Core Team will be focused upon the **evaluation of alternative scenarios**. The analyses will incorporate a number of scenarios developed on the basis of projected actions taken to address the identified societal causes of environmental degradation. The initial starting point for these scenarios will be "current trends". In effect, from an economic perspective, the analyses will consider the implications of measures to internalise environmental externalities in the evaluation of alternative options for water use. Different alternative approaches will be considered in order to reach a given objective (alternative scenarios, policy changes, investment in technological solutions, etc.). From a social perspective, the analysis will consider the incremental cost of measures to encourage the modification of unsustainable social and economic development trends. The **uncertainties** in the scenarios must also be identified and clearly stated.

4.2.4.2 The predictive phase of the assessment will build on the studies and analyses undertaken over the entire three-year period of GIWA. The products will be finalised in the third year when sufficient validated data from the sub-regional and regional analyses become available. This phase will require the participation of well-recognised regional and international experts, supported where possible from the bodies and donors contributing to GIWA itself. This phase of the work will not be treated as a merely academic exercise but will actively involve stakeholders from governments, industry and all levels of society. The **principal product** from the third year of GIWA will be a detailed scheme for placing priorities on transboundary environmental issues in the various sub-regions.

4.2.4.3 Products at the end of year three will be: nine regional and 66 sub-regional scenarios of the future state of international waters based on planning bounds reflecting differing rates of change and industrialisation, population and development trends; a global analysis of the societal causes of identified water-related, major concerns and principal issues; a global overview of the relative importance of the various major concerns and principal issues by region; and a significant number of global reviews of topics through the regional reviews and the work of UNCSO;

4.2.5 Dissemination of the GIWA products

4.2.5.1 The final phase of GIWA will be dedicated to the preparation and dissemination of the global and regional GIWA products. Whilst numerous intermediate products will have been produced and disseminated during the earlier phases of the project many of these will be of a highly technical nature. During this phase emphasis will be directed towards the preparation of **reviews that are easily comprehensible to various sectors of society**. GIWA should not remain a desk exercise but should be made available to the public in general, to educational institutions and to national and regional authorities. The GIWA meta-data base and regional reports should be **freely available** through electronic communications, on CD ROM and, where strictly necessary, in hard copy. The GIWA Core Team and the Task Teams, together with specialists on public education and awareness will complete this work. **Anticipated products** from this phase include: popular educational and information materials concerning transboundary water-related environmental problems on a regional basis; CD-ROM's of data and information for use in decision making; a meta-data catalogue of relevant assessments, data and information sources available via the Internet; and substantive contributions to an Internet website for international waters to be established in close co-operation with the GEF IW-Learn project implemented by UNDP.

4.3 Expected Outcomes/Results

4.3.1 Expected outcomes of the project will be:

- strategic assessments of ecological status of transboundary waters for GEF use at a programmatic level through the provision of an assessment of ecological priorities at the regional and global scales concerning issues and problems in the focal area of

- international waters;
- provision of a framework for GEF projects to decide upon appropriate management interventions including remedial and mitigatory actions in international waters, of value to the GEF, regional international organisations, and governments participating in the GEF;
- identification of more sustainable approaches to the use of water and its associated resources, at national regional and local levels;
- protocols for the conduct of causal chain and transboundary diagnostic analyses for use in GEF International Waters Projects by the Implementing Agencies;
- a considerable increase in leveraged co-financing as a result of improved focusing and credibility of future interventions and projects;
- a baseline of information at the regional and sub-regional level which will facilitate the regional task of preparation of Transboundary Diagnostic Analyses within new projects and improve the capacity to evaluate projects underway or within the existing GEF pipeline.

5. Project Risks and Sustainability

5.1 As noted in the Logical Framework Matrix (Annex IX) the success of project implementation is based on the assumptions that governments will support the process of GIWA execution and will actively contribute to it and further that governments, and donors will accept the results of the assessment.

5.2 Progress to project completion is dependent upon the preparation of sub-regional reviews and analyses in an orderly and timely manner to permit their aggregation to regional and global scales. It is also assumed that the sub-regional reviews and analyses will be of comparable quality permitting regional level aggregation of information and analysis at broader scales. Both these assumptions seem likely to be met through the proposed organisational structure.

5.3 One further assumption relates to the nature in which social and economic data are normally aggregated on the basis of political and administrative boundaries and without regard to environmental boundaries. Handling such data during the analytical phase will require their dis-aggregation and re-aggregation and it was the opinion of the second working group that although time consuming such a re-aggregation was possible.

6. Dissemination of Project Results

6.1 As noted in section 4.2.5 the final phase of GIWA will be dedicated to the preparation and dissemination of the global and regional GIWA products. Throughout the life of the activity information and analyses will be produced in a variety of forms and disseminated widely by various means including Internet, CD ROM's and in print media where necessary.

7. Incremental Costs & Budget

7.1 In accordance with the streamlined procedures for incremental cost assessment issued by the GEF Secretariat, this proposal is deemed to be a complementary project in which all the activities add something without changing the baseline. This project complements rather than substitutes existing activities, since the existing global activities concerned with water-related assessments, are thematic or sectorial in their approach and do not take the holistic overview intended for the GIWA Project. The costs of such activities have been estimated (Annex X) and are included, as ongoing baseline activities in the following table that includes an estimate of the value of the existing data and information upon which GIWA will be based. Estimated costs of ongoing, sub-regional and regional activities that will contribute to GIWA are listed in the table as being designed to achieve 'domestic' environmental benefits (see Annex X). Since no other organisation will undertake an assessment of the scope of GIWA in the foreseeable future, and since the entire GIWA project is complementary, all costs can be considered incremental.

Table 1 Incremental costs of GIWA

	Baseline	Alternative	Increment
Global Environmental Benefits 1999-2002	12,500,000	26,619,000	13,119,000
Past activities contributing to the global baseline	200,000,000	200,000,000	0
'Domestic' (Regional & Sub-regional) Environmental Benefits	50,000,000	50,000,000	0
TOTAL	262,500,000	276,619,000	13,519,000

7.2 The budget is presented in the GEF format in Table 2 as approved by the GEF Council and costs of project implementation are shown in two columns: the GEF funding is primarily to support activities in those regions that are characterised by countries with developing economies or economies in transition. Global coverage of GIWA is ensured through the additional support of donors through co-financing in both developed and developing regions. The in-kind contribution of expert time to GIWA is estimated to be approximately 125 person years, amounting to some US \$ 5 million in salary costs alone, this figure is not included in these tables. The following notes relate to the individual budget lines:

- **Personnel** GEF finance will support three members of the Core Team, including the Scientific Director with responsibility for directing, managing and guiding the conduct of GIWA. The remainder of the team (1-3 individuals) will be financed by co-financing and parallel contributions (e.g. through the provision of Junior Professional Officers, visiting professorship schemes, etc.). International consultants are mostly supplied by co-financing and will be employed for specific technical tasks, particularly in assisting with regional assessments as needed and for the development of common assessment protocols. Local consultants include support staff recruited to assist with programme execution.
- **Regional Focal Points and Task Teams** are shown on the budget table as sub-contracts. This reflects the project management strategy based upon subsidiarity to regions and sub-regions. Contracts will be provided, where necessary, to the Focal Points based in the sub-regions for specific tasks related to information gathering, interpretation, and the development of regional and sub-regional information products. Donors will be encouraged to finance entire sub-regional programmes.
- **Workshops** encompass all meetings related to the implementation of the project (regional review meetings, Thematic Task Teams, and Steering Group meetings) and the associated travel and meeting expenses. This is a major item since one of the main modalities of implementing GIWA will be through the formation of cross-sectorial teams to examine major environmental issues.
- **Equipment** purchased for the project will be minimal and will consist principally of data processing and communication support to the Core Team.
- **Travel costs** indicated are for the Core Team specialists. All other travel costs are reflected in the workshop and Focal Point budgets.
- **Miscellaneous costs** shown refer to the cost of co-ordinating GIWA and to production of its products. The largest single item refers to publications, including those in electronic form. A considerable emphasis is given to the wide diffusion of GIWA products, particularly in Phase 4 and 5 of implementation. Donor support will enable publication of sub-regional and multi-language versions of GIWA products.
- **Infrastructure costs:** provision of facilities for the Core Team will be provided by Kalmar University, Sweden. The valuation of the infrastructure provided by Kalmar University is lower than originally anticipated and a revised budget for the project is presented in the GEF format in Table 3.

Table 2 Global International Waters Assessment - Budget as approved by the GEF Council

Budget Line	Thousands of US \$											
	Phases 1 (PDF) & 2		Phase 3		Phase 4		Phase 6		Project Total		Total	
	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing		
Personnel ¹⁸ :												
Core Team	350	120	350	120	350	120	350	120	1400	480	1880	
International consultants	30	100	30	375	30	75	80	275	170	825	995	
Local consultants	70	35	70	30	70	30	70	30	280	125	405	
Regional TT, FP (Subcontracts)	150	200	870	1400	620	440	200	150	1840	2190	4030	
Workshops	350	240	850	400	240	350	80	200	1520	1190	2710	
Training												
Equipment	45		20		10				75		75	
Travel	40		55		55				205		205	
Miscellaneous:												
Communications	36		36		36				144		144	
Operations & Maintenance	10	50	20	50	15	50	15	50	60	200	260	
Publications	20	20	35	20	60	20	250	400	365	460	825	
Other	10		10		10				40		40	
Infrastructure (recurrent exp.)		450		450		450		450		1800	1800	
Total for Phase	1111	1215	2346	2845	1496	1535	1146	1675	6099	7270	13369	
PDF	290	64							290	64	354	
Agency support costs	92		92		92		92		368		368	
Evaluation missions	4		10		4		10		28		28	
Total cost to GEF (+PDF)	1497		2448		1592		1248		6785		6785	
Total co-financing (+PDF)		1129		2695		1385		1525		6734	6734	
GRAND TOTAL (PDF + Project)											13519	

¹⁸ The in-kind contribution of expert time to GIWA is estimated to be approximately 125 person years, amounting to some US \$ 5 million in salary costs alone.

Table 3 Global International Waters Assessment – Revised Budget, excluding PDF Funds

Budget Line	Thousands of US \$												
	Phases 1 (PDF) & 2		Phase 3		Phase 4		Phase 5		Phase 6		Project Total		
	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	GEF	Cofinancing	Total
Personnel¹⁾:													
Core Team	350	120	350	120	350	120	350	120	350	120	1400	480	1880
International consultants	30	100	30	375	30	75	30	275	80	170	170	825	995
Local consultants	70	35	70	30	70	30	70	30	70	280	280	125	405
Regional TT, FP (Subcontracts)	150	200	870	1400	620	440	200	150	200	1840	2190	2190	4030
Workshops	350	240	850	400	240	350	200	80	80	1520	1190	1190	2710
Training													
Equipment	45		20		10						75		75
Travel	40		55		55				55		205		205
Miscellaneous:													
Communications	36		36		36				36		144		144
Operations & Maintenance.	10	50	20	50	15	50	20	50	15	60	200	200	260
Publications	20	20	35	20	60	20	250	400	250	365	460	460	825
Other	10		10		10				10		40		40
Infrastructure (recurrent exp.)		300		300		300		300		300		1200	1200
Total for Phase	1111	1215	2346	2845	1496	1535	1146	1675	6099	7270	13369		13369
Agency support costs	82		82		82				82		368		368
Evaluation missions	4		10		4				10		28		28
Total cost to GEF	1207		2448		1592		1248		6495		6495		6495
Total co-financing		1065		2895		1385		1525		6670		6670	6670
GRAND TOTAL													13165

¹⁾ In-kind contribution of expert time to GIWA is estimated to be approximately 126 person years, amounting to some US \$ 5 million in salary costs alone.

7.3 The revised budget following the completion of the appraisal phase is presented in UNEP format in Annex XI, whilst Annex XII provides a preliminary timetable and work plan. A half-time Fund Management Officer financed through the project budget administrative cost line and located in the GEF Co-ordination Office will handle all administrative and financial matters related to the professional staff of the Core Team, financial transfers made in accordance with the project budget and for financial reporting to the GEF Secretariat.

7.5 Although this project has been approved with a duration of four years to December 31st 2002, release of funds from the Environment Fund of UNEP will depend upon availability of biennial resources in the Environment Fund. Periodic revisions for this project will be issued to account for any variations in the UNEP contribution.

7.6 Counterpart contributions have been secured from the Government of Finland (4 million FMK, equivalent to US \$ 1 million), the Municipality of Kalmar, Sweden (US \$ 500,000), the Swedish International Development Cooperation Agency (12 million SEK, equivalent to US \$ 1.5 million) and the United States National Oceanic and Atmospheric Administration (in kind contribution valued to approximately US \$ 1.5 million), in total approximately US \$ 4.5 Million (Annex XIII includes the Letters of Commitment from the Counterparts). The detailed modalities of these contributions will be agreed upon between UNEP, the Counterparts and the University of Kalmar when the Core Team is operational. Securing the additionally required co-financing and parallel contributions such as the provision of Junior Professional Officers for the execution of the project, particularly regarding the geographic areas not eligible for GEF funding, will be a main task for the Scientific Director of the Core Team when appointed.

8. INSTITUTIONAL FRAMEWORK AND EVALUATION

8.1 Institutional Framework

8.1.1 Supporting Organisation:

8.1.1.1 The project will be executed by the University of Kalmar at the Global level, assisted by a UNEP appointed Core Team of scientists. The Core Team will be located in the City of Kalmar, Sweden, at the Marine Biological Centre of the University of Kalmar.

8.1.1.2 The University of Kalmar has a well established profile in natural science and technology with special emphasis on the environment and marine biology. There are established Chairs in Natural Resource Management, Aquatic Ecology and Technical Environmental Science. Doctoral studies in Agenda 21 have been established at the University. Nautical Officers and Marine Engineers are trained at the Merchant Marine Academy, which is equipped with advanced simulator capacity.

8.1.1.3 The Host Country Agreement between UNEP and the Swedish Government and the Agreement between UNEP, the University of Kalmar and the Municipality of Kalmar are provided in Annexes XIV and XV. Annex XV provides details of the support to be provided by the University of Kalmar to the work of the Core Team. The University of Kalmar will be responsible for managing the funds provided to support the work of the Core Team and all components of the GIWA Network, and for timely production of financial reports to UNEP.

8.1.2 The Core Team:

8.1.2.1 The Core Team will consist of between 4 – 6 professionals (depending upon available co-financing) headed by a Scientific Director, and appointed by UNEP, see Figure 1. The Terms of reference for the Core Team and for individual professional staff within the team are attached as Annexes XVI and XVII to this document. All the proposed substantive activities will be managed and co-ordinated on a day-to-day basis by the UNEP Core Team, in consultation with UNEP HQ (Division of Environmental Assessment and Early Warning) and the University of Kalmar. UNEP will designate a Programme Officer in the Division of Environmental Assessment and Early Warning as the half-time focal point for the implementation of the project.

FIGURE 1 PROFESSIONAL STAFFING OF THE GIWA CO-ORDINATION OFFICE

- [█] POSITIONS CAN BE FUNDED FROM THE GEF PROJECT BUDGET
- [▒] POSITIONS CAN BE FUNDED FROM CO-FINANCING SOURCES
- [□] POSITIONS FOR WHICH FUNDING IS TO BE SOUGHT

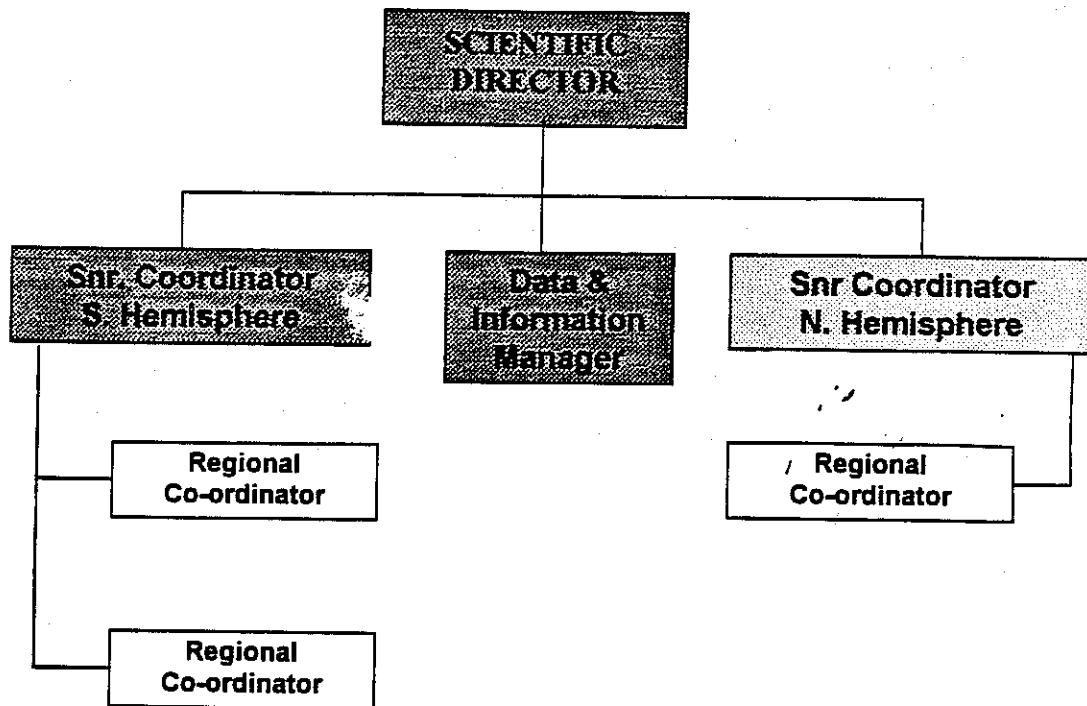
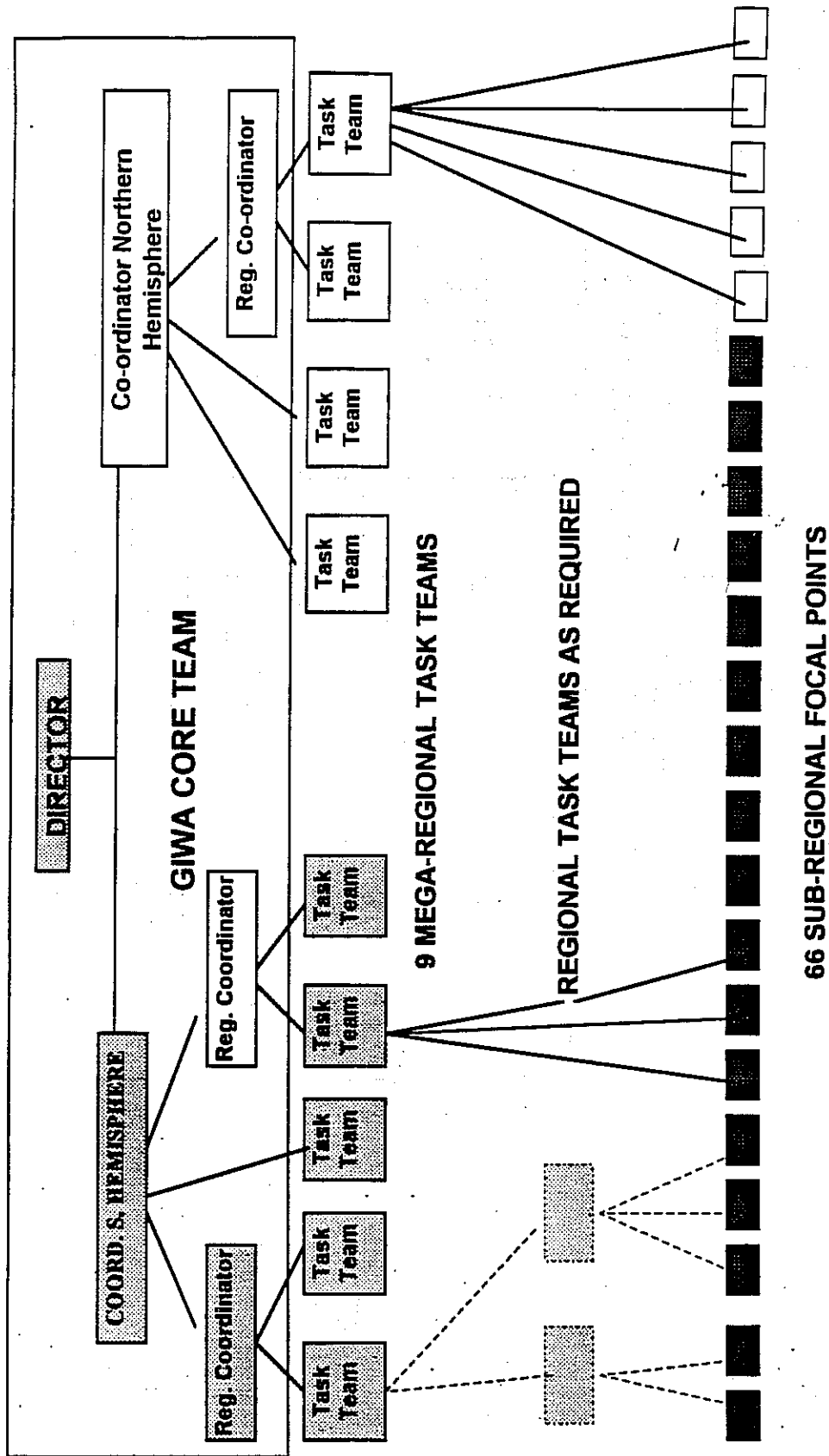
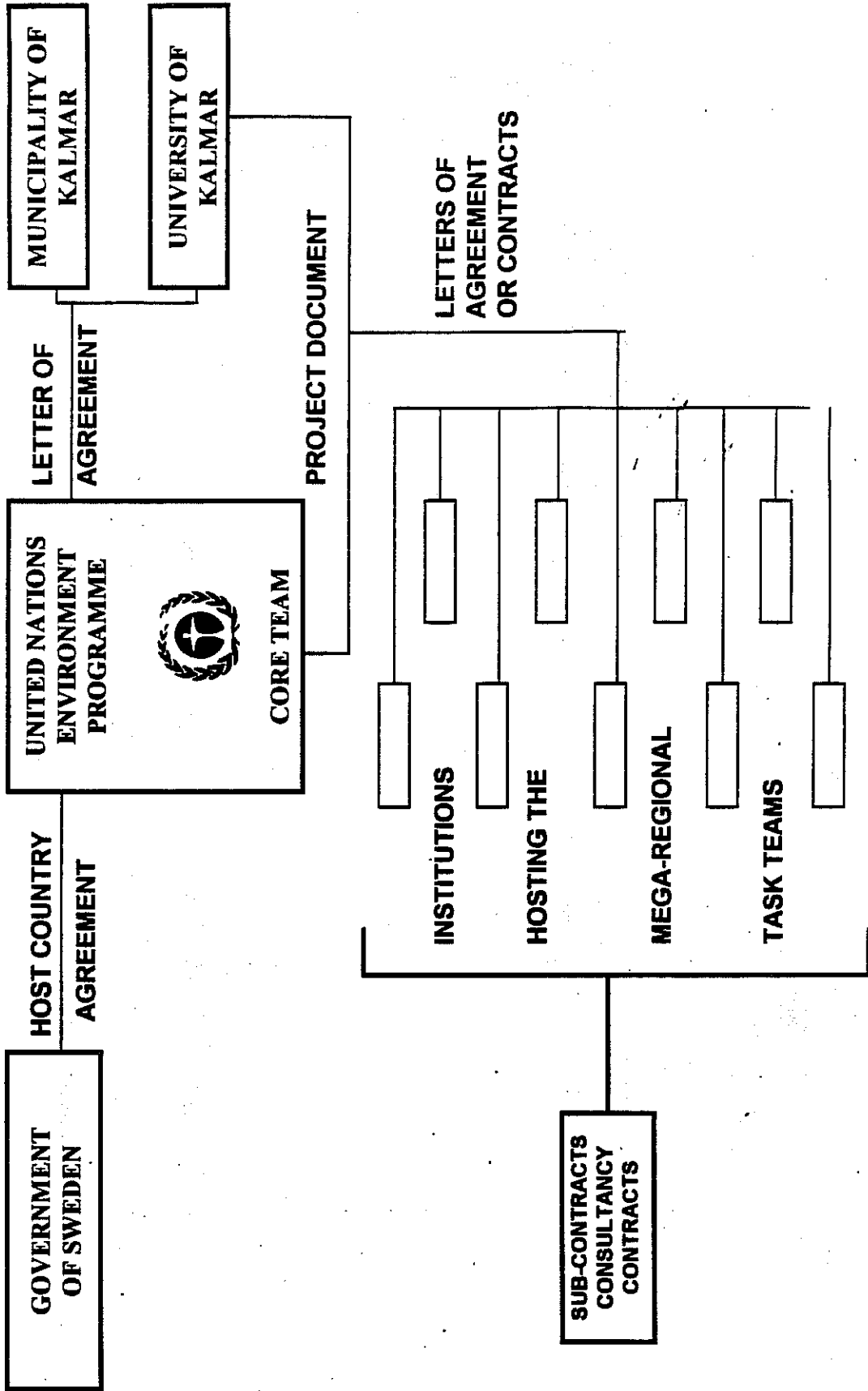


FIGURE 2 RELATIONSHIPS BETWEEN THE CORE TEAM OF GIWA, THE REGIONAL TASK TEAMS AND FOCAL POINTS



Shaded entities are financed from the GEF

FIGURE 3. INSTITUTIONAL STRUCTURE FOR THE EXECUTION OF GIWA



8.1.3 The Steering Group:

8.1.3.1 The Core Team will be advised by, and report to, the Steering Group of the project. The Steering Group will be chaired by the Director for the Division of Environmental Assessment and Early Warning, UNEP, and will be responsible for guiding the process of implementation of the project, endorsing the management plan of the project, and assisting the Core Team in soliciting wide support for the execution of the project, dissemination and acceptance of results. The terms of reference for the Steering Group are attached in Annex XVIII.

8.1.4 The Focal Points:

8.1.4.1 For each of the 66 sub-regions that will be the basic units of assessment of GIWA (Annex IV) a Focal Point will be appointed by the Steering Group on recommendation by the Core Team. The relationships between the Focal Points, Task Teams and Core Team are illustrated in Figure 2 whilst the institutional arrangements are illustrated in Figure 3. The Focal Points will be assisted and supported by the Core Team. Where possible, and in the case of many of the regions of the northern and parts of the southern hemisphere, the Focal Points will be based in an existing organisations and institutions already undertaking relevant assessments. For those sub-regions where there are no existing organisations or institutions involved in assessment activities, organisation and compilation of the required information and data will be the responsibility of identified Focal Points, supported by the Core Team and working with appropriate national experts and institutions. The Focal Points will be members of the relevant Regional Task Teams as appropriate. The terms of reference for the Focal Points are attached in Annex XIX.

8.1.5 The Regional Task Teams:

8.1.5.1 The Regional Task Teams will consist of between 10-15 individuals appointed in their personal capacity, who may also serve as the Focal Points for sub-regional units of the assessment. Regional Task Teams will include government nominated experts and experts of international standing from the appropriate regional scientific community. Each Regional Task Team will be hosted by an appropriate institution or organisation that will provide support to the Chair and the work of each Regional Task Team.

8.1.5.2 The appointment of members and the composition and hosting of the Regional Task Teams will be recommended by the Core Team and decided upon by the Steering Group of GIWA. The terms of reference for the Regional Task Teams are provided in Annex XIX.

8.1.6 The Thematic Task Teams:

8.1.6.1 The Thematic Task Teams will be established, by the Core Team in consultation with the Steering Group, in order to review on a global scale, specific issues and problems, including *inter alia* problems such as transboundary freshwater basin management, integrated water resources management in small islands, climate variability and change, and the societal driving forces causing water-related issues and problems. The number of such Thematic Task Teams and the terms of reference for them will be determined by the Core Team on the basis of initial results from the sub-regional assessments, and the findings resulting from the work of the UNCSD in freshwater and seas.

8.1.7 Consultants

8.1.7.1 Terms of reference for consultants that will perform specific tasks during the project will be proposed by the Scientific Director for decision by the Steering Group. All consultants will be supervised by the Scientific Director.

8.1.8 Correspondence

8.1.8.1 All correspondence on substantive and technical matters related to the project should be addressed to:

In the University of Kalmar:

Professor Erik Arrhenius,
Department of #####
University of Kalmar,
Box 905
391 29 Kalmar, Sweden
Tel: #####
Fax: #####
e-mail: erik.arrhenius@ng.hik.se

In UNEP:

The Director,
Division of Environmental Assessment and Early Warning,
United Nations Environment Programme,
P.O. Box 30552,
Nairobi Kenya.
Tel: 254-2-625318
Fax:
e-mail: dan.claasen@unep.org

with copies to:

Mr Ahmed Djoghlaif, Executive Co-ordinator,
UNEP/GEF Co-ordination Office,
United Nations Environment Programme
P.O. Box 30552,
Nairobi Kenya.
Tel: 254-2-624166
Fax: 254-2-520825-23557
e-mail: Ahmed.djoghlaif@unep.org

Mr E. Ortega, Chief
Budget and Fund Management Service, UNON
P.O. Box 30552,
Nairobi, Kenya
Tel: 254-2-62 3637
Fax: 254-2-227057
e-mail: edmunido.ortega@unep.org

8.1.8.2 All correspondence on financial and administrative matters related to the project should be addressed to:

In the University of Kalmar:

Bengt Sedvall, title
Centralförvaltningen
University of Kalmar
Box 905
391 29 Kalmar, Sweden
Tel: 46-480-446010
Fax: 46-480-446032
e-mail: bengt.sedvall@cf.hik.se

In UNEP:

Mr E. Ortega, Chief
Budget and Fund Management Service, UNON
P.O. Box 30552,
Nairobi, Kenya
Tel: 254-2-
Fax: 254-2-227057
e-mail: edmundor.ortega@unep.org

with copies to:

The Director,
Division of Environmental Assessment and Early Warning,
United Nations Environment Programme,
P.O. Box 30552,
Nairobi Kenya.
Tel:xxxxxxx
Fax:xxxxxxx
e-mail:xxxxxxx

Mr Ahmed Djoghlaif, Executive Co-ordinator,
UNEP/GEF Co-ordination Office,
United Nations Environment Programme
P.O. Box 30552,
Nairobi Kenya.
Tel: 254-2-624166
Fax: 254-2-520825/623557
e-mail: ahmed.djoghlaif@unep.org

8.2. Evaluation

8.2.1 Evaluation of the preparatory phase was undertaken by two STAP Roster experts and their reviews together with a response concerning how the issues raised were addressed are attached as Annex XX. Evaluation of the quality of the outputs of the project will take place via independent peer review of products and their presentation to and acceptance by regional and other intergovernmental fora as appropriate. Evaluation of product utility will be an ongoing process subject to scrutiny by the Steering Group and measured through the extent to which proposed approaches are adopted by the other Implementing Agencies and donors.

8.2.2 A mid-term internal evaluation will be undertaken under the supervision of the UNEP/GEF Coordination Office to diagnose problems and suggest necessary corrections. It will evaluate the efficiency of project management, including delivery of inputs and activities in terms of quality, quantity and timeliness. Final desk evaluation of the project will be undertaken by the Division of Environmental Assessment and Early Warning of UNEP according to UNEP approved Monitoring and Evaluation procedures. Evaluation of the overall performance of the project will be undertaken within the framework of the Monitoring and Evaluation Programme of the GEF Secretariat.

8.2.3 A terminal external and independent, in depth evaluation of the project will be carried out, undertaken under the supervision of the UNEP/GEF Coordination Office to provide a judgement on the impact of the project and to make recommendations for future action, identify the conditions for successful replication if appropriate and draw generic lessons.

8.2.3 An *ex-post facto* in depth evaluation will be conducted by the GEF Monitoring and Evaluation Unit two years after the project has been completed, to evaluate the environmental impacts and long term effects of the project.

9. MONITORING AND REPORTING

9.1 Progress Reports

9.1.1 Operational monitoring of the project's achievements of targets and milestones will be undertaken through the institutional arrangements established under the project and detailed in paragraph 8.1.3 above. Overall monitoring and reporting to the GEF on progress in achieving the implementation schedule will be the responsibility of the UNEP/GEF Co-ordination Office. The Core Team will monitor progress on a day to day basis, and progress in the sub-regional assessments and analyses will be the responsibility of the 9 Regional Task Teams. UNEP will be assisted in monitoring overall progress by the Steering Group that will meet annually to review progress and approve the subsequent years workplan.

9.1.2 The Scientific Director of the Core Team will be responsible for providing to the Director, Division of Environmental Assessment and Early Warning and the UNEP/GEF Co-ordination Office **Quarterly Operational Reports** in the format attached as Annex XXI to this document. The Scientific Director of the Core Team will be responsible for providing to the Steering Group, using the standard format attached as Annex XXII, **half yearly progress reports** as at 30 June and 31 December on the implementation of the project, with copies to the Division of Environmental Assessment and Early Warning, the University of Kalmar, Budget and Fund Management Service, UNON and to the UNEP/GEF Co-ordination Office. The progress report should be specific and state which outputs have been achieved and which have not. If certain outputs have not been achieved, the progress report should provide an explanation and describe the remedial actions to be taken.

9.1.3 Products and outputs will be peer-reviewed for their scientific quality, before being presented to governments via appropriate intergovernmental fora and/or meetings.

9.2 Terminal Report

9.2.1 The Scientific Director of the Core Team will be responsible for providing a terminal report using the standard format attached as Annex XXIII, on an attainment of outputs and results of the project to the Division of Environmental Assessment and Early Warning, UNEP, and the University of Kalmar within 60 days of project completion.

9.3 External Reporting

9.3.1 The University of Kalmar, and the Scientific Director of the Core Team, will be responsible for any reports of a financial or substantive nature to external donors concerning the use of counterpart contributions, in accordance with the requirements agreed upon between the University of Kalmar and the external donor. Copies of such reports will be provided to the UNEP/GEF Co-ordination Office. Where funds representing co-financing of project activities are paid directly to Kalmar University the University shall enter into an agreement with the donor and shall inform UNEP of such agreements. Where the donor remits funds to UNEP and the funds are forwarded to the University of Kalmar, a tripartite agreement shall be drawn up and this project document will be revised to take into account the additional resources and their uses.

9.4 Financial Reports

9.4.1 Project expenditure accounts

9.4.1.1 Details of project expenditures, will be reported in line with project budget codes as set out in the project document, as at 31 March, 30 June, 30 September and 31 December (see Annex XXIV). All expenditure accounts will be dispatched to UNEP within 30 days of the end of the quarter to which they refer, certified by a duly authorized official of University of Kalmar.

9.4.1.2 The expenditure accounts at 31 December, certified by a duly authorized official, should be dispatched to UNEP within 60 days, as for other quarters, but, in addition, UNEP requires that the end of year expenditure account should be reported in an opinion by a recognized firm of public accountants (for a government, by Government auditors), which shall be dispatched to UNEP by 31 March. In particular, the auditors should be asked to report whether, in their opinion:

- Proper books of account and records have been maintained;
- All project expenditures are supported by vouchers and adequate documentation;
- Expenditures have been incurred in accordance with the objectives outlined in the project document.

9.4.1.3 Within 120 days of the completion of the project, the University of Kalmar will supply UNEP with a final statement of account in the same format as for the quarterly statements, certified by a recognized firm of public accountants (for a Government, by a Government auditors). If requested the University of Kalmar shall facilitate an audit (by United Nations Board of auditors and/or the Audit Service) of the accounts of the project.

9.4.1.4 Any portion of cash advances remaining unspent or uncommitted by the University of Kalmar on completion of the project will be reimbursed to UNEP within one month of the presentation of the final statement of accounts. In the event that there is any delay in such disbursement, the University of Kalmar will be financially responsible for any adverse movement in the exchange rates.

9.4.2 Cash advance accounts

9.4.2.1 A statement of advances of cash provided by UNEP should be submitted quarterly in the format shown in Annex XXV as at 31 March, 30 June, 30 September and 31 December.

9.5 Terms and conditions

9.5.1 Non-expendable equipment

The University of Kalmar will maintain records of non-expendable equipment (items costing \$1,500 or more as well as items of attraction such as pocket calculators purchased with UNEP funds and will submit an inventory of all such equipment to UNEP once a year indicating description, serial number (if any), date of purchase, cost and condition of each item at the time of inventory attached to the progress report submitted on 30 June. Within 60 days of the completion of the project the University of Kalmar will submit to UNEP a final inventory of all non-expendable equipment purchased under the project indicating description, serial number (if any), date of purchase, cost and condition at the time of inventory, together with the University of Kalmar proposal for the disposal of the equipment. Non-expendable equipment purchased with funds administered by UNEP remains the property of UNEP until its disposal is authorized by UNEP, in consultation with the University of Kalmar. The University of Kalmar shall be responsible for any loss of or damage to equipment purchased with UNEP funds unless it is proved that such loss or damage result from negligence or misuse on the part of UNEP staff. The proceeds from the sale of equipment (duly authorized by UNEP) shall be credited to the accounts of UNEP, or of the appropriate trust fund or counterpart fund.

The University of Kalmar shall attach to the terminal report mentioned in paragraph 6.2 a final inventory of all non-expendable equipment purchased under this project following the format in Annex XXVI indicating description, serial number, original cost, condition at the time of inventory, location and a proposal for the disposal of the said equipment. The inventory should be physically verified by a duly authorised official of the University of Kalmar.

9.5.2 Cost overruns

Any cost overrun (expenditure in excess of the amount budgeted in each budget subline) shall be met by the organization responsible for authorizing the expenditure, unless written agreement has been received in advance, from UNEP. In cases where UNEP has indicated its agreement to a cost overrun in a budget subline to another, or to increase the total cost to UNEP, a revision to the project document amending the budget will be issued by UNEP.

9.5.3 Claims by third parties against UNEP

The University of Kalmar shall be responsible for dealing with any claims which may be brought by third parties against UNEP and its staff, and shall hold UNEP and its staff non-labile in case of any claims or liabilities resulting from operations carried out by the University of Kalmar under this project document, except where it is agreed by the University of Kalmar and UNEP that such claims or liabilities arise from

gross negligence or willful misconduct of the staff of UNEP.

9.5.4 Cash Advance Requirements

An initial cash advance from the UNEP contribution will be made upon signature of the project document by both parties and will cover expenditures expected to be incurred by the supporting organization (the University of Kalmar) during the first three months. Subsequent advances are to be made quarterly, subject to:

(i) Confirmation by the University of Kalmar, at least two weeks before the payment is due, that the expected rate of expenditure and actual cash position necessitate the payment, including a reasonable amount to cover "lead time" for the next remittance, (see format of request in Annex XXVII).

(ii) The presentation of :

- a satisfactory financial report showing expenditures incurred for the past quarter, under each project (see format in Annex XXIV)
- timely and satisfactory progress reports on project implementation.

10 Publications

10.1 This project document provides for printing, distribution/sales of UNEP publications emanating from UNEP programmes. All publications must be produced/published, according to the UNEP publications manual with the approval of the UNEP Editorial Committee to ensure peer review of manuscripts, and distribution and marketing strategies. UNEP thereby affirms itself as copyright-holder of the said manuscripts. The UNEP Editorial Committee will only release funds for printing/publishing upon approval.

10.2 Both the cover and the title page of publications will carry the logo of UNEP and the title United Nations Environment Programme, together with that of the University of Kalmar. The University of Kalmar will submit three copies of any manuscript prepared under the project for clearance prior to their publication in final form. UNEP's views on the publication and any suggestions for amendments of working will be considered expeditiously to the University of Kalmar, with an indication of any disclaimer or recognition, which UNEP might wish to see appear in the publication.

10.3 Copyright and royalties, as well as free copies, will normally be claimed by UNEP on publications produced under a UNEP project and financed by UNEP, the rate of royalties payable to UNEP and the number of free copies, will be negotiated with each individual commercial publisher. Royalties received from commercial publishers will be deposited in UNEP Revolving Fund (Information).

ANNEX I

AVAILABLE REFERENCE DOCUMENTS

Meeting reports.

1. First Meeting of the Steering Group for the Global International Waters Assessment (GIWA). Report of the Meeting. 24-27 February 1997. UNEP/GIWA.1/13
2. Global International Waters Assessment Expert Workshop on Water-Related Issues of Transboundary and Global Concern. Report of the Workshop. 21-25th April 1997. UNEP(WATER)/GEF-GIWA/2.4
3. Global International Waters Assessment (GIWA) expert Workshop on the Formulation of a Geographic Framework for the Analysis of International Waters Issues of Transboundary and Global Significance. 9-13 June, 1997. UNEP(WATER)/GEF-GIWA/3.3
4. Second Meeting of the Steering Group for the Global International Waters Assessment (GIWA). 14-15 June, 1997. UNEP(WATER)/GEF-GIWA/4.2
5. Management Meeting for the Global International Waters Assessment (GIWA). 11-12 September 1997. UNEP(WATER)/GEF-GIWA/5.3

Discussion documents

6. Environmental and Socio-economic Impacts of Water-related Major Concerns and Principal Issues with their potential Transboundary Consequences. 10 pp.
7. Causal Chain Analysis for Identified Water-related Major Concerns and Principal Issues. 13 pp.
8. Marine Geographic Areas and Freshwater Basins: the Geographic framework for GIWA. 13 pp.
9. Scoping the Global International waters Assessment: a preliminary consideration of the Regional Importance of the Major Water-related Concerns and Principal Issues.
10. Preliminary bibliography of assessments and information sources. 100 pp.

ANNEX II

ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS OF WATER RELATED MAJOR CONCERNS AND PRINCIPLE ISSUES, TOGETHER WITH THEIR POTENTIAL TRANSBOUNDARY CONSEQUENCES

MAJOR CONCERN 1: FRESHWATER SHORTAGE

ISSUES	ENVIRONMENTAL IMPACTS	SOCIO-ECONOMIC IMPACTS	POTENTIAL TRANSBOUNDARY CONSEQUENCES
<p>REDUCTION IN STREAM FLOW</p>	<ol style="list-style-type: none"> 1. Modification of riparian habitats 2. Depletion of fish stocks and species diversity 3. Water quality change 4. Decreased wetland areas 5. Reduced capacity to transport sediments, siltation 6. Reduced groundwater recharge 7. Saltwater intrusion 8. Changes in biological diversity and food webs 9. Changes in sediment budgets 	<ol style="list-style-type: none"> 1. Loss of agricultural uses (crops, livestock, aquaculture, mariculture) 2. Loss of human drinking water supplies 3. Loss of recreational use 4. Loss of hydro-electric power production 5. Loss of aesthetic values 6. Loss of coastal harbours and inland transport 7. Loss of industrial uses 8. Increased potential for upstream/downstream conflicts 9. Reduced availability of fish as food 10. Loss of waste assimilative capacity 11. Increased costs of alternative water supplies 12. Compromise of future use optional 	<ul style="list-style-type: none"> - Shifts in freshwater/saltwater front - Changes in riparian communities - Changes in withdrawal uses - Potential for conflict over shared water - Potential for induced migration - Reduced groundwater recharge
<p>POLLUTION OF EXISTING SUPPLIES</p>	<ol style="list-style-type: none"> 1. Modification of riparian habitat 2. Depletion of fish stocks and species diversity 3. Changes in terrestrial and aquatic biological diversity and food webs 4. Potential for impacts on migratory species such as water birds 	<ol style="list-style-type: none"> 1. Human health impacts 2. Reduced agriculture productivity (crops, livestock, aquaculture mariculture) 3. Loss of recreation possibilities 4. Loss of aesthetic values 5. Increased intake treatment cost 6. Increased damage to water-related equipment 7. Increased potential for upstream-downstream conflicts 8. Increased costs of alternative water supplies 9. Compromise of future use options 	<ul style="list-style-type: none"> - Reduction in water use options - Human health impacts - Upstream/downstream conflicts
<p>LOWERING OF WATER TABLE</p>	<ol style="list-style-type: none"> 1. Reduction in stream flows 2. Land subsidence 3. Reduced aquifer capacity 4. Reduced vegetation cover 5. Greater potential for saltwater intrusion 6. Water quality changes 7. Increased soil erosion 8. Increased penetration of contaminants into deep aquifers 	<ol style="list-style-type: none"> 1. Loss of aesthetic value 2. Damage to infrastructure 3. Increased costs of deepening wells and pumping 4. Population migration 5. Transboundary implications 6. Compromise of future use options 7. Increased costs of alternative water supplies 8. Increased vulnerability to sea level rise 	<ul style="list-style-type: none"> - Transboundary groundwater supply conflicts - Contamination of transboundary aquifers - Potential for reduced transboundary streamflow

MAJOR CONCERN II: POLLUTION

ISSUES	ENVIRONMENTAL IMPACT	SOCIO-ECONOMIC IMPACT	POTENTIAL TRANSBOUNDARY CONSEQUENCES
MICROBIOLOGICAL (bacteriological, viral and other microbial)	<ol style="list-style-type: none"> 1. Aquatic organism infections and diseases 	<ol style="list-style-type: none"> 1. Increased risks to human health 2. Increased costs of human health protection 3. Loss of potable water supplies 4. Increased costs of water treatment 5. Costs of preventative medicine 6. Costs of medical treatment 7. Loss of tourism/recreational values 8. Costs of increased fisheries product processing 	<p>The sub-group on pollution examined the entries under the various categories of pollutant for "environmental impact" and "socio-economic impact" with a view to determining the potential for these impacts to be transboundary. It was concluded that all such pollutants have the potential for transboundary impacts. Accordingly, rather than simply assigning each and every impact as "potentially transboundary" it was decided that a text should be prepared to provide some qualitative discrimination to the likely magnitude of such transboundary impacts for each class of contaminants.</p> <p>The reason that all contaminant classes have the potential for transboundary impacts is due to the high probability both in riparian rivers and coastal margins that the introduction of substances will result in transport and effects beyond national boundaries. Nevertheless, the relative potential for these and other transboundary effects depends on both the conservatism and persistence of the contaminants. Thus,</p>
EUTROPHICATION	<ol style="list-style-type: none"> 1. Redox changes (extreme Anoxia) 2. Increased algal blooms 3. Changes in algal community structure 4. Changes in macrophyte community structure 5. Loss of habitat (e.g. coral reefs) (Sedimentary composition changes) 6. Change in composition of feral fisheries and loss in case of anoxia 	<ol style="list-style-type: none"> 1. Loss of tourism/recreation 2. Loss of water supplies 3. Costs of water treatment 4. Change in fisheries value 5. Compromise of options for aquaculture development opportunities 6. Loss of property values 7. Loss of aesthetic value 8. Costs of weed control 9. Loss of wildlife sanctuaries 10. Costs of increased navigational clearance 11. Increased costs of human health protection 12. Increased costs of fish surveillance/processing in the case of toxin incidence 13. Costs of reduced fish marketability due to aesthetic perceptions 	<p>transboundary" it was decided that a text should be prepared to provide some qualitative discrimination to the likely magnitude of such transboundary impacts for each class of contaminants.</p> <p>The reason that all contaminant classes have the potential for transboundary impacts is due to the high probability both in riparian rivers and coastal margins that the introduction of substances will result in transport and effects beyond national boundaries. Nevertheless, the relative potential for these and other transboundary effects depends on both the conservatism and persistence of the contaminants. Thus,</p>
CHEMICAL	<ol style="list-style-type: none"> 1. Reproductive dysfunction in aquatic organisms 2. Behavioral dysfunction in aquatic organisms 3. Modified community structure 4. Increased mortality of aquatic organisms 	<ol style="list-style-type: none"> 1. Loss in fisheries 2. Loss of protected areas 3. Increased cost of human health protection measures 4. Increased cost of navigational dredging activities 5. Increased cost of fish processing activities 6. Reduced options for aquaculture development 7. Increased costs of water treatment 8. Loss of tourism/recreational opportunities 9. Compromise of other uses of freshwater (reduction in options) 10. Potential for international conflicts 	<p>lowest on the scale of potential for transboundary impacts are microbiological agents, solid wastes and thermal discharges. Next highest in probability are suspended solids and nutrients (as proxy for eutrophication). Of similar scales of impact and, therefore similar probability of transboundary consequences, are substances introduced by accidental spillage. The highest likelihood of transboundary impacts are posed by chemicals and radionuclides which, because many of them behave conservatively, can be transported great distances and pose increased risks of damage in remote areas.</p>

<p>SUSPENDED SOLIDS</p>	<ol style="list-style-type: none"> Habitat modification Changes in biological community composition Changes in the growth/survival/reproduction of species Reduced productivity Enhanced erosion of coasts and river channels Increased sediment deposition and siltation Destruction (blanketing) of benthic communities Changes in sediment redox conditions (organics) 	<ol style="list-style-type: none"> Increased costs of navigational survey and dredging Loss of reservoir storage capacity Damage to equipment (particle impacts) Reduced tourism/recreational amenities/opportunities Increased water treatment costs Increased costs of coastal protection from waves/storm surges/erosion Costs of cleaning intakes 	
<p>SOLID WASTES (Bulk)</p>	<ol style="list-style-type: none"> Habitat loss Hydraulic modification Entanglement/Suffocation of marine organisms Beach and sediment compositional changes 	<ol style="list-style-type: none"> Loss of aesthetic values/amenities Endangerment of species Increased costs of animal protection (esp endangered species) Increased costs of human health protection Increased costs of clean-up Increased costs of navigational protection (survey & dredging) 	
<p>THERMAL</p>	<ol style="list-style-type: none"> Population/community changes Barriers to migration Displacement of organisms Changes to physical environment 	<ol style="list-style-type: none"> Compromise of options for aquaculture development Displacement of valued species Increased risk to aquaculture (if improper siting) 	
<p>RADIONUCLIDE (from anthropogenic sources only)</p>	<ol style="list-style-type: none"> Proximal and stochastic risks to animal life 	<ol style="list-style-type: none"> Avoidance of amenities and products due to perceptions of effects of contamination Costs of public reassurance Risks to human health Maintenance of monitoring and radiological protection activities for public reassurance purposes 	
<p>SPILLS (accidental episodic releases/introductions of substances to the aquatic environment)</p>	<ol style="list-style-type: none"> Increased avian mortality Increased mortality of aquatic life Habitat damage Long-term contamination of sediments and beaches with associated ecological changes 	<ol style="list-style-type: none"> Costs of clean-up Costs of preventive measures (e.g. tanker design/construction) Costs of contingency measures Real or perceived damage to feral and cultured fisheries Loss of tourism and recreational amenities (temporary or permanent) Costs of litigation Costs of insurance Loss of sanctuary and protected areas and associated wildlife Costs of disruption to shipping, marine reserve and marine scientific activities during survey and clean-up 	

MAJOR CONCERN III: HABITAT AND COMMUNITY MODIFICATION

ISSUES	ENVIRONMENTAL IMPACT	SOCIO-ECONOMIC IMPACT	POTENTIAL TRANSBOUNDARY CONSEQUENCES
LOSS OF ECOSYSTEMS OR ECOTONES	<ol style="list-style-type: none"> 1. Loss of natural productivity 2. Loss of biodiversity 3. Loss of natural storm barriers 4. Loss of natural protection from erosion 5. Loss of carbon sinks and release of carbon to the atmosphere 6. Loss of migratory species using the habitat and altered migratory patterns 7. Impacts of estuarine system changes on adjacent coastal marine ecosystems 	<ol style="list-style-type: none"> 1. Reduced capacity to meet basic human needs (food, fuel) for local pop'ns 2. Changes in employment opportunities for local populations and associated changes in social structures 3. Loss of aesthetic value/recreation for local populations 4. Loss of existing income and foreign exchange from fisheries, tourism, etc. 5. Loss of opportunity for investment income and foreign exchange from former ecosystem and possible new opportunities (e.g. loss of materials for potential pharmaceutical products) 6. Loss of cultural heritage 7. Human conflicts, nat'l & int'l 8. Loss of education and scientific value 9. Increased risks to human population and capital investment; loss of land due to loss of physical protection 10. Costs of responding to risks 11. Intergenerational inequity, possibly 	<ul style="list-style-type: none"> - Damage to transboundary ecosystems, including loss (or change) in productivity, biodiversity, or loss of stability in shared ecosystem, change in community structure, both plant and animal (regional) - Damage to endangered, threatened or endemic species (global) - Loss of stability in national or transboundary systems due to species introductions (global) - Spread of disease or exotic species to neighbouring countries (regional) - Reduced natural protection from storms or erosion in countries sharing ecosystems (regional) - Impacts of freshwater or estuarine systems changes on international coastal marine ecosystems (regional) - Impacts of physical changes in beach dynamics on adjacent countries, erosion deposition (regional) - Damage to migratory species and their habitat changing patterns of migration (interregional and global) - Loss of carbon sinks and increased release of carbon to the atmosphere (global)
MODIFICATION OF ECOSYSTEMS OR ECOTONES, INCLUDING COMMUNITY STRUCTURE AND/OR SPECIES COMPOSITION (threatened/endangered species)	<ol style="list-style-type: none"> 1. Modification of natural productivity 2. Modification of biodiversity including loss of species and genetic diversity 3. Changes in ecosystem stability 4. Changes in community structure both plant and animal 5. Susceptibility to disease 6. Changes in migratory species populations and migratory patterns 7. Modification in natural storm barriers and reduced protection from erosion 8. Increased vulnerability to opportunistic invaders 	<ol style="list-style-type: none"> 1-5 as above 6. Modification or loss of cultural heritage 7-11 as above 12. Costs of controlling invasive species 13. Costs of restoration of modified ecosystems 	<ul style="list-style-type: none"> - Loss/damage of anadromous/caladramous stocks and their habitat shared by riparian fishing States (regional and interregional) - Reduced means of meeting basic needs (food and fuel) for pop'ns in countries sharing systems (regional) - Loss of existing and potential income from fishing, tourism, potential future resources (regional and global) - Loss of existing potential foreign exchange and investment in countries sharing damaged systems (regional) - Effects on movement of foreign investment, world prices (regional and global) - Costs of restoration to countries sharing damaged systems (regional) - Costs of controlling introduced species to shared marine systems (regional) - Costs of emergency response and rebuilding to shared systems for storm or erosion damage (regional) - Damage to shared cultural heritage (regional) - Reduced aesthetic recreational value in shared system (regional) and for international tourism (global) - Damage to educational and scientific value to shared systems (regional) and loss of potential knowledge (global) - Costs of dealing with human migration and possible international conflict (regional and global)

MAJOR CONCERN IV: UNSUSTAINABLE EXPLOITATION OF FISHERIES & OTHER LIVING RESOURCES.

ISSUES	ENVIRONMENTAL IMPACT	SOCIO-ECONOMIC IMPACT	POTENTIAL TRANSBOUNDARY ISSUES
INAPPROPRIATE HARVESTING PRACTICES Over-exploitation Destructive fishing practices	a. Changes in biological community structure due to overexploitation/depletion of one or more key species b. Changes in food webs favouring scavengers by Wastage of bycatch discards c. Increasing vulnerability of protected species populations d. Changes to habitat and community structure resulting from destructive fishing practices.	1. reduced economic returns 2. loss of employment 3. Conflict between user groups for shared resources including space 4. resources including space 5. (+): potential new source of employment 6. (-): loss of protein for human or animal consumption 7. (-): Juveniles entering other fisheries destroyed, thus reducing earnings 8. Loss of protected species 9. Lost opportunities inter-generational equity issues	- For shared/straddling stocks - problem of sharing resources/management mechanisms by fishery commission. - Wastage of juveniles in one jurisdiction may affect earnings in other (through migration) - International tensions due to conflicting claims - Pressure on States through international press (media)/NGOs
RESOURCE/HABITAT CHANGES	a. Changes in community structure by food chain manipulation b. Changes in community structure through restocking and habitat manipulation	1. Improved catch/earnings 2. Improved catch/earnings	- Assumes agreement of owners in other jurisdictions, for transboundary resources - Uncertain (see Habitat)
HABITAT DESTRUCTION	a. Ecosystem degradation	1. Loss of employment/earnings	- Effects in other jurisdictions of imported fishery products
DECREASED VIABILITY OF STOCK THRO' CONTAMINATION & DISEASE	a. Possible physiological and ecological impacts on animal populations through chronic contamination	1. Possible Human Health impacts 2. Reduced commercial value (reducing from tailing)	
MAN-INDUCED CHANGES IN THE PHYSICAL ENVIRONMENT	a. Potentially severe impacts on ecosystem	1. Loss of food sources and livelihood	
BIODIVERSITY IMPACTS	a. Long-term changes in population genome & gene frequencies b. Changes in biological communities thro' deliberate and accidental introductions	1. Possible effects on fishery (uncertainty) 2. Increased risks of predation, competition and/or disease for commercially valuable species	- Relevant to transboundary seas and waterbodies and shared resources

MAJOR CONCERN V: GLOBAL CHANGE

ISSUES	ENVIRONMENTAL IMPACT	SOCIO-ECONOMIC IMPACT	POTENTIAL TRANSBOUNDARY ISSUES
CHANGES IN HYDROLOGICAL CYCLE	<ol style="list-style-type: none"> 1. Land cover change 2. Habitat/Biodiversity 3. Shifts in Boundaries between sea and fresh waters 4. Feedback to global climate change 5. Changes in thermohaline circulation 6. Extreme events (frequency and intensity) 7. Changes in precipitation, evaporation and snow accumulation and melting 	<ol style="list-style-type: none"> 1. Freshwater availability 2. Food security 3. Employment security 4. Changes in productivity of agriculture, fisheries and forestry 5. Changes in resources distribution and political jurisdiction over them 6. Human migration 7. Damage to human life and property 8. Response costs for extreme events 9. Costs for avoiding navigation hazards 	<p>N.B. Climate Change is by its very nature a Transboundary cause of environmental and socio-economic issues, many of the impacts of which are themselves transboundary.</p>
SEA LEVEL CHANGE	<ol style="list-style-type: none"> 1. Intrusion of sea water to fresh water 2. Modification of aquatic habitats 3. Loss of land, damage to coastal zones including productive land 	<ol style="list-style-type: none"> 1. Increased cost of coast protection and emergency response/forecast 2. Loss of income and employment 3. Loss of property & capital assets 4. Human migration 	
INCREASED UV-B RADIATION AS A RESULT OF OZONE DEPLETION	<ol style="list-style-type: none"> 1. Damage to flora and fauna at the water surface and sub-surface 2. Decrease of productivity 	<ol style="list-style-type: none"> 1. Loss of incomes and foreign exchange from fisheries 2. Loss of opportunity for investments (both domestic and foreign) 3. Increased costs of human health care 	
CHANGES IN OCEAN CO ₂ SOURCE/SINK FUNCTION	<ol style="list-style-type: none"> 1. Feedback to global climate change 		

ANNEX III

PRINCIPAL SOCIO-ECONOMIC ROOT CAUSES OF THE IDENTIFIED WATER RELATED MAJOR CONCERNS AND PRINCIPAL ISSUES

- I. **Policy and Legal Failures (Economic policy failures, see III below)**
 1. Policy and Legal failures including inadequate regulation and best practices, guidelines, etc.
 2. Inadequate law and policy harmonization among international instruments
 3. Property and user rights
 4. Unethical transfer of goods, wastes and technology between countries
- II **Institutional Failures**
 1. Lack of capacity, budget, or will to implement policies and decisions
 2. Lack of capacity, budget, or will to enforce policies and decisions
 3. Lack of clearly defined responsibilities and poor coordination among national government agencies responsible for different sectors
 4. Inadequate coordination between local and national levels of government and inadequate delegation responsibility
 5. Deficiencies in stakeholder participation (a matter of law and policy in most cases)
 6. Failure of institutions to utilize effectively current information in decision-making processes, including selecting inappropriate technology
 7. Corrupt practices which subvert the effective implementation of policies and programmes
- III **Economic (Market) failures (many of these issues originate in Law and Policy)**
 1. Pricing issues, domestic and international
 2. Subsidies
 3. Investment policies
 4. Valuation of environmental goods and services
 5. User fees
- IV **Information failures in scientific, technical and economic aspects**
 1. Inadequate scientific understanding and uncertainty and related data
 2. Inadequate economic analysis and related data
 3. Inadequate or unreliable data collected through routine national data programmes
 4. Inadequate knowledge of technological and technical response options
 - 5a. Methodological failures in pre-operational prediction, such as prior comparative analysis of options, prior risk assessments, prior impact assessments
 - 5b. Methodological failures in post operational or environmental analysis, such as environmental auditing, environmental accounting, cause effect analysis, source distribution analysis
 6. Ineffective data interpretation for management purposes
 7. Inappropriate expert advice and technology
 8. Inadequate access to scientific information at the international level by governments and access to data collecting at the national level for international purposes
 9. Poor public education and awareness regarding scientific and economic values and technical options

ANNEX IV

INTERACTIONS BETWEEN THE MAJOR CONCERNS AND PRINCIPAL ISSUES

1 = Low, 2 = Intermediate, 3 = High

	A			B			C						D					E				
	1	2	3	1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3
A WATER SCARCITY																						
A1 Pollution				3	3	3	3	3	3	2	2	1	1									
A2 Lowering of water table				3	2	2																
A3 Reduction in stream/low				3	3	3	3	3	3	3	2		2									
B HABITAT																						
B1 Loss of ecosystem/ecotones	3	2	3	3																		
B2 Modification of ecosystems/ecotones	3	2	3	3			3	3	3	2	1		2	2	2	2	2	2	2	2	3	2
C POLLUTION																						
C1 Microbiological	3			3																		
C2 Eutrophication	3			3										1								
C3 Chemical	2			3													3	3	2			
C4 Suspended solids	2			3													2	2	2			
C5 Solids	1			2													1	1	1			
C6 Radionuclides																	3	2	1			
C7 Spills																						
D FISHERIES																						
D1 Overexploitation									1								2	3	3			
D2 Excessive by-catch																	2		1			
D3 Destructive fishing																	3	3	1			
D4 Disease/Pollution																	2		2			
D5 Biogenetic Diversity	2			2	2																	
Fisheries biomass	3	2	3	3	2		2	1	2	3	2	1	2	3	1	1	2		2	2	1	2
E GLOBAL CHANGE																						
E1 Hydrological Cycle	2	1	2	3	2	3	2	2	2	2	1	1	2	3	2	1	2	2		2	1	1
E2 Sea-level rise																						
E3 UVB																						

ANNEX V

CAUSAL CHAIN ANALYSIS FOR IDENTIFIED WATER RELATED MAJOR CONCERNS AND PRINCIPAL ISSUES

MAJOR CONCERN: FRESHWATER SHORTAGE

ISSUES	CAUSAL CHAIN				UNCERTAINTIES
	IMMEDIATE	SECONDARY	TERTIARY	QUATERNARY	
POLLUTION OF EXISTING SUPPLIES	<ul style="list-style-type: none"> a. Municipal waste water discharges b. Industrial waste water discharges c. Irrigation return flows d. Urban storm runoff e. agricultural storm runoff f. Evaporation induced concentration g. Atmospheric deposition 	<ul style="list-style-type: none"> 1. Inadequate waste water treatment (a,b) 2. Excessive use of fertilizers and other chemicals (c,e) 3. Excessive irrigation (c) 4. Lack of storm water controls and treatment (d,e) 5. Impoundments (f) 6. Poor air quality (g) 	<ul style="list-style-type: none"> 1. High cost of treatment (a,b,g) 2. Inadequate regulation and enforcement (a,b,g) 3. Poor operation of treatment plants (a,b) 4. Difficulty in monitoring (a-e,g) 5. Lack of knowledge of pollution impacts (a-e,g) 	<ul style="list-style-type: none"> I 1 II 1, 2, 7 II 2 II 2 IV 4 IV 1, 9 	<ul style="list-style-type: none"> - Effects of pollution - Ambient conditions - Future development patterns
LOWERING OF WATER TABLE	<ul style="list-style-type: none"> a. Excessive pumping b. Reduced recharge c. Reduced peak flow d. Vegetative cover including phreatophytes 	<ul style="list-style-type: none"> 1. Increased water demand from: Population growth; Life style; Industrialization; Food production; Urbanization (a,b) 2. Urban drainage and impermeability (b) 3. Lack of protection of recharge zones (b) 4. Climate change (b,d) 5. Rural land use patterns (b,d) 6. Impoundments (c) 	<ul style="list-style-type: none"> 1. Agricultural subsidies (a) 2. Lack of groundwater property rights (a) 3. Lack of regulation and enforcement (a,b) 4. Lack of basin-wide management (a-d) 5. Lack of conjunctive use management (a,b,c) 6. Inappropriate reservoir operation (b,c) 	<ul style="list-style-type: none"> I 1 III 2 I 1 II 1, 2, 7 II 3, 4 IV 1-4 	<ul style="list-style-type: none"> - Future land use and development patterns - Future demographic patterns - Effects of land-use change on hydrology - Regional effects of climate change - Effectiveness of regulations - Future technological changes - Future institutional changes
REDUCTION IN STREAMFLOW	<ul style="list-style-type: none"> a. Increased diversion for: domestic, industrial, public, irrigation, and recreational uses b. Decreased inputs from: changed rainfall-runoff relationships, and decreased groundwater inflow, Return flows c. Increased evaporation d. Reduced peak flows 	<ul style="list-style-type: none"> 1. Population growth (a) 2. Life style changes (a) 3. Industrialization (a) 4. Over pumping (a,b) 5. Urbanization (a,b) 6. Food production (a,f) 7. Inappropriate land-use practice (b,c) 8. Reduced recharge (b,c) 9. Irrigation practice (b,c) 10. Changes in channel (b,c) 11. Increased temperature (b,d) 12. Increased water surface, including impoundments (d) 13. Increased vegetative cover. 	<ul style="list-style-type: none"> 1. Inappropriate investment policies and subsidies (a) 2. Inappropriate water pricing (a) 3. Lack of regulation and enforcement (a) 4. Absence of demand-side management (a,b) 5. Lack of water property rights (a,b) 6. Lack of basin-wide management (a-c) 7. Climate change (a,e) 	<ul style="list-style-type: none"> III 2, 3 I 1 II 1, 2, 7 I 1, 3 II 3, 4 IV 1-4 IV 1 	<ul style="list-style-type: none"> - Future land use and development patterns - Future demographic patterns - Effects of land-use change on hydrology - Regional effects of climate change - Effectiveness of regulations - Future technological changes - Future institutional changes

MAJOR CONCERN II: POLLUTION

ISSUES	CAUSAL CHAIN				UNCERTAINTIES
	IMMEDIATE	SECONDARY	TERTIARY	QUATERNARY	
EUTROPHICATION	<p>a. Enhanced Nutrient Inputs (given appropriate turbidity, incident light and temperature conditions)</p> <p>b. Increased recycling/mobilization</p> <p>c. Trapping of nutrients (e.g. in river impoundments)</p>	<p>1. Use of fertilizers in crop production (a) Use of animal wastes in agriculture (a)</p> <p>2. Wastes from animal production (a)</p> <p>3. Combustion of fossil fuel (a)</p> <p>4. Forestry/Agricultural practices (a,b)</p> <p>5. Phosphate detergents (a)</p> <p>6. Sewage discharges (a)</p> <p>7. Aquaculture (a)</p> <p>8. Draining of wetlands (a,b)</p> <p>9. Wildlife preservation e.g. accumulation of guano from sanctuaries for migratory birds (a)</p> <p>11. Soil loss (a)</p> <p>12. [Transport of micro-nutrients to the pelagic environment]</p> <p>13. Water system impoundment (b,c)</p> <p>14. Soil and sediment erosion, remobilization, leaching (a,b)</p>	<p>1. Enhanced food production via use of fertilizers (a)</p> <p>2. Intensification of animal production (a)</p> <p>3. Enhanced energy demand (a,c)</p> <p>4. Urbanization (a)</p> <p>5. Enhanced aquacultural production (a)</p> <p>6. Land-use changes (a,b)</p> <p>7. Enhancement of navigation, dredging of waterways and harbours (b)</p> <p>8. Enhancement of water supplies (b,c)</p> <p>9. Hydroelectric power development (b,c)</p>	<p>1. Lack of internalization of costs of environmental degradation</p> <p>2. Inadequate development and/or enforcement of regulations</p> <p>I 1, 2 II 1-7 III 1-5 IV 1-9</p>	<p>Relative importance of given sources in a given situation (temporal & spatial variance)</p> <p>Levels/input rates of nutrients that give rise to algal blooms (exceptional)</p> <p>Limitations of information on the incidence and bio-availability of forms of nutrients (N & P)</p> <p>Uncertainties in the precision of comparisons among options or, Uncertainties in the predictions of the outcome of management intervention</p>
[HARMFUL ALGAL BLOOMS] (including shifts in phytoplankton community structure, e.g. diatoms to dinoflagellate)	<p>a. Alterations to the relative rates of input of nutrients (P & N) - Phosphate limitation (Enhancements of nitrogen supply/inputs, reduction in phosphorus inputs, abnormal mixing/upwelling (M))</p> <p>b. Alterations to the relative rates of input of nutrients (SI, P & N) (Increased N inputs, reduced SI inputs, reduced P inputs)</p>	<p>1.Reduction of Phosphorus containing detergents (a)</p> <p>2.increased nitrogen emissions from agriculture especially animal husbandry (a)</p> <p>3.Increased N emissions from agriculture (b)</p> <p>4.River impoundment (b)</p>	<p>1. Intensification of agriculture (a)</p> <p>2. Intensification of agriculture (b)</p> <p>3. Runoff control/modification (b)</p>	<p>I 1, 2 II 1-7 III 1-5 IV 1-9</p> <p>Lack of understanding of phytoplankton metabolism in response to changes in availability of nutrients</p> <p>Consequence on higher trophic structure of shifts in phytoplankton community structure</p>	

MICROBIOLOGICAL (Bacteriological, viral, and other microbiological agents)	a. Discharge of sewage, animal wastes, contaminated solids, urban (runoff), inadequately treated hospital wastes, through point and diffuse sources b. Industrial and urban waste discharges c. Agricultural runoff d. Leachates from solid waste landfill e. Chemical releases from aquaculture f. Acid mine drainage g. Weed and pest control activities h. Disease vector control activities i. Emissions from fossil fuel combustion (electrical and vehicle) j. Increased combustion of natural vegetation	1. Inadequate regulation of waste management activities and/or lack of enforcement 2. Road safety improvement (a) 3. Enhanced manufacture and use of chemicals in domestic applications (a, b) 4. Mineral extraction and refining (a, b, c) 5. Land clearance (and combustion) (a, b, c, i) 6. Human health protection (a, b, g) 7. Intensification of agriculture (b, f, i) 8. Aquaculture development (d) 9. Increased use of antifoulants (d) 10. Intensified forest management (f) 11. Intensified fossil fuel combustion (h)	1. Governance and/or institutional failures 2. Lack of internalization of costs of environmental degradation 4. Lack of education 5. Deficiencies in sectoral management approaches 1. Population growth (a, b) 2. Enhancements in standards of living (a, b) 3. Increased industrial development (a, b, e, h) 4. Increased urbanization (a, b, h) 5. Increased demand for food/proteins (a, d, f, i) 6. Reduction of risks to human health and safety (g) 7. Increased use of vehicles (h) 8. Continued reliance on fossil fuels (f)	I 1, 2 II 1-7 III 1-5 IV 2, 3, 5a, 5b, 6, 7, 9 1. Lack of internalization of costs of environmental degradation 2. Failure to limit population growth and migration 3. Poor development and/or enforcement of regulations pertaining to environmental impacts of social and industrial development 4. Limitations in the international transport of hazardous substances 5. Deficiencies in sectoral management approaches I 1-4 II 1-7 III 1-5 IV 1-9	Effects on the environment, Man and aquatic organisms imprecise (both deterministic and stochastic effects regimes) Dose/response relationships uncertain Difficulties in quantifying relative magnitudes of sources Lack of information on production rates and use of chemicals and their locations
CHEMICAL	a. Soil erosion (aeolian and runoff transport) b. Land development/ excavation/earthmoving c. Dredging d. Aggregate recovery e. Mine waste discharges f. Placer mining g. Sewage (& sewage sludge) discharges, dumping h. Release of drilling muds and particulate additives i. Hydraulic mining j. Urban waste discharges (including plastic scrubbers in domestic and industrial cleaners)	1. Deforestation (a) 2. Agricultural activities (a) 3. Mineral mining, extraction and separation (a, b, d, e, h, i) 4. Reservoir maintenance (b, c) 5. Harbour development, maintenance (b, c, d) 6. Navigational improvements (c, d) 7. Inadequate treatment of urban wastes (g, j)	1. Urbanization (a, b, d, g, i) 2. Infrastructural improvement (a, b, c, d, g, j) 3. Industrial development (a, b, c, d, e, f, h, i) 4. Residential development (a, b, d, g) 5. Marine and riverine transport (c, d)	1. Population growth 2. Improvement in standards of living 3. Failure to internalize costs of environmental degradation 4. Deficiencies on the enforcement of regulations (unregulated activities) 5. Failures of sectoral management approaches I 1, 2 II 1-7 III 1-5 IV 1, 2, 3, 5a, 5b, 6, 7, 9	
SUSPENDED SOLIDS					

<p>SOLIDS (Bulky wastes)</p>	<p>a. Deliberate dumping of objects b. Casual discard of buoyant and non-buoyant waste objects by individuals</p>	<p>1. Increased use of packaging 2. Misplaced reliance on public good behaviour 3. Thoughtlessness 4. Deficiencies in recycling programmes</p>	<p>1. Excessive/unnecessary use of packaging 2. Limitations in waste disposal options 3. Excessive pace of enhancements to standards of living without committant development of recycling and disposal facilities</p>	<p>1. Deficiencies in the enforcement of regulations 2. Failure to internalize the costs of environmental degradation 3. Inadequate education 4. Deficiencies in the control of public behaviour 5. Deficiencies of sectoral (non-holistic) management approaches I 1, 2, 3, 4 II 1, 2, 3, 4, 5, 7 III 1, 5 IV 2, 3, 5a, 5b, 6, 7, 9</p>	
<p>RADIONUCLIDES</p>	<p>a. Incidents at sea b. Spills from treatment facilities c. Discharges/emissions from nuclear power plants d. Discharges/emissions from nuclear fuel reprocessing plants e. Deliberate waste disposal at sea f. Accidents with nuclear weapons g. Accidents at nuclear power installations h. Accidents involving nuclear-powered vessels i. Fallout from nuclear weapons tests j. Contamination from underwater/underground nuclear tests (military and peaceful)</p>	<p>1. Deliberate use of the marine environment for waste assimilation and disposal 2. Use of nuclear power as an electrical generation source and for powering military and civilian vessels 3. Military activities</p>	<p>1. Peaceful applications of nuclear power 2. Military applications of nuclear power and nuclear weapons 3. Peaceful application of nuclear explosives</p>	<p>1. No global problems 2. Perceptions represent concerns only 3. Except for limited fail-safe provisions for release from nuclear weapons</p>	
<p>ACCIDENTAL SPILLS</p>	<p>a. Inadequate accident minimization measures b. Inadequate contingency, response measures c. Human error d. Force majeure</p>	<p>1. Lack of development or implementation of preventative and/or remedial measures</p>	<p>1. Failures in policy development 2. Failures in policy implementation</p>	<p>I 1, 2(f), 3, 4 II 1-7 III 3, 5 IV 1, 2, 4(f), 5a, 5b, 6, 7, 9 I 1, 2(f), 3, 4 II 1, 2, 3, 4, 5a, 5b, 6, 7 III 3, 5 IV 1, 2, 4(f), 5a, 5b, 6, 7, 9</p>	

MAJOR CONCERN III: HABITAT AND COMMUNITY MODIFICATION

ISSUES	CAUSAL CHAIN				UNCERTAINTIES
	IMMEDIATE	SECONDARY	TERTIARY	POLICY MANAGEMENT FAILURES	
LOSS OF MANGROVE ECOSYSTEM	a. Conversion to aquaculture	1. High economic returns at individual and group level	1. Export drive & world market price of shrimp	1. Undervaluation of mangrove ecosystem 2. Government foreign trade & investment policies I-1, 2, 3; II-all; III-1, 3, 4; IV-1-7, 9	Method of economic valuation and valuation of mangrove ecosystems
	b. Conversion to Agriculture for: (i) Subsistence requirements (ii) Intensive, commercial production	1. Subsistence requirements & food security eg rice 2. Economic returns from cash crops e.g. oil palm	2. High population pressures 3. Export drive and world prices of agricultural commodities	1. Undervaluation of mangrove ecosystem 2. Government foreign trade & investment policies I-1, 2, 3; II-all; III-1-4; IV-all	Determination of carrying capacity
	c. Conversion to ports, airports and other public infrastructure	1. National Development needs		1. Undervaluation of ecosystem 2. National policies on land-use 3. Coordination among sectoral agencies of government I-1, 3; II-all; III-3, 4; IV-all	Determination of carrying capacity
	d. Conversion to Tourism Infrastructure	2. High economic returns		1. Undervaluation of ecosystem 2. National policies on land-use 3. Coordination among sectoral agencies of government I-1, 3; II-all; III-3, 4; IV-all	Determination of carrying capacity

¹ The examples specified are not meant to be comprehensive. Similar causal chains could be developed for coral reefs, seagrass beds, and many other tropical and temperate systems

<p>MODIFICATION TO MANGROVE ECOSYSTEM</p>	<p>a. Substantive wood harvest</p> <p>b. Commercial timber harvest (forestry ("sustainable"))</p> <p>c. Selection of particular species resulting in monoculture</p> <p>d. Woodchip harvest for Rayon Production, based on clear-felled coups</p>	<p>1. Substantive/Su rival needs Better economic returns</p> <p>2. Commercial exploitation for export</p>	<p>1. Poverty, lack of employment, economic opportunities</p> <p>2. Population growth and migration</p> <p>3. High economic return to foreign investor but negligible return to country when resources is exploited</p>	<p>1. Government policies on foreign investment</p> <p>2. Monopoly in world woodchips market; government policies on foreign investment; undervaluation of mangrove ecosystem</p> <p>I-1, 2, 3; II-all; III-1, 3, 4; IV-all</p>	<p>Valuation of mangrove ecosystem</p> <p>Lack of ecological understanding of ecosystem structure and function</p> <p>Recovery time after extensive harvest</p> <p>Extent of ecological damage after harvest</p>
<p>MODIFICATION OF TEMPERATE ESTUARY</p> <p>biodiversity and system function, migratory species and patterns of migration, nursery and fishery productivity, recreational value</p>	<p>a. Sedimentation due to: Forestry, road and other construction; Dams, diversion; Cattle raising/riparian erosion</p> <p>b. Introduction of exotic species through aquaculture</p> <p>c. Disease from reintroduction of species for aquaculture</p> <p>d. Loss of habitat due to conversion to airports, marinas, housing, etc.</p>	<p>1. High economic returns</p> <p>2. Comparative value of placer minerals such as tin</p> <p>3. Population pressure</p> <p>1. Food supply and cash crop</p> <p>2. Food supply and cash crop</p> <p>3. Relative valuation</p>	<p>1. Inadequate forest and watershed management practices</p> <p>2. Inadequate consideration of downstream impacts and lack of coordination among different government Ministries in water allocation</p> <p>3. Inadequate management practices to control erosion</p>	<p>I-1, 2, 3; II-all; III-1, 3, 4; IV-1-7, 9</p> <p>1. Inadequate consideration of downstream impacts and lack of coordination among different government Ministries in water allocation</p> <p>I-1, 2; II-all; III-1, 2, 4, 5; IV all</p> <p>I-1; II-all; III-3, 4; IV-1-7, 9</p> <p>I-3; II-2, 3-5, 7; III-4; IV-9</p> <p>I-1, 2; II-all; III-1, 2, 4, 5; IV all</p>	<p>Scientific basis for buffer zone and protected areas</p> <p>Scientific information on nutrient fluxes</p> <p>Agreed methods and economic valuation of system and system function</p> <p>Change in flushing rates in some estuaries</p>

MAJOR CONCERN V: OVEREXPLOITATION OF FISHERIES & OTHER LIVING MARINE RESOURCES

ISSUES	CAUSAL CHAIN				QUATERNARY	UNCERTAINTIES
	IMMEDIATE	SECONDARY	TERTIARY	QUATERNARY		
OVER-EXPLOITATION	<p>a. Excessive effort (too many boats, fishermen, etc.)</p>	<p>1. Possibility of individual/collective profits</p> <p>2. Need for food for subsistence drives poor into fishery as 'employment of last resort'</p>	<p>1. High prices, demand driven, international trade in fish</p> <p>2. Migration to the coast</p> <p>3. Lack of employment opportunities, poverty</p> <p>4. Lack of other food options</p>	<p>1. Free access to resources</p> <p>2. Human population growth and lack of land tenure in agriculture</p> <p>I 3</p> <p>III 4</p> <p>IV 1, 2, 3, 5a, 6, 7, 9</p>	<p>- Inadequate information on resources and on socio-economic aspects;</p> <p>- Market uncertainty</p> <p>- Employment uncertainties</p> <p>- Impact of climate variability on resources (e.g. El Nino)</p>	
EXCESSIVE BYCATCH AND DISCARDS	<p>a. Low economic value of discards</p>	<p>1. Poor Fishing Gear</p> <p>2. Selectivity</p> <p>lack of storage facilities and/or poor acceptance as food</p>	<p>1. Lack of research on fishing technology</p> <p>2. Lack of research on product development</p>	<p>III 1, 4, 5</p> <p>IV 1</p> <p>IV 4</p>	<p>- Uncertainty of priority between reducing bycatch and utilising it</p>	
DESTRUCTIVE FISHING PRACTICES	<p>a. Inappropriate technology and poor harvest procedure</p>	<p>1. Lack of "environmentally friendly" fishing gear</p> <p>2. Lack of ecological ethics in harvesters/users</p>	<p>1. Lack of research on fishing technology</p> <p>2. Lack of consideration of intergenerational equity issue</p>	<p>1. Lack of education of fishery</p> <p>I 1</p> <p>II 1, 2, 5</p> <p>III 4</p> <p>IV 1</p>	<p>- Direct and indirect impacts of fishing difficult to distinguish</p>	
DECREASED VIABILITY OF STOCK THROUGH POLLUTION/ DISEASE	<p>a. Unsuitable environment for survival or completion of life cycles</p>	<p>1. Anoxia</p> <p>2. Contaminants</p> <p>3. Loss of habitat</p> <p>4. Disease-causing organisms</p>	<p>1. Pollution (See pollution and Habitat)</p>			
IMPACT ON BIOLOGICAL AND GENETIC DIVERSITY	<p>a. Increase in exotic species interferes with commercial species, competitors, predators)</p> <p>b. Reduction of the gene pool of wild stocks</p>	<p>1. Accidental introductions by shipping (ballast water), aquaculture</p> <p>2. Intentional release of animals of a single genotype stock</p> <p>3. Loss of diversity in breeding areas/ecosystems</p>	<p>1. Failure of regulations regarding ballast water treatment/quarantine of imported species</p> <p>2. High returns from aquaculture and recreational fisheries investments</p>	<p>1. Lack of scientific research</p> <p>IV 1</p> <p>II 2</p> <p>2. Poor planning (lack of consideration of intergenerational equity) when making investments</p>	<p>- Inadequacy of controls</p> <p>- Questionable enforcement capacity</p>	

ANNEX VI

MARINE GEOGRAPHICAL AREAS AND FRESHWATER BASINS

The following tabulation is a preliminary and far from complete geographic framework under which a GIWA Assessment might be organised. The Major Regions correspond to the 9 regional organisational Units. Columns one and two represent the major marine divisions, and columns 4 and 5 represent the major freshwater units, around which the regional assessments could be structured. Column 3 includes smaller marine sub-units for a number of areas where it is known that specialised assessment activities are already underway or have been completed in the past.

The following points should be noted:

- The columns headed Coastal and Riparian States & Relevant Institutions, Organisations and Programmes, are provided for guidance only and are NOT intended to be taken as an exhaustive listing;
- in a number of instances the inland or land-locked countries sharing freshwater basins have not been listed (e.g. the Nile)
- not all the world's rivers have been listed and in a number of instances where none are named, numerous smaller rivers drain into the coastal seas designated in columns 2 & 3; and,
- the geographic scope of each unit includes the entire area of the catchment basins draining to the designated marine area.
- nomenclature follows the Times Atlas of the Oceans
- A global map of Large Marine Ecosystems (LMEs) is included in Annex V of this report and individual LMEs are identified under each of the large regional units in the following tabulation.

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REGION I: ARCTIC & MAJOR FRESHWATER CATCHMENT BASINS

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
Arctic Basin (I) ²			MacKenzie		Denmark, Norway, USA Canada Russia	AMAP; IASC; AOSB; MIZEX; SHEBA; All
			N. Dvina			
			Pechora			
			Ob			
			Enisey	Baykal Lake		
			Lena			
			Kolyma			

² Roman numerals in parantheses (e.g. I) correspond to the columns in Annex.##

REGION II: NORTH ATLANTIC & MAJOR FRESHWATER CATCHMENT BASINS³

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
Wider Caribbean	Gulf of Mexico (2) (LME)		Mississippi		USA Mexico	IOCARIBE; UNEP (CEP); Gulf of Mexico Mexico Program; Gulf of Mexico Fisheries Management Council; River Basin Commissions; National Estuary Programs; Watershed Councils; Universities; EPA; NOAA; USGS; National Water Quality Monitoring Council
			Rio Grande			
			Brazos			
			Grijalva			
			Colorado			
	Caribbean Sea (3) (LME)		Magdalena		Belize, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Venezuela	IOCARIBE, COSDLC, UNDP, FAO, CARICOMP, OAS MEXICO, UNEP, PNUMA.
		Caribbean Islands (4)			Aruba, Cuba, Haiti, Dominican Republic, Jamaica, US Virgin Islands, Antigua & Barbuda, Barbados, Bermuda, St.Kitts/Nevis, Dominica, St.Lucia, St.Vincent & the Grenadines, Grenada, Trinidad & Tobago, British Dependent Territories, The Netherlands Antilles, French Islands	UNDP; FAO; UNCHS; CRMI(OECS/NRMU); CCA; ECLAC; CARICAD; CEPOL; COSALC; CFRAMP; CARICOMP; WIDECAST; IRF; CEHI; IMA; CMI; METEO-France; CARMABI; CANARI; Univ. of West Indies; MAREMP; CMS; UWICED.

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REGION II: NORTH ATLANTIC & MAJOR FRESHWATER CATCHMENT BASINS⁴, Continued.

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes	
Western North Atlantic	Southeast Shelf (5) (LME)	Pamlico Sound	Pamlico		USA	NAFO; ICES;	
			Neuse				
	Northeast Shelf (6) (LME)	Gulf of Maine	Androscoggin			USA	National Estuary Programmes;
		Bay of Fundy	St. John				
		Long Island Sound	Connecticut				National Water Quality Monitoring Council
		Delaware Bay	Hudson				
		Chesapeake Bay	Delaware				Chesapeake Bay Programme
			Susquehanna				
			Potomac				
		Albermarle Sd.	James				
	Scotian Shelf (7) (LME)		St. John			Canada	
	Gulf St. Lawrence (8)		St. Lawrence	Great Lakes		USA, Canada	International Joint Commission;
	Newfoundland Shelf (9) (LME)					Canada	Fisheries Management
	Baffin Bay, Labrador Sea, Canadian Archipelago (10)						Councils States/Tribes;
East Greenland (15) (LME)					Greenland		
West Greenland (16) (LME)							
Iceland Shelf (14) (LME)					Iceland		

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REGION II: NORTH ATLANTIC & MAJOR FRESHWATER CATCHMENT BASINS⁵, Continued.

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes	
Eastern North Atlantic	Barents Sea (11) (LME)	Tuloma			Russia, Norway, Faroes	ICES; UNDP Barents Sea Oslo & Paris Commission	
	Norwegian Sea (12) (LME)	Namsen					
	Faroe Plateau (13) (LME)						
	Baltic Sea (17) (LME)	North Sea (18)	Oder	Bug		Sweden, Finland, Estonia, Latvia, Lithuania, Denmark	HELCOM; ICES; EU (Phare/Tacis, MAST); NSP; SKAGEX;
			Vistula	Ladoga Lake		Germany	Baltic Agenda 21, BALTIX
			Neva			Poland, Belarus, Ukraine	Oslo & Paris Commission
			Dalelven			Russia	Int. Rhine Comm.
			Rhine			Sweden, Norway, Denmark	
			Shelde			Switzerland, France	
			Elbe			Netherlands	
			Weser			Germany	Int Elbe Comm.
			Humber				
			Tyne			UK	
	Thames						
	Celtic-Biscay Shelf (19) (LME)	Iberian Coastal (20) (LME)	Avon			UK,	Oslo & Paris Commission
Loire					France,		
Shannon					Ireland,		
Mediterranean Sea (21) (LME)	Western Mediterranean	Douro, Tejo			Spain,	Oslo & Paris Commission	
		Tambre			Portugal		
		Ebro			Malta, Morocco, Algeria, Monaco		
		Rhone			Spain		
		Po			France Switzerland		
Eastern Mediterranean		Nile ⁶			Italy, Slovenia, Croatia, Greece	UNEP/MAP; EU; WB/UNDP/EIB-METAP WB	
					Egypt, Albania, Turkey, Cyprus		
					Syria, Lebanon, Israel, Tunisia, F. Yugoslavia, Bosnia-Herzegovina, Libya		

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⁶ The countries of the Nile Basin are not listed in the Right Hand Column

REGION II: NORTH ATLANTIC & MAJOR FRESHWATER CATCHMENT BASINS⁷, Continued.

Marine Area, Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutional Organizations & Programmes
	Black Sea (22) (LME)				Bulgaria Georgia Romania Russia Turkey Ukraine	BSEP- UNDP/UNEP/WB /EU; TU-Black Sea - NATO; EROS- 2000 - EU; COMSBlack - IOC IOC Reg. Programme.
			Danube		Austria, Bulgaria, Romania, Germany, Slovakia, Slovenia, Moldova, Hungary, Croatia, Czech Republic, Bosnia, F.Yugoslavia Belarus, Russia, Ukraine Moldova Georgia, Turkey Russia, Ukraine	Danube River Basin - EU/GEF Sub-regional: Danube Delta GEF (PDF)
	Caspian Sea (23)	(Azov Sea)	Dnipro Dniestr Chorokh Don			Dnipro GEF (PDF)
		North Caspian	Volga Ural Kura		Turkmenistan, Iran Russia Kazakhstan Turkey, Georgia, Armenia, Azerbaijan	Azov Sea DSS - Netherlands; Lower Don (WB) WB/EU
	Aral Sea (24)	Amudariya			Kirgistan, Turkmenistan Kazakhstan, Uzbekistan	

⁷ NB. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of UNEP or the GEF concerning the legal status of any State, Territory, City or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. This document contains the views expressed by experts acting in their individual capacities, and may not necessarily correspond with the views of the sponsoring organisations.

REGION III: NORTH PACIFIC & MAJOR FRESHWATER CATCHMENT BASINS⁸, Continued.

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment Level 2	Coastal & Riparian States	Relevant Institutions, Organizations & Programmes	
North Pacific	California current (26) (LME)		Columbia		Canada USA Mexico	CALCOFI; GLOBEC; COOP; WOCE	
			Sacramento				
	Gulf of California (27) (LME)		Colorado				
			Fuerte				
	Gulf of Alaska (25) (LME)		Columbia			USA	INPOC; WOCE; GLOBEC; COOP
			Susitna				
			Matanuska				
			Copper				
			Fraser Skeena				
	Bering Sea	E. Bering Sea (28) (LME) W. Bering Sea (29) (LME)		Yukon		USA, Canada,	BERPAC
			Anadyr				
Sea of Okhotsk (30) (LME)					Russia, Japan		
Oyashio Current (31) (LME)					Japan	NOWPAP	
Kuroshio Current (32) (LME)					Japan, China	NOWPAP	
Sea of Japan ⁹ (33) (LME)			Amur Tumen		Russia, Japan, S. Korea, N. Korea, China	NOWPAP	
Yellow Sea (34) (LME)	Bohal Sea (35)		Hai Liao Yellow		Japan, N. Korea, S. Korea	NOWPAP	
East-China Sea (36) (LME)			Yangtse Hual		China China, Japan, S. Korea	EASAP	
Central Pacific	Hawaiian Archipelago (37) (LME)				USA & International Water	UNCLOS	

⁸ NB. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of UNEP or the GEF concerning the legal status of any State, Territory, City or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. This document contains the views expressed by experts acting in their individual capacities, and may not necessarily correspond with the views of the sponsoring organisations.

⁹ Also known as the East Sea

REGION IV: EASTERN SOUTH AMERICA & MAJOR FRESHWATER CATCHMENT BASINS¹⁰

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes	
Southeast Atlantic	Patagonian Shelf (38) (LME)		La Plata/Parana	Paraguay	Chile, UK Brazil, Paraguay, Argentina, Bolivia Uruguay, Brazil Paraguay, Argentina, Brazil Brazil	La Plata Treaty GEF Project	
				Bermejo			
				Uruguay			
	Brazil Current (39) (LME)		Paraipe do Sul			Itaipu Agreement Brazilian Government PDBG	
			Guanabara Bay				
			Sao Francisco				
	Northeast Brazil Shelf (40) (LME)		Patos Lagoon			Uruguay Brazil	CEIVAP Brazilian Government CEVASF
			Tocantins,	Araguaia			
				Xingu			
			Amazon (33b)				

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REGION V: SUB-SAHARAN AFRICA & MAJOR FRESHWATER CATCHMENT BASINS¹¹

Marine Area Level 1*	Marine Sub-area, Level 2* (description)	Marine Sub-area, Level 3* (description)	Freshwater catchment(s) Level 1	Associated catchment Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
West & Central Africa	Canary Current (41) (LME) Senegal/Cape Verde Island		Senegal		Guinea Bissau	ORSTOM, ECOWAS, CECAF Senegal River Commission
			Gambia		Gambia, Mauritania, Mali	
			Lake Chad (43) (landlocked)		Nigeria, Chad, Sudan, Cameroon, Niger	
	Gulf of Guinea (42) (LME)		Volta		Sierra Leone, Liberia, Cote d'Ivoire, Sao Tome & Principe, Equatorial Guinea, Gabon	ECOWAS, Central Africa Economic Community, CECAF, GEF Volta River Authority, CEB
			Niger/Benue		Ghana, Benin, Burkino Faso, Togo	
			Congo		Niger, Guinea, Nigeria, Benin, Cameroon, Chad, Mali	
	Benguela Current (44) (LME)		Cunene		Congo Brazzaville, Congo	Niger River Authority Economic Community of Central Africa
			Oranje		Kinshasa, Angola	
			Okavango (internal river)		Angola	
East Africa - Western Indian Ocean	Aguilhas' Current (45) (LME)		Great Ruaha		Angola	BENEFIT, SADC SADC, SADC, OKACOM
			Mangoky		Namibia, South Africa	
			Limpopo		Namibia, Botswana, Angola	
	Somali Coastal Current (46) (LME)		Zambezi		Tanzania, Comoros, Madagascar	SADC, COMESA, IOCIMCWO
			Tana		Botswana, Zimbabwe	
			Ruyuma		Mozambique, Zambia, Malawi, Namibia, South Africa	
	East African Rift Valley Lakes (47)		Juba		Kenya	IGAD; EAS; IOCINWIO
					Tanzania, Mozambique	
					Somalia, Ethiopia, Kenya	
					Kenya, Tanzania, Uganda, Ruanda, Burundi, Congo-Kinshasa, Ethiopia, Zambia, Zimbabwe, Mozambique	GEF

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REGION VI: INDIAN OCEAN & MAJOR FRESHWATER CATCHMENT BASINS¹²

Marine Area Level 1*	Marine Sub-area, Level 2* (description)	Marine Sub-area, Level 3* (description)	Freshwater catchment(s) Level 1	Associated catchment Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
Arabian Sea System	Gulf of Aden (48)				Yemen, Djibouti, Somalia	PERSGA
	Red Sea (49) (LME)				Eritrea, Sudan, Egypt, Palestine, Israel, Syria, Jordan, Saudi Arabi	PERSGA
		Jordan (land-locked river system) (51)			Israel, Syria, Jordan, Palestine, Lebanon	EU Database Project
South Asia Seas	Persian Gulf (50)		Tigris-Euphrates		Turkey, Syria, Iraq, Iran, Saudi Arabia, Kuwait, Bahrain, Qatar, United Arab Emirates	ROPME
	Arabian Sea (52) (LME)		Narmada		India Oman, Somalia, Yemen, Pakistan, Maldives, Iran.	SACEP, ICIMOD, SAARC, IOMAC, START - SEACOM, ESCAP JGOFS, PERSGA, WOCE
	Bay of Bengal (53) (LME)		Indus		Afghanistan, Pakistan, India	Indian/Pakistan Agreement
			Ganges		Sri Lanka, Thailand	GEF
		Brahmaputra		Bangladesh, India, Bhutan, Nepal	ICIMOD, Indo/Bangladesh Agreement, India/Nepal Agreement	
		Irrawaddy		Myanmar		

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REGION VII: SE ASIA AND THE SOUTH PACIFIC & MAJOR FRESHWATER CATCHMENT BASINS¹³

Marine Area Level 1*	Marine Sub-area, Level 2*	Marine Sub-area, Level 3*	Freshwater catchment(s) Level 1	Freshwater catchment(s) Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
South-East Asia (incl. North Australia)	South China Sea (54) (LME)	Gulf of Thailand	Pearl River		Malaysia, Philippines, Indonesia China Vietnam, Laos, Cambodia, Thailand	START - SARCS; ASEAN; COBSEA
			Red River			
			Black River			
			Mekong (55)			
			Chaophraya			Mekong Commission
	Sulu-Celebes Sea (56) (LME)				Indonesia	
	Indonesian Seas (57) (LME)				Indonesia	
	Northern Australian Shelf (58) (LME)				Australia Indonesia	
South Pacific	Coral Sea Basin (59)				Australia New Zealand	
					Australia	GBRMPA
					Australia	Murray-Darling Commission
					Cook Islands; Fiji; Kiribati; Niue, Marshall Islands; Federated States of Micronesia; Papua New Guinea; Tonga; Tuvalu; Vanuatu; Western Samoa; Nauru; Solomon Islands; Territories & Dependencies of UK & USA; France New Zealand	SPREP, ESCAP, University of South Pacific, SPC, SPEC, South Pacific Forum, Forum Fisheries Agency, SOPAC, Tourism Council of the South Pacific
	Great Barrier Reef (60) (LME)					
	Great Australian Bight (61)		Murray-Darling			
	Small Islands (62)					
	Tasman Sea (63)	New Zealand Shelf (LME)				

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REGION VIII: SOUTH-EAST PACIFIC & MAJOR FRESHWATER CATCHMENT BASINS¹⁴

Marine Area Level 1*	Marine Sub-area, Level 2* (description)	Marine Sub-area, Level 3* (description)	Freshwater catchment(s) Level 1	Associated catchment Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
Southeast Pacific	Humboldt Current (84) (LME)	Bravo			Colombia, Panama Chile, Peru, Ecuador Peru, Bolivia	CPPS
		Lake Titicaca (landlocked) Chilean Southern Lakes				
Eastern Equatorial Pacific (85)					Guatemala, Nicaragua, El Salvador, Costa Rica, Honduras	

REGION IX: ANTARCTIC¹⁵

Marine Area Level 1*	Marine Sub-area, Level 2* (description)	Marine Sub-area, Level 3* (description)	Freshwater catchment(s) Level 1	Associated catchment Level 2	Coastal/ Riparian States	Relevant Institutions, Organizations & Programmes
Antarctic (86) (LME)	Southern Ocean	Weddell Sea			Antarctic Treaty Countries	Scientific Committee on Antarctic Research CCAMLR

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ANNEX VII

PRELIMINARY CONSIDERATION OF THE REGIONAL IMPORTANCE OF THE MAJOR WATER-RELATED CONCERNS AND PRINCIPAL ISSUES

The following tabulation provides an initial expert opinion concerning the relative importance of the identified major concerns and principal issues on a regional basis. It was constructed as a means of scoping the full assessment and does not constitute, in itself, an assessment of the relative importance of the major concerns and principal issues.

During the preparation of these tables and the subsequent plenary discussion it was clearly recognised that:

- the contents of this Annex provide a guide to the scope and nature of the final assessment and should not be taken as a quantitative statement concerning the importance of the concerns in each region;
- the highlighted concerns (shaded cells) represent an opinion by members of the Group concerning the comparative importance of each issue in a regional and global context;
- Individual regional assignments should not be taken out of the context of the entire table; and,
- participants in the exercise noted that in many cases, either information was lacking, or the collective knowledge of the Expert Group was insufficient for a well-qualified judgement regarding the degree of concern, such cases are indicated by ii = insufficient information.

In some cases the designated regions could be further subdivided on the basis of available information and expert knowledge, hence the final page of this annex provides a more detailed geographic breakdown for the Mediterranean, Black and Caspian Seas.

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ANNEX VII. Cont.

		REGION II - NORTH ATLANTIC																							
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
A FRESHWATER SHORTAGE	A1 Pollution	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	A2 Changes in Water Table	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	A3 Reduction in streamflow	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
B HABITAT MODIFICATION	B1 Loss of ecosystems/ecotones	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	B2 Modification of ecosystems/ecotones	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
C POLLUTION	C1 Microbiological	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C2 Eutrophication	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C3 Chemical	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C4 Suspended solids	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C5 Solids	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C6 Radionuclides	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	C7 Spills	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
D FISHERIES OVEREXPLOITATION	D1 Overexploitation	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	D2 Excessive by-catch	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	D3 Destructive Fishing	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	D4 Diseases/Pollution	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	D5 Biological diversity	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	D6 Fisheries biomass	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
E GLOBAL CHANGE	E1 Hydrological cycle	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	E2 Sea level change	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	
	E3 UVB	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II	

REGION I ARCTIC

- 1. Arctic

REGION II - NORTH ATLANTIC

- 2. Gulf of Mexico LME
- 3. Caribbean Sea LME
- 4. Caribbean Islands
- 5. South East Shelf LME
- 6. Northeast Shelf LME
- 7. Scotian Shelf LME
- 8. Gulf of St. Lawrence
- 9. Newfoundland Shelf LME
- 10. Baffin Bay, Labrador Sea, Canadian Archipelago
- 11. Barents Sea LME
- 12. Norwegian Sea LME
- 13. Faroe Plateau
- 14. Iceland Shelf LME
- 15. East Greenland Shelf LME
- 16. West Greenland Shelf LME
- 17. Baltic LME
- 18. North Sea LME
- 19. Celtic-Biscay Shelf
- 20. Iberian Coastal LME
- 21. Mediterranean Sea LME
- 22. Black Sea LME
- 23. Caspian Sea
- 24. Aral Sea

ANNEX VII. Cont.

	REGION III - NORTH PACIFIC											REGION IV - EASTERN SOUTH AMERICA				REGION V - SUB-SAHARAN AFRICA									
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40a	40b	41	42	43	44	45	46	47	
A FRESHWATER SHORTAGE																									
A1 Pollution																									
A2 Changes in Water Table																									
A3 Reduction in streamflow																									
B HABITAT MODIFICATION																									
B1 Loss of ecosystems/ecotones																									
B2 Modification of ecosystems/ecotones																									
C POLLUTION																									
C1 Microbiological																									
C2 Eutrophication																									
C3 Chemical																									
C4 Suspended solids																									
C5 Solids																									
C6 Radionuclides																									
C7 Spills																									
D FISHERIES OVEREXPLOITATION																									
D1 Overexploitation																									
D2 Excessive by-catch																									
D3 Destructive Fishing																									
D4 Diseases/Pollution																									
D5 Biogenetic diversity																									
D6 Fisheries biomass																									
E GLOBAL CHANGE																									
E1 Hydrological cycle																									
E2 Sea level change																									
E3 UVB																									

REGION III NORTH PACIFIC

- 25. Gulf of Alaska, LME
- 26. California Current LME
- 27. Gulf of California LME
- 28. West Bering Sea LME
- 29. East Bering Sea LME
- 30. Sea of Okhotsk LME
- 31. Oyashio Current LME
- 32. Kuroshio Current LME
- 33. Sea of Japan LME
- 34. Yellow Sea LME
- 35. Bohai Sea
- 36. East China Sea LME
- 37. Hawaiian Archipelago LME

REGION IV EASTERN SOUTH AMERICA

- 38. Patagonian Shelf LME
- 39. Brazil Current LME
- 40. Northeast Brazil Shelf LME
- 40a. Brazilian Northeast
- 40b. Amazon

REGION V SUB-SAHARAN AFRICA

- 41. Canary Current, LME
- 42. Gulf of Guinea, LME
- 43. Lake Chad
- 44. Benguela Current, LME
- 45. Agulhas Current, LME
- 46. Somali Coastal Current, LME
- 47. East African Rift Valley Lakes

ANNEX VII. Cont.

	REGION VI - INDIAN OCEAN				REGION VII - SOUTHEAST ASIA AND THE SOUTH PACIFIC									REGION VIII - SOUTHEAST PACIFIC			REGION IX - ANTARCTIC				
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63					
A FRESHWATER SHORTAGE																					
A1 Pollution																					
A2 Changes in Water Table																					
A3 Reduction in streamflow																					
B HABITAT MODIFICATION																					
B1 Loss of ecosystems/ecotones																					
B2 Modification of ecosystems/ecotones																					
C POLLUTION																					
C1 Microbiological																					
C2 Eutrophication																					
C3 Chemical																					
C4 Suspended solids																					
C5 Solids																					
C6 Radionuclides																					
C7 Spills																					
D FISHERIES OVEREXPLOITATION																					
D1 Overexploitation																					
D2 Excessive by-catch																					
D3 Destructive Fishing																					
D4 Diseases/Pollution																					
D5 Biogenetic diversity																					
D6 Fisheries biomass																					
E GLOBAL CHANGE																					
E1 Hydrological cycle																					
E2 Sea level change																					
E3 UVB																					

REGION VI INDIAN OCEAN

- 48. Gulf of Aden
- 49. Red Sea LME
- 50. Persian Gulf
- 51. Jordan(Land-locked River system)
- 52. Arabian Sea, LME
- 53. Bay of Bengal

REGION VII SOUTHEAST ASIA & THE SOUTH PACIFIC

- 54. South China Sea LME
- 55. Mekong River
- 56. Sulu-Celebes Sea, LME
- 57. Indonesian Seas, LME
- 58. North Australian Shelf, LME
- 59. Coral Sea Basin
- 60. Great Barrier Reef, LME
- 61. Great Australian Bight
- 62. Small island States
- 63. New Zealand Shelf, LME

REGION VIII SOUTHEAST PACIFIC

- 64. Humboldt Current LME
- 65. Eastern Equatorial Pacific

REGION IX ANTARCTIC

- 66. Antarctic LME

ANNEX VII. Cont.

	REGION II NORTH ATLANTIC																
	SUB-REGION 21 MEDITERRANEAN							SUB-REGION 22 BLACK SEA							SUB-REGION 23 CASPIAN SEA		
	21	A	B	C	D	E	F	22	G	H	I	J	K	L	23	M	N
A FRESHWATER																	
SHORTAGE																	
A1 Pollution																	
A2 Changes in Water Table																	
A3 Reduction in streamflow																	
B HABITAT																	
B1 Loss of ecosystems/ecotones																	
B2 Modification of ecosystems/ecotones																	
C POLLUTION																	
C1 Microbiological																	
C2 Eutrophication																	
C3 Chemical																	
C4 Suspended solids																	
C5 Solids																	
C6 Radionuclides																	
C7 Spills																	
D FISHERIES																	
D1 Overexploitation																	
D2 Excessive by-catch																	
D3 Destructive Fishing																	
D4 Diseases/Pollution																	
D5 Biogenetic diversity																	
D6 Fisheries biomass																	
E GLOBAL CHANGE																	
E1 Hydrological cycle																	
E2 Sea level change																	
E3 UVB																	

**SUB-REGION 21
MEDITERRANEAN**

- A. Western Mediterranean
- B. Eastern Mediterranean
- C. Ebro
- D. Rhone
- E. Po
- F. Nile

**SUB-REGION 22
BLACK SEA**

- G. Azov Sea
- H. Danube
- I. Dniipro
- J. Dniestr
- K. Chorokh
- L. Don

**SUB-REGION 23
CASPIAN SEA**

- M. Volga
- N. Kura

ANNEX VIII

GIWA COORDINATION - DRAFT PROPOSAL ONLY

SUB-REGIONS	EXECUTING ORGANISATION ¹⁶	REGION COORDINATING BODY	MEGA-REGIONS HOST
1. Arctic	ACOPS/PAME	N/A	(I) ARCTIC ACOPS
2. Gulf of Mexico LME	US-NOAA	[CARICOMP]	(II) NORTH ATLANTIC
3. Caribbean Sea LME	CARICOMP		
4. Caribbean Islands	UNDP/GEF		
5. South East Shelf LME	US-NOAA		
6. Northeast Shelf LME	US-NOAA	[US/CANADA]	
7. Scotian Shelf LME	Canada		
8. Gulf of St. Lawrence	Canada		
9. Newfoundland Shelf LME	Canada		
10. Baffin Bay, Labrador Sea Canadian Archipelago	Canada		
11. Barents Sea LME	?		
12. Norwegian Sea LME	?		
13. Faroe Plateau	?		
14. Iceland Shelf LME	?		
15. East Greenland Shelf LME	?		
16. West Greenland Shelf LME	?		
17. Baltic LME	HELCOM		
18. North Sea LME	?		
19. Celtic-Biscay LME	?		
20. Iberian Coastal LME	?		
21. Mediterranean Sea LME	MAP	? DRAFT ?	NOT FOR CITATION
22. Black Sea LME	BSEP UNDP/GEF		
23. Caspian Sea	CSEP UNDP/GEF		
24. Aral Sea	Aral Sea Commission		
25. Gulf of Alaska LME	US-NOAA	PICES ?	(III) NORTH PACIFIC
26. California Current LME	CALCOFI		
27. Gulf of California LME	Mexico		
28. West Bering Sea LME	US-NOAA		
29. East Bering Sea LME	US-NOAA		
31. Oyashio Current LME	Japan		
32. Kuroshio Current LME	Japan	PICES ?	
37. Hawaiian Archipelago LME	US-NOAA		
30. Sea of Okhotsk LME	NOWPAP		NOWPAP
33. Sea of Japan LME	EMECS		
34. Yellow Sea LME	NOWPAP		
35. Bohai Sea	NOWPAP		
36. East China Sea LME	NOWPAP		

¹⁶ Where a country is listed in this column a national organisation needs to be identified.

ANNEX VIII. Cont.

38. Patagonian Shelf LME	IOC ?		(IV) EASTERN SOUTH AMERICA
39. Brazil Current LME	Brazil	IOC ? marine	
40. Northeast Brazil Shelf LME	Brazil	FW separate from Marine	
40a. Brazilian Northeast			
40b. Amazon	Commission		
41. Canary Current LME	UNEP/GEF OSPARCOM	Fresh water separate from Marine	(V) SUB-SAHARAN AFRICA
42. Gulf of Guinea LME	UNDP/GEF		
43. Lake Chad	UNDP/GEF	latter separated	
44. Benguela Current LME	UNDP/GEF	East & West	
45. Agulhas Current LME	?	DRAFT	
46. Somali Coastal Current LME	UNEP/GEF		
47. East African Rift Valley Lakes	IDEAL	NOT FOR CITATION	
48. Gulf of Aden	UNEP/UNDP/WB PERSGA		(VI) INDIAN OCEAN
49. Red Sea LME	UNEP/UNDP/WB PERSGA		
50. Persian Gulf	ROPME	?	
51. Jordan (Land-locked river system)	Jordan/Israel		
52. Arabian Sea LME	ROPME		
53. Bay of Bengal	SACEP	SACEP ¹⁷	
54. South China Sea LME	UNEP/GEF		(VII) SOUTHEAST ASIA & THE SOUTH PACIFIC
55. Mekong River	MRC		
56. Sulu-Celebes Sea, LME	[ADB]	?	
57. Indonesian Seas LME	[ADB]		
58. North Australian Shelf LME	Australia		
59. Coral Sea Basin	Australia		
60. Great Barrier Reef LME	Australia	Australia ?	
61. Great Australian Bight	Australia		
62. Small Island States	SPREP		
63. New Zealand Shelf	New Zealand		
64. Humboldt Current LME	CPPS		(VIII) SOUTHEAST PACIFIC CPPS
65. Eastern Equatorial Pacific	CPPS	N/A	
66. Antarctic LME	SCAR	N/A	(IX) ANTARCTIC SCAR

¹⁷ Includes West coast of India

**ANNEX IX
LOGFRAME MATRIX**

Project Structure	Indicators of Achievement	Means of Verification	Assumptions/Risks
<p>Goal</p> <p>To contribute to improving the effectiveness of national, regional, and global level actions designed to achieve environmental benefits in the area of international waters.</p>	<p>Adoption of the framework by the GEF at programmatic level.</p> <p>Adoption of the Framework by other donors and organisations in the selection of future international waters projects</p>	<p>Selection by the GEF and other donors of projects which address the priority areas identified by the GIWA</p>	<p>It is assumed that selection of 'pure priority areas for interventions in International Waters will be based on rational decision making. An associated risk is that decision making is distorted by other sectorial interests or external influences</p>
<p>Purpose (Immediate Objectives)</p> <p>To develop a comprehensive and strategic framework for the identification of priorities for remedial and mitigatory actions in international waters, designed to achieve significant environmental benefits, at national, regional and global levels</p>	<p>Production of a detailed scheme for determining priorities between and among transboundary water-related issues and areas</p>	<p>Use of the GIWA framework by the GEF and the participating Governments in prioritising and selecting future IW projects</p> <p>Use of the GIWA framework by the GEF's partner organisations, UNCCSD, ACC Sub-committees on Ocean and Water Resources, in the design of future programmes</p> <p>Use of the framework by other donors in project identification and appraisal</p>	<p>The governments will support the process of the development of GIWA and will actively contribute to it.</p> <p>Governments and donors will accept the results of the assessment.</p>
<p>Outputs</p> <p>Strategic information for GEF use at a programmatic level in the IW focal area</p> <p>Identified regional and global priority areas for action in the area of International Waters</p> <p>Identified approaches for more sustainable use of water and its associated resources</p> <p>GIWA Assessment Protocol including agreed methods for conducting causal chain analyses to examine societal root causes of water related environmental problems, and transboundary diagnostic analyses</p> <p>Detailed approaches to the application of Incremental Cost Analyses in IW projects</p>	<p>A global overview of the relative importance of the various major concerns and principal issues by region</p> <p>A global analysis of the societal causes of identified water-related, major concerns and principal issues</p> <p>66 sub-regional reviews of the transboundary ecological status (including analyses of environmental degradation)</p> <p>9 regional and 66 sub-regional scenarios of the future state of international waters</p> <p>Completion and publication of methods/guidelines for the conduct of causal chain and transboundary diagnostic analyses</p> <p>Provision of approaches to incremental cost analysis to the GEF family</p>	<p>Policy statements related to the International Waters, promoting the results of GIWA.</p> <p>Periodic Reviews by the Steering Group and, the Thematic and Regional Task Teams;</p> <p>Peer review and acceptance</p> <p>Review and acceptance by various intergovernmental fora;</p> <p>Adoption of the guidelines by the GEF Implementing Agencies, collaborating organisations/agencies and other donors.</p> <p>Application of the methodology in future transboundary diagnostic and causal chain analyses</p> <p>Improved Incremental Cost Analyses in future GEF projects</p>	<p>It is assumed that sub-regional reviews will be produced in an orderly and timely manner to permit their aggregation to a global scale</p> <p>It is assumed that sub-regional reviews and analyses will be of comparable quality permitting regional and global aggregation</p> <p>It is assumed that socio-economic data are available and suitable for the development of the sub-regional scenarios. An associated risk is a failure to release data by the data holders/owners</p>

The activities leading to the above outputs and the means to achieve them are laid out in detail in section 4 of the project brief.

ANNEX X

INCREMENTAL COSTS AND BENEFITS OF GIWA

Background

The GEF Incremental Costs analysis requires a consideration of baseline and incremental costs associated with achieving 'domestic' and global environmental benefits. The global scope of GIWA presents methodological difficulties in assessing the baseline and incremental costs of the project which are normally calculated in a national context. This results in part from the fact that the benefits resulting from the execution of the project are seen as being primarily accruing at the global and regional scales, and in part from the fact that the GIWA project is dependent on the information and data assembled as a result of past activities undertaken at national, regional and global scales. Consequently the entire costs of the GIWA Project may be considered incremental since no other organisation will undertake such an assessment in the immediate future.

The GIWA project is global in scope and complementary to existing national, regional and global activities related to the assessment of water-related environmental issues and concerns. In addition no other international organisation or body is at present contemplating undertaking such an assessment and hence the entire costs of GIWA may be considered 'incremental'. Nevertheless some global thematic assessments are ongoing or planned for the immediate future and these may be considered as the existing baseline for GIWA. By developing strong synergistic links with such global efforts GIWA will build upon this existing base of activities.

At the regional and sub-regional level various assessment activities including those contemplated through the execution of the GPA/LBA and UNEP's Regional Seas Programme may be seen as contributing directly to the achievement of GIWA goals and objectives. These have not been included in the baseline. The costs of such assessments at sub-regional and regional levels are considered as analogous to the costs of achieving 'domestic' environmental benefits in nationally executed GEF projects.

Whilst the entire project costs may be considered incremental, it should be noted however, that not all costs are eligible for GEF funding. To ensure a global scope the assessment requires the participation of donor countries in conducting assessments for those sub-regions outside the GEF eligible areas of the Globe. Present indications are that the support required and detailed in the budget table of the project brief will be forthcoming.

Baseline - past activities providing the information and data upon which GIWA will be based

GIWA is based upon the evaluation and analysis of information which, in most though not all cases, has already been gathered or is being gathered by existing country-based or international programmes. It adds value to these sets of information by facilitating a truly interdisciplinary analysis which: **examines societal driving forces or causes of environmental degradation; generates regional and global scenarios for policy consideration; and recommends priority areas for developing and funding international waters projects.**

GIWA as a global project with broad scope, encompassing the analysis of environmental and societal factors in a global context will focus on - and support financially - activities that are not, covered by existing programmes or undertaken by individual countries acting unilaterally. GIWA is therefore clearly focused on undertaking and supporting incremental activities, leading to the identification of priority actions yielding maximal global benefits.

An illustration of the **baseline costs of GIWA** can be made by examining the approximate costs of some regional, and global assessment programmes as provided by the relevant co-ordinating bodies:

- **Mediterranean:** The Mediterranean countries have been conducting a pollution assessment programme, MEDPOL, within the framework of UNEP's Mediterranean Action Plan (MAP) since 1976. The estimated cost of this assessment to the Mediterranean Trust Fund and the cooperating UN Agencies is US \$ 35 million. This cost does not include the contribution of the countries for implementing national monitoring programmes and research projects. The full cost

of MEDPOL, including national and individual contributions, is estimated as US \$ 180 million¹. A socio-economic study, designated the **Blue Plan**, has also been conducted within the framework of MAP and the Barcelona Convention. The estimated cost to the Mediterranean Trust Fund and the Government of France is US \$ 9 million for the 1978-1996 period. The corresponding costs of developing national scenarios elevate this figure to some US \$ 20 millions, which does not include the costs of socio-economic assessments conducted in the framework of the coastal area management plans and other activities of the Priority Areas Programme of the MAP.

- **Black Sea:** The recently completed three-year GEF study for formulating the Black Sea Transboundary Diagnostic Analysis cost a total of approximately US \$ 3 million in GEF funding and US \$ 3 million in funding from other donors, notably the European Union. An additional US \$ 10 million was spent on capacity building for a total cost of **US \$ 16 million**.
- **Arctic:** The Arctic Marine Assessment Programme (AMAP) cost about US \$ 4.5 million in specialist time and data analysis (some 30 person-years). The published assessment itself cost some US \$ 0.5 million, for a total cost of **US \$ 5 million**.
- **Comprehensive Freshwater Assessment:** The CFA, which focused on problems of freshwater availability, was funded in a complex manner through support to the eight Agencies involved and the total funding involved is difficult to evaluate at this stage. Funding for the Secretariat (the Stockholm Environment Institute) consisted of about US \$ 1 million from the Swedish government plus US \$ 0.2 million for publication, adding the other agency costs, gives an estimated total of **US \$ 3.2 million**.
- **GESAMP - State of the Marine Environment:** GESAMP's 1985-1989 State of the Marine Environment (which did not include socio-economic studies) cost about US \$ 2.5 millions. This sum does not include the cost of eleven regional studies on which the global study was based. The costs associated with the preparation of these studies is estimated as between US \$ 3 and 4 million for a total cost of around **US \$ 6 million**.
- **GEMS - Water** The Global Environment Monitoring System compilations of River discharge and freshwater quality have cost approximately **US \$ 5 million** over the last 4-5 years.
- **Independent World Commission on the Oceans (IWCO):** For the preparation of a report for the Year of the Oceans the Commission's operating budget for the period 1996-1998 is approximately US \$ 4.7 million, mainly provided by governments and private foundations. This figure does not include the in kind contributions of several governments, foundations and individuals, estimated as an additional US \$ 1.4 million, for a total of **US \$ 6.3 million**
- **GEF Regional TDA's & SAP preparation:** During the last three years GEF has funded a number of regional TDA assessments at an average cost of around **US \$ 350,000**.

The above are examples of the costs of different regional and thematic assessments of varying scope and this is by no means a comprehensive listing of the past assessments, the information and data from which will contribute to the execution of GIWA. On the basis of these examples however, it is apparent that the **costs of the information on which GIWA is to be based will be considerable**. A conservative estimate for the 'past' baseline costs of the GIWA would be of the order of **US \$ 200 million**.

Baseline - ongoing and planned global activities contributing to the GIWA

Planned or ongoing global assessment activities that will contribute to the execution of the GIWA include: the GESAMP assessment of the State of the Marine Environment (1997-2002), the World Water Council's 'Vision for the Future', and the GEMS/Water activities, amongst others. A conservative estimate of the costs of such activities would be approximately **US \$ 12.5 million** over the life of the GIWA Project.

¹ This figure includes equipment and training for developing country scientists; field sampling measurements and observations, laboratory analyses and experiments not envisaged in the framework of GIWA. Consequently this figure cannot be considered in total as a baseline contribution.

Based on the above figures a conservative estimate of the ongoing annual investment worldwide in water-related assessment activities undertaken at a regional scale (such as those outlined above and those undertaken in the context of UNEP's Regional Seas Programme) that will provide on-going support to GIWA during its execution would be of the order of **50 million US \$ per annum**. Such activities may be considered as an analogue of the 'domestic' benefits for GEF projects conducted within a single country. The national level assessment activities that contribute to regional assessment activities such as those outlined above, may be as much as two orders of magnitude greater than this figure.

Benefits of the GIWA

GIWA adds value to international programmes, since it will **provide inter-regional comparisons** of the findings of individual assessments of ecological status and root causes of degradation. GIWA will, to the extent possible, incorporate the findings of past programmes related to international waters or, in the case of on-going programmes, work in close partnership with them in order to avoid duplication and optimize the overall benefit.

The incremental benefits of GIWA are harder to quantify at this stage. GIWA should **reduce the scoping study costs** for the GEF, partner agencies and many donors, enabling more of their funds to be applied to direct action. By focusing action on priority areas where environmental benefits may be achieved the effectiveness of limited funding will be improved.

The global and regional benefits of the GIWA project are clearly recognised by the extent of commitment to co-financing and collaboration secured during the preparatory phase (see Annex IV).

REVISED BUDGET IN UNEP FORMAT

Project No:

Year 1999	US \$	Year 2000	US \$	Year 2001	US \$	Year 2002	US \$	Total US \$
GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF
UNEP E	UNEP E	UNEP E	UNEP E	UNEP E	UNEP E	UNEP E	UNEP E	UNEP E

10 PROJECT PERSONNEL COMPONENT

1200	Consultants (Description of activity/service) w/m							
1220	Unspecified (TOR to be determined)	100,000	0	100,000	0	100,000	0	400,000
	[TOR will be set by the Core Team and Steering Group as required]							
1298	Prior years' adjustment							
1299	Total	100,000	0	100,000	0	100,000	0	400,000
1600	Travel on official business							
1601	Core Team Travel	40,000	0	55,000	0	55,000	0	205,000
1698	Prior years' adjustment							
1699	Total	40,000	0	55,000	0	55,000	0	205,000
1999	Component Total	140,000	0	155,000	0	155,000	0	605,000

20 SUB CONTRACT COMPONENT

2200	Sub-contracts (MOUs/LAs for supporting organizations)							
2201	5 Regional Task Teams	150,000	0	620,000	0	200,000	0	1,840,000
2298	Prior years' adjustment							
2299	Total	150,000	0	620,000	0	200,000	0	1,840,000
2999	Component Total	150,000	0	620,000	0	200,000	0	1,840,000

30 TRAINING COMPONENT

3300	Meetings/conferences (Title)							
3302	Regional & Thematic Task Team Migs [Nos of TTs & meetings to be agreed by the Core Team and Steering Group]	280,000	68,000	180,000	68,000	20,000	68,000	1,260,000
3398	Prior years' adjustment							
3399	Total	280,000	68,000	180,000	68,000	20,000	68,000	1,260,000
3999	Component Total	280,000	68,000	180,000	68,000	20,000	68,000	1,260,000

Project No:

	Year 1999 US \$		Year 2000 US \$		Year 2001 US \$		Year 2002 US \$		Total US \$	
	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E

40 EQUIPMENT AND PREMISES COMPONENT

4100 Expendable equipment (items under \$1,500 each)										
4101 Office supplies	8,000	0	12,000	0	12,000	0	12,000	0	44,000	0
4103 Computer Software	2,000	0	0	0	0	0	0	0	4,000	0
4120 Unspecified	0	0	2,000	0	2,000	0	2,000	0	6,000	0
4198 Prior years' adjustment	10,000	0	14,000	0	14,000	0	14,000	0	54,000	0
4199 Total	20,000	0	28,000	0	28,000	0	28,000	0	116,000	0

4200 Non-expendable equipment (see items listed on budget worksheet)

4201 Computer hardware	15,000	0	0	0	0	0	0	0	15,000	0
4220 Unspecified	20,000	0	10,000	0	10,000	0	10,000	0	50,000	0
[Equipment needs will be determined by the Core Team following establishment of the office.]										
4298 Prior years' adjustment	35,000	0	20,000	0	10,000	0	0	0	65,000	0
4299 Total	70,000	0	30,000	0	24,000	0	14,000	0	118,000	0
4999 Component Total	45,000	0	36,000	0	24,000	0	14,000	0	119,000	0

50 MISCELLANEOUS COMPONENT

5100 Operation and maintenance of equipment										
5101 Rental and maintenance of computer equipment	2,500	0	2,500	0	2,500	0	2,500	0	10,000	0
5102 Rental and maintenance of photocopying equipment	2,500	0	2,500	0	2,500	0	2,500	0	10,000	0
5104 Rental and maintenance of other office equipment	2,500	0	2,500	0	2,500	0	2,500	0	10,000	0
5198 Prior years' adjustment	7,500	0	7,500	0	7,500	0	7,500	0	30,000	0
5199 Total	15,000	0	15,000	0	15,000	0	15,000	0	60,000	0

REVISED BUDGE . IN UNEP FORMAT

Project No:

	Year 1999 US \$		Year 2000 US \$		Year 2001 US \$		Year 2002 US \$		Total US \$	
	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E
5200 Reporting cost										
5220 Unspecified	20,000	0	35,000	0	60,000	0	250,000	0	365,000	0
[The nature of reports and the medium will be agreed by the Core Team and Steering Group in the annual workplans.]										
5298 Prior years' adjustment										
5299 Total	20,000	0	35,000	0	60,000	0	250,000	0	365,000	0
5300 Sundry										
5301 Communications (telex, telephone, fax) [Additional Communications costs will be charged to counterpart contributions]	20,000	0	22,000	0	22,000	0	25,000	0	89,000	0
5302 Postage and pouch charges	3,000	0	5,000	0	5,000	0	5,000	0	18,000	0
5304 Other	2,000	0	3,000	0	3,000	0	3,000	0	11,000	0
5398 Prior years' adjustment										
5399 Total	25,000	0	30,000	0	30,000	0	33,000	0	118,000	0
5999 Component Total	52,500	0	72,500	0	97,500	0	290,500	0	513,000	0

60 UNEP PARTICIPATION COMPONENT (this component is directly controlled by UNEP Headquarters)

	Year 1999 US \$		Year 2000 US \$		Year 2001 US \$		Year 2002 US \$		Total US \$	
	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E	GEF TF	UNEP E
6100 Project Personnel										
6110 Experts Title Grade w/m										
6111 Scientific Director D2 equiv. 48 w/m	208,200	0	184,300	0	184,300	0	190,600	0	767,400	0
6112 Sr Coordinator South (P4/P5) 48 w/m	187,350	0	132,500	0	132,500	0	137,500	0	589,850	0
6113 Programme Officer (P3) 42 w/m	99,350	0	101,000	0	101,000	0	103,400	0	404,750	0
6114 Fund Management Officer (P3) 24 w/m	50,000	0	50,000	0	50,000	0	50,000	0	200,000	0
6118 Prior years' adjustment										
6119 Total	544,900	0	467,800	0	467,800	0	481,500	0	1,962,000	0

Project No:

Year 1999 US \$ Year 2000 US \$ Year 2001 US \$ Year 2002 US \$ Total US \$
 GEF TF UNEP E GEF TF UNEP E GEF TF UNEP E GEF TF UNEP E

60 UNEP PARTICIPATION COMPONENT continued.

6160	Travel on official mission															
6161	Travel of headquarters staff	6,000	0	6,000	0	6,000	0	6,000	0	6,000	0	24,000	0			
6168	Prior years' adjustment															
6169	Total	6,000	0	6,000	0	6,000	0	6,000	0	6,000	0	24,000	0			
6199	Component Total	550,900	0	473,800	0	473,800	0	487,500	0	1,986,000	0		0			

6530	Sundry															
6534	Other - Administrative Overheads	36000	0	36000	0	36000	0	36000	0	144,000	0		0			
6538	Prior years' adjustment															
6539	Total	36,000	0	36,000	0	36,000	0	36,000	0	144,000	0		0			

6550	Evaluation costs															
6551	Evaluation consultants (fees, travel and DSA)	2000	0	8000	0	2000	0	8000	0	20,000	0		0			
6553	Travel and DSA (UNEP staff)	2000	0	2000	0	2000	0	2000	0	8,000	0		0			
6558	Prior years' adjustment															
6559	Total	4,000	0	10,000	0	4,000	0	10,000	0	28,000	0		0			
6599	Component Total	40,000	0	46,000	0	40,000	0	46,000	0	172,000	0		0			

6999	Total UNEP participation costs	590,900	0	519,800	0	513,800	0	533,500	0	2,158,000	0		0			
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99	GRAND TOTAL	1,258,400	68,000	2,433,300	68,000	1,590,300	68,000	1,213,000	68,000	6,495,000	272,000					
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PREVIOUS BUDGET SCHEDULE
 INCREASE/DECREASE

ANNEX XII

Table 1 Timetable for the Execution of GIWA

ACTIVITIES	PDF PHASE			Appraisal Phase			DURATION OF PROJECT 48 MONTHS																		
	3	6	9	12	3	6	9	12	3	6	9	12	15	18	21	24	27	30	33	35	39	42	45	48	
1. Pre-Project preparatory phase PDF																									
Steering Group mtgs	x	x	x	x																					
2 expert group meetings, & Management mtg.	x	x	x	x																					
Prelim. Biblio. & metadata catalogue				3																					
Finalisation of project brief																									
Finalisation of UNEP prodoc																									
2. Establishment of the network & development of Assessment Protocol																									
2.1 Select Core Team, 1d Focal Pts; regional organisations; form. Regional Task Teams (RTT)																									
2.2 Steering Group (SG) Mtg.																									
2.3 Draft assessment protocol include: TDA & causal chain methods; approaches to incremental costs analysis.																									
2.4 Mtgs of 9 Regional Task Teams																									
Prep. of meta-data catalogue & website inputs																									
2.5 Review of assessment protocol & mtgs. of Thematic Task Teams																									
3. Analytical phase																									
3.1 Annual Core Team Rpt & 1999 workplan, SG Mtg																									
3.3 Regional Task Team mtgs. 2 x 9																									
Preparation of regional reviews, TDA analysis																									
Preparation of regional causal chain analysis																									
3.4 3 Mtgs of Economics Task Team, methods for scenario analysis																									
3.5 3 Mtgs of Thematic Task Teams																									
Preparation of draft thematic global reviews																									
3.6 Finalisation of GEF TDA guidelines																									
4. Predictive/policy options phase																									
4.1 Annual Core Team Rpt & 2000 workplan, SG Mtg.																									
4.2 Combined mtg. Economics & RTT																									
4.3 Regional & sub-regional scenario development																									
4.4 Stakeholders meeting																									
4.5 Preparation of the global overview																									
6. Dissemination of GIWA products																									
5.1 Annual Core Team Rpt & 2001 workplan, SG Mtg																									
5.2 Appt. of Public Information expert																									
5.3 Mtgs of Regional & Thematic TT																									
5.4 Expansion of website information, CD ROMs																									
5.5 Global & Regional Information products																									

TABLE 2 WORKPLAN: SUMMARY OF GIWA ACTIVITIES, MILESTONES AND PRODUCTS

Activity	Time Period	Implementation	Products (major products in bold)
1. Pre-project preparatory phase (completed)			
1.1 Establishment & meetings of Steering, Management and Expert Groups	April - Sept. 1997	UNEP	Two Steering, Two Expert Group & Management Meeting reports. Preliminary analysis of thematic and geographical scope of GIWA.
1.2 Preparation of preliminary bibliography	May - Sept. 1997	UNEP	Preliminary bibliography of water related assessments
1.3 Analysis of expert meeting results & design of the project Brief	July - Sept. 1997	UNEP	• Project Brief
1.4 Approval of the Project brief	November 1997	GEF Council	• Approved Project Brief
1.5 Appraisal and finalisation of the UNEP Internal project Document including Host Country Agreement, MoU for Institutional support and co-financing agreements	December 1997 - November 1998	UNEP	• UNEP Project Document
1.6 Final clearance	December 1998	CEO & GEF Council	• Final clearance by the GEF Council
2. The establishment of the GIWA network and development of the GIWA Assessment Protocol			
2.1 Appointment of Core Team staff of specialists: Scientific Director (D2), 4 Programme Officers (P4/PS) and identification of regional collaborators & focal points.	Nov./Dec. 1998	UNEP	Recommendations to the Steering Group (SG) on: Identification of existing programmes and institutions in each region, and sub-region; selection of regional, collaborating bodies; identification of sub-regional focal points and formation of regional task teams, where justified, or the use of existing teams where present.
2.2 Steering Group meeting	April, 1999	UNEP	Approval of GIWA Management Plan & final GIWA UNEO Project Document.
2.3 Completion of draft GIWA Assessment protocol; TDA & causal chains methods; approaches to incremental cost analysis	Jan - Sept. 1999	Core Team	Recommendation to UNEP on appointment of Core Team Draft documents, see under 2.5
2.4 Meetings of all 9 Regional Task Teams	April - Dec. 1999	Core Team	Reports on the establishment of the regional GIWA task teams; analysis of existing/completed projects in the regions; full discussion of the proposed methodology; identified information gaps.
2.5 Peer review and meeting of Thematic Task Teams to complete the GIWA methodology	April - September, 1999	Core Team	<ul style="list-style-type: none"> • a meta-data catalogue of existing/completed projects in all regions; • GIWA methodology for causal chain analysis of water-related environmental issues and their societal causes; • methodology for conducting regional TDA; and, • detailed approaches to incremental cost analyses.
3. Analytical phase of GIWA			
3.1 Meeting of the GIWA Steering Group	November, 1999	UNEP	Review of 1998 project implementation & results, approval of 1999 annual workplan
3.2 Coordination of implementation	October 1999 - September 2000	Core Team	Report demonstrating the implementation of workplan and development of specific products
3.3 Two meetings of each regional task team and implementation of regional programmes	October 1999 - September 2000	Core Team/ Donors/ regional bodies	<ul style="list-style-type: none"> • Sub-regional & regional reviews of transboundary issues & their societal causes. • Meta database & bibliography on CD ROM. • Creation and updating of a GIWA Web page

Activity	Time Period	Implementation	Products (major products in bold)
3.4 Three meetings of economic task team in support of regional case studies & to identify & fill gaps in regional/global database.	October 1999 - September 2000	Core Team in close cooperation with the World Bank	Draft methodology for the scenario and policy options analysis phase, based upon the availability of regional data and information from case studies.
3.5 Meetings of <i>ad-hoc</i> thematic task teams, as necessary	December 1999 - July 2000	Core Team. In close cooperation with technical partners.	<ul style="list-style-type: none"> Preparation of draft global thematic reviews
3.6 Methodology development for GEF Transboundary Diagnostic Analyses (TDA)	April - July 2000	Core Team	<ul style="list-style-type: none"> Methodology for GEF TDA (including inputs from the Regional TTs)
4 Predictive/ policy options analysis phase			
4.1 Meeting of the GIWA Steering Group	October, 2000	UNEP	Review of 1999 project implementation & results, approval of 2000 annual workplan
4.2 Meeting of economic task team & key members of regional TTs to review data gathered in Phase 4 & to explain the methodology for regional scenario development & policy options analysis.	October, 2000	Core Team. & Technical partners	Meeting Report and agree methodology for scenario development and policy options analysis
4.3 Regional and Sub-regional scenario development by thematic/regional TTs	October 2000 - September, 2001	Core Team., Donors, Regional bodies	<ul style="list-style-type: none"> Regional & sub-regional scenarios of future state of international waters based on trends & rates of change in industrialisation, population growth and development.
4.4 Stakeholders meeting to review the initial conclusions of the policy options analysis	September, 2001	Core Team	Meeting Report
4.5 Joint Economic TT and Core Team 'task force' to examine global issues of concern to GIWA and to complete assessment	April - September, 2001	Core Team and technical partners	<ul style="list-style-type: none"> Detailed scheme for decision making concerning priority areas for action at national, regional and global levels A global overview of the relative importance of the various issues and their principal causes.
5. Outreach activities and diffusion of the GIWA products			
5.1 Meeting of the GIWA Steering Group	October, 2001	UNEP	Review of 2000 project implementation and results, approval of 2001 annual workplan
5.2 Incorporation of additional expertise on public information in the Core Team	October 2001	UNEP	
5.3 Meetings of key members of the regional and thematic TTs to plan and produce region-specific and thematic information products	October 2001 - April 2002	Core Team, Donors, Regional bodies	<ul style="list-style-type: none"> Public information plain language technical reviews Popular educational and information materials specific to the regions & sub-regions
5.4 Expansion of GIWA Website as a tool for education and production of GIWA CD-ROM	October 2001 - September 2002	Core Team, Donors, Technical Partners	<ul style="list-style-type: none"> GIWA Website with regional reviews GIWA educational CD-ROM GIWA Reports and data base on CD-ROM Meta-data catalogue on Website & CD-ROM
5.5 Production of global information products	December 2001 - October 2002	Core Team.	<ul style="list-style-type: none"> Comprehensible, illustrated Global Waters Assessment (sales publication)
5.6 Evaluation and reports to co-sponsoring organisations	Oct. - Dec. 2002	UNEP/Core team	<ul style="list-style-type: none"> Evaluation reports

ANNEX XIII

LETTERS OF COMMITMENT

Letters from:

Johan Holmberg, Director,
Department of Natural Resources & Environment,
SIDA,
Sweden

dated May 28th 1998
committing 12 million Swedish crowns

Timo Karmakallio, Acting Deputy Director General,
Department for International Development Co-operation
Ministry for Foreign Affairs of Finland

date July 20th 1998
committing 6 million Finnish marks

D. James Baker, Administrator,
Under Secretary for Oceans and Atmosphere,
National Oceanic and Atmospheric Administration,
United States Department of Commerce

dated October 5th 1998
committing 1.5 million United States dollars



NATUR
Kent Blom

tel. +46 (0)8 6985323
fax: +46 (0)8 6985653
E-mail: kent.blom@sida.se

*** FAX***

Page 1 (2)

May 28, 1998

Dr Klaus Töpfer
Executive Director
UNEP Headquarters
PO Box 30522
Nairobi, Kenya

Fax: 009-254-2-226 886

Your ref:

Reg. No./Dnr:

SENT (date/sign)

UNEP
OCEANS AND COASTAL AREAS
PROGRAMME ACTIVITY CENTRE

RECEIVED

28 MAY 1998

ACTION OED

completed

acknowledged

no action required

Files

Info O.V. JP

Dear Dr Töpfer,

I am writing to provide you with information on the status of the Swedish funding for the GEF/UNEP initiative Global International Waters Assessment (GIWA). As you may have heard, Sweden fully supports the overall objective of GIWA. The development of a comprehensive strategic assessment and identification of priorities for remedial and mitigatory actions in international waters will have significant environmental benefits at national, regional and global levels. The Swedish Prime Minister Mr Göran Persson and the Speaker of the Swedish Parliament Ms Birgitta Dahl welcomed the decision to establish GIWA and expressed satisfaction and pride that this secretariat be located in Kalmar in the south of Sweden during the ACOPS Oceans and Security Conference in Stockholm early 1998.

Sweden, through the municipality of Kalmar and Kalmar University, had already in late 1997 agreed to arrange localities for the GIWA Core team in the new Marine Research Centre in the city of Kalmar as requested by UNEP. Funds (4 million SEK - a little more than USD0.5 million) for the GIWA Secretariat have also been allocated from the municipality of Kalmar for the four year period in accordance with the guidelines in the invitation letter sent to the two potential host cities from UNEP. Confirmation of the Kalmar commitments has been received by UNEP/GEF.

In February Sida received an application - on behalf of UNEP - for a Swedish contribution to the funding of GIWA. The application was submitted by the municipality of Kalmar in cooperation with Kalmar University through Research School Agenda 21. The requested sum was SEK 3 millions/year for the GEF/UNEP project GIWA for each of its four working years starting 1998 or a total of SEK 12 million (approximately USD1,6 million).

Sida's consultants in the marine field are now working together with the Kalmar University and UNEP on the final design on how the Swedish contribution should be used in GIWA. Within a few weeks you will have our decision on the Swedish contribution to GIWA. If you wish to discuss this matter with Sida during your visit to Sweden in June, we will naturally be at

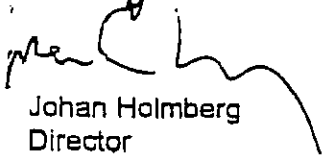
SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
Address: S-105 25 Stockholm, Sweden. Office: Sveavägen 20, Stockholm
Telephone: + 46 (0)8-698 50 00. Telefax: + 46 (0)8-20 88 64.
Telegram: sida stockholm. Postal giro: 1 56 34-9. VAT. No. SE 202100-478901
Sida's Homepage: <http://www.sida.se>

Sida

Page 2 (2)

your disposal.

Sincerely,



Johan Holmberg
Director
Department for Natural Resources and the Environment



20 July, 1998

Mr. John C. Pernetta
Senior Programme Officer
International Waters
UNEP - GEF

RE: UNEP - GEF Global International Waters Assessment (GIWA)

Dear Mr. Pernetta,

I am pleased to confirm that the Government of Finland has decided to support the above-mentioned programme with 6 000 000 Finnish marks

This contribution will be delivered in three tranches. In year 1998 2.000.000 FIM, in year 1999: 2.000.000 FIM and in year 2000 2 000 000 FIM. The specific details concerning the area of Finland's contribution in this assessment will be elaborated later, together with the core-team when established in Kalmar, Sweden.

For any further details, please do not hesitate to contact Ms Vuokko Heikkinen, Councillor, tel, +358-9-1341 6321, fax +358-9-1341 6202 or Ms. Theresa Zitting, Attaché, tel +358-9-1341 6329.

Yours sincerely,

Timo Karmakallio
acting Deputy Director General
Department for International Development Co-operation

U N E P	
GEF COORD. OFFICE	
RECEIVED	
ACTION NO <input type="checkbox"/>	REQUIRED YES <input type="checkbox"/>
31 JUL 1998	
Tel 09-1341151 Fax 09-629 840	
CIRCULATE	NO <input type="checkbox"/> YES <input type="checkbox"/>
FILE IN	

P.O. Box 176
00161 HELSINKI

Katajanokanlaituri 3



UNITED STATES DEPARTMENT OF COMMERCE
 The Under Secretary for
 Oceans and Atmosphere
 Washington, D.C. 20230

OCT 5 1998

98/2854

Dr. John C. Pernetta
 Senior Programme Officer
 GEF Coordination Office
 United Nations Environment Programme
 P.O. Box 30552
 Nairobi, Kenya

Dear Dr. Pernetta:

Thank you for your letter concerning the Global International Waters Assessment (GIWA) project. The National Oceanic and Atmospheric Administration (NOAA), expects that ongoing work of its National Ocean Service and the National Marine Fisheries Service would support GIWA over the next several years. While no funds are appropriated by Congress for these specific activities, for planning purposes, NOAA's expected in-kind contribution is expected to exceed \$1.5 million. In addition to NOAA's programs, other agencies of the United States Government notably the Environmental Protection Agency, are also expected to undertake projects related to GIWA.

I hope you find this information to be responsive, and I look forward to working with your organization.

Sincerely,

James Baker

D. James Baker

GEF COORD. OFFICE
RECEIVED
 ACTION: NO REQUIRED: YES
 22 OCT 1998
 WHAT.....
 WHO.....
 WHEN COMPLETED.....
 CIRCULATE NO YES
 FILE IN



THE ADMINISTRATOR

ANNEX XIV

**AGREEMENT BETWEEN
THE UNITED NATIONS ENVIRONMENT PROGRAMME
AND THE
GOVERNMENT OF SWEDEN**

**REGARDING THE COORDINATION OFFICE
OF THE
GLOBAL INTERNATIONAL WATERS ASSESSMENT
SITUATED IN KALMAR, SWEDEN**

4504
98

98/2071

To Katumanga to Catalogue
cc: T. Melvaselo
A. Djoghbf

U N E P	
GEF COORD. OFFICE	
RECEIVED	
REQUIRED	<input type="checkbox"/>
YES	<input type="checkbox"/>
28 SEP 1998	
WHAT
WHO
WHEN COMPLETED
CIRCULATE	NO <input type="checkbox"/> YES <input type="checkbox"/>
FILE IN

**AGREEMENT BETWEEN THE UNITED NATIONS ENVIRONMENT
PROGRAMME AND THE GOVERNMENT OF SWEDEN
REGARDING THE COORDINATION OFFICE OF THE GLOBAL
INTERNATIONAL WATERS ASSESSMENT SITUATED
IN KALMAR, SWEDEN.**

The United Nations Environment Programme
and
The Government of Sweden;

WHEREAS the Council of the Global Environment Facility in November 1997 approved the
Global International Waters Assessment (GIWA);

NOTING the undertaking of the University of Kalmar and the Municipality of Kalmar to
ensure the availability of the necessary facilities and conditions to enable the Coordination
Office to perform its functions as described in the Memorandum of Understanding annexed to
this Agreement for information;

HAVING REGARD to the institutional arrangements for implementation of the Global
International Waters Assessment, for which the United Nations Environment Programme is
the Implementing Agency;

CONSIDERING that the General Convention on the Privileges and Immunities of the United
Nations adopted on 13 February 1946 by the United Nations, General Assembly, to which
Sweden acceded on 28 August 1947, applies to United Nations officials servicing the
Coordination Office;

CONSIDERING that it is desirable to regulate further certain matters relating to the
establishment of the Coordination Office in Kalmar.

HAVE agreed as follows:

[Handwritten signature]

[Handwritten mark]

Article I
Definitions

Whenever used in this Agreement, the following words and expressions shall have the meaning assigned to them hereunder:

- (a) "Convention" means the Convention on the Privileges and Immunities of the United Nations of 13 February 1946;
- (b) "Coordination Office" means the technical coordination office of the GIWA;
- (c) "Experts" means persons, other than those referred to in sub-paragraph f) of this article, designated by UNEP or the Coordination Office to perform official missions for the Coordination Office;
- (d) "GIWA" means the Global International Waters Assessment, as approved by the Council of the Global Environment Facility on 6 November 1997;
- (e) "the Government" means the Government of Sweden;
- (f) "Officials" means persons appointed or recruited by UNEP for employment with the Coordination Office for the purpose of carrying out its official functions, including the Scientific Director; it does not include persons in domestic service of the Coordination Office or persons recruited locally or remunerated on an hourly basis;
- (g) "Parties" means the Government of Sweden and UNEP;
- (h) "Premises" means the premises of the Coordination Office and any buildings, parts of buildings or facilities used by the Coordination Office on a permanent or temporary basis, to carry out its official functions;
- (i) "Scientific Director" means the official of the Coordination Office who is the head of the Coordination Office;
- (j) "UNEP" means the institutional and financial arrangements for the United Nations Environment Programme established by the General Assembly of the United Nations in resolution 2997 (XXVII) of 15 December 1972, and such other institutional and financial arrangements as may from time to time be made for the United Nations Environment Programme.

Article II
Application of the Convention

Except as otherwise provided in this Agreement, the status, privileges and immunities of the Coordination Office shall be governed by the provisions of the Convention.

Article III
Use and Occupation of Premises

The Coordination Office may establish and operate research, documentation and other technical facilities within its premises. These facilities shall be subject to appropriate safeguards which, in the case of facilities which might create hazards to health or safety or interfere with property, shall be agreed upon with the appropriate authorities.

Article IV
Immunity from legal process

1. The Coordination Office shall, within the scope of its official activities, enjoy immunity from every form of legal process except;

(a) in so far as in any particular case it has expressly waived its immunity;

(b) in respect of a civil action by a third party for damage arising from an accident caused by a motor vehicle or other means of transport belonging to, or operated on behalf, of the Coordination Office.

Article V
Inviolability of the Premises

1. Any person authorized to enter any place under any legal provision shall not exercise that authority in respect of the Premises of the Coordination Office unless permission to do so has been given by or on behalf of the Executive Director of UNEP or the Scientific Director acting on his behalf. Such permission may, however, be presumed in the event of fire or other emergencies requiring prompt protective action. Any person who has entered the premises with the presumed permission of the Executive Director of UNEP or the Scientific Director acting on his behalf shall, if so requested by the Executive Director of UNEP or the Scientific Director acting on his behalf, leave the premises immediately.

2. The Executive Director of UNEP or the Scientific Director acting on his behalf, shall give due consideration to a request for permission from the Swedish authorities to enter the Premises, without prejudice to the interests of the Coordination Office.

3. The appropriate Swedish authorities shall take appropriate measures to ensure the security and protection of the premises of the Coordination Office.

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TK

Article VI
Inviolability of the Archives

The archives of the Coordination Office, and in general all records, correspondence, manuscripts, photographs, films, recordings, documents, computer data and computer files belonging to or held by it, shall be inviolable wherever located.

Article VII
Communications

1. The Government shall permit and protect unrestricted communication on the part of the Coordination Office for all official purposes. The Coordination Office may employ all appropriate means of communication, including couriers and message in code or cipher. However, the Coordination Office may install a wireless transmitter only with the consent of the appropriate authorities.
2. Sealed bags containing documents or articles for official use and bearing external marks of their character shall not be opened or detained.
3. A courier of the Coordination Office shall be provided with an official document indicating his status and the number of packages constituting the sealed bag. The appropriate authorities shall assist him in the performance of his functions, in which he shall enjoy personal inviolability, and he shall not be subjected to any form of arrest or detention.

Article VIII
Interruption of Public Services

In case of interruption or intended interruption of public services, including communications and transportation, the Government will consider the needs of the Coordination Office as being of equal importance with the similar needs of its essential agencies and attempt to ensure that the work of the Coordination Office is not prejudiced.

Article IX
Privileges and Immunities of Officials of the Coordination Office

1. The officials of the Coordination Office shall enjoy immunity from seizure of their official baggage;
2. In addition to the privileges and immunities specified in Section 18 of the Convention the Scientific Director, unless he is of Swedish nationality, shall enjoy, with respect to himself, his spouse and minor children the privileges and immunities, exemptions and facilities normally accorded to diplomatic envoys of comparable rank by the Vienna Convention on Diplomatic Relations, 1961, The Scientific Director shall for this purpose be incorporated by the Swedish Ministry for Foreign Affairs into the Diplomatic list.

3. A Deputy Scientific Director or other senior official, when acting on behalf of the Scientific Director during his absence from duty, shall be accorded the same immunities as are accorded to the Scientific Director.

4. There shall, however, be no immunity in respect of a civil action by a third party arising from an accident caused by a motor vehicle or other means of transport belonging to, or driven by them, or in respect of a traffic offence involving such a vehicle and committed by them.

5. Nothing in this article shall effect the privileges and immunities given in section 18 of the Convention.

*Article X
Privileges and Immunities of Experts*

1. Article VI of the Convention shall apply to experts

2. With respect to section 22 of the Convention, the immunities provided therein shall not apply to civil action by a third party for damage arising from an accident caused by a motor vehicle or other means of transport belonging to or driven by him or a traffic offence involving such a vehicle and committed by them.

*Article XI
Waiver of Immunity*

1. The privileges and immunities for which provision is made in this agreement are granted solely for the purpose of carrying out effectively the aims and purposes of the Coordination Office.

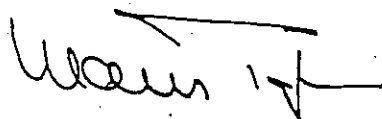
2. The Executive Director of UNEP or a UNEP official acting on his behalf may waive the immunity of any official or expert whenever in his opinion such immunity would impede the course of justice and can be waived without prejudice to the interests of the Coordination Office.

3. Without prejudice to the privileges and immunities accorded by this Agreement, it is the duty of all persons enjoying such privileges and immunities to respect the laws and regulations of Sweden.

*Article XII
Notification*

1. With respect to section 17 of the Convention the following shall also apply:

UNEP shall promptly notify the Government of:





(a) the appointment of Officials and Experts, their arrival and their final departure, or the termination of their functions with UNEP or the Coordination Office;

(b) the arrival and final departure of dependant members of the families forming part of the households of the persons referred to in sub-paragraph a) of this article and, where appropriate, the fact that a person has ceased to form part of the household.

2. The privileges and immunities granted to the respective categories of persons referred to under paragraph 1 of this article shall be implemented upon arrival of such persons and shall be repealed two weeks after notification to the ministry that either the person has terminated his function with the Coordination Office, or has ceased to be a dependant member of the family forming part of the household of a person referred to under paragraph 1, sub-paragraph a) and b). In any case, privileges and immunities shall be repealed immediately after final departure of the persons concerned.

3. The Government shall issue to the officials, to the dependant members of the families forming part of the households of the Officials identity card bearing the photograph of the holder. This card shall serve to identify the holder in relation to the Host State authorities.

Article XIII
Social security

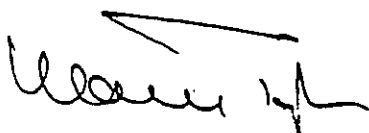
1. In the event that the Coordination Office shall have established its own social security system or shall adhere to a social security system offering comparable coverage to the coverage under the legislation of Sweden, the Coordination Office and its Officials to whom the aforementioned scheme applies, shall be exempt from social security provisions in Sweden.

2. The provisions of paragraph 1 of this article shall apply, mutatis mutandis, to the dependant members of the families forming part of the households of the Officials unless they are employed otherwise than by the Coordination Office or self-employed in Sweden or, unless they receive social security benefits from Sweden.

Article XIV
Employment of Family Members of Officials

1. Dependant members of the families forming part of the households of Officials of the Coordination Office shall be entitled to be granted the appropriate permits to allow them employment within Sweden for the duration of the employment of the Officials.

2. The dependant members of the family forming part of the household of the Officials shall not, when they practice a professional or commercial activity for personal profit, enjoy immunity from administrative and civil jurisdiction in respect of acts performed in the course of or in connection with such activities.



*Article XV
Settlement of Disputes*

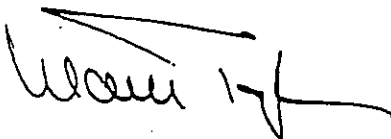
1. Any dispute between the Parties concerning the interpretation or application of this Agreement shall be settled through negotiations or any other means agreed by the Parties.
2. If the dispute cannot be settled through the means mentioned in paragraph 1 above it may be submitted at the request of any Party, to final and binding arbitration in accordance with the Permanent Court of Arbitration Optional Rules for Arbitration involving International Organizations and States of July 1996, as in effect on the date of submission of the dispute to the Court. The number of arbitrators shall be three.

*Article XVI
Amendments to Agreement*

1. At the request of either Party, this Agreement as well as the Annex may be amended by mutual consent at any time.
2. Any such amendment may be effected by an exchange of Notes.

*Article XVII
Duration of Agreement and Conditions of Termination*

1. The Agreement shall be in effect for an initial period of five years. At the end of the five year period set out in this article the agreement shall automatically remain in force until further notice unless either of the Parties has terminated the agreement by giving notice of no less than 12 months before the end of the five year period.
2. Either Party may terminate this Agreement after the end of the initial five year period at any time by giving 12 months notice to the other Party.
3. This Agreement shall be terminated in the event that the Coordination Office is transferred from the territory of Sweden or in the event that the Coordination office ceases to exist. The provisions of this Agreement relevant to the orderly termination of the Coordination Office's operations in Sweden and to the disposal of its property shall remain applicable as long as necessary, but not longer than six months after the Government has been notified by UNEP that the Coordination Office will terminate its operations in Sweden.
4. Upon the termination of this Agreement, property, furniture, equipment and other items that are made available by either UNEP or the Government will remain the property of UNEP or of Sweden, as the case may be.



*Article XVIII
Final Provisions*

1. UNEP and the Government may enter into such supplementary agreement as may be necessary.
2. This Agreement shall be approved by the Parties in accordance with their own procedures.

*Article XIX
Entry into Force*

The Agreement shall enter into force one week after the Parties have notified each other that the requisite procedures have been completed.

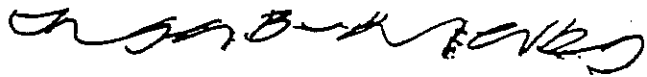
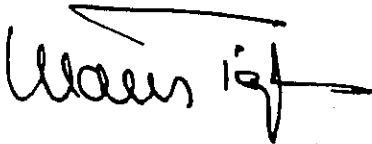
IN WITNESS WHEREOF the undersigned, duly authorized to that effect, have signed this Agreement.

DONE at *Nairobi*
in duplicate in the English language

on *24 September 1948*

For the United Nations
Environment Programme

For the Government of Sweden



ANNEX XV

**MEMORANDUM OF UNDERSTANDING
BETWEEN**

**THE UNIVERSITY OF KALMAR, THE MUNICIPALITY OF KALMAR, SWEDEN
AND
THE UNITED NATIONS ENVIRONMENT PROGRAMME REGARDING THE
COORDINATION OFFICE FOR THE GLOBAL INTERNATIONAL WATERS
ASSESSMENT**

Sept. 11, 1998

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE UNIVERSITY OF KALMAR, THE MUNICIPALITY OF KALMAR, SWEDEN AND
THE UNITED NATIONS ENVIRONMENT PROGRAMME
REGARDING THE COORDINATION OFFICE FOR
THE GLOBAL INTERNATIONAL WATERS ASSESSMENT

WHEREAS the University of Kalmar the Municipality of Kalmar, Sweden, and the United Nations Environment Programme, referred to below as the Parties;

COGNIZANT that the Council of the Global Environment Facility approved the United Nations Environment Programme/Global Environment Facility Project "Global International Waters Assessment" in November 1997;

NOTING the Agreement between the Government of Sweden and the United Nations Environment Programme Regarding the Coordination Office of the Global International Waters Assessment Situated in Kalmar, Sweden;

HAVING REGARD to the institutional arrangements for implementation of the Global International Waters Assessment, for which the United Nations Environment Programme is the Implementing Agency and the University of Kalmar the Supporting Agency, as specified in the United Nations Environment Programme Project Document covering the Global International Waters Assessment;

NOW THEREFORE, the Parties have reached the following understanding:

Article 1 Use of Terms.

- a) "Coordination Office" means the technical co-ordination office of the Global International Waters Assessment;
- b) "DE" means the Division of Environmental Information, Assessment and Research of the United Nations Environment Programme;
- c) "GEF Coordination Office" means the Global Environment Facility Coordination Office of the United Nations Environment Programme;
- d) "GIWA" means the Global International Waters Assessment, as approved by the Council of the Global Environment Facility on 6 November 1997;
- e) "Municipality" means the Municipality of Kalmar, Sweden;
- f) "Officials" means professional staff appointed or recruited by UNEP for employment with the Coordination Office for the purpose of carrying out its official functions, including the Scientific Director;
- g) "Project Document" means the UNEP Project describing the institutional, financial and administrative arrangements for the execution of the Global International Waters Assessment;
- h) "Scientific Director" means the United Nations official of the Coordination Office who is the head of the Coordination Office;
- i) "UNEP" means the institutional and financial arrangements for the United Nations



Environment Programme established by the General Assembly of the United Nations in resolution 2997 (XXVII) of 15 December 1972, and such other institutional and financial arrangements as may from time to time be made for the United Nations Environment Programme;

- j) "University" means the University of Kalmar;
- k) "UNON" means the United Nations Office of Nairobi.

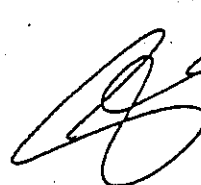
Article 2 University's Obligations

1. The services and facilities to be provided in kind to the Coordination Office, with no cost to UNEP, by the University are identified as follows:

- a) 220 square meters of office space in "Kalmarsundslaboratoriet", a modern building in the city centre of Kalmar, shared by the Department of Marine Sciences of the University of Kalmar, to be subdivided into 9 offices with 13 work places and one meeting room, with the option to provide for possible future growth of the Coordination Office;
- b) Electricity; heating; and water supply for the premises;
- c) Use of and access to all the facilities available within the University complex, including: a reception; telephone switchboard, admission security; mail and archive facilities; library system; free parking places; meeting facilities; lecture room; state-of-art visual design; janitorial and cleaning services;
- d) Access to the University computer network and Internet connection, including support functions;
- e) Financial reporting and administrative support services for the execution of GIWA activities as described in the Project Document;
- f) Access to the infrastructure of expertise and training in the field of water quality and natural resource management, including participation of University Experts in the work of the project as appropriate, and with the agreement of the Scientific Director and the Vice Chancellor of the University;
- g) Involvement of research assistants/associates at doctoral levels, as well as master and doctoral candidates, in research projects that directly contribute to the goals of GIWA, as agreed by the Scientific Director and the Vice Chancellor of the University.

2. The estimated value of the in kind contribution of the University, described in Article 2 (1) points a) - g), is approximately 300 000 US \$ per year.

3. The University will charge the Coordination Office for operational costs such as telephone and fax costs; maintenance of computers/computer network; photocopy machine; and postage costs at the same rate as other departments within the University;



Article 3 Municipality's Obligations

1. The Municipality shall provide the Coordination Office with an estimated sum of up to 125 000 US\$ per year over four years that will cover the costs of the following:

- a) Preparation and equipping of the offices to be occupied by the Coordination Office including provision of office equipment, chairs, desks, telephones, computers including licence fees for computer software, cupboards and archive; kitchenette; and secretariat equipment;
- b) Secretarial and accounting services to the Coordination Office, by providing two locally employed staff members;

2. The contribution of the Municipality of Kalmar shall be transferred on an annual basis to the University, and the University shall be responsible for providing the items and services described in Article 3 (1) a) – b).

3. The staff employed by the University and provided to the Coordination Office shall not be considered as being officials or staff members of UNEP. The University shall solely be responsible for their performance in the Coordination Office, as well as their salaries, insurance and any other financial obligation arising from their employment.

Article 4 UNEP's Obligations

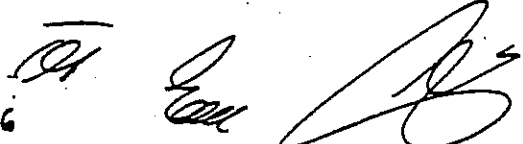
UNEP shall provide the following in support of the Coordination Office:

- a) The officials of the Coordination Office as specified in the Project Document;
- b) A part time Programme Officer, placed at DELA as the UNEP focal point for liaison between the Coordination Office and the substantive departments of UNEP on matters of substance;
- c) A Fund Management Officer, placed at the GEF Coordination Office to follow all administrative and financial matters related to the officials of the Coordination Office and periodic financial transfers between UNEP and the University. The Fund Management Officer will also function as the UNEP focal point for liaison between the University and UNON on matters of fund management and financial support services;

Article 5 The Coordination Office's Obligations

The Coordination Office shall provide the following services to the University:

- a) The Scientific Director and other officials shall give academic lectures on issues related to Global International Waters to the students of the University of Kalmar, on an arrangement to be agreed upon between the Scientific Director and the Vice Chancellor of the University;



- b) Request visiting senior scientists participating in the activities of GIWA, to give lectures on an ad hoc basis, as agreed upon between the Scientific Director and the Vice Chancellor of the University.

Article 6 Application of the Memorandum of Understanding

This memorandum of Understanding and the Project Document shall be complementary to each other and be read together as one document. Neither of the two shall restrict the application of the other.

Article 7 Dispute Settlement

1. In the event of a dispute between the Coordination Office and the University on administrative matters, including issues related to the locally employed staff members, the difficulties shall be settled through negotiation between the two. In case the matter remains unsolved, it may be referred to the Director of DEIA for amicable solution, in consultation with the Vice Chancellor of the University.
2. a) Any dispute between the Parties concerning the interpretation or application of this Agreement shall be settled through negotiations or any other means agreed by the Parties.
- b) If the dispute cannot be settled through the means mentioned in paragraph 1 above it may be submitted at the request of any Party, to final and binding arbitration in accordance with the Permanent Court of Arbitration Optional Rules for Arbitration involving International Organizations and States of July 1996, as in effect on the date of submission of the dispute to the Court. The number of arbitrators shall be three.

Article 8 Amendment of the Memorandum of Understanding

1. The Memorandum of Understanding may be modified or extended in writing by mutual agreement of the Parties through an exchange of letters.
2. It is understood that the ability of the parties to carry out their obligations under this Memorandum of Understanding is subject to the availability of funds through their respective budgetary processes. If one party is not able to carry out their obligations, the other party(-ies) would have the right to withdraw from the Memorandum of Understanding at the end of the year concerned.

Article 9 Entry into Force

This Memorandum of Understanding shall enter into force upon the date of the last signature and remain effective until the 31 December 2002, subject to the approval of the Project Document and the Agreement between the Government of Sweden and the United Nations

Handwritten signatures and initials, including the number 87, are present at the bottom of the page.

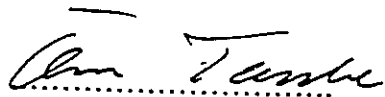
Environment Programme Regarding the Coordination Office of the Global International Waters Assessment Situated in Kalmar, Sweden.

IN WITNESS WHEREOF, the undersigned being duly authorised to that effect, have signed this Memorandum of Understanding this *F.M.* day of *Sept, 11*..... 1998.

DONE at*Kalmar*....., in duplicates in the English language, each version being equally authentic.

For the University of Kalmar

For the Municipality of
Kalmar, Sweden



Örn Taube
Vice Chancellor, University of Kalmar



Mr. Anders Engström
Mayor, Municipality of Kalmar

For the United Nations
Environment Programme



Mr. Shafqat Kakakhel
Deputy Executive Director, UNEP:

ANNEX XVI

TERMS OF REFERENCE FOR THE CORE TEAM OF GIWA

The objective of the Global International Waters Assessment (GIWA) is to develop a comprehensive, strategic framework for identification of priorities for remedial and mitigatory actions in international waters, that could achieve significant environmental benefits at the national, regional and global level.

The geographic scope of the project is global, with a defined regional focus. The assessment will be organised in sixty-six sub regions as basic units, grouped in nine mega regions. The work of participating individuals and institutions in the sub regions, will be co-ordinated through focal points, who will participate in a **regional task team** established for each mega region. These individuals and institutions, the focal points and the regional task teams, together with **thematic task teams** established on an as needed basis, will form the **GIWA Network**.

The GIWA Network will be supported and assisted by a **Core Team** of between 4 – 6 professionals headed by a Scientific Director. The Core Team will be located in the City of Kalmar, Sweden, at the Marine Biological Centre of the University of Kalmar. It will be advised by and report to, the **Steering Group** of the project.

The Core Team will establish the major components of the GIWA network and prepare recommendations concerning the establishment of the components of the GIWA network for consideration by the Steering Group. In this regard, it will identify existing programmes and institutions in each region and sub-regions, select regional collaborating bodies, identify sub-regional focal points and establish the Regional Task Teams. The Core Team will also prepare an overall management plan of the project for consideration of the Steering Group.

The Core Team will be initially responsible for:

- convening expert consultations for the completion of a preliminary GIWA Assessment protocol;
- identifying the need for thematic task teams to review on a global scale specific issues and problems;
- finalising and disseminating the Assessment Protocols;
- convening and preparing meetings of the Steering Group, the Regional Task Teams, and the Thematic Task Teams;
- monitoring progress in achieving the objectives of the project and reporting on an annual basis to the Steering Group;
- ensuring that the necessary support is provided to the regional and thematic task teams with individual members of the Core Team serving as links to, and focal points for, one or more of the regional task teams;
- assisting national experts and providing guidance to institutions in the assembly and analysis of information necessary to apply the GIWA assessment protocol at the sub-regional level;
- facilitating the provision of additional expertise to regions as required; and,
- maintaining an electronic network of communication to facilitate the transfer of appropriate information between the task teams.

As the project progresses the Core Team shall:

- complete and disseminate in collaboration with the Regional and Thematic Task Teams the regional and thematic assessments;
- in close collaboration with the Thematic Task Teams, develop the draft methods and approaches to be used during the predictive and policy options analysis phase of GIWA;
- elaborate a series of global reviews based on the work of the GIWA Network targeting the requirements of UNCSD; and,
- together with the task teams develop scenarios based on current trends and projected actions taken to address societal causes of water-related issues and problems; and,
- evaluate the projected outcomes of the alternative scenarios.

The Core Team shall actively promote GIWA to additional potential donors and shall also be responsible for ensuring stakeholder participation and commitment to action based on the outcomes of GIWA. The Core Team will be responsible for the production and publishing of an illustrated Global International Waters Assessment (sales publication). It shall be responsible for publishing and dissemination of all relevant GIWA products and findings on CD-ROM and hard copies as appropriate and shall produce popular educational and information material, and shall establish and maintain a web site and meta data catalogue.

ANNEX XVII

TERMS OF REFERENCE FOR THE PROFESSIONALS OF CORE TEAM OF GIWA

Post: SCIENTIFIC DIRECTOR, CORE TEAM FOR THE UNEP/GEF PROJECT GLOBAL INTERNATIONAL WATERS ASSESSMENT

Level: L Post (equivalent to D1-D2)

Functions:

Under the overall supervision of the Executive Director of the United Nations Environment Programme and in close consultation with the Director of the Division of Environmental Information, Assessment and Research, the Scientific Director shall take overall responsibility for directing, managing and guiding the conduct of the Global International Waters Assessment. More specifically the Scientific Director shall discharge the following functions:

1. Formulate and recommend policies and strategies to the GIWA Steering Group for the implementation of the project, in particular regarding:
 - i) the establishment of the components of the GIWA Network; and,
 - ii) the development of an overall management plan for the project.
2. Direct and supervise the implementation of the overall management plan for GIWA, by:
 - i) liaison with the Director of the Division of Environmental Information, Assessment and Research on substantive matters, on a regular basis;
 - ii) liaison with the authorities of the University of Kalmar regarding financial and administrative matters on a day-to-day basis;
 - iii) liaison with the UNEP/GEF Co-ordination Office regarding matters of relevance to the Global Environment Facility;
 - iv) reporting to and participating in, the meetings of the Steering Group;
 - v) participating in appropriate meetings of the regional and thematic task teams; and,
 - vi) managing the execution of the project on a day-to-day basis.

In discharging these functions the Scientific Director will take overall responsibility for:

1. Formulation, completion and dissemination of the GIWA Assessment Protocols, by:
 - i) convening the necessary expert consultations;
 - ii) analysing experience of the Regional Task Teams in order to design a methodology for conducting causal chain analysis to examine the societal root causes of water related environmental problems;
 - iii) designing guidelines for the conduct of Transboundary Diagnostic Analyses (TDA's) at sub-regional and regional scales;
 - iv) identifying the need for, and establishing appropriate Thematic Task Teams including a socio-economic task team;
 - v) developing approaches to the application of incremental cost analysis in International Waters projects;
 - vi) developing draft methods and approaches to be used during the predictive and policy options analysis phases of the project.
2. Providing guidance to the work of the regional and thematic task teams, and their Focal Points, regarding:
 - i) the application of the GIWA Assessment Protocols;
 - ii) socio-economic analyses and the dis-aggregation of existing data;
 - iii) methods and approaches to be used during the predictive and policy options analysis phase; and,

- iv) the development and evaluation of scenarios based on current trends and projections and the outcome of alternative actions taken to address societal causes of identified water-related environmental issues and problems.
3. Supporting the work of the regional and thematic task teams, and their Focal Points, by:
 - i) convening and organising as appropriate, meetings of the various task teams;
 - ii) providing specialist assistance and expertise as required, in the analysis of information gathered by national experts and institutions the provision of additional expertise to regions and the application of the agreed assessment protocols;
 - iii) ensuring the transfer and sharing of experiences and information between the various regional and thematic task teams
 4. Managing UNEP's interactions with external entities including the media and potential additional donors and partners, regarding GIWA, in order to ensure responsiveness to governments, as well as to co-ordinate with the work of other international organisations, non-governmental organisations, scientific institutions, and the media, through:
 - i) participating in appropriate meetings of UNCSD;
 - ii) participating in other relevant international meetings to publicise the work of GIWA and secure extended participation and support for the project;
 - iii) organising meetings with relevant stakeholders;
 - iv) liaison with potential donors, co-financiers and other potential contributors and participating in appropriate meetings of such bodies;
 - v) the elaboration and wide dissemination of a series of global reviews directed towards the priorities of the CSD and based on the outputs from the regional and thematic task teams
 - vi) organising press briefings from time to time;
 - vii) directing the establishment and maintenance of a web site; and,
 - viii) organising the publication and wide dissemination of all relevant GIWA products and findings
 5. Management of the GIWA Core Team and Project Office in the University of Kalmar, by providing:
 - i) providing overall guidance and supervision to the work of the professional and support staff of the GIWA Core Team;
 - ii) oversight of the financial management of the GIWA activities in accordance with the overall management plan, preparation of annual budgets, financial reports to UNEP and co-financing organisations, and the finalisation of contracts and agreements;
 - iii) monitoring project progress and reporting on substantive matters to the Steering Group and UNEP, as appropriate and as required under the terms of the project document.

Qualifications:

Advanced degree, preferable Ph. D, in environmental or natural sciences, or resource management and economics.

Experience at the international level for over ten years; experience at the national level for five to ten years. Solid experience and good record as a manager of a large, multi-disciplinary environmental projects and programmes. Ability to assess and resolve complex scientific and technical issues. Ability to communicate effectively with peers and managers at all levels, and to interact with tact and diplomacy with senior officials in governments and other organisations. Experience in the work of scientific institutions, with a particular focus on international waters, and knowledge of environmental and institutional conditions in developing countries.

Excellent command of English; working knowledge of other United Nations languages an asset.

Post: Senior Co-ordinator Southern Hemisphere, Core Team for the UNEP/GEF Project Global International Waters Assessment

Level: L Post (equivalent to P4 - P5)

Functions:

Under the overall guidance and direct supervision of the Scientific Director, the Senior Co-ordinator, Southern Hemisphere, will take responsibility for the implementation of the appropriate components of the GIWA project in the mega-regions of Eastern South America, Sub-Saharan Africa, Indian Ocean, South East Asia & the South Pacific and the Southeast Pacific. More specifically the Senior Co-ordinator will:

1. Assist the Scientific Director to formulate and recommend policies and strategies to the GIWA Steering group for the implementation of the project, through:
 - i) identification of, and liaison with potential organisations, institutions and individuals that could be used to constitute the components of the GIWA Network in the southern hemisphere;
 - ii) assisting in the development of the overall management plan for the project; and,
 - iii) identification of, and initial liaison with, potential donors, partner agencies and contributors interested in the work of the regional and thematic task teams, for which the senior co-ordinator is responsible.
2. Assist the Scientific Director in providing overall direction and supervision of the development and implementation of the GIWA project, through:
 - i) organisation of, and participating in, the meetings of appropriate regional and thematic task teams;
 - ii) preparation of draft contracts and agreements with appropriate organisations, institutions and individuals comprising that portion of the GIWA Network located in the southern hemisphere;
 - iii) providing guidance to, assisting in the work of, and monitoring the progress of the regional task teams for which the Senior Co-ordinator is responsible, in executing the required components of the GIWA project
 - iv) taking responsibility for organisation of the work and monitoring the progress of, the thematic task teams that are assigned by the Scientific Director
3. Assist the Scientific Director to formulate and complete the GIWA Assessment Protocols, by
 - i) analysing experiences of the regional task teams for which the Senior Co-ordinator is responsible, in order to design a methodology for conducting the causal chain analysis to examine societal root causes of water related environmental problems;
 - ii) providing substantive inputs to the design of guidelines for the conduct of Transboundary Diagnostic Analyses (TDA's);
 - iii) providing substantive inputs to the development of approaches to the application of incremental cost analysis in International Waters projects;
 - iv) providing substantive inputs to the development of draft methods and approaches to be used during the predictive and policy options analysis phase.
4. Provide guidance to the work of the five mega-regional Task Teams for which the Senior Co-ordinator is responsible regarding:
 - i) the implementation of the GIWA Assessment Protocols;
 - ii) socio-economic analyses and the dis-aggregation of existing data;
 - iii) methods and approaches to be used during the predictive and policy options analysis phase;
 - iv) the development and evaluation of scenarios based on current trends and projects and the outcome of alternative actions taken to address the societal causes of water-related environmental issues and problems.
4. Assist the Scientific Director in providing specialist assistance and expertise to the five mega-regional task teams for which the Senior co-ordinator is responsible through:
 - i) identification of appropriate experts and sources of expertise;
 - ii) preparation of draft contracts and agreements of additional expertise to the above mentioned regions and actively promote GIWA to additional potential donors;

5. Supervise on a day to day basis the work of programme officers assigned by the Scientific Director, to work on the regions and thematic issues for which the Senior Co-ordinator has overall responsibility.

Qualifications

Advanced degree, preferable Ph. D, in environmental or natural sciences or resource management and economics.

Experience at the international level for over seven years; experience at the national level for five to seven years. Experience of the work of scientific institutions, in the field of international waters. Experience of working in developing countries in relevant professional fields and the management of large multi-country projects. Ability to assess and resolve complex scientific and technical issues. Ability to communicate effectively with peers and managers at all levels.

Excellent command of English; working knowledge of other United Nations languages, particularly Spanish an asset.

Post: Senior Co-ordinator Northern Hemisphere and Antarctica, Core Team for the UNEP/GEF Project Global International Waters Assessment

Level: L Post (equivalent to P4-P5)

Functions:

Under the overall guidance and direct supervision of the Scientific Director, the Senior Co-ordinator, Southern Hemisphere, will take responsibility for the implementation of the appropriate components of the GIWA project in the mega-regions of the Arctic, Antarctic, North Atlantic and North Pacific. More specifically the Senior Co-ordinator will:

1. Assist the Scientific Director to formulate and recommend policies and strategies to the GIWA Steering group for the implementation of the project, through:
 - i) identification of, and liaison with potential organisations, institutions and individuals that could be used to constitute the components of the GIWA Network in the northern hemisphere;
 - ii) assisting in the development of the overall management plan for the project; and,
 - iii) identification of, and initial liaison with, potential donors, partner agencies and contributors interested in the work of the regional and thematic task teams, for which the senior co-ordinator is responsible.
2. Assist the Scientific Director in providing overall direction and supervision of the development and implementation of the GIWA project, through:
 - i) organisation of, and participating in, the meetings of appropriate regional and thematic task teams;
 - ii) preparation of draft contracts and agreements with appropriate organisations, institutions and individuals comprising that portion of the GIWA Network located in the northern hemisphere;
 - iii) providing guidance to, assisting in the work of, and monitoring the progress of the regional task teams for which the Senior Co-ordinator is responsible, in executing the required components of the GIWA project
 - iv) taking responsibility for organisation of the work and monitoring the progress of, the thematic task teams that are assigned by the Scientific Director
3. Assist the Scientific Director to formulate and complete the GIWA Assessment Protocols, by
 - i) analysing experiences of the regional task teams for which the Senior Co-ordinator is responsible, in order to design a methodology for conducting the causal chain analysis to examine societal root causes of water related environmental problems;
 - ii) providing substantive inputs to the design of guidelines for the conduct of Transboundary Diagnostic Analyses (TDA's);
 - iii) providing substantive inputs to the development of approaches to the application of incremental cost analysis in International Waters projects;
 - iv) providing substantive inputs to the development of draft methods and approaches to be used during the predictive and policy options analysis phase.
4. Provide guidance to the work of the five mega-regional Task Teams for which the Senior Co-ordinator is responsible regarding:
 - i) the implementation of the GIWA Assessment Protocols;
 - ii) socio-economic analyses and the dis-aggregation of existing data;
 - iii) methods and approaches to be used during the predictive and policy options analysis phase;
 - iv) the development and evaluation of scenarios based on current trends and projects and the outcome of alternative actions taken to address the societal causes of water-related environmental issues and problems.
5. Assist the Scientific Director in providing specialist assistance and expertise to the five mega-regional task teams for which the Senior co-ordinator is responsible through:
 - i) identification of appropriate experts and sources of expertise;
 - ii) preparation of draft contracts and agreements of additional expertise to the above mentioned regions and actively promote GIWA to additional potential donors:

6. Supervise on a day to day basis the work of programme officers assigned by the Scientific Director, to work on the regions and thematic issues for which the Senior Co-ordinator has overall responsibility.

Qualifications

Advanced degree, preferable Ph. D, in environmental or natural sciences or resource management and economics.

Experience at the international level for over seven years; experience at the national level for five to seven years. Experience of the work of scientific institutions, in the field of international waters. Experience of working in countries with economies in transition in relevant professional fields and the management of large multi-country projects. Ability to assess and resolve complex scientific and technical issues. Ability to communicate effectively with peers and managers at all levels.

Excellent command of English; working knowledge of other United Nations languages, particularly French or Russian an asset.

Posts: Regional Project Co-ordinators, Core Team for the UNEP/GEF Project Global International Waters Assessment
(The number of such posts is subject to financial or in kind contributions but between 2 and 3 are anticipated to be created)

Level: L Post (P-3/P-4 equivalent)

Functions:

Under the overall guidance of the Scientific Director, and the direct supervision of the relevant Senior Co-ordinator, the regional project co-ordinators will take day-to-day responsibility for guiding and assisting in the work of a two or three of the regional task teams engaged in the GIWA project. More specifically the co-ordinators will be assigned to following functions:

1. Assist and support the regional Task Teams by providing guidance and substantive inputs to:
 - i) the implementation of the GIWA Assessment Protocols at a regional and sub-regional level;
 - ii) the development of regionally specific approaches to the protocols to be used in the predictive and policy options analysis phases of the project;
 - iii) the development and evaluation of scenarios based on current trends and projections and the outcome of alternative actions taken to address the societal causes of water-related environmental issues and problems;
 - iv) in consultation with the Regional Co-ordinator identifying the need for external expertise and advice and identifying appropriate means of providing such assistance to the regional task teams.
2. Participate in appropriate meetings of the regional task forces:
 - i) to present and explain the GIWA Assessment protocols; and,
 - ii) ensure congruity between regional and sub-regional work plans and timetables and the overall GIWA work plan and timetable.
3. Take responsibility for data and information acquisition from the sub-regional Focal Points and regional task teams and:
 - i) its exchange between appropriate task teams;
 - ii) its compilation in the agreed GIWA format; and,
 - iii) its inclusion in the global level databases and meta-data catalogues of the GIWA project
4. Monitor progress of project execution at the regional and sub-regional levels, and provision of periodic reports to the relevant Senior Co-ordinator.

Qualifications

Advanced degree in environmental or natural sciences or resource management and economics.

Experience at the international level for a minimum of five years; experience at the national level for two to five years. Experience of the work of scientific institutions, with a particular focus on international waters. Experience of working in an appropriate developing region and in the context of multi-partner projects. Ability to assess and resolve complex scientific and technical issues and to communicate effectively with scientists and managers at all levels.

Excellent command of English, working knowledge of other United Nations languages an asset.

Post: Data Manager, Core Team for the UNEP/GEF Project Global International Waters Assessment

Level: L Post (P-4 equivalent)

Functions:

Under the overall guidance and direct supervision of the Scientific Director, the data and information manager will take responsibility for their acquisition, storage and manipulation of data and information resulting from GIWA activities at the regional and sub-regional level. More specifically the data and information manager will be assigned the following functions:

1. Develop the GIWA data and information system by:
 - i) designing appropriate formats and protocols for data and information acquisition at the regional and sub-regional level;
 - ii) Establishment of appropriate meta-data catalogues of existing and completed water-related projects and activities within each mega-region
 - iii) Establishment and maintenance of a GIWA Web Site for information dissemination;
 - iv) development of appropriate protocols for data and information exchange between sub-regional focal points and regional task teams;
2. Establishment of an electronic network connecting the components of the GIWA Network for the purposes of routine correspondence and for data and information exchange.
3. Develop and maintain the GIWA electronic filing system
4. Supervise the production and dissemination of GIWA products, including but not limited to;
 - i) Public education and awareness materials including a GIWA Educational CD ROM
 - ii) GIWA regional and thematic reports, data bases and meta-data catalogues on CD ROM and in other formats as agreed;
 - iii) Comprehensible, illustrated Global International Waters Assessment (sales publication
5. Reply to all enquiries concerning GIWA and requests for documents.

Qualifications

Advanced university degree in information and communications technology. Experience in communications and knowledge of advanced information and computer technology. Seven years of relevant working experience. Experience from work in an international organisation an asset.

Excellent command of English, working knowledge of other United Nations languages an asset.

ANNEX XVIII

TERMS OF REFERENCE FOR THE STEERING GROUP

The Steering Group will be chaired by the Director for the Division of Environmental Assessment and Early Warning, of UNEP, and will be responsible for providing overall guidance to the process of implementation of the project. More specifically the Steering Group will:

- endorse the initial management plan for the project to be developed by the Scientific Director and Core Team members;
- agree on the network components as proposed by the Scientific Director;
- advise and assist the Scientific Director on the need for and modalities of co-operation and linkage with related initiatives both within and outside the international system;
- review on an annual basis, progress in the implementation of the various phases of the project;
- approve the annual workplans submitted by the Scientific Director;
- assist the Scientific Director and Core Team in soliciting wide support for the execution of the project; and,
- assist in the dissemination and acceptance of the results of the assessment.

The Steering Group will meet at least annually and the first meeting will be called within four months of establishment of the Core Team to agree upon the initial workplan and approve the establishment of the initial components of the network. Extraordinary meetings of the Steering Group may be called by the Director of the Division of Environmental Assessment and Early Warning in consultation with the Scientific Director on an as needed basis. Between regular meetings of the Steering Group the group will work via correspondence.

Membership of the Steering Group will initially consist of, the Director of the Division of Environmental Assessment and Early warning as Chairman, The Scientific Director as Secretary, representatives of the GEF Coordination Offices of the three Implementing Agencies, (UNDP, UNEP, WB) representatives of the University and City of Kalmar, Sweden, GESAMP, SCOPE, ACOPS, WWC, ICSU, NOAA and the co-financing entities SIDA and FINIDA. Additional representatives may be added subsequently from organisations and co-financing entities as the partnerships and collaborative arrangements are extended and finalised.

At its first meeting, the Committee shall decide upon its own rules of procedure and standing orders and may decide to establish working groups to assist the Scientific Director and Core Team in the execution of different facets of the project.

ANNEX XIX

TERMS OF REFERENCE FOR THE REGIONAL TASK TEAMS AND SUB-REGIONAL FOCAL POINTS OF GIWA

The objective of the Global International Waters Assessment (GIWA) is to develop a comprehensive, strategic framework for identification of priorities for remedial and mitigatory actions in international waters, designed to achieve significant environmental benefits at the national, regional and global level.

The geographic scope of the project is global with a defined regional focus. The assessment will be organized in sixty-six sub regions as basic units, grouped in nine mega regions: the Arctic; North Atlantic; North Pacific; Eastern South America, Sub-Saharan Africa; Indian Ocean; Southeast Asia & the South Pacific; Southeast Pacific and Antarctic. Participating individuals and institutions in the sub regions, co-ordinated through Focal Points, which will participate in a Regional Task Team established for each mega region, will form the GIWA Network.

The Regional Task Teams will consist of between 10-15 members, hosted by a regional organization. The appointment of Focal Points and the composition and hosting of the Regional Task Teams will be recommended by the Core Team and decided upon by the Steering Group of GIWA.

Each Regional Task Team will review the preliminary GIWA Assessment Protocol and provide input to the Core Team regarding methodologies for conducting causal chain analysis to examine societal root causes of water related environmental problems and guidelines for the conduct of transboundary diagnostic analyses.

The Regional Task Teams and the sub-regional Focal Points will assist and give guidance to the national experts and institutions on the sub-regional level to gather and analyze the information necessary for applying the GIWA Assessment Protocol. Furthermore, they shall review the quality and relevance of the information gathered, and in some regions, where information is scarce and fragmented, the Regional Task Teams will recommend to the Core Team specific studies to be conducted. Based on the products of the sub-regions, the Regional Task teams shall, in collaboration with the Core Team, commence and as far as possible complete the regional level assessments.

The Regional Task Teams and sub-regional Focal Points will subsequently work on development and policy options analysis and the evaluation of alternative scenarios, in collaboration with the Core Team and the Thematic Task Teams. The analysis should incorporate a number of regional and sub-regional scenarios developed on the basis of projected actions taken to address the identified societal causes of environmental degradation and consider the implications of internalizing environmental externalities in the evaluation of alternative options for water use. The final product should be nine regional and 66 sub-regional scenarios of the future state of international waters based on planning bounds reflecting differing rates of change and industrialization, population and development trends.

Each Regional Task Team will select a key member to, in collaboration with the Core Team, plan and produce region specific information products, such as popular educational and information material, and input to the production of GIWA CD ROM's.

Much of the work in the Regional Task Teams will depend on day to day electronic mail communications. The Core Team will assist the Regional Task Force and the Focal Points in this regard by providing an updated mailing list of the GIWA Network. The Core Team will also organize the meetings of the Regional Task Teams.

The participants in the Regional Task Teams from recipient countries of the GEF, will receive financial support from the Core Team to enable their participation in meetings and fulfillment of tasks. It is expected that participants from non-recipient countries will cover their own costs of participating, as an in kind contribution to the project.

ANNEX XX

STAP ROSTER EXPERT REVIEW STAP ROSTER TECHNICAL REVIEW

During the preparation of this project proposal twelve STAP roster experts have been involved in the expert working groups that developed the geographic framework for the assessment, the preliminary methodology for the 'causal chain analysis' and an indicative listing of societal root causes. In addition the Chair and Vice Chair of STAP were members of the Steering Group responsible for directing the preparation of this proposal and reviewing the drafts.

Two STAP Roster Expert reviews were obtained from Government Scientists in: the United Kingdom, Dr. John Portman former Deputy Director of Aquatic Environment Protection of the Ministry of Agriculture Fisheries and Food; and in China, Professor Su Jilan, Director of the State Oceanic Administration. These are attached herewith.

Both reviewers comment on the innovative approach proposed by GIWA and the fact that the activity is both timely and truly incremental, they also raise a number of technical points that have been addressed in this revision of the project brief. A number of points raised concern the precise nature of the geographic sub-regions and regions and these will be addressed during the project appraisal phase when the regional collaborating partners are identified. The issues raised by Dr. Portman in regard to the financial support required by the individual regional task teams and the sub-regional focal points are included in the full budget as presented under budget lines for sub-contracts and successful completion of GIWA will be dependent upon securing the required cofinancing. Professor Su Jilan raises the issue of the importance of climatic variability and change in the development of the GIWA scenarios and as indicated in the revised paragraph 6.5 serious consideration will be given to the early establishment of a thematic task team to provide guidance on this issue.

STAP Roster Review of the project brief "Global International Waters Assessment (GIWA)"

Reviewer: Dr. John E. Portmann. Date of the Review 16 September, 1997

This assessment addresses the various key and secondary issues set out in the Terms of Reference for Technical Reviews of GEF Project Proposals. Where appropriate some detailed assessments are provided by reference to sections or sub-sections of the main project brief document. In addition further comments are provided on more specific points of detail.

So far as the scientific and technical soundness of the project is concerned the need is clearly stated and there is no doubt the gap identified is real and worthy of attention in order to focus future remedial and preventative action and funding where it can be most effective. The proposed approach of tackling the assessment according to a common format but at a sub-regional level coordinated at a regional level and in turn by a professional core team, is in my view, the only approach that offers any prospect of success. Even so it could be difficult to achieve unless the countries involved in each sub-region are prepared to nominate appropriate experts to the project and give them the necessary time to devote to the task. Far too often nominees either exist in name only or are presented with their assignment simply as an additional duty. As a consequence they often cannot devote enough time to it and/or lack commitment. A further difficulty that is bound to be encountered is the lack of existence or availability of information on which to conduct a comprehensive assessment for each sub-region. I appreciate that the Workshops and Expert meetings have made an estimate of data availability but on the basis of my personal knowledge on the position for a number of the sub-regions I have to say that either the expectations are low or, and I suspect this is the real situation, rather optimistic.

On the basis of the details provided the common approach proposal looks feasible in principle but I think some of the sub-regions are going to need either further details, with perhaps a worked example, or considerable on-hand expert guidance before they will be able to achieve what is required. Also on the availability of experts but at the more supervisory and advisory level I wonder is it realistic to hope to

continue to attract people simply by providing travel and subsistence costs, increasingly these days even State employers expect to see their staff costs covered.

I do not see any drawbacks to the project, which as I have already commented, seems timely and necessary. I did however, expect to see rather more explanation of the global benefits that are expected to result. Perhaps the organisation(s) expected to provide the funds are already fully familiar with the situation but I expected some examples of existing or potential problems to make the need more obvious. For example whilst I do not doubt there are a few marine problems of transboundary scale, e.g. over exploitation of fish stocks and ballast water issues, most of the obvious ones are inshore and locally caused. In international rivers, inland seas and major lakes it can be different and the problem of the actions of one country upstream ignoring consequences downstream are obvious. If these are the sort of problems GIWA is expected to address spelling them out may help to grab attention of the funders more effectively.

Despite the above comments, it is clear enough to me how the project falls within the GEF remit and scope and I would not expect those more familiar with GEF funding priorities to have any problems with the rationale for them supporting it.

The plan clearly has far more than simply regional objectives in that it is ultimately aimed at a global assessment. However, as it will achieve this by the progressive piecing together of regional assessments, there are clearly going to be regional and sub-regional benefits along the way. Similarly, as the aim is to do all the sub-assessments to a common plan and format, there should be no problems of lack of replication.

Subject only to the obvious proviso that the project requires funding commitment and clear allocation of time for the individuals who will be expected to contribute, to allow them to do so, I believe the project will be sustainable. So far as the funding is concerned I am not very familiar with the way these things work. However, on the basis of recent experience with the MAP, I am a little sceptical of the entries in the Table on P10 of the project brief where it is shown that large amounts of money are expected to come from co-finance organisations. Despite the bald statement in para 8.1 that global coverage is assured it is not obvious to this reader who those co-financiers are or to what extent they have made firm commitments. Equally the separation between what the GEF is expected to contribute and what will be co-financed seems arbitrary. Maybe it will be obvious to the funders, but I am left wondering to what extent the divisions reflect hope and perhaps some optimistic signs of approval from at least the GEF, of the indicative sums being forthcoming. Can this be clarified? Does it need to be? My worry, based on MAP, is that often plans for projects seem to be agreed, even though at the time no definite source of the money has been identified. The end result is it often never is and there is no action only disappointment.

I am not sure the final key issue question is really relevant to a project of GIWA proportions. However, in so far as the assessment should provide a much clearer rationale for international and inter-regional protocols and action to resolve, remedy and prevent problems arising, I am satisfied the project does meet a global need and falls within the GEF scope and interests.

As far as the secondary issues are concerned, I feel the project brief does cover the first two points adequately. There will clearly be an overall benefit which ought to be obvious, at the very least at sub-regional and some regional levels, even if it were to prove for some reason impossible to complete the full range of activities in all the regions.

At present, as commented above, I am somewhat unclear just how committed the various stakeholders are, whether they be funding organisations (cash or in-kind) or countries and institutions which are expected to participate. I have no doubt that even if funded externally the true support of countries and some of their key personnel, is vital to the success of the project. I wonder whether it might be possible to seek to get such input assured by persuading member governments to commit themselves at the outset to implementing the outcomes of the assessment. Such a measure might do much to persuade them they own the product and need to make sure it suits them. This might reduce the risk, referred to in section 5.1, and would be a valuable addition to the only other real provision of assurance I found viz. in Annex IV para 2 on stakeholder involvement.

The fact that all regions and sub-regions will be expected to operate to a common format in conducting their assessments and that, if I am correct, many will need a fair amount of Core team guidance, should provide a fair measure of capacity building along the way.

Finally in relation to the innovativeness of the project I am impressed by its ambitious nature and entirely satisfied of its value. My only concern is that there are a number of references to the GESAMP related MEA activity, with the inference that useful input might be expected of it. I expect it will be the reverse if the GIWA project is funded. I even have doubts as to whether the GESAMP activity will proceed let alone succeed. From what I have seen recently GESAMP is a pale shadow of its former self with too few members expected to do far too much and with too little support from the Agencies. That comment does not however detract from the validity, and hopefully also practicality, of the GIWA project.

Finally on these general points and in the same context of GESAMP and other related activities I note no mention is made of any formal attempt to link with the Regional Seas. I know there are reviews in progress or planned of their effectiveness and these might produce some relevant material.

Turning to specifics:

Para 3.1 Was the Freshwater Assessment referred to linked in any way to the one on water resources undertaken by the Blue Plan RAC for the Mediterranean countries? If not it should be at least for that region; unexplained differences could be embarrassing.

Section 4.2.2 sub para 1 Would it be worthwhile indicating how big the Core-team will be overall (I see elsewhere 3 full time members plus? others)? How big will the Steering group be, also the regional task teams and in sub para 2 the thematic task teams? I also suggest it should be clearer what those thematic task teams will cover and how many there will be. I found mention of only one on economic aspects (para 4.2.3 sub para. 3).

Section 4.2.3 sub para 1 I think I understand the aim of parallel activity but have doubts as to the practicality. If it really does complete regional level assessments in parallel with the conduct of the sub-regional ones I see a real danger that the former will bear only an accidental relationship to the latter. The end result could be chaos or at the very least some frantic last minute major adjustments.

The final sentence of this paragraph is I believe an honest and accurate assessment of the scarcity of information in some regions and even more so-though it is not mentioned, of inadequate or should I say disparate quality of available information. The statement does not seem to fit easily with the assessment in Table 1 of the June workshop report, which, as I comment earlier, seems to me to be optimistic in the extreme.

Section 4.2.3 sub para 4 As commented earlier I am not sure GESAMP experts and possibly also not those to be provided by ICSU will be able to make much of an impact unless they just happen to be such experts but involved in a sub regional or regional task team. Sadly I do not see much hope of GESAMP, as it is currently supported and operates, providing any meaningful input to the GIWA activity along the way and precious little even at the end.

Section 4.2.4 sub para 1 I firmly endorse the sentence and am pleased to see that in many cases an attempt has been made to identify these (though there are some odd gaps e.g. on p22 of the April workshop report in relation to radioactive and spills, perhaps they simply could not agree?) En passant I hope others will be as impressed as I by line 6 "internalise environmental externalities" but hope they can better understand it.

Section 6.3 From my earlier comments it will probably come as no surprise that I would like to see clarification of how those groups will be funded and the personnel allocated time for the specified activity.

Section 8.1 bullet 5 Does this mean the 3 permanent members or all persons associated with the core team?

Bullet 6 Should specialist be specialists or is there a word missing?

Annex I bullet 1 Does the socio-economic study refer only to that conducted by the BP/RAC or does it include those by the PAP/RAC and the CAMPs? Bullet 5 Do the costs referred to include the cost of all the expert's time? I believe much, if not all, was provided free of charge to the Agencies by the parent organisations and governments of the experts involved. Either way say.

Annex III and elsewhere I realise mangrove swamps are a very important and widespread resource frequently under threat but am a little puzzled that they have been singled out. As an example fine but what about coral systems and estuaries more generally? Also in relation to Impact on Diversity do we really have any regulations of any significance in global shipping terms?

Finally if I may be allowed one comment on a Workshop report, I can only assume that the details in the Tables in Annex VI of the June report have yet to be completed. For example for the regions I know best I find it odd that ICES and OSPARCOM are not mentioned in relation to the North Sea or Celtic/Biscay or Iberian coast. Perhaps CIEM deserves a mention for the Mediterranean? I suspect the Avon ought to read Severn and surely the Seine and Gironde rivers are worth a mention? Also are not the countries "owning" the Duoro, Teijo and Tambre mixed up?

STAP Roster Review of the GEF project brief, Global International Waters assessment (GIWA)

Professor Su Jilan, China. Date of the review 17 September 1997

1. Scientific and Technical Basis

Water is the most important condition of life on earth, physically, chemically and biologically. Although a water planet, only less than 0.3% of earth's water is available for human use and for freshwater aquatic ecosystems. Thus freshwater availability has dominated the development of mankind throughout the history. Increasing demands, caused by both growing population and rising per capita consumption, have increased the sensitivity and vulnerability of societies to changes to changes of the available water. In addition to natural causes, human activities can seriously modify the hydrological cycle and pollute the water resources. Monitoring and assessment of the quality and quantity of the water systems are necessary for sustainable development.

Of the vast oceans the coastal ocean accounts for only eight percent of its surface but supplies ninety percent of the world's fish catch. It is also the marine domain where other human activities concentrate, including recreation, transportation, and waste discharge. Monitoring and assessment of the ecological states of the marine ecosystems in the coastal ocean are also important for the long-term sustainability of marine resources.

Most of the coastal oceans are shared by neighbouring countries and often used by other states as well. Many drainage basins in the world also straddle different countries. These international waters are already under stress. Various thematic assessments of water systems have been or are being conducted by national, regional and global programmes. However they generally lacked the holistic system approach and often treated a freshwater system independently of its associated marine and coastal systems. The proposed GIWA is designed to fill in this important gap. It is an incremental activity and will build primarily on a broad base of data and information arising from existing country-based or international programmes.

2. Approach and Outputs

GIWA divides the world into a series of about 66 units (sub-regions), based on a mix of environmental, biogeographical, and geopolitical factors. In many cases a drainage area and the associated marine basin are incorporated as one unit. Such a grouping is not only scientifically sound but also useful for the implementation of GIWA. Water-related environmental issues and their societal causes vary widely over the world. A unit (sub-region) chosen in this way would result in the narrowing down of the range of issues as well as their causes, rendering its assessment better to carry out.

Developing countries are the major stakeholders who will benefit from GIWA. This unit-based regional approach will encourage active participation in GIWA by these stakeholders. At the same time interaction between the units (sub-region) and the task teams, regional as well as thematic, will ensure the quality and comparability of the information and analyses. These analyses will provide forward looking projections of change in water quality and quantity and ecological states. By their very nature they are therefore policy relevant and will be very important for policy makers at national levels. Integrating across all units (sub-regions) these analyses will provide important basis for regional and global policies on water-related issues.

3. An Innovation of GIWA and its Possible Implication

Linking a drainage area and its associated marine basin is not new. For example, the global research programme LOICZ adopts such an approach. However, the adoption of such an approach in a global assessment programme as in the proposed GIWA is new and innovative. It may have some profound influence on our way of thinking.

At present, except for transboundary rivers, jurisdiction over modification of the hydrological balance in a drainage basin falls strictly within the authority of that country which governs the basin. However, if this river drains into a marine basin, a major hydrological construction project in the drainage area may have significant impact on the ecological states of that marine basin. If, furthermore, the marine basin borders more than one country, it is then an international water and the river discharge has then a transboundary characteristics. By inference, any hydrological construction project in this drainage area may be regarded as a transboundary issue and not simply only of national concern.

Even for a transboundary river, presently its international river authority pays more attention to terrestrial concerns than to marine matters. The innovative concept of linking the terrestrial and marine domains in the proposed GIWA will force such an authority to consider the impact on the associated marine ecosystem by any modification of the hydrological cycle in the river basin. In the end this line of thinking will be beneficial towards the long-term sustainability of marine resources.

4. Two suggestions

Forward looking projections of change in water quality and quantity and ecological states within each unit (sub-region) will be the essential outputs from the proposed GIWA. Such a projection must depend on the anticipated change in population, demographic distribution and standard of living of that sub-region over the next decade or more. On the other hand, recent climate research results has demonstrated the importance of climate variability over the decadal time scale. In fact, the World Climate Research Programme recently has established a programme, CLIVAR, in which the decadal time scale climate variability is one of its three focal areas. In the final analysis, hydrological balance depends critically on the climate. Although decadal time scale variability is still, to a large extent, a research topic, it is perhaps unwise to ignore any of its findings in GIWA assessment which happens to span similar time scale.

In the proposed GIWA the 66 units (sub-regions) are grouped into 9 regions, for the convenience of project management. Mostly this grouping seems to share both geographical integrity and similar open ocean forcing. In this sense I would suggest to further divide Region VII into two separate regions, one the Southeast Asia Region and the other the South Pacific Region. The Southeast Asia Region would include Papua New Guinea and the Northern Australian shelf. It is dominated by the Pacific lower latitude western boundary currents and the Throughflow.

5. Summary

The proposed GIWA project intends to address hydrological and ecological questions in international waters, both terrestrial and marine. The project is sound, scientifically and technically. It does not duplicate existing programmes and is an incremental activity based primarily on data and information collected in existing country-based and international programmes. Implementation of GIWA has a strong regional context, in many cases based largely on drainage area and its associated marine basin. The outputs from GIWA will be strongly policy relevant. As important stakeholders developing countries are expected to be active partners in GIWA. At the same time these outputs will be equally policy relevant at regional and international levels.

Linking a drainage area with its associated marine basin in an assessment is an innovative approach adopted in GIWA. This approach may change our present view of regarding non-transboundary river systems as distinct from international waters.

It is suggested that due attention should be paid to the effects of decadal climate variability on hydrological cycles. The preliminary grouping of Region VII is suggested to be divided into two regions, based on geographical and open-ocean forcing considerations.

ANNEX XXI

FORMAT OF QUARTERLY OPERATIONAL REPORT TO UNEP/GEF

1. IDENTIFIERS

Country:

Focal Area:

Project Title:

Requesting Agency:

Executing Agency:

2. IMPLEMENTATION PROGRESS

[Statement of progress of the project components in relation to agreements or plans. Assessment of Overall status. Report on the reasons, in the event of delays, cost over-run or positive deviations]

3. ACHIEVEMENT OF PROJECT OBJECTIVES

[Assessment of likelihood that project objectives will be achieved.]

4. SPECIFIC ASSESSMENT OF FACTORS RELATING TO THE INTERNATIONAL WATERS FOCAL AREA.

[Status of progress in developing multi-country institutional arrangements]

ANNEX XXII

UNITED NATIONS ENVIRONMENT PROGRAMME
SIX MONTHLY PROGRESS REPORT

SECTION 1 - BACKGROUND INFORMATION

1.1 Project Title:

1.2 Project Number:

1.3 Responsible Office: (PAC/Unit/Branch)

1.4 Coordinating Agency or Supporting Organization (if relevant):

1.5 Reporting Period: (the six months covered by this report)

1.6 Relevant UNEP Programme of Work Component Number: (3 digits)

SECTION 2 - PROJECT STATUS

2.1 Status of the Implementation of the Activities and Outputs Listed Under the Workplan in the Project Document (check appropriate box)

Project activities and outputs listed in the Project workplan for the reporting period have been materially completed and the responsible Office is satisfied that the project will be fully completed on time (give reasons for minor variations as Section 3 below).

Project activities and outputs listed in the Project Workplan for the reporting period have been altered (give reasons for alterations: lack of finance; project reformulated; project revisions; other at Section 3 below).

Project activities and outputs listed in the Project Workplan for the reporting period have not been fully completed and delays in project delivery are expected (give reasons for variations in Section 3.1 and new completion date in Section 3.2 below).

Insufficient detail provided in the Project Workplan.

2.2 List Actual Activities/Outputs Achieved in the Reporting period:
(please tick appropriate box)

(a) **MEETINGS** (UNEP-convened meetings only)

Inter-governmental (IG) mtg Expert Group Mtg. Training Seminar/Workshop
 Others

Title: _____

Venue and dates _____

Convened by _____ Organized by _____

Report issued as doc. No/Symbol _____ Languages _____ Dated _____

For Training Seminar/Workshop, please indicate: No. of participants _____ and attach **annex** giving names and nationalities of participants.

(b) **PRINTED MATERIALS**

Report to IG Mtg. Technical Publication Technical Report Others

Title: _____

Author(s)/Editor(s) _____

Publisher _____

Symbol (UN/UNEP/ISBN/ISSN) _____

Date of publication _____

(When technical reports/publications have been distributed, **attach distribution list**)

(c) **TECHNICAL INFORMATION** **PUBLIC INFORMATION**

Description _____

Dates _____

(d) **TECHNICAL COOPERATION**

Grants and Fellowships Advisory Services
 Staff Missions Others (describe)

Purpose _____

Place and duration _____

For Grants/Fellowships, please indicate:

<u>Beneficiaries</u>	<u>Countries/Nationalities</u>	<u>Cost(in US\$)</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

(e) SERVICES

Description

Dates

(f) OTHER OUTPUTS

For example, Centre of excellence, Network, Environmental Academy, Convention, Protocol, University chair, etc.

SECTION 3 - PROJECT DELIVERY

3.1 Summary of the Problems Encountered in Project Delivery (if any)

3.2 Actions Taken or Required to Solve the Problems (identified in Section 3.1 above)

TERMINAL REPORT
(For External Projects Only)

Implementing Organization _____
Project _____
No.: _____
Project Title: _____

1. **Project Needs and Results**
Re-state the needs and results of the project.
2. **Project activities**
Describe the activities actually undertaken under the project, giving reasons why some activities were not undertaken, if any.
3. **Project outputs**
Compare the outputs generated with the ones listed in the project document.
List the actual outputs produced but not included in previous Progress Reports under the following headings

(Please tick appropriate box)

(a) **MEETINGS** (UNEP-convened meetings only)

Inter-governmental (IG) Mtg. Expert Group Mtg. Training Seminar/Workshop Others

Title: _____

Venue and dates _____

Convened by _____ Organized by _____

Report issued as doc. No/Symbol _____ Languages _____ Dated _____

For Training Seminar/Workshop, please indicate: No. of participants _____ and attach annex giving names and nationalities of participants.

(b) **PRINTED MATERIALS**

Report to IG Mtg. Technical Publication Technical Report Others

Title: _____

Author(s)/Editor(s) _____

Publisher _____

Symbol (UN/UNEP/ISBN/ISSN) _____

Date of publication _____

(When technical reports/publications have been distributed, attach distribution list)

(c) **TECHNICAL INFORMATION**

PUBLIC INFORMATION

Description _____

Dates _____

(d) TECHNICAL COOPERATION

- Grants and Fellowships Advisory Services
 Staff Missions Others (describe)

Purpose _____

Place and duration _____

For Grants/Fellowships, please indicate:

<u>Beneficiaries</u>	<u>Countries/Nationalities</u>	<u>Cost(in US\$)</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(f) OTHER OUTPUTS/SERVICES

For example, Networking, Query-response, Participation in meetings etc.

4. Use of outputs

State the use made of the outputs.

5. Degree of achievement of the objectives/results

On the basis of facts obtained during the follow-up phase, describe how the project document outputs and their use were or were not instrumental in realizing the objectives/results of the project.

6. Conclusions

Enumerate the lessons learned during the project execution. Concentrate on the management of the project, indicating the principal factors which determined success or failure in meeting the objectives set down in the project document.

7. Recommendations

Make recommendations to:

- (a) Improve effect and impact of similar projects in the future;
- (b) Indicate what further action might be needed to meet the project objectives/results.

8. Non-expendable equipment (value over US\$1,500)

Please attach to the terminal report a final inventory of all non-expendable equipment (if any) purchased under this project, indicating the following:

Date of purchase, description, serial number, quantity, cost, location and present condition, together with your proposal for the disposal of the said equipment.

DEFINITIONS (BASED ON UN TERMINOLOGY)

ACTIVITY. In general terms, Activity denotes a programme, subprogramme, programme element or project. Specifically, it refers to action taken to transform inputs into outputs.

OUTPUTS. These are specific products or services which an activity is expected to produce in order to achieve its objectives; e.g., trained personnel, meetings serviced, reports, publications or advisory, editorial, translation and security services. Activities may also have intermediate outputs, which in turn may serve as inputs to other activities or final outputs.

INTER-GOVERNMENTAL MEETING. A meeting is intergovernmental when the participants are representatives of Governments.

EXPERT GROUP MEETING. The objective of an expert group meeting is to advise the secretariat on a specific subject. Participants at these meetings act in their individual capacities, even when they are nominated by their Governments.

REPORTS SUBMITTED TO INTER-GOVERNMENTAL MEETINGS. These are official documents brought for the consideration of intergovernmental meetings. These reports are identified by a United Nations symbol; e.g. the 1988 Annual Report of the Executive Director bears symbol UNEP/GC.15/4. SWMTEP 1990-1995 bears symbol UNEP/GCSS.1/7/Add.1.

TECHNICAL PUBLICATIONS. These include (i) sales publications, published internally or externally; or (ii) technical or scientific bulletins, journals, newsletters and similar publications distributed free of charge when they are intended primarily for users external to the Secretariat. A technical publication is generally identified by an international standard book number (ISBN) or an international standard serial number (ISSN) for periodical publications.

TECHNICAL REPORTS. These include reports of a technical nature which are not widely distributed outside the Secretariat. Generally technical reports are intermediate outputs which are used as inputs into other activities.

TECHNICAL INFORMATION. These include information of a technical nature provided to recipients outside the Secretariat. Typical technical information in UNEP is provided by INFOTERRA, IRPTC and IE/PAC; such as responses to queries of technical nature.

PUBLIC INFORMATION. This category includes all material which are generally of non-technical nature, whether free of charge or sold, that is distributed by the United Nations directly or through intermediaries to the general public. The material falls into two main groups of outputs:

1. Publications

- (a) Books, reports, yearbooks, chronicles and biographical notes.
- (b) Periodical bulletins, newsletters, magazines and booklets.
- (c) Pamphlets, brochures, fact sheets and wall sheets.

2. Other public information services

- (d) Press releases.
- (e) Exhibits and other visual materials.
- (f) Films and videotapes.
- (g) Radio broadcasts and tapes of news, documentary and feature programmes.
- (h) Guided tours, group briefings, lectures and seminars.
- (i) Organization of special events.

GRANTS AND FELLOWSHIPS. These are funds awarded to individuals, organisations, etc. for specific activities/training. Grants and fellowships are considered final outputs.

ADVISORY SERVICES. Assistance provided to developing countries on environmental matters through the provision of consultants and/or UN staff expertise.

OTHER TECHNICAL COOPERATION. This includes among others, materials and equipment donated to developing countries for the implementation of certain projects.

ANNEX XXIV

Format of quarterly project expenditure accounts for co-operating agencies

Quarterly project statement of allocation (budget), expenditure and balance (Expressed in US \$) covering the period

Project No. Agency name to

Project title: Project ending: (date)

Project commencing: (date)

Object of expenditure by UNEP budget code	Project budget allocation for year.....		Total expenditure for quarter	Total unliquidated obligations *	Cumulative expenditure for year	Unspent balance of budget allocation for year	
	m/m (1)	Amount (2)				m/m (6)	Amount (2)-(5)
1100 Project personnel			(3)	(4)	(5)		
1200 Consultants							
1300 Administrative support							
1400 Volunteers							
1600 Travel							
2100 Sub-contracts							
2200 Sub-contracts							
2300 Sub-contracts							
3100 Fellowships							
3200 Group training							
3300 Fellowships							
4100 Expendable equipment							
4200 Non-expendable equipment							
4300 Premises							
5100 Operation							
5200 Reporting costs							
5300 Sundry							
5400 Hospitality							
99 GRAND TOTAL							

* See breakdown of unliquidated obligations, by object of expenditure attached as Annex 8

Signed: _____
 Duly authorised official of co-operating agency

NB: The expenditure should be reported in line with the specific object of expenditures as per project budget

ANNEX XXV

Format of quarterly financial statements reporting unliquidated obligations

Agency name: _____
 Unliquidated obligations during _____
 (period covered)

Expressed in US \$		Unliquidated obligations during _____ (period covered)													Total 99							
UNEP project No.	Abbreviated Title	UNEP allocation	1100	1200	1300	1400	1600	2100	2200	2300	3100	3200	3300	4100	4200	4300	5100	5200	5300	5400	Total 99	
XXX	XXX	XXX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XXX	XXX	XXX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NB: The unliquidated obligations should be reported in line with the specific object of expenditures as per project budget.

ANNEX XXVI

**UNEP
INVENTORY OF NON-EXPENDABLE EQUIPMENT PURCHASED AGAINST UNEP PROJECTS
UNIT VALUE US\$ 1,500 AND ABOVE
AND ITEMS OF ATTRACTION**

As at _____

Project No: _____
Project Title: _____
Implementing Agency: _____
Internal/SO/CA (UNEP use only): _____
FPMO (UNEP use only): _____

Description	Serial No (if any)	Date of Purchase	Original Price (US\$)	Present condition	Location	Remarks/ Recommendation for disposal

A Physical verification of the item(s) above was done by: Name: _____ Signature: _____
Title: _____ Date: _____

ANNEX XXVII

Cash Advance Statement

Statement of cash advance as at
And cash requirements for the quarter of

Name of co-operating agency/
Supporting Organization _____
Project No. _____
Project title _____

- I. **Cash statement**
1. Opening cash balance as at US \$ _____
2. Add: cash advances received:

Date	Amount
.....
.....
.....
.....

- Total cash advanced to date US \$ _____
4. Less: total cumulative expenditures incurred US \$ (_____)
5. Closing cash balance as at US \$ _____

- II. **Cash requirements forecast**
6. Estimated disbursements for quarter ending US \$ _____
7. Less: closing cash balance (see item 5, above) US \$ (_____)
8. Total cash requirements for the quarter US \$ _____

Prepared by _____ Request approved by _____
Duly authorised official of The University of Kalmar, Sweden



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