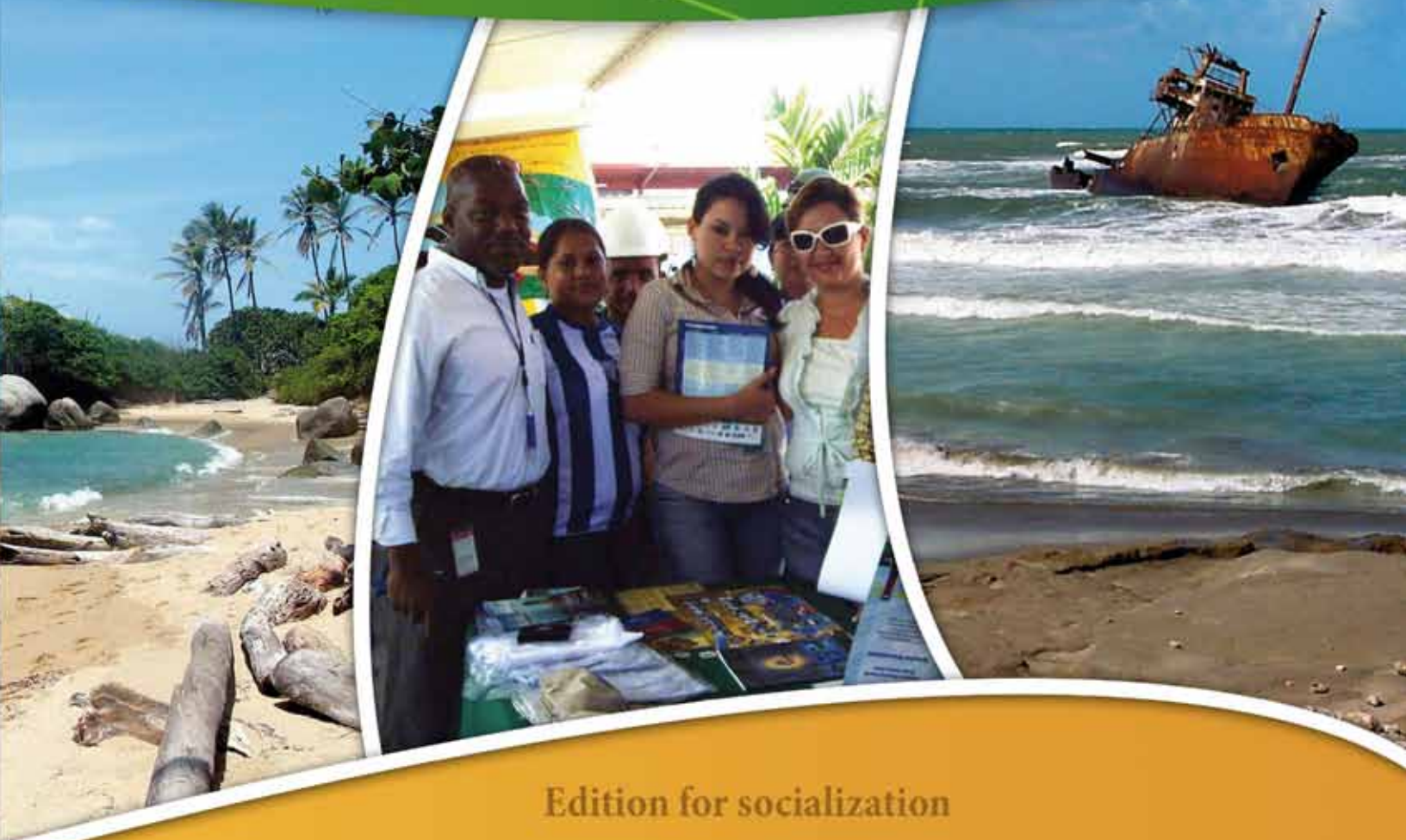




PROYECTO  
GOLFO DE  
HONDURAS

Project for Environmental Protection  
and Maritime Transport Pollution Control  
in the Gulf of Honduras

# STRATEGIC ACTION PLAN



Edition for socialization



The Strategic Action Plan (SAP) for the area of the Gulf of Honduras, is the result of a process of identification and analysis of problems that constitute the current state of the situation from which the long-term desirable status of the situation was built, with a proposed scenario in which the current problems have been modified - or reversed - to achieve an acceptable environmental quality status.

The SAP represents for the different stakeholders who interact at the different levels of the life dynamics of in the area of the Gulf of Honduras, the framework for regional harmonization and coordination of a series of actions of interest to be executed by countries in the study area (Belize, Guatemala and Honduras), both at national and regional levels, thus contributing to a comprehensive management - harmonious and sustainable – of the natural resources of the Gulf of Honduras.

**Image No. 1: Panoramic view of Puerto Cortes, Honduras**



Source: Gulf of Honduras Project

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**Strategic Action Plan (PAE)**

Document No. PGH-002

Frontpage images: Gulf of Honduras Project. These present the both the natural landscape of the Gulf of Honduras as the actions of the SAP process.

Inside photos: Gulf of Honduras Project. They relate to the different dynamics of the area of the Gulf of Honduras and the activities undertaken during the preparation of the SAP.

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August 2011



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# PRESENTATION

The Gulf of Honduras is part of the western Caribbean Cayman Basin. It includes Amatique Bay, the entire Caribbean coast of Guatemala, eastern coast of Honduras and southern part of the Belize Barrier Reef. The regional environmental problems are due to the oceanography of the water body. The prevailing direction of the currents varies with the seasons and contributes to the interconnection of waters in Belize, Guatemala and Honduras. There is a persistent counter-clockwise current along the coast, particularly off the coast of Belize. This reverse flow of coastal water is most pronounced during the summer months, when combined with the currents created by the winds. During the winter months, the trade winds can cause coastal upwelling off the coast of Honduras with its current westward along the coast.

As a result of these prevailing oceanographic currents, the region of the Gulf is highly susceptible to point pollution spreading over great distances in the three countries. As maritime traffic and port operations continue to increase in the Gulf of Honduras and beyond, the potential for catastrophic accidents and marine pollution increases. Furthermore, rivers flowing into the Gulf drag increasingly larger loads of sediment and pollutants, which are carried by the currents through the marine boundaries.

Consequently, the environmental protection of the Gulf, particularly the prevention and control of pollution, requires a strategic approach in which actions are directed at addressing the main sources, monitoring trends and build lasting and sustainable schemes for regional cooperation Gulf management.

In this sense, in the framework of the Project for Environmental Protection and Maritime Transport Pollution Control in the Gulf of Honduras - GEF-BID-COCATRAM-CCAD, the Strategic Action Plan (SAP) has been developed as a result of the Environmental Assessment Analysis of the Gulf area, which constitutes the technical- policy tool for making significant agreements in its adoption and helping governments and countries involved to address identified problems on a priority, strategic and consensual basis and, support measures for generate a positive change of the current conditions that affect the region's natural resources, reducing the causes and potential threats exerting pressure on the health of the marine system, seriously compromising their sustainable development.

The implementation of the **Strategic Action Plan (PAE)** of the Gulf of Honduras and the achievement of the objectives, requires political decisions, participation, effort and commitment of all actors and social, economic and political sectors interacting in the dynamics of life in the area of the Gulf of Honduras. It is and should a shared responsibility of the states of Belize, Guatemala and Honduras, their governments, civil society, private sector, communication media, academia, international cooperation and of each and every one man and women with conscience of the need to influence the reduction of the negative impacts caused by pollution and contribute to a better and sustainable use of natural and environmental resources available in the area of the Gulf of Honduras and thereby achieve an improvement in the quality of life of “today” and of “tomorrow”.

**Ing. Mariano Vásquez**  
President Pro-Tempore  
COCATRAM

**Ing. Edas Muñoz Galeano**  
Director  
Gulf of Honduras Project

**Lic. Otto Noack Sierra**  
Executive Director  
COCATRAM

Image No.2 Roatan Barrier Reef, Honduras



Source: Gulf of Honduras Project

## FOREWORD

The SAP is a tool for planning the actions that must be carried out in the area of influence of the Gulf of Honduras, which involves the countries of Guatemala, Honduras and Belize. This tool provides in a summary way, on one hand, the problems identified and prioritized, and, secondly, the objectives to be achieved and activities to be performed from a systemic approach or of comprehensive and complete vision of all the different components and elements present in the interrelations of the environmental system of the Gulf area.

The main goal of the SAP is to promote both sustainable development in the Gulf of Honduras (with particular emphasis on ecosystems and its associated biodiversity) and improving the quality of life of the coastal population, through the incorporation of environmental concerns into national and regional policies, plans and development programs, create a vision of integrated management of natural resources and the establishment of mechanisms for harmonization of regional coordination and public participation.

The contents of the document is presented in a simple and orderly way, respectful of technical and scientific rigor, to facilitate understanding and encourage decision making and the execution of actions by different actors involved directly and indirectly in the dynamics of life in the Gulf of Honduras.

The origin of this document is linked to the **Project for Environmental Protection and Maritime Transport Pollution Control in the Gulf of Honduras (Gulf of Honduras Project)**, executed by the COCATRAM y co-executed by the CCAD through the Regional Program Coordination Unit (URCP).





# INSTITUTIONAL FRAMEWORK OF THE STRATEGIC ACTION PLAN

## Central American Commission on Maritime Transportation (COCATRAM)

COCATRAM is a specialized agency that is part of the institutions of the Central American Integration System (SICA), which is of permanent nature, and has its own directory based in Managua, Nicaragua.

COCATRAM addresses matters relating to maritime and port development in Central America. Its main function is to advise the Council of Ministers Responsible for Transportation in Central America (COMITRAN) and member governments to adopt policies and decisions in order to achieve a harmonious development of the sector to meet the needs of the countries' foreign trade in terms of quality, economy and efficiency of maritime transport and ports, to protect and represent the interests of the region before interest and extra-regional bodies. In turn, COCATRAM meets the guidelines and policies issued by the COMITRAN.

Legally COCATRAM is based on REMITRAN Resolution V-3-87, establishing its constitution and operation. Members of COCATRAM are: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. The Directorate of COCATRAM is in charge of a Board, with the participation of public and private sector.

Their vision is to be the leader in the management and promotion of maritime port policies of member countries to turn Central America into a competitive and integrated region in the international maritime trade. Its mission is to identify, promote and support measures, policies and

actions that contribute to the development of maritime trade in Central America in the framework of the regulations and standards of its competence.

COCATRAM - through the GEF and IDB member countries - has assumed the commitment to be the executing agency **Project for Environmental Protection and Maritime Transport Pollution Control in the Gulf of Honduras (Gulf of Honduras Project)**, within which it develops the **Strategic Action Plan** as a management tool to ensure sustainable economic benefit of the countries of the region, protection of natural resources and more importantly, the benefit of the people of the valuable region of the Gulf of Honduras.

## Central American Commission for Environment and Development (CCAD)

CCAD is the body of the Central American Integration System (SICA), responsible for the regional environmental agenda. Its main objective is "to contribute to sustainable development of the Central American region, strengthening the cooperation regime and the integration for environmental management"

On December 12, 1989, the presidents of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, decided to sign the Constitutive Agreement of the Commission on Environment and Development (CCAD) to establish a "regional cooperative regime for optimal and rational use of natural resources in the area, pollution control and restoration of ecological balance" that ensures a better

quality of life for the people of Central American. An Addendum to the Agreement in 1991, incorporated Belize and Panama. In 2005, the Dominican Republic joins the CCAD as an associated body.

It is within this institutional framework that CCAD assumes the commitment as co-executor of the Gulf of Honduras Project.

### **Regional Program Coordination Unit (URCP)**

To implement the Gulf of Honduras Project, the institutions responsible for it, the Central American Commission of Maritime Transportation (COCATRAM) as executing agency and the Central American Commission of Environment and Development (CCAD) as co-executing agency, with the approval of the Global Environment Facility (GEF) as a donor agency and the Inter-American Development Bank (IDB) as an administrative entity, created the Regional Program Coordination Unit (URCP), which is based in the city of Puerto Cortes, Honduras.

The URCP is the technical and administrative base driving the operation of the Project in the whole area of influence of the Gulf of Honduras. This unit has played the role of carrying out the approaches, processes and activities and achievement of results of the set of components integrating the project.

### **The Gulf of Honduras Project and the SAP**

The Gulf of Honduras comprises a tri-national body of coastal and marine waters, including portions of the exclusive economic zone of Belize, Guatemala and Honduras. The conditions sustaining productivity and diversity of the Gulf are the same factors which, combined with humans-caused elements, make the area vulnerable

to maritime and terrestrial pollution. Accelerated erosion of watersheds, mainland pollution sources and inadequate environmental safety in the ports is a growing concern due to potentially negative impacts on nearby coastal ecosystems as well as on public health and economic development.

The issue of safety of navigation is of great importance to the Gulf. The risks of collisions and groundings are significant, so the need to improve the safety of navigation, including infrastructure and communications systems, as well as updating the nautical cartography is widely recognized. The Gulf region is vulnerable to spills due to the shallow and enclosed nature of the bay, in combination with strong circular currents.

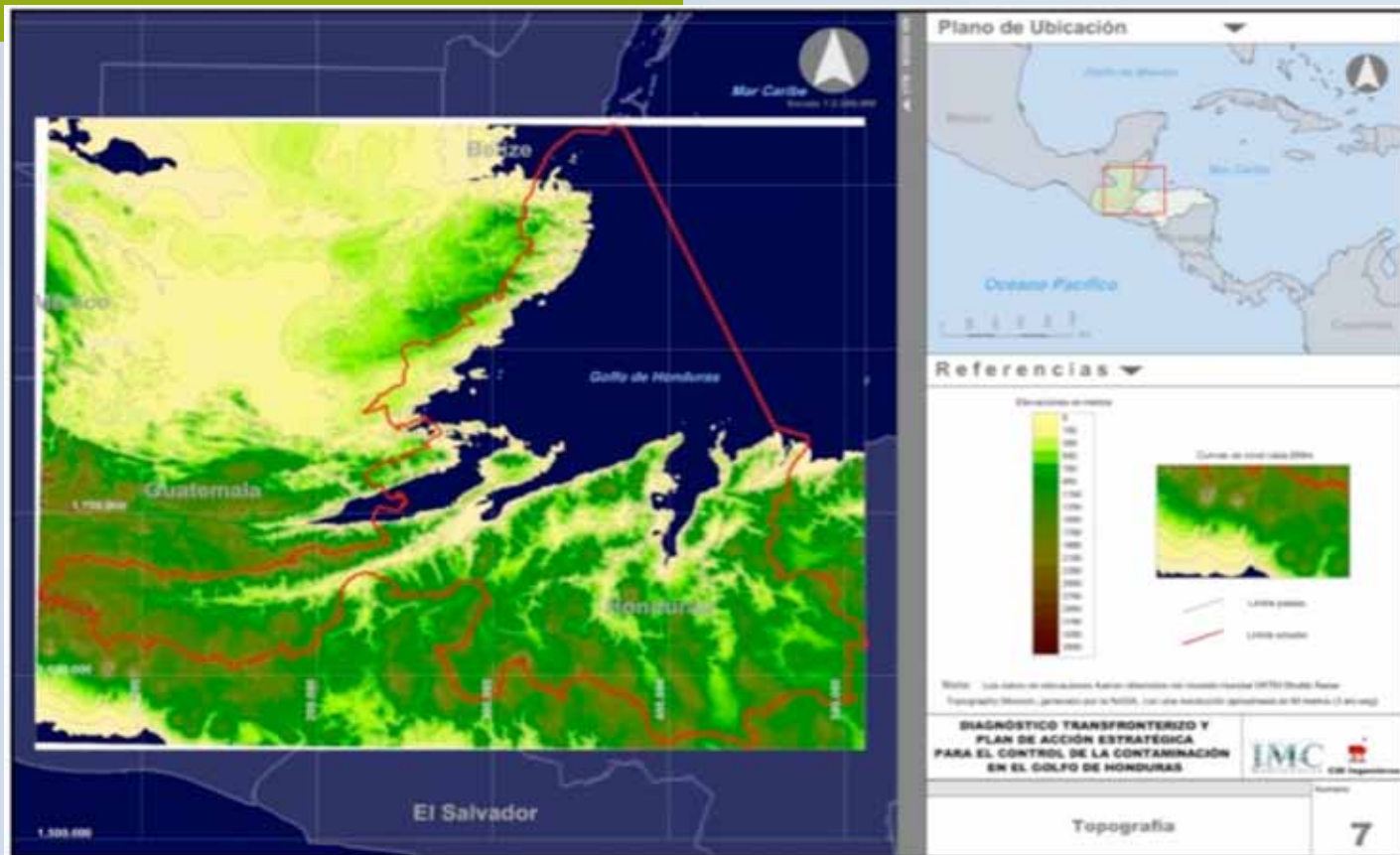
To minimize the risks of pollution in the Gulf, the Gulf of Honduras Project was created, which is a regional initiative supported by the Global Environment Facility (GEF) through a non-reimbursable fund No. GRT / FM - 9179 - RS of \$ 4.8 million, administered by the Inter-American Development Bank (IDB), which added a \$ 2.4 million contribution from the participating countries: Belize, Guatemala and Honduras. The executing agency of the Gulf of Honduras Project is the Central American Commission of Maritime Transportation (COCATRAM), and the Central American Commission of Environment and Development (CCAD) as co-executing agency, through the Regional Program Coordination Unit (URCP).

The development objective of the Project is to reverse degradation of coastal and marine ecosystems, strengthening the control and prevention of pollution from maritime transportation in the major ports and shipping routes, improving navigation safety to avoid ship groundings and spills and reduce the entry of contaminants from land-based pollution sources to the adjacent coastal and marine areas in the Gulf of Honduras.





Image No. 3: Panoramic view of the area of the Gulf of Honduras



Source: Gulf of Honduras Project

Its overall objective is to implement a regionally coordinated Strategic Action Plan that translates into an environmental benefit for the region and by extension, to the world. This will be done through the protection of international waters and their resources, and promoting sustainable use, while reducing threats to the Mesoamerican Barrier Reef System, an ecosystem of global importance.

The Gulf of Honduras Project through the socialization of the SAP, aims to achieve significant agreements in its the adoption, generating a positive change in current conditions affecting the region's natural resources, reducing the causes and potential threats that putting pressure on the health of the marine system, seriously compromising their sustainable development



# 1. STRATEGIC ACTION PLAN (SAP)

## 1.1 Introduction

As part of the Gulf of Honduras Project, the **Data and Information Management System for the Gulf of Honduras** was developed, oriented to obtain technical and scientific information on the current state of the Gulf from of environmental, social and economical standpoints, with emphasis on the ecosystems of the region and current pollution levels. This information has been necessary to prepare the Environmental Diagnostic Analysis (EDA) from which the Strategic Action Plan (SAP) is derived and which describes the actions and activities that the governments of Belize, Guatemala and Honduras and the region in general must perform to solve the problems identified.

Image No.4: Monitoring actions in the area of the Gulf



Source: Gulf of Honduras Project, Belize 2008


The methodology for both the development of the Action Plan and for the identification and development of priority actions corresponded - with some adaptations - to the methodology developed by the Component of the International Waters (IW) of the Global Environment Facility (GEF). According to it, from the problems identified

in the Environmental Diagnostic Analysis (EDA), which are called “**Current Status**” is built on “**Desirable Long Term Status**” (scenario where the current problems have been modified - or reversed - to achieve an acceptable environmental quality status). This “**desired state**” constitutes the framework for defining a long-term goal, which is reached through the so-called ecosystem quality objectives, and for achieving them it is necessary to develop, in the short term, a series of priority actions, which in turn, are part of operational objectives

The main goal of the SAP is to promote both sustainable development in the Gulf of Honduras (with particular emphasis on ecosystems and its associated biodiversity ) and improving the quality of life of the coastal population, through the incorporation of environmental concerns into national and regional policies, plans and programs, the establishment of a vision of integrated management of natural resources and the establishment of mechanisms for harmonization of regional coordination and public participation. To this end, it proposes a series of “actions” considered “priority”, which are aimed at preventing unsustainable use and degradation of natural resources and to encourage the adoption of sustainable management practices.

In general, this document contains:

- Information that identifies and characterizes the root causes of priority problems diagnosed, its environmental and socio - economic consequences.
- The Strategic Action Plan itself, which includes long-term goal, objectives, quality eco-systemic, operational objectives, priority actions, activities in geographical and temporal scope, cost estimates and financing mechanisms, the portfolio of funding sources and financial mechanisms that can be used in the region.
- The strategy for the socialization of the SAP, which aims to reach socio economic and political technical agreements for its implementation.



The countries of the region should carry out the implementation of a consensus and more specific SAP, ensuring their economic benefit, the protection of natural resources and most importantly, the benefit of the inhabitants of the region of the Gulf of Honduras

## 1.2 Analysis of the causal chain of problems

Based on scientific information gathered in an exhaustive review of literature and an Environmental Campaign Survey conducted between 08 and 26 August 2008, sufficient input was available for the causal chain analysis of priority problems identified, and their consequent environmental and socio - economic impacts in the Gulf of Honduras, drainage basins and marine-coastal areas associated with it.

Tables 1 through 4 present a first approach to identifying the causes of some of the current priority issues identified. To view the pollution problems identified for Motagua and Sarstun rivers Table 5 is presented. The major contaminants observed were defined according to their concentration in the sampling points into consideration, in relation to

the total sampling points. Additionally, those parameters exceeding international guideline values were considered.

In particular, the quality of the sediment matrix representing the most important purposes of assessment of pollution were considered, since the quality of water depends on several factors and especially of the dynamic factors (tides, winds, inputs from tributaries, others.).

Also, the potential impacts from major pollutants found were established, as well as the main causes of the presence of such contaminants in the transboundary rivers under study. Many of the immediate causes and root causes identified are general and not specific, as this is beyond the scope of the investigation and would require further specific investigations. The sectors involved and identified, are also outlined in general terms.

Through an effective socialization strategy it is expected to reach national and regional consensus to allow the implementation of the SAP in order to counteract the negative effects of anthropogenic origin and the current conditions of natural resource degradation.

### Análisis de la Cadena Causal

The “Causal Chain Analysis,” according to the GIWA methodology (Global International Waters Assessment) covers the cause - effect relationships, associated with each priority issue from the environmental and socio - economy impacts to its root causes. Its purpose is to identify the most important root causes of each priority problem, to make it subject of appropriate policy measures for correction or mitigation. This last feature must be emphasized, since the overall objective of the GIWA methodology (and, therefore, that of the Causal Chain Analysis) is to develop a conceptual framework - strategic - to identify priorities for “corrective action or mitigation” in international waters, it is for this reason that the “Causal Chain Analysis” is oriented to policies.

The methodology seeks to provide a systematic and practical approach to identify and understand the root causes of transboundary water problems and is intended that it will allow describing how the relevant components are linked to determine the transboundary water problems in a given area. The approach is based on accepted theoretical models that have been tested in several sub - regions, however, the methodology is tailored to meet the particular characteristics of the needs and circumstances of each particular case.

The core of the causal chain analysis is to recognize the root causes of human actions that impact the way in which water and related resources are used. To achieve this, the factors that determine the actions that have both direct and indirect impact on major GIWA must be identified, these factors will be the root causes.



The methodology was developed to provide practical and systematic guidelines for identifying and understanding the complexity of the causal factors that lead to transboundary water problems. The characteristics of both the required data as statistical tools to prove “causality” in a scientific way, suggest that the construction of the causal chain is an extremely difficult process, however, if the analysis is supported by information and therefore with quantitative evidence, the process will be greatly simplified.

It should be added that the GIWA methodology provides a list - not exhaustive - of root causes and examples of how they can act and influence each other since, at present, there is no universally unified theory to explain how different root causes are configured and interact. In the absence of that theory, all the hypotheses on the importance of each root cause and how they interact with each other, must be substantiated with evidence.

**Table 1: Causal Chain Analysis: Problems of water availability**  
ASPECT: FLOW REDUCTION


IMPACT	IMMEDIATE CAUSES	SECTOR/ ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Shortage of water supply</li> <li>- Conflicts of use</li> <li>- Greater potential for saltwater intrusion</li> <li>- Increased transport of contaminants to groundwater</li> <li>- Changes in their quality</li> <li>- Modification of habitat</li> <li>- Reduced groundwater recharge</li> <li>- Changes in flow</li> </ul>	<ul style="list-style-type: none"> <li>- Inadequate management of water resources</li> <li>- Unequal distribution of the population</li> <li>- Increased demand</li> <li>- Insufficient distribution</li> <li>- Large amount of unaccounted water</li> <li>- Changes in the relationship rainfall - runoff</li> <li>- Weather effects</li> </ul>	Urbanization Agriculture	<ul style="list-style-type: none"> <li>- Lack of land use planning</li> <li>- Population growth</li> <li>- Economic growth</li> <li>- Poverty</li> <li>- Lack of integrated watershed management</li> <li>- Lack of local response capacity</li> <li>- Natural disasters</li> <li>- Insufficient potable water distribution systems</li> <li>- Insufficient distribution sources</li> <li>- Insufficient water resource management</li> </ul>

**Imagen No. 5: Panorámica de área del Golfo de Honduras**



Fuente: Proyecto Golfo de Honduras

**Table 2: Causal Chain Analysis: Problems of pollution**  
**ASPECT: MICROBIOLOGY**

IMPACT	INMEDIATE CAUSES	SECTOR/ ACTIVITY	ROOT CAUSE
Deterioration of surface water quality Deterioration of the groundwater quality (infiltration) Risk of disease for aquatic organisms	<ul style="list-style-type: none"> <li>- Sewage water discharges</li> <li>- Industrial wastewater discharges</li> <li>- Storm water discharge</li> <li>- Animal waste</li> <li>- Solid waste discharges from boats</li> <li>- Leaching from landfills and / or sanitary landfills</li> </ul>	Tourism Urbanization Ports Agriculture Industrial	<ul style="list-style-type: none"> <li>- Lack of land use planning</li> <li>- Population growth</li> <li>- Mismanagement of domestic wastewater</li> <li>- Unsustainable management of solid waste</li> <li>- Poverty</li> <li>- Mode of urbanization</li> <li>- Lack of local response capacity</li> <li>- Lack of systematic monitoring</li> <li>- Economic growth</li> <li>- Natural disasters</li> <li>- Lack of integrated watershed management</li> <li>- Lack of quality standards</li> <li>- Lack of scientific information</li> <li>- Insufficient access to cleaner production technologies</li> <li>- Gaps in existing regulations</li> <li>- Insufficient capacity for monitoring and enforcement of regulations</li> <li>- Inadequate coordination of sectoral policies</li> <li>- Lack of coordination between levels of government</li> <li>- Insufficient financial and human resources</li> <li>- Lack of approval and implementation of contingency plans</li> <li>- Lack of agreement of understanding on border problems</li> <li>- Lack of agreement on limits of territorial waters</li> <li>- Lack of port environmental management plans</li> <li>- Lack of financial mechanisms for sustainable coastal and marine management.</li> </ul>
<b>Image No. 6: Pollution sources</b> 			
Source: Gulf fo de Honduras Project			



**Tabla 2: Causal Chain Analysis: Problems of pollution (Continued)**  
**ASPECT: EUTROPHICATION**

IMPACT	INMEDIATE CAUSES	SECTOR/ ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Deterioration of surface water quality</li> <li>- Deterioration of quality of groundwater (infiltration)</li> <li>- Loss of habitat</li> <li>- Increased algal blooms</li> <li>- Presence of toxic substances in the water</li> </ul>	<ul style="list-style-type: none"> <li>- Sewage water discharge</li> <li>- Industrial water</li> <li>- Rainwater discharge</li> <li>- Animal waste</li> <li>- Solid wastes</li> <li>- Landfill leaching or open dumps and / or sanitary landfill</li> <li>- Discharges from boats</li> <li>- Leaching and landfill of agricultural products</li> <li>- Aquaculture discharges</li> </ul>	Tourism Urbanization Ports Industrial Agriculture Aquaculture	<ul style="list-style-type: none"> <li>- Lack of land use planning</li> <li>- Population growth</li> <li>- Poverty</li> <li>- Modality of urbanization</li> <li>- Economic growth</li> <li>- Mismanagement of domestic wastewater</li> <li>- Unsustainable management of agricultural products</li> <li>- Unsustainable management of solid waste</li> <li>- Lack of local response capacity</li> <li>- Lack of systematic monitoring</li> <li>- Natural disasters</li> <li>- Lack of integrated watershed management</li> <li>- Lack of quality standards</li> <li>- Lack of scientific information</li> <li>- Insufficient access to cleaner production technologies</li> <li>- Gaps in existing regulations</li> <li>- Lack of control and policy enforcement</li> <li>- Inadequate coordination of sectoral policies</li> <li>- Lack of coordination between different levels of government (national and local)</li> <li>- Insufficient financial and human resources</li> <li>- Lack of approval and implementation of contingency plans</li> <li>- Lack of agreement of understanding on border problems</li> <li>- Lack of agreement on limits of territorial waters.</li> <li>- Lack of financial arrangements that make sustainable coastal and marine management</li> <li>- Lack of port environmental management plans</li> </ul>
<p><i><b>Eutrophication refers to the enrichment of nutrients in the ecosystem of the Gulf that begins when the water receives discharges from agricultural, industrial wastes, etc. which favor the growth of algae blooms, loss of habitat, deterioration of the quality of both surface and underground waters, among others.</b></i></p>			

**Image No.7: Impacts of agriculture and livestock in the Motagua River**



**Tabla 2: Causal Chain Analysis: Problems of pollution (Continued)**  
**ASPECT: CHEMISTRY**

IMPACT	INMEDIATE CAUSES	SECTOR/ ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Deterioration of surface water quality</li> <li>- Deterioration of quality of groundwater (by infiltration)</li> <li>- Loss of habitat</li> <li>- Increased mortality of aquatic organisms</li> <li>- Increase behavioral dysfunctions of aquatic organisms (from toxicity and bio - accumulation)</li> <li>- Deterioration of quality of sediments (resuspension of contaminants in the water column and bio - accumulation in biota)</li> </ul>	<ul style="list-style-type: none"> <li>- Sewage water discharge</li> <li>- Industrial water discharge</li> <li>- Discharge of rainwater (washing of streets, etc.).</li> <li>- Solid waste (municipal and hazardous)</li> <li>- Leachate or landfills of open dumps and / or sanitary landfills</li> <li>- Discharges from boats</li> <li>- Leaching of agricultural products (pesticides)</li> <li>- Waste boat fuel</li> <li>- Port Activity</li> <li>- Burning of solid and agricultural waste</li> <li>- Discharge of mining activities</li> <li>- Accidental spills of chemicals and petroleum or petroleum products</li> </ul>	Turismo Urbanización Puertos Agricultura Transporte marítimo Industrial	<ul style="list-style-type: none"> <li>- Falta de planes de ordenamiento territorial</li> <li>- Crecimiento poblacional</li> <li>- Mal manejo de aguas residuales domésticas</li> <li>- Manejo no sustentable de productos agrícolas</li> <li>- Manejo no sustentable de desechos sólido</li> <li>- Pobreza</li> <li>- Modalidad de urbanización</li> <li>- Falta de capacidad de respuesta local</li> <li>- Falta de monitoreo de calidad de aguas</li> <li>- Crecimiento económico</li> <li>- Desastres naturales</li> <li>- Falta de gestión integrada de cuencas</li> <li>- Carencia de estándares de calidad (en el ámbito local, nacional y/o regional)</li> <li>- Falta de información científica</li> <li>- Insuficiente acceso a las tecnologías de producción más limpias</li> <li>- Vacíos existentes en materia de regulaciones</li> <li>- Insuficiente capacidad de control e implementación de normativas</li> <li>- Coordinación inadecuada de políticas sectoriales</li> <li>- Falta de coordinación entre los distintos niveles de gobierno (nacional y local)</li> <li>- Insuficientes recursos humanos y financieros</li> <li>- Falta de acuerdos de entendimiento sobre problemas transfronterizos</li> <li>- Falta de acuerdos sobre límites de aguas territoriales</li> <li>- Falta de mecanismos financieros que hagan sustentable la gestión costera y marina.</li> <li>- Falta de concientización a nivel social</li> <li>- Falta de planes de gestión ambiental portuaria.</li> </ul>

Image No.8: Pollution Control: Guatemala Treatment Plant



Source: Gulf of Honduras Project

Image No.9: Puerto Barrio Manoeuvre



Source: Gulf of Honduras Project



**Table 2: Causal Chain Analysis: Problems of pollution (Continued)**  
**ASPECTO: SÓLID WASTE**

IMPACT	IMMEDIATE CAUSES	SECTOR/ ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Deterioration of surface water quality</li> <li>- Deterioration of quality of groundwater (by infiltration)</li> <li>- Loss of habitat</li> <li>- Increased mortality of aquatic organisms</li> <li>- Deterioration of the beaches</li> <li>- Changes in the composition of sediments</li> </ul>	<ul style="list-style-type: none"> <li>- Discharge of solid waste (urban and industrial)</li> <li>- Discharge of rainwater (washing of streets, etc.).</li> <li>- Solid waste discharged into water courses</li> <li>- Solid waste generated by ships (cruise ships and boats)</li> <li>- Solid waste generated by beach users</li> <li>- Solid waste from construction of coastal development</li> <li>- Existence of illegal dumping</li> <li>- Increase in waste generation</li> </ul>	Turismo Urbanización Puertos Agricultura Industrial Forestación	<ul style="list-style-type: none"> <li>- Lack of land use planning</li> <li>- Population growth</li> <li>- Mismanagement of domestic wastewater</li> <li>- Unsustainable management of agricultural products</li> <li>- Unsustainable management of solid waste</li> <li>- Poverty</li> <li>- Modality of urbanization</li> <li>- Lack of local response capacity</li> <li>- Lack of awareness at the social level</li> <li>- Economic growth</li> <li>- Natural disasters</li> <li>- Lack of integrated watershed management</li> <li>- Lack of quality standards</li> <li>- Lack of scientific information</li> <li>- Improper management of solid waste</li> <li>- Poor access to clean production technologies</li> <li>- Gaps in existing regulations</li> <li>- Lack of capacity to implement regulations</li> <li>- Lack of coordination of sectoral policies</li> <li>- Lack of coordination between levels of government</li> <li>- Insufficient financial and human resources</li> <li>- Lack of approval and implementation of contingency plans for natural events</li> <li>- Lack of agreement of understanding on transboundary problems</li> <li>- Lack of agreement on limits of territorial waters</li> <li>- Lack of financial arrangements to make sustainable coastal and marine management</li> <li>- Lack of port environmental management plans</li> </ul>

Image No.10: Scenic beauty of the area of the Gulf of Honduras





**Tabla 3: Causal Chain Analysis: Loss and alteration of habitats and communities**  
**ASPECT: ECOSISTEM LOSS**

IMPACT	INMEDIATE CAUSES	SECTOR/ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Loss of biodiversity</li> <li>- Loss of natural storm barriers</li> <li>- Loss of natural protection against erosion</li> <li>- Alteration of the bio-geochemical cycle</li> </ul>	<ul style="list-style-type: none"> <li>- Changes in land use</li> <li>- Dredging and disposal of products</li> <li>- Natural disasters</li> <li>- Solid waste</li> <li>- Coastal erosion</li> <li>- Extraction of aggregates</li> <li>- Over-exploitation of key species</li> </ul>	Tourism Urbanization Agriculture Ports Fishing	<ul style="list-style-type: none"> <li>- Lack of land use planning</li> <li>- Lack of good management practices</li> <li>- Population growth</li> <li>- Lack of regulation</li> <li>- Lack of coordination (local and regional)</li> <li>- Modality of urbanization</li> <li>- Natural phenomena</li> </ul>

**ASPECT: ECOSISTEM MODIFICATION**

<ul style="list-style-type: none"> <li>- Modification of the natural productivity</li> <li>- Modification of biodiversity (including loss of species)</li> </ul>	<ul style="list-style-type: none"> <li>- Replacement of native species by alien species</li> <li>- Diseases</li> <li>- Eutrophication</li> <li>- Discharge of untreated sewage</li> </ul>	Aquaculture  Forestry  Minery  Industry  Maritime Transport	<ul style="list-style-type: none"> <li>- Insufficient definition of fishing exclusion areas (marine protected areas and areas of spawning aggregations)</li> <li>- Inadequate wastewater management</li> <li>- Unsustainable management of solid waste</li> <li>- Lack of coastal management policies</li> </ul>
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**Table 4: Causal Chain Analysis: Problem of unsustainable exploitation of living resources**  
**ASPECT: SOBREEXPLOTACIÓN**

IMPACT	INMEDIATE CAUSES	SECTOR/ACTIVITY	ROOT CAUSE
<ul style="list-style-type: none"> <li>- Reduction of key species</li> <li>- Changes in food chains</li> <li>- Changes in the composition of biological communities</li> </ul>	<ul style="list-style-type: none"> <li>- Gears and mechanization</li> <li>- Decreased level of recruitment</li> <li>- Reduction of habitat</li> <li>- Fishing in aggregation zones</li> </ul>	Fisheries	<ul style="list-style-type: none"> <li>- Lack of regulation</li> <li>- Lack of coordination among governments for the establishment of closed seasons and areas</li> <li>- Lack of scientific knowledge</li> </ul>

**ASPECT: BYCATCH**

<ul style="list-style-type: none"> <li>- Change in the composition of biological communities</li> </ul>	<ul style="list-style-type: none"> <li>- Gears and mechanization</li> <li>- Fish bycatch in gillnets</li> </ul>		
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**Table 5: Situation of transboundary rivers**

**MAIN PROBLEMS DETECTED**

Sarstun River Countries: Belice – Guatemala	Motagua Countries: Guatemala-Honduras
<b>Water</b> Dissolved oxygen (above the guideline value), suspended solids, oil and grease, sulfide.	<b>Water</b> - pH - Suspended solids
<b>Sediment</b> Nickel (highest value guide), copper (TEL exceeds PE) pentacosane and sulfur	<b>Sediment</b> - No high concentrations for any parameter found

## 1.3 Objectives of the SAP

**Figure No.1: Outline of objectives of the SAP**



## 1.4 Methodology

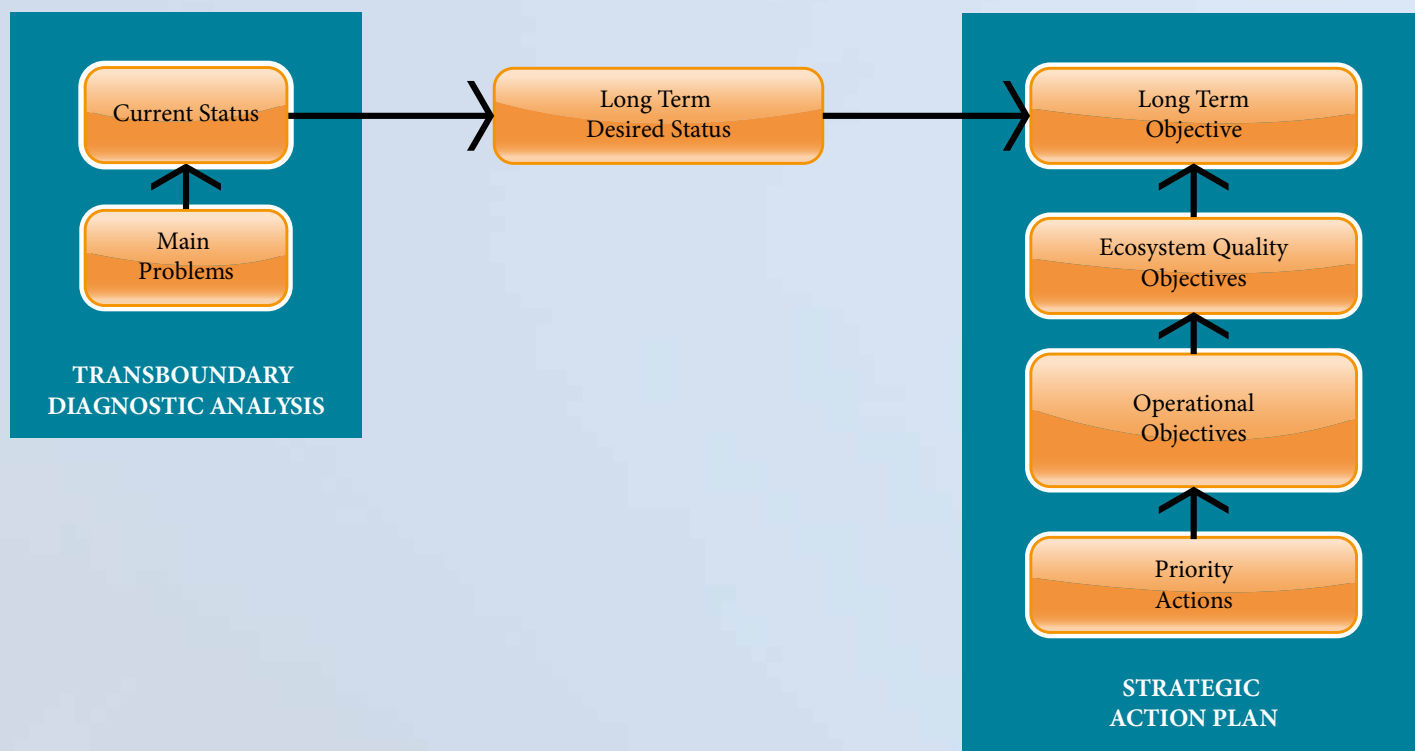
The Strategic Action Plan (SAP), based on the consultation and participation processes developed, is the result of the Environmental Diagnostic Analysis (ADA) which identified the main problems (actual and consequential), as well as direct and basic causes, from the physical, biogeochemical, pollution, socio-economic and institutional - legal frameworks.

The methodology used to prepare the Strategic Action Plan (SAP), the identification and development of priority actions, and the Environmental Diagnostic Analysis (ADA),

corresponds - with some adaptations - to the methodology developed by the International Waters Component (IW) of the Global Environment Facility (GEF).

This “Desired Status” constitutes the framework for defining a which is reached through the so-called” Ecosystem Quality Objectives”, which are achievable in the medium term. To achieve these eco-systemic objectives, it is necessary to develop in the short term, a series of “priority actions” that in turn, are framed in “Operational Objectives”

**Figure 2: Simplified outline of the methodology for the elaboration of the SAP**





This will give the sequence:

### **“Long Term Goal “-” Ecosystem Quality Objectives “-”Operational Objectives “**

This sequence in objectives determines the proposed set of “Priority Actions” that constitute the framework for decision making and, in particular, to define the objectives and content of actions and projects to be implemented in the scope of this plan.

These “Priority Actions” aimed at preventing and / or mitigating the identified environmental problems, focusing mainly on the root causes of anthropogenic origin by three types:

- Research, prevention and environmental protection.
- Development and institutional strengthening.
- Communication and public participation.

These are actions aimed at sustainable development of natural resources, seeking to create the necessary conditions for improving the quality of life of the population.

This set of “priority actions” that are considered necessary to implement in the shortest time possible, whether at regional, national or local levels, provides technical, social, institutional and legal responses to current problems in the Gulf.

## **1.5 Current status of the Gulf of Honduras**

The main potential threats exerting pressure on the health of the marine-coastal system of the Gulf of Honduras, and compromising their sustainable development are:

- Population growth.
- Lagging behind urban development in terms of coverage of basic services and lack of adequate land use planning.
- The potential expansion of agricultural activities.
- The overexploitation of fisheries resources.

- degradation and loss of biodiversity (ecosystems and species).
- unsustainable development of coastal and marine areas (with major expansion projects in the tourism infrastructure and port).
- The effect of climate change.
- The legal loopholes.

The Gulf of Honduras has valuable natural resources which because of its disordered not systematized and incipient unsustainable development, its future has been compromised. This leads to having levels of inattention basic services for the population and its consequent level of poverty.

## **1.6 Desirable long-term status of the Gulf of Honduras**

The Gulf of Honduras maintains a growing trend in its economic activities, despite the stagnation of agricultural production. Economic dynamism is led by the tourism, maritime transport, port activity and also industrial sector growth has been consolidated through the production and export of diverse products (including oil), and has promoted sustainable development through an important component of environmental conservation (Cleaner production).

The values associated with the natural environment of the region, constitute a substantial part of its strengths. Large spaces in direct contact with the sea, beautiful scenery, clean water and a varied and rich biodiversity are some of these values; its conservation grants quality of life to the region and provides the basis for the economic development of tourism and industry linked to it.

In this frame, marine-coastal protected areas constitute an important component of environmental conservation and ecosystem health for sustainable development and the tourist attractions of the region.

The high biological productivity of the region is the base of another of its key industries: the sector of **fisheries and**



**aquaculture**; its benefits should be extended indefinitely through effective and responsible management of these resources.

The **tourism** sector has developed rapidly in the three countries in the region (Belize, Guatemala and Honduras). This development has been based on the development of “strategic plans” or “master plans” that have favored a policy framework - in the national and regional levels - which has enabled significant investments in this sector.

*The Gulf of Honduras is envisioned in the future as a vast marine area of high strategic and environmental value, with a relatively low human impact, which has gone through a significant process of population growth and economic development based on protection and conservation of ecosystems and biodiversity associated with them as well as the sustainable use of natural resources.*

### Long-term ecosystem quality objectives

The “Long Term Desired Status” a scenario in which current problems have been modified or reversed - to achieve an acceptable environmental quality status. This “desirable long-term status” constitutes the framework for defining both the “Long Term Objective” as the “Ecosystem Quality Objectives” which are necessary for the transition between the “Current” and the “Long Term Desirable Status”, which would be attainable through the “Long Term Objective”. In this way the “Long Term Objective” and “Ecosystem Quality Objectives” set the direction of the “Strategic Action Plan”.

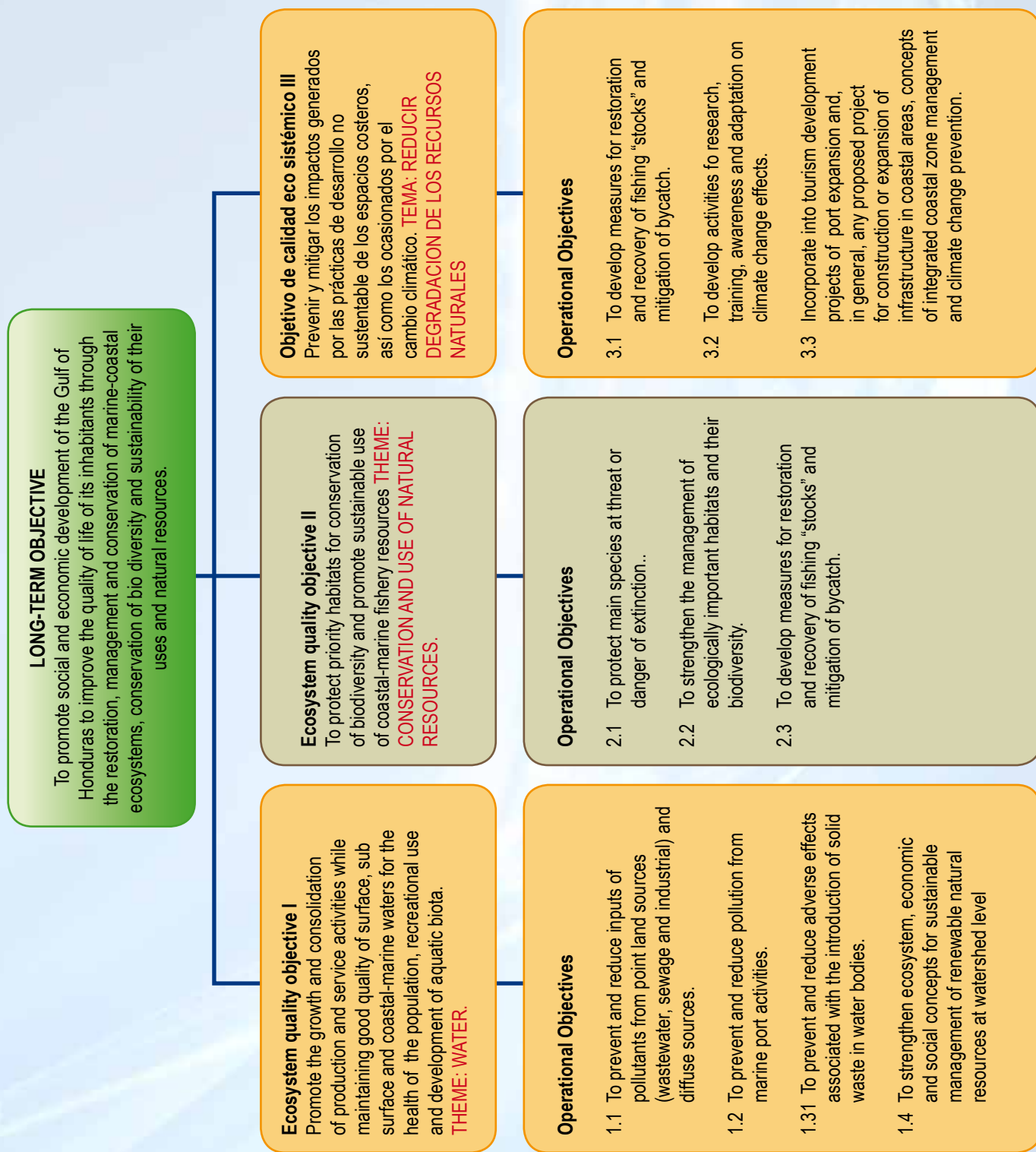
Image No.11: Pollution Control: Treatment Plant Guatemala



Source: Gulf of Honduras Project



Figure No.3: Outline of the Strategic Action Plan



### 1.6.1 Priority actions and activities to achieve ecosystem quality objective I

Table 6: Priority actions and activities to achieve the goals of Operational Objective I.1

Objective I.1. 1.1 To prevent and reduce inputs of pollutants from point land sources (wastewater, sewage and industrial) and diffuse sources. THEME: WASTEWATER			
Priority Actions	Activities	Scope of Application	Temporal Scope (Indicates the time when activities will take place)
01. Establishment and implementation of national quality standards for surface waters for the protection of natural ecosystems	Creation of technical working groups	NACIONAL	Short term (1 to 2 years)
	Development of a proposal of regulations including quality standards		Medium term (3 to 5 years)
	Implementation of mechanisms for social participation		Medium term (3 to 5 years)
	Formalization of the technical proposal and implementation of the same		Medium term (3 to 5 years)
02. Implementation or strengthening of a system for the evaluation of inland water quality of the tributary watersheds of the Gulf of Honduras	National diagnostic of the status of water quality of tributaries of the Gulf of Honduras.	NACIONAL	Short term (1 to 2 years)
	Implementation or strengthening of interinstitutional coordination mechanisms with stakeholders involved in the evaluation of water quality.		Short term (1 to 2 years)
	Creation of technical working groups responsible for the design, implementation, evaluation and monitoring system for monitoring and evaluation of the quality of continental waters and the harmonization of sampling and analytical methodologies to be applied.		Short term (1 to 2 years)
	Update or creation of "Geographic Information Systems" and "Databases."		Medium term (3 to 5 years)
03. Implementation and, where appropriate, strengthening of strategies for improvements in coverage and sanitation service management of coastal areas.	Expansion of existing coverage.	NACIONAL	Medium and long term (3 to 10 years)
	Strengthening capacities of municipalities and service providers.		Short and medium term (1 to 5 years)
	Ensuring the quality of public services and final disposal according to regulations, development of control mechanisms and monitoring their implementation.		Short and medium term (1 to 5 years)
	Development of tools to enable the delivery of services within a framework of decentralized management, efficiency, transparency and public participation.		Short term (1 to 2 years)
	Improve the processes of service management: promotion of technical training of human resources, sustained technical assistance and analytical capacity building for monitoring and control of wastewater treatment		Medium term (3 to 5 years)
	Provide the sector with a regulatory framework to standardize and improve technical quality standards.		Medium term (3 to 5 years)
	Seek the financial stability of the service considering different strategies for the provision of resources.		Medium term (3 to 5 years)
	Promote spaces for public and private participation.		Short and medium term (1 to 5 years)



**Table 6: Priority actions and activities to achieve the goals of Operational Objective I.1 (Continued)**

Priority Actions	Activities	Scope of Application	Temporal Scope
04. Promote and, where appropriate, strengthen the development of schemes and regulations for authorization of discharges	Creation of "Technical Working Groups."	NATIONAL	Short term (1 to 2 years)
	Development of a "Regulation Proposal" including quality standards.		
	Implementation of "Social Participation Mechanisms."		
	Formalization of the technical proposal and its implementation .		
05. Decentralization of environmental management by strengthening and / or establishment, where appropriate of "Environmental Management Units" in local governments and / or municipalities.	Strengthening and / or, where appropriate, creation of "Environmental Management Units" in local governments and / or municipalities.	NATIONAL	Medium term (3 to 5 years)
	Development and implementation of processes for the delegation of management.		Medium term (3 to 5 years)
	Creation of "Technical Working Groups" in order to develop and implement decentralized "Environmental Management Units" and attribute their duties.		Short and medium term (1 to 5 years)
	Formation events and training.		Medium and long term (3 to 10 years)
	Media events and public participation aimed at dissemination of decentralization.		Short and medium term (1 to 5 years)
06. Plan for "trinational harmonization" normative and regulatory instruments for the prevention and reduction of pollutant loads from land and self-generated in the Gulf of Honduras	06.1. Establishment of "Quality Objectives" for water, sediment and biota.	REGIONAL	Short and medium term (1 to 5 years)
	06.2. Establishment of a "Water Quality Index" (ICA) for the Gulf of Honduras.		
	06.3. Development of tri - national protocols.		
	06.4. Implementation of the Strategic Environmental Assessment (SEA).		

**Image No.12: Socio-natural settings, opportunities for participation and monitoring activities in the Gulf of Honduras**



**Source: Gulf of Honduras Project**

**Table 7: Priority Actions and Activities to achieve Operational Objective I.2**

Objective I.2 To prevent and reduce marine pollution from port activities.				
Priority Actions	Activities	Scope of Application	Temporal Scope	
07. Analysis of the viability and convenience of the ratification of certain conventions and regional and / or international treaties and, where appropriate, their ratification and implementation	National meetings and workshops aimed at the development of regulations and mechanisms for implementation and control	NATIONAL	Medium term (3 to 5 years)	
	Adherence to those conventions that are deemed pertinent.			
	National meetings and workshops focused on the development of regulations and mechanisms for implementation and control.			
	Implementation of regulations and control mechanisms in each country and each of its ports.			
08. Strengthening and / or creation, where appropriate of "Environmental Management Units" in the ports of the Gulf of Honduras	Environmental assessment of each port and needs assessment of environmental management.	NATIONAL	Short and medium term (1 to 5 years)	
	Evaluation of the "Environmental Management Units" and diagnostic of existing strengthening and training needs.			
	Development and implementation of policies, regulations, controls, "good practice guides" and "contingency plans" .			
	Development and implementation of monitoring and control mechanisms.			
	Training and implementation of "contingency plans" .			
	Training and capacity building.			
09. Drafting and ratification of an "Agreement of Understanding of the Countries of the Gulf of Honduras (Belize, Guatemala and Honduras) on the Control of Vessels by the Port State Control"	Trinational workshops aimed at the elaboration of the agreement.	REGIONAL	Medium term (3 to 5 years)	
	Signing of the Agreement.			
	Establishment of a Committee and a Technical Secretariat.			
	Development and implementation of "Information System of the Gulf of Honduras"			
	Assistance and training events.			
	Communication and public participation events.			
10. Drafting and ratification of a "Gulf of Honduras Agreement to Prevent and Fight Aquatic Environment Pollution Incidents by Oil and other Harmful or Dangerous Substances"	Trinational workshops aimed at the elaboration of the Agreement.	REGIONAL	Medium term (3 to 5 years)	
	Signing of the Agreement.			
	Assistance and training events.			
	Communication and public participation events.			

**Table 8: Priority Actions and Activities to achieve Operational Objective I.3**

I.3 To prevent and reduce the adverse effects associated with the introduction of solid waste in water bodies.			
Priority Actions	Activities	Scope of Application	Temporal Scope
11. Developing a "Plan for Integrated Management of Solid Waste of the Basin of the Gulf of Honduras" originating from terrestrial sources (urban, industrial, agro-industrial and services)"	Basic studies and diagnostics.	REGIONAL	Short term (1 to 2 years)
	Events of discussion and analysis of the diagnostics elaborated.		Medium term (3 to 5 years)
	Creation of "Technical Working Groups" aimed at developing the "Plan".		Medium term (3 to 5 years)
	Defining the standards to be met by each type of waste classification established in the "Plan".		Medium term (3 to 5 years)
	Tracking and monitoring of implementation of the "Plan".		Long term (5 to 10 years)
12. Drafting and ratification of an "Agreement of Understanding of the Countries of the Gulf of Honduras (Belize, Guatemala and Honduras) on a Regulation on Port Reception Facilities for Ship-generated Waste and Cargo Residues".	Diagnosis of the current situation and needs of each port.	REGIONAL	Medium term (3 to 5 years)
	Workshops for diagnosis and analysis of national and regional needs.		
	Workshops for developing the agreement and mechanisms for its implementation.		
	Signing of the Agreement.		
	Establishment of frameworks and / or legal reforms.		
	Establishment of a Committee and a Technical Secretariat		
	Design and installation of "reception facilities".		
	Development and implementation of "Management and Waste Handling Plans."		
	Assistance and training events.		
	Communication events and public participation events.		

**Table 9: Priority Actions and Activities to achieve Operational Objective I.4**

I.4 To strengthen the eco-system , economic and social development conceptionfor the sustainable management of renewable natural resources at watershed level hidrográficas.			
Priority Actions	Activities	Scope of Application	Temporal Scope
13. Strengthening and, where appropriate, creation of "Binational Bodies of Transboundary Watersheds" and "Watershed Forums".	Binational workshop of coordination agreements, information sharing and commitments.	BINATIONAL	Short and medium term (1 to 5 years)
	Assistance and training.		
14. Development, implementation and monitoring of "Integrated Management Plans of Transboundary Watersheds".	Meetings and events aimed at sharing experiences and knowledge.		
	Establishment of the "Watershed Forums".		
	Socio - economic and environmental diagnostics of each binational watershed.		
	Binational workshops to disseminate the diagnostic of each watershed		
	Agreements and arrangements necessary for the formation of "Transboundary Watershed Binational Bodies" and "Watershed Forums".		
	Creation and implementation of the "Binational Bodies of Transboundary Watersheds" and "Watershed Forums."		
	Preparation of the "Integrated Management Plan."		
	Design and establishment of a permanent monitoring system of water quality and sediments.		



**Table 10: Cross-cutting Actions for Operational Objectives I.1 to I.4**

Cross-cutting actions	Activities	Scope of Application	Temporal Scope
15. Foster the implementation of cleaner production policies (P + L) through a "Demonstrative Projects Program" applied to coastal economic activities.	Basic studies to identify national coastal economic activities feasible to be included in the program.		Short term (1 to 2 years)
	Design projects to be implemented at the national level.	REGIONAL	Short term (1 to 2 years)
	Regional workshops for common knowledge and exchange of projects of each country.		Short term (1 to 2 years)
	Implementation of selected projects.		Medium term (3 to 5 years)
	Regional workshops aimed at sharing and discussion of results		Medium term (3 to 5 years)
16. Implementation of a system for joint monitoring of water quality, sediment and biota of the Gulf of Honduras.	Basic studies of the analytical capabilities at the level of the three countries.		Short term (1 to 2 years)
	Proposal of a network of laboratories.		Short term (1 to 2 years)
	Creation of working groups for the design and proposal of the monitoring system.		Short term (1 to 2 years)
	Workshops for "harmonization of analytical methods."		Short term (1 to 2 years)
	Events for presentation of the "Joint Monitoring System."	REGIONAL	Short term (1 to 2 years)
	Signature of a Memorandum of Understanding for the implementation of monitoring.		Short term (1 to 2 years)
	Activities for quality assurance of analytical capacity and sampling techniques.		Short and medium term (1- 5 years)
	Development and implementation of the "Joint Monitoring System"		Medium and long term (5-10 years)
	Communication events aimed at disseminating of monitoring results.		Long term (5 to 10 years)

## 1.6.2 Priority Actions and Activities to achieve ecosystem quality objectives II

**Table 11: Priority Actions and Activities to achieve Operational Objective II.1**

Objective II.1 To protect main species threatened or at risk of extinction			
Cross-cutting actions	Activities	Scope of Application	Temporal Scope
17. Development and implementation of monitoring programs aimed at identifying the major threatened and endangered species and key habitats.	Creation of "Technical Working Groups" for the preparation of "Red Lists" and the preparation of the "National Plans for Conservation of Threatened and Endangered Species".		Short and medium term (1 to 5 years)
	Development and implementation of population monitoring programs.	NATIONAL	Medium term (1 to 5 years)
	Communication and public participation events aimed at the dissemination of "National Red Lists" and "National Plans for Conservation of Threatened and Endangered Species".		Short and medium term (1 to 5 years)
18. Making - and permanent update - of a "Red List of Flora and Fauna of the Gulf of Honduras".	Creation of "Technical Working Groups" for the preparation of the "Regional Red List" and the preparation of "Regional Plans for Conservation of Threatened and Endangered Species."	REGIONAL	Medium to long term (5 to 10 years)
19. Elaboration and implementation of "Conservation Plans of Threatened and Endangered Species" (species listed in the "Red List of Flora and Fauna of the Gulf	Communication and public participation events aimed at the dissemination of both the "Regional Red List" and the "Regional Plans for Conservation of Threatened and Endangered Species."		Medium to long term (5 to 10 years)

**Table 12: Priority Actions and Activities to achieve Operational Objective II.2**

Objective II.2 To strengthen the management of ecologically important habitats and their biodiversity			
Cross-cutting actions	Activities	Scope of Application	Temporal Scope
20. Promote the establishment of marine protected areas and strengthening their management capabilities through the promotion of decentralized management.	Analyze - and, where appropriate, promote - at national and / or regional level consideration as "marine protected areas" of the "priority sites" identified in the ecoregional assessments made at present.	NATIONAL REGIONAL	Medium and long term (5 to 10 years)
	Strengthen national systems of protected areas and, particularly, in relation to the management of these areas.		Medium term (3 to 5 years)
	Promote - and, where appropriate, strengthen - the decentralized management of protected areas including their co - management in conjunction with communities and local governments or NGOs.		Medium term (3 to 5 years)
	Training and capacity building activities of human resources assigned to the management of protected areas.		Medium term (3 to 5 years)
	Develop, implement and / or strengthen research and monitoring activities in protected areas (particularly, on issues of water quality, sediments and biota).		Medium term (3 to 5 years)
21. Promote studies aimed at establishing and monitoring spatio - temporal degradation rates of coral reefs, seagrass beds, mangroves and sandy beaches.	Ensure the maintenance over time of the "Report Card for the Mesoamerican Reef" initiative.	NATIONAL (REGIONAL)	Short term (1 to 2 years)
	Support the development of similar initiatives aimed at developing health indicators to allow spatio - temporal monitoring of the state of mangroves, seagrasses and sandy beaches.		Medium term (1 to 5 years)
	Encourage initiatives aimed at analyzing the evolution of the surface occupied by mangroves and sandy beaches using aerial photographs and satellite images.		Medium term (1 to 5 years)
22. Analysis of the viability and convenience of ratification of a "Convention for the Conservation and Protection of Nature and Natural Resources of the Gulf of Honduras" and, if deemed appropriate, its implementation.	One or more trilateral workshops of authorities related to the environment, natural resources, coastal zones, fisheries and protected areas.	REGIONAL	Short term (1 to 2 years)
	Signature of the Convention.		
	Establishment of a Committee and a Secretariat.		
	Development of assistance and training events.		
23. Integration of Marine Protected Areas in a "Regional System of Marine Protected Areas of the Gulf of Honduras."	Development of communication and public participation events.	REGIONAL	Long term (5 to 10 years)
	One or more trilateral workshops authorities related to protected areas		
	Sign a "Agreement of Understanding" aimed at establishing a "Regional System of Protected Marine Areas of the Gulf of Honduras"		
	Establishment of a Committee and a Secretariat.		
	Development of assistance and training events designed to expand the knowledge of national and regional human resources.	REGIONAL	Long term (5 to 10 years)
	Development of communication and public participation events aimed at the diffusion of the "Regional System of Marine Protected Areas of the Gulf of Honduras."		

**Table 13: Priority Actions and Activities to achieve Operational Objective II.3**

Objective II.3 Develop measures for the restoration and recovery of fishing “stocks” and mitigation of bycatch			
Priority Actions	Specific Actions / Activities	Scope of Application	Temporal Scope
<p><b>24.</b> Análisis de factibilidad y de entenderse conveniente, elaboración y ratificación de un “Acuerdo de Entendimiento de los Países del Golfo de Honduras (Belice, Guatemala y Honduras) sobre el Establecimiento de Vedas Regionales de Pesca”</p>	<p><b>24.1.</b> Promote necessary institutional reforms for the development and implementation of departments or units of “Fisheries Statistics and Research” within national institutions linked to the fishery resources of the Gulf of Honduras.</p>	NATIONAL	Short term (1 to 2 years)
	<p><b>24.2.</b> Declare as “special management zone” the sites of reef fish aggregation (considering for that purpose the sites identified timely by Arrivillaga and Windevoehel, 2008).</p>		Short term (1 to 2 years)
	<p><b>24.3.</b> Promote and implement the necessary actions - in the national level and, where appropriate, at the regional level - for, in the medium and long term, declare “banned areas” to times and places of breeding and recruitment of species identified as “threatened” and “in danger of extinction”.</p>	NATIONAL (REGIONAL)	Long term (5 to 10 years)
	<p><b>24.4.</b> Implement and / or strengthen at the national and / or regional level mechanisms for monitoring of compliance with the special management zones and ban seasons.</p>		Long term (5 to 10 years)
	<p><b>24.5.</b> Develop and Implement “Fisheries Best Practices Guide”.</p>		Short term (1 to 2 years)

### 1.6.3 Priority Actions and Activities to achieve ecosystem quality objectives III

**Table 14: Priority Actions and Activities to achieve Operational Objective III.1**

Objective III.1 Develop and implement policies for integrated coastal zone management plans and marine - coastal area management plans			
Priority Actions	Specific Actions / Activities	Scope of Application	Temporal Scope
<p><b>25.</b> Promote the creation of national bodies for integrated coastal zone management.</p> <p><b>26.</b> Develop, implement - and, where appropriate, strengthen - policies and plans (local and / or national) of integrated coastal zone management.</p>	Integrated coastal zone management	GUATEMALA AND HONDURAS:	Medium term (1 to 5 years)
<p><b>27.</b> Strengthen the authority and the Coastal Zone Management Institute (CZMAI).</p> <p><b>28.</b> Develop and implement integrated management plans for coastal zone management.</p>			
<p><b>29.</b> Analyze the feasibility and the economic and environmental benefits of promoting the declaration of the Gulf of Honduras as a “Particularly Sensitive Marine Area” and, if appropriate, initiate efforts for the purpose of this declaration.</p>	Trinational workshops aimed at analyzing the feasibility and the economic and environmental benefits of the declaration.	REGIONAL	Long term (5 to 10 years)
	If the declaration is considered convenient, promote the formation of a “Technical Working Group”.		
	Preparation and presentation of required documents.		
	Development of assistance and training events.		
	Development of communication and public participation events.		



Tabla 15: Acciones Prioritarias y Actividades para el logro del Objetivo Operativo III.2

Objective To develop activities of research, training, awareness and adaptation on climate change effects III.2 Desarrollar actividades de investigación capacitación, sensibilización y adaptación sobre los efectos del cambio climático			
Priority Actions	Specific Actions / Activities	Scope of Application	Temporal Scope
30. Promotion at the national and regional levels, research activities on climate change.	Research activities in relation to: a) current and historical variations in surface temperature, salinity, sea level and weather conditions, and b) the acquisition of information on current direction and speed.	NATIONAL (REGIONAL)	Short term (1 to 2 years)
31. Development at the national and regional levels events related to dissemination, awareness and training activities on climate change.	Realización de cursos y talleres con especial énfasis en temas de vulnerabilidad al cambio climático y las posibles medidas de mitigación y adaptación.		Short term (1 to 2 years)
32. Preparation and implementation of a "Program of General Measures for Mitigation and Adaptation to Climate Change".	Update and / or enhancement of national assessments already carried out. Formation of "Technical Working Groups". Proposal for a "Program of General Measures for Mitigation and Adaptation to Climate Change". Identification of "priority actions". Detailed assessment of "priority actions" (cost of implementation and fiscal, environmental, social and any type of impacts). Implementation of "priority actions".		Long term (5 to 10 years)
33. Promotion and development of international relations with organizations, institutions and agencies related to climate change.			Short term (1 to 2 years)

Table 16: Priority Actions and Activities to achieve Operational Objective III.3

Objetivo III.3 To incorporate tourism development, port expansion and, in general, any proposed projects of construction or expansion of infrastructure in coastal areas, concepts of integrated coastal zone management and prevention of climate change			
Priority Actions	Specific Actions / Activities	Scope of Application	Temporal Scope
34. Analyze the convenience and feasibility and, if deemed advisable, implement, within the study area covered by this consultancy a delay line of construction ("setback").		NATIONAL REGIONAL	Long term (5 to 10 years)
35. Consider in any new project of construction or expansion of infrastructure in coastal areas the potential rise of sea levels.			Short term (1 to 2 years)

Table 17: Cross-cutting Actions for Operational Objectives I a III

Priority Actions	Specific Actions / Activities	Scope of Application	Temporal Scope
36. Creation of the Joint Technical Committee of the Gulf of Honduras (INTERGOH).		REGIONAL	Short and medium term
			(1 to 5 years)



## 1.7 Estimated costs and funding mechanisms

According to Emerson et al. (2006), “financial sustainability of protected areas is much more than fundraising”. Also, according to the definition of the International Union for Conservation of Nature (IUCN) that sustainability includes “the ability to secure stable and sufficient financial resources in the long term and allocate them so as to achieve conservation goals of biodiversity

The financial sustainability of this “Strategic Action Plan” (SAP) requires identifying the sources of funding to develop the actions and activities proposed, including the identification of investment, operating costs and expenses associated with the monitoring of the proposed activities.

Thus, for purposes of the financial sustainability of the “Strategic Action Plan” (SAP), a “portfolio” of multiple sources of funding was identified (Table 18).

It is noteworthy that it is important that resources from these sources of funding are managed taking into consideration the “Strategic Action Plan” (SAP), which should be on the one hand, the strategic frame of reference and on the other, mechanisms for efficient and effective administration of these funds must be provided.

To this end, we propose the creation of a “Conference of Donors and Partners” of a permanent nature and specific to the Gulf of Honduras, to ensure the implementation of the basic mechanisms of the financing scheme of the “Strategic Action Plan” (SAP). This “conference” could be a significant chapter of the one currently operating in the scope of CCAD which, in particular, ensures the monitoring of the “Environmental Plan for Central America” (PARCA).

Also presented are the cost estimates corresponding to the “priority actions” and “specific” (when applicable) also incorporating information about the eventual “breakdown” of such costs.

### Environment Plan for the Region of Central America (PARCA)

PARCA is a planning instrument guiding the operation, in the regional and international context of the Central American Commission on Environment and Development (CCAD) and seeks to enhance and facilitate inter-agency coordination and joint construction of synergies for environmental regional integration and sustainable development in Central America.

The first PARCA (2000 - 2004) was an exercise of capacity building to address environmental challenges in the region and was designed to operationalize the Alliance for Sustainable Development (ALIDES) and start the consolidation of CCAD as a whole.

The second PARCA (2004 - 2009) defined strategic areas, specific objectives, outcomes and indicators to address environmental challenges and focused on the development and validation of harmonized regional policy instruments.

The third PARCA (2010 - 2014) focuses on environmental governance with a management model based on environmental compliance and enforcement, and a strong emphasis on inter-sectoral and inter-agency multi-year plan under the Central American Integration System (SICA) and focuses on two areas of action: a) political action to achieve the mainstreaming of environmental management and interinstitutional coordination, which aims to influence public institutions to assume their role in environmental integration, providing them with technical support and on the other hand, b) technical management of CCAD, more related to supporting the direct responsibility of the national environmental authorities, especially in environmental quality management, management of natural heritage and climate change adaptation.

Table 18: Portfolio of potential funding sources

Potential institutions for financing and technical cooperation in projects of environmental management, biodiversity conservation and sustainable management of natural resources		Funds international cooperation and financing		International Technical Cooperation
Acronym	Meaning	Grants	Loans	
GEF	Global Environment Facility	X		
BID	Inter-American Development Bank	X	X	
BIRF / WB	World Bank	X	X	
BCIE	Central American Bank for Economic Integration		X	
ASDI	Swedish Agency for International Development	X		X
DANIDA	Danish Agency for International Cooperation	X		X
USAID	Agency for International Development (U.S.)	X		X
GIZ	German Development Cooperation	X		X
SNV	Netherlands Cooperation for Development Service	X		X
COSUDE	Swiss Agency for Development and Cooperation	X		X
JICA	Japan International Cooperation Agency	X		X
AECI	Spanish International Cooperation Agency	X		X
NORAD	Norwegian Agency for International Cooperation	X		X
EPA	United States Environmental Protection Agency			X
OAPN	National Parks Management Agency (Spain)			X
FAO	Food and Agriculture Organization			X
PNUMA	United Nations Environment Program	X		X
PNUD	United Nations Development Program	X		X
OEA	Organization of American States	X		
OMI	International Maritime Organization			X
TRAINMAR	Training in the Maritime - Port Sector			X
WWF	World Wild Fund			X
TCN	The Nature Conservancy			X
AVINA	AVINA Foundation – VIVA TRUST	X		X
MARFUND	Mesoamerican Reef System Fund	X		X
UICN	International Union for Conservation of Nature			X

Image No.13: Meetings of Ministers of the countries that converge in the Gulf of Honduras





**Table 19: Estimated costs of implementation**

Priority / Specific Actions	Scope of Application	Estimated Cost (US\$)	Breakdown (US\$)		
			International Cooperation	1st Phase	Development Phase
01. Establishment and implementation of national quality standards for surface waters for the protection of natural ecosystems.	NATIONAL	300.000	---	300.000	---
02. Implementation or strengthening of a system for evaluation of the quality of inland waters of the tributary watersheds to the Gulf of Honduras.	NATIONAL	2.500.000	---	300.000	2.200.000
03. Implementation and, where appropriate, strengthening of strategies for improvements in coverage and management of sanitation services of coastal areas.	NATIONAL	51.500.000	---	1.500.000	*50.000.000
04. Promote and, where appropriate, strengthen the development of schemes and rules for authorization of discharges.	NATIONAL	210.000	---	210.000	---
05. Decentralization of environmental management by strengthening and / or establishment, where appropriate, of "Environmental Management Units" in local governments and / or municipalities.	NATIONAL	3.000.000	---	300.000	2.700.000
06. Trilateral harmonization plan of policy and regulatory instruments for the prevention and reduction of pollutant loads of terrestrial origin and those generated in the Gulf of Honduras.					
<b>Specific Actions</b>					
06.1. Establishment of Quality Objectives for Water, Sediment and Biota.	REGIONAL	300.000	300.000	---	---
06.2. Establishment of a Water Quality Index (WQI) for the Gulf of Honduras.	REGIONAL	150.000	150.000	---	---
06.3. Development of tri - national protocols	REGIONAL	75.000	75.000	---	---
06.4. Implementation of the Strategic Environmental Assessment (SEA)	REGIONAL	300.000	300.000	---	---
07. Analysis of the viability and convenience of the ratification of certain Covenants and Regional and / or International Treaties and, where appropriate, their ratification and implementation.	NATIONAL	2.500.000	---	600.000	1.900.000
08. Enhancement and / or creation, where appropriate, of "Environmental Management Units" in the ports of the Gulf of Honduras.	NATIONAL	300.000	---	300.000	---
09. Drafting and ratification of an "Agreement of Understanding of the Countries of the Gulf of Honduras (Belize, Guatemala and Honduras) on the Control Vessel by the Port State Control".	REGIONAL	75.000	75.000	---	---
10. Drafting and ratification of a "Gulf of Honduras Agreement to Prevent and Fight Aquatic Environment Pollution Incidents by Oil and other Harmful or Dangerous Substances"	REGIONAL	75.000	75.000	---	---
11. Developing a "Plan for Integrated Management of Solid Waste of the Basin of the Gulf of Honduras" originating from terrestrial sources (urban, industrial, agro-industrial and services)"	REGIONAL	1.500.000	500.000	1.000.000	---

**Note:** Corresponds to the cost of the execution of works for the expansion of coverage of sanitation services including conduction systems, treatment and final disposal, the cost was established from estimates of the number of dwellings and unit costs per connection

**Table 19: Estimated costs of implementation (Continued)**

Priority / Specific Actions	Scope of Application	Estimated Cost (US\$)	International Cooperation	Breakdown (US\$)	
				1st Phase	Development Phase
12. Drafting and ratification of an "Agreement of Understanding of the Countries of the Gulf of Honduras (Belize, Guatemala and Honduras) on a Regulation on Port Reception Facilities for Ship-generated Waste and Cargo Residues".	REGIONAL	75,000	75,000	---	---
13. Strengthening and, where appropriate, creation of "Binational Bodies of Transboundary Watersheds" and "Watershed Forums"	BINATIONAL	150,000	150,000	---	---
14. Development, implementation and monitoring of "Integrated Management Plans of Transboundary Watersheds".	BINATIONAL	15,000,000	750,000	750,000	13,500,000
15. Foster the implementation of cleaner production policies (P + L) through a "Demonstrative Projects Program" applied to coastal economic activities.	REGIONAL	3,000,000	---	500,000	2,500,000
16. Implementation of a system for joint monitoring of water quality, sediment and biota of the Gulf of Honduras.	REGIONAL	6,000,000	1,500,000	500,000	4,000,000
17. Development and implementation of monitoring programs aimed at identifying the major threatened and endangered species and key habitats.	NATIONAL (REGIONAL)	1,000,000	350,000	150,000	500,000
18. Making - and permanent update - of a "Red List of Flora and Fauna of the Gulf of Honduras".	NATIONAL (REGIONAL)	500,000	175,000	75,000	250,000
19. Elaboration and implementation of "Conservation Plans of Threatened and Endangered Species" (species listed in the "Red List of Flora and Fauna of the Gulf)	NATIONAL (REGIONAL)	2,500,000	250,000	250,000	2,000,000
20. Promote the establishment of marine protected areas and strengthening their management capabilities through the promotion of decentralized management.	NATIONAL (REGIONAL)	750,000	500,000	250,000	---
21. Promote studies aimed at establishing and monitoring spatio - temporal degradation rates of coral reefs, seagrass beds, mangroves and sandy beaches.	NATIONAL (REGIONAL)	2,500,000	1,250,000	250,000	1,000,000
22. Analysis of the viability and convenience of ratification of a "Convention for the Conservation and Protection of Nature and Natural Resources of the Gulf of Honduras" and, if deemed appropriate, its implementation.	REGIONAL	150,000	150,000	---	---
23. Integration of Marine Protected Areas in a "Regional System of Marine Protected Areas of the Gulf of Honduras."	REGIONAL	100,000	100,000	---	---
24. Análisis de factibilidad y de entendimiento conveniente, elaboración y ratificación de un "Acuerdo de Entendimiento de los Países del Golfo de Honduras (Belize, Guatemala y Honduras) sobre el Establecimiento de Vedas Regionales de Pesca"	---	---	---	---	---
<b>Specific Actions</b> 24.1. Promote necessary institutional reforms for the development and implementation of departments or units of "Fisheries Statistics and Research" within national institutions linked to the fishery resources of the Gulf of Honduras.	NATIONAL	3,500,000	150,000	350,000	3,000,000

**Table 19: Estimated costs of implementation (Continued)**

Priority / Specific Actions	Scope of Application	Estimated Cost (US\$)	International Cooperation	Breakdown (US\$)	Development Phase
				1st Phase	
24.2. Declare as "special management zone" the sites of reef fish aggregation (considering for that purpose the sites identified timely by Amvillaga and Windevoxhel, 2008).	NATIONAL	75.000	75.000	---	---
24.3. Promote and implement the necessary actions - in the national level and, where appropriate, at the regional level - for, in the medium and long term, declare "banned areas" to times and places of breeding and recruitment of species identified as "threatened" and "in danger of extinction".	NATIONAL (REGIONAL)	300.000	150.000	150.000	---
24.4. Implement and / or strengthen at the national and / or regional level mechanisms for monitoring of compliance with the special management zones and ban seasons.	NATIONAL (REGIONAL)	3.500.000	350.000	350.000	2.800.000
24.5. Develop and Implement "Fisheries Best Practices Guide".	NATIONAL (REGIONAL)	3.000.000	1.000.000	500.000	1.500.000
25. Promote the creation of national bodies for integrated coastal zone management.	GUATEMALA Y HONDURAS	500.000	150.000	350.000	---
26. Develop, implement - and, where appropriate, strengthen - policies and plans (local and / or national) of integrated coastal zone management.	GUATEMALA Y HONDURAS	5.000.000	500.000	500.000	4.000.000
27. Strengthen the authority and the Coastal Zone Management Institute (CZMAI).	BELICE	250.000	---	250.000	---
28. Develop and implement integrated management plans for coastal zone management.	BELICE	2.500.000	250.000	250.000	2.000.000
29. Analyze the feasibility and the economic and environmental benefits of promoting the declaration of the Gulf of Honduras as a "Particularly Sensitive Marine Area" and, if appropriate, initiate efforts for the purpose of this declaration.	REGIONAL	500.000	500.000	---	---
30. Promotion at the national and regional levels, research activities on climate change.	NATIONAL (REGIONAL)	3.000.000	1.000.000	500.000	1.500.000
31. Development at the national and regional levels events related to dissemination, awareness and training activities on climate change.	NATIONAL (REGIONAL)	150.000	150.000	---	---
32. Preparation and implementation of a "Program of General Measures for Mitigation and Adaptation to Climate Change".	NATIONAL (REGIONAL)	1.500.000	150.000	150.000	1.200.000
33. Promotion and development of international relations with organizations, institutions and agencies related to climate change.	NATIONAL (REGIONAL)	150.000	150.000	---	---
34. Analyze the convenience and feasibility and, if deemed advisable, implement, within the study area covered by this consultancy a delay line of construction ("seback").	NATIONAL (REGIONAL)	300.000	300.000	---	---
35. Consider in any new project of construction or expansion of infrastructure in coastal areas the potential rise of sea levels.	NATIONAL (REGIONAL)	---	---	---	---
36. Creation of the Joint Technical Committees of the Gulf of Honduras (INTERGOH).	REGIONAL	1.500.000	300.000	200.000	1.000.000
<b>TOTALS</b>		<b>120.235.000</b>	<b>11.900.000</b>	<b>10.785.000</b>	<b>97.550.000</b>
			<b>(10 %)</b>	<b>(9 %)</b>	<b>(81 %)</b>



## 1.8 Portfolio of potential funding sources

Potential sources of financing for the of “Strategic Action Plan” (**Table 18**), the Global Environment Facility (GEF) - and, consequently, the Interamerican Development Bank (IDB), as administering agency are key partners.

Indeed, the international fund - which through a non-reimbursable fund partially funds the cost of the “ Project for Environmental Protection and Maritime Transport Pollution Control in the Gulf of Honduras “ - intends among its objectives, to facilitate access to other sources of funding for those programs and plans aimed at preserving global ecosystems of global or worldwide interest.

Thus, the GEF partially funded the requirements of the strategic action plans, focusing on the incremental costs associated with the components of the actions and activities that generate global environmental impact (which go beyond the objectives on a local or national level) .

In estimating the costs of implementing the present “Strategic Action Plan” (**Table 19**) the incremental costs associated with climate change have been differentiated, which could be financed with resources from both the GEF as from other international agencies or donors.

For its part, **Table 20** presents a list of instruments that were evaluated in the context of the preparation of the Environmental Diagnostic Analysis (EDA) and the Strategic Action Plan (SAP) by reviewing the experiences in existing protected areas and interviews with qualified stakeholders.

These instruments highlight funds from national or municipal budget oriented to environmental conservation and preservation of biodiversity in the marine - coastal area of the Gulf of Honduras. These are resources that can reach significant levels, but currently are not sufficient and are not being executed efficiently and are not necessarily part of a Strategic Action Plan.

In this category, funds are included which can be obtained through swaps of international debt. For example,

Guatemala and the United States signed in 2006, an exchange for \$ 24 million that produced the so-called “Fund for the Conservation of Tropical Forests” (FCA) administered by the “Foundation for the Conservation of Natural Resources and Environment of Guatemala “(FCG) which is the entity in charge of financial management of funds with specific instructions from the Oversight Committee and of its day to day operation. In year 2008, Guatemala has requested negotiating a second debt swap with the United States, the same could be oriented to financing Guatemalan ocean - coastal policy.

Corresponds to indicate that Belize has also had experiences of international debt swap to fund environmental conservation.

In general, the international debt swap to fund environmental conservation is a mechanism that requires bilateral negotiations between the creditor country and the debtor country, but that is facilitated by the existence of previous precedents and a strategic program providing a framework for environmental commitments - effective - of the debtor country.

**Table 20. Strategic Action Plan: Other financial instruments and mechanisms**

source	Possible financial instruments or mechanisms
State Budget (National or Municipal)	<ul style="list-style-type: none"> <li>– Direct transfers</li> <li>– Specific Environmental Taxes</li> <li>– Tolls</li> <li>– International Debt Swap</li> </ul>
Private sector contributions, foundations and NGOs	<ul style="list-style-type: none"> <li>– International foundations</li> <li>– Voluntary contributions from Tourism Companies, Energy, Chemical, etc.</li> <li>– Other Private Sector Contributions</li> <li>– Oil Pipeline tolls and Storage Terminals</li> </ul>
Fisheries sector	<ul style="list-style-type: none"> <li>– Tax on export of sea products (Certified Products / Eco - Labeling: Export Lobster, Shrimp)</li> <li>– Tax on the aquaculture industry</li> <li>– Fee for sport fishing licenses</li> </ul>
Tourism Sector	<ul style="list-style-type: none"> <li>– International tourist rates (in airports)</li> <li>– Rates of cruise tourists</li> <li>– Rates to hotels</li> <li>– Fees for visits to protected areas</li> <li>– Rates of yachting activities - diving</li> <li>– Voluntary contributions</li> </ul>
Rights to coastal infrastructure investments and commercial properties in coastal areas	<ul style="list-style-type: none"> <li>– Property rate for environmental conservation</li> </ul>
Maritime Navigation and port services	<ul style="list-style-type: none"> <li>– Port taxes</li> <li>– Environmental toll on maritime navigation</li> <li>– Management of oil and hazardous products (Ports)</li> </ul>
Grants from multilateral and international institutions	
Payment for Environmental Services	

## 1.9 Other financial instruments and mechanisms

In the category “State Budget” (National or Municipal), the possibility of specific tolls to road transport was included, but its implementation presents many challenges.

Another category is aimed at promoting the contribution - and to facilitate contributions - from the private sector and civil society organizations conducting business in the marine - coastal area of the Gulf of Honduras. In this sense, it is of particular importance to develop an awareness campaign at the level of the private sector, facilitating the development of

a strategy of “social responsibility” among private companies, but more specifically aimed at those operating under the headings “oil “; management of dangerous goods “(in the field of ports) and” tourism “.

Another potential category is related to the fishing industry. In particular, consideration has been given to the possibility of charging a tax on exports of lobster, the aquaculture industry or a service fee for certification of responsible fishing. Another possibility is charging a fee to the category “sport fishing” (which has shown great potential for the region, becoming a tourist attraction factor).

Currently, the tourism sector contributions to the financing of environmental funds are very limited. Such is the case of Belize, which applies a fee to tourists: a) the fee for international visitors at the airport in Belize City and b) the fee to cruise tourists. Consequently, we considered the potential of generalizing these fees in the region, and the implementation of new instruments and mechanisms such as: a) the payment of appropriate fees to visitors of protected areas (as part of conservation plans and management of these areas), b) a fee of yachting - diving tourism, and c) a tax on international tourism in hotels of international category.

The potential mechanisms associated with port charges or tolls to shipping were also considered. In the first case, there are factors of port competitiveness that would make implementation difficult, however, the application of a toll on shipping in the Gulf of Honduras, administered by a regional institution as the “Joint Technical Committee of the Gulf of Honduras” - INTERGOH (proposal under the “Strategic Action Plan”), does not create a problem of competition between ports because it would apply to all international merchant ships and would be based on an approach of “environmental service” for the use of sensitive shipping routes in terms of conserving biodiversity and ecosystem health in the region (and in particular the Mesoamerican reef system).

It is noteworthy that the implementation of “payment for environmental services” is being studied in several regional academic circles, as an example, Costa Rica has approved the implementation of payment for services associated with tropical forests. However, its implementation in areas such as management of water resources presents many practical difficulties that require the implementation of a process for the generation of agreements between the main stakeholders. In the case of the major tributary watersheds of the Gulf of Honduras, it is proposed to include feasibility analysis of implementing such “payments for environmental services” under the “Integrated Management Plans of Transboundary Watersheds.”





## 2. SOCIALIZATION STRATEGY OF THE STRATEGIC ACTION PLAN

This strategy is defined as *“the descriptive model of an approach that can capitalize on an opportunity within a specified period (short, medium and long term).”* It contains a series of steps:

### **Step 1: Decide to change the way of doing things.**

At this point it is considered that it is not convenient from economic, social, environmental and policy standpoints to maintain a **“status quo”** of the current situation of the natural resources and the economy of the Gulf of Honduras. This region includes important and valuable ecosystems that are unfortunately in a bad state of health, which impacts negatively on the economies of the countries of the region. **However, the fundamental premise are the political representatives of the countries that must take this first step or decision.**

### **Step 2: Identify an opportunity.**

**The opportunity is now.** Now is when the Gulf of Honduras project has the initiative to propose this approach. It is now that we have technical and scientific information that supports the decision **not only to “change the way of doing things”** but to improve the quality and quantity of natural resources that result in economic benefits, by way of example, greater, better and more organized fishery as well as, more and better tourism to help develop the economy of the region.

**Step3: Concentrate the larger number of data of the factors that affect the opportunity today and make a detailed analysis of the situation.**

**The data exist.** It is planned that this information is

presented to the various sectors of society in each of the countries in the region to finally present the regional aspect in work meetings. The idea is to support technically and scientifically the social, economic and environmental “reality of the region, to be used in decision-making.

**Step 4: Raise the impact of the capitalization of that opportunity, determine what would be the ultimate goal to be achieved with the proposed plans.**

The ultimate goal of these “working meetings” is to reach agreements. Agreeing to endorse the Strategic Action Plan (SAP) introduced as a starting point for landing a more local and specific plan in which all sectors see themselves represented, is the ultimate goal of the socialization strategy. Knowing and “feel” the need as countries to undertake SAP implementation, understanding the positive impact on economies, social and environmental aspects of the region is most important. **The approach is not only environmental. It is primarily economic with important social, political and natural resource management variables.**

**Step 5: The result is a list of critical success factors arising from the present to the future. It should raise a hypothesis of how to achieve it. This is a Strategic Approach.**

Critical factors for the success of the strategy is the actual content of the approach. The approach must demonstrate that the solution to the problem of natural resources currently proposed, is making arrangements whose economic, environmental and social effects are evident. These should be offered to the highest political authorities of the countries and region for the future implementation of the SAP. The hypothesis is that the SAP implementation will improve the current situation of natural resource

degradation in the region resulting in the near future (short, medium and long term) in economic, environmental and social improvement in the region. How to do this, is the implementation of the SAP.

#### **Step 6: Project Vision and Work Plan.**

The project vision is to reach arrangements for the future implementation of the SAP. It seeks to improve the quality of valuable natural resources of the region by implementing measures to reduce degradation. All resulting in improved health of the inhabitants, and their economic, social and environmental situation in the Gulf of Honduras.

## **3. WORK PLAN**

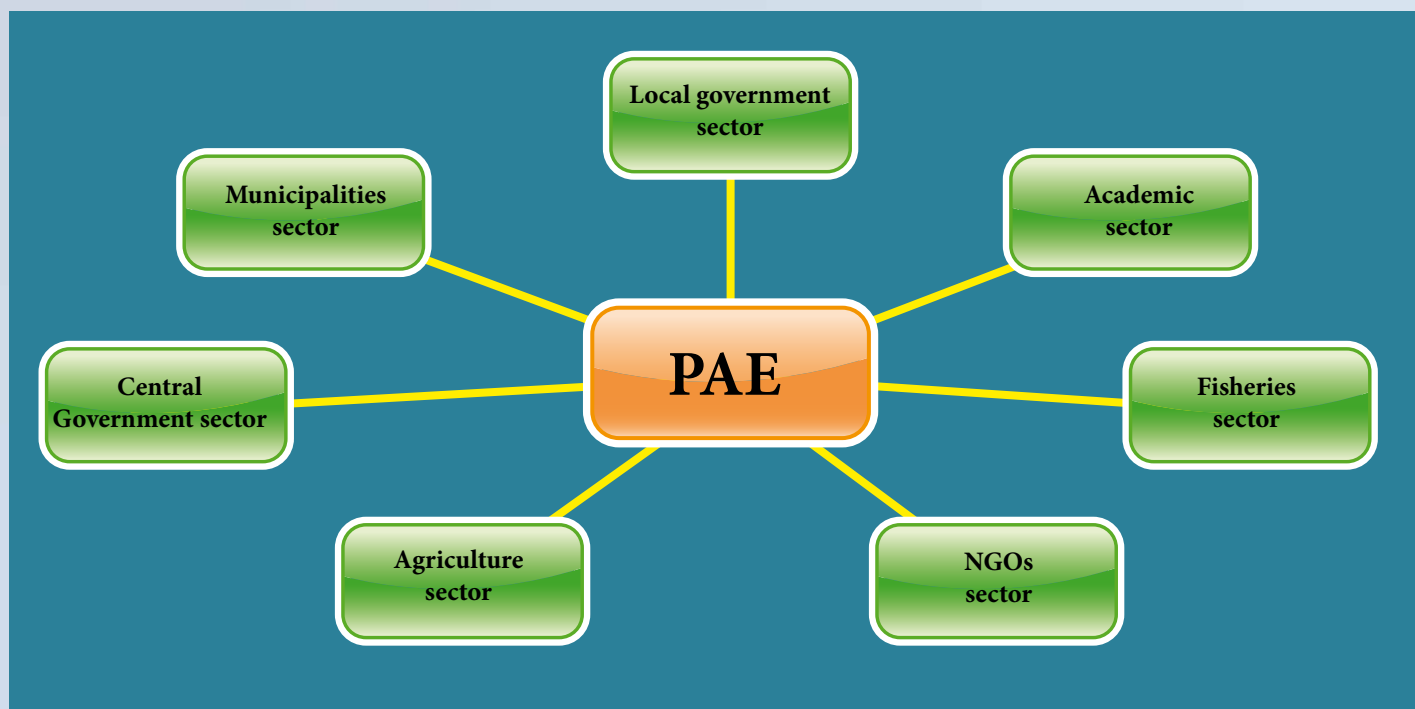
### **Initial assumptions and requirements**

1. It is important to “socialize” the EAP. It is recognized that the GEF methodology proposes the Causal Chain Analysis and the establishment of a SAP that results in national and regional analysis, therefore, of general nature.
2. To build a more specific SAP with more ability to be appropriate, it is necessary to conduct a process that must take into account the following:
  - a. The mapping of key actors in of the region (which already exists).
  - b. The identification of the actions already being undertaken in the different national institutions of each country and region in general.
  - c. With the above (a and b) more specific actions that should be part of the SAP must be described and implemented. This will be the result of using “consultation sheets” with the actors in the region over the work meetings. The sheets for consultation must contain, among other information, the description of the measure, potential funding and if it is of short, medium or long term. Example: Central Government Sector.

Overall activity in the SAP	Related activities being implemented	Institution	Description of how the SAP is associated with the activity	Drafting of the specific measure	Possible cost (US \$) and funding source

3. This means that the strategy of socializing and consensus should be done by sector, for example local government sector (Key), central government sector (Key), agricultural sector, fisheries, tourism, industry, environmental NGOs and others.

Figure No.4: Exemplified diagram of the participation of different sectors in the implementation of the SAP



4. The central idea is that by knowing the activities that different sectors of society are currently conducting that they agree to implement the SAP measures resulting from the “working meetings”. This will make themselves and their institutions feel part of the solution and generate specific activities to be performed. In this way the SAP will be more concrete and specific.
5. This means that socialization also becomes a way of acquiring information which must be collected and processed by the URCP creating at the end a more specific SAP. This implies that there must be two (2) meetings per sector. One to obtain information and the other to agree on the measures. Only in this way the general and specific SAP can be “built” at the regional, national and local levels. **The second meeting should produce technical and policy agreements at institutional level.**
6. This may in future be brought before the international cooperation in the donor conference as a possible second phase of the Gulf of Honduras Project.



# GLOSSARY

<b>Systematic approach:</b>	It is to have a full and complete view of the many components and elements of the diverse interrelationships of the system, in this case the environment, which functions as a whole.
<b>Anthropogenic:</b>	Of human origin or derived from human activity.
<b>Biodiversity:</b>	Or biodiversity. It refers to the wide variety of living beings on earth and the natural patterns that shape it.
<b>Sustainable development:</b>	Meeting the needs of present generations without compromising the ability of future generations to meet their own needs. It revolves around the reconciliation of three aspects: economic, social and environment.
<b>Rainwater discharges:</b>	Stormwater flows with street drag.
<b>Ecosystems:</b>	The ecosystem is the level of organization of nature in the interest of ecology as a science that studies the relationships between living things and their environment.
<b>Marine and coastal ecosystems:</b>	Ecosystem formed by the sea (coastal) and offshore (marine).
<b>Eutrophication:</b>	Natural process in aquatic ecosystems, especially in lakes, characterized by an increase in the concentration of nutrients such as nitrates and phosphates, with consequent changes in the community composition of living beings.
<b>Dynamic factors:</b>	Are those that result from a combination of external processes related to wind, rain, marine, others along with others that occur due to the internal dynamics of the earth such as earthquakes and volcanic eruptions.
<b>Indicator:</b>	It is the quantitative measurement or qualitative observation to identify changes over time and whose purpose is to determine how well a system is working, providing an alert on the existence of a problem and allow action to solve it, once you have clarity about the causes that generated it..
<b>Intrusion:</b>	Introduced without the right . Igneous rock body that has been introduced itself to other pre-existing rocks.
<b>Theoretical models:</b>	Theories constructed by humans to explain, predict and nominate different phenomena (events, the behavior of animals, etc.).
<b>Groundwater:</b>	Groundwater layers.

**Sediment:**

It is a solid material accumulated on the surface resulting from the actions of phenomena and processes acting in the atmosphere, hydrosphere and biosphere (wind, temperature variations, precipitation weather, movement of surface water or groundwater, moving water bodies in lacustrine or marine environment, chemical actions, actions of living organisms).

**Ecosystem health:**

Ability of a given ecosystem to maintain their organization, relationships, and autonomy over time, without altering the internal balance of the system caused by natural factors (hurricanes, earthquakes, landslides, etc.) and anthropological (pollution, war, fishing, among others).

**Guideline values:**

Data or reference values which are set to measure the state of a situation or particular fact based on them.

**Image No. 14: Panoramic view of Puerto Cortes, Honduras**



Source: Gulf of Honduras Project



Image No. 15: Big Creek Basin, Belice



Source: Gulf of Honduras Project

*This document is part of the activities developed by the Consortium International Mar Consult Inc. - CSI Ingenieros SA in connection with consulting services in relation to the so called " Data and Information Management System, Establishment of Base Line, Preparation of the Transboundary Diagnostic Analysis (TDA) and the Strategic Action Plan (SAP) " which are part of the "Project for Environmental Protection and Maritime Transport Pollution Control in the Gulf of Honduras" developed by the Central American Commission on Maritime Transport (COCATRAM) and the Central American Commission for Environment and Development (CCAD) with the support of the Global Environment Facility (GEF) and the Inter-American Development Bank (IDB).*

*The opinions expressed herein are those of the authors and do not necessarily reflect those of the organizations mentioned above.*

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#### **COCATRAM**

Central American Commission on Maritime Transport  
Residencial Bolonia, frente al costado oeste del Hotel Mansión Teodolinda •  
Apto. Postal: 2423  
PBX: (505) 2222-2754 / 2222-3667 / 2222-3560 • Fax: (505) 2222-2759  
Managua, Nicaragua  
[www.cocatram.org](http://www.cocatram.org)

#### **CCAD**

Central American Commission for Environment and Development  
Bulevar Orden de Malta No. 470, Urbanización Santa Elena, Antiguo Cuscatlán,  
El Salvador, Centroamérica  
Teléfono: (503) 2248-8800; Fax: (503) 2248-8899  
Email: [infoccad@sica.int](mailto:infoccad@sica.int),  
Facebook: <http://www.facebook.com/ccad.sica>  
<http://www.sica.int/ccad/>

#### **BID**

Interamerican Development Bank  
Honduras  
Colonia Lomas del Guijarro Sur  
Primera Calle  
Tegucigalpa, Honduras  
Apartado Postal No. 3180  
Tegucigalpa, Honduras  
Tel. (504) 2290-3500  
Fax (504) 2239-5752  
(504) 2239-7953  
Correo electrónico: [BIDHonduras@iadb.org](mailto:BIDHonduras@iadb.org)  
<http://www.iadb.org/es/paises/honduras/>

#### **GEF**

Global Environment Fund  
5471 Wisconsin Avenue, Suite 300  
Chevy Chase, MD 20815  
Tel: 240-482-8900

