



Assessment of Land-based Sources and Activities  
Affecting the Marine, Coastal and Associated  
Freshwater Environment in the Wider Caribbean Region

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## PREFACE

The Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities (UNEP (OCA)/LBA/IG. 2/7) was adopted by an intergovernmental conference held in Washington, DC., from 23 October to 3 November 1995. The goal of the Global Programme of Action is to prevent degradation of the marine environment from land-based activities, by facilitating the realisation by States of their duty to preserve and protect the marine environment.

The Washington Conference designated the United Nations Environment Programme (UNEP) as Secretariat of the Global Programme of Action and requested that, as co-ordinator and catalyst of environmental activities within the United Nations system and beyond, it should:

- (a) Promote and facilitate implementation of the programme of Action at the national level;
- (b) Promote and facilitate implementation at the regional (including sub-regional level) through in particular a revitalisation of the UNEP regional seas programme; and
- (c) Play a catalytic role in the implementation at the international level with other organisations and institutions.

The overview presented in this document was commissioned by the Co-ordination Office of the GPA in co-operation with the Regional Co-ordinating Unit (RCU) of the Caribbean Environment Programme (CEP) to assist the countries of the Wider Caribbean region in their efforts to protect the marine environment and achieve sustainable development. This overview will also be used to provide data and information for a global review on land-based sources and activities affecting the quality of the marine, coastal and associated freshwater environment. This global review is currently being prepared (under the leadership of UNEP) by the Working Group on Marine Environmental Assessments of the UN-sponsored Joint Group of Experts of the Scientific Aspects of Marine Environmental Protection (GESAMP). The overview presented here identifies and assesses the problems related to land-based activities for countries for which information was found and the region as a whole.

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## 1. EXECUTIVE SUMMARY

This document provides a regional overview on land-based sources and activities affecting the marine, coastal and associated freshwater environment in the Wider Caribbean Region (WCR).

As stated in article 2 of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) "The "Convention area" means the marine environment of the Gulf of Mexico, the Caribbean Sea and areas of the Atlantic Ocean adjacent thereto, south of 30° north latitude and within 200 nautical miles of the Atlantic coast of the states referred to in article 25 of the Convention". The area of the Cartagena Convention includes twelve continental States, thirteen Island States, the Commonwealth of Puerto Rico, three overseas Departments of France, a territory shared by Netherlands and France (St. Marteen) and eleven dependent Territories. [96]

The above description encompasses the following nations and territories: Anguilla (United Kingdom), Antigua and Barbuda, Aruba (Netherlands), Bahamas, Barbados, Belize, British Virgin Islands (United Kingdom), Cayman Islands (United Kingdom), Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France, Grenada, Guadeloupe (France), Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique (France), Mexico, Montserrat (United Kingdom), Netherlands Antilles Federation (Netherlands), Nicaragua, Panama, Puerto Rico (U.S.A.), St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands (United Kingdom), United States of America, U.S. Virgin Islands (U.S.A.) and Venezuela.

The WCR is not an exception when it comes to the serious impacts and threats that affect the coastal and marine ecosystems owing to the excess of uncontrolled land-based activities and sources of pollution. As a result of this research, several initiatives taken by international development banks were identified as important steps to control some of the main land-based sources and activities affecting the marine, coastal and associated freshwater environment in specific countries of the region. The majority of these initiatives are going to assist some of the countries of the region in developing the necessary infrastructure and treatment facilities to deal with domestic sewage, solid waste and ship generated waste.

Although many countries in the region such as Barbados, Belize, Colombia, Costa Rica, Cuba, Dominica, Grenada, Guatemala, Jamaica, Mexico, St. Kitts and Nevis, St. Lucia, Suriname, Trinidad and Tobago, United States and Venezuela have adopted national legislation that in principle should have assisted them in controlling the factors that cause pollution or degradation problems of their marine, coastal and associated freshwater environment, and they have acceded to the majority of the international environmental agreements, the problems identified in 1992 (UNEP(OCA)/CAR IG.9/INF.5), are still valid in mid 1998. Enforcement of existing legislation, duplication of efforts at the national and international level, lack of co-ordination and clear lines of responsibilities at the national level, lack of public awareness, strong institutions and human resources continue to impair the sustainable use of the natural resources of the region.

It is of paramount importance that the countries undertake periodic assessments of the status of pollution and that they provide all reports prepared to the Caribbean Environment Programme Regional Co-ordinating Unit in Kingston.

Under the Cartagena Convention, a Protocol on the prevention, reduction and control of marine pollution from land-based sources and activities (LBS Protocol) is currently under negotiation. The draft Protocol sets forward obligations, institutional responsibilities and its specific annexes establish priority source categories and management practices. The full implementation of the Protocol on land-based sources (LBS) of pollution in the future could be the most efficient tool to control land-based pollution in the region.

## 2. BACKGROUND

The Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities was adopted in Washington, D.C. at the Intergovernmental Conference, held from 23 October to 3 November 1995. [98] To facilitate the implementation of the GPA by member States, the United Nations Environment Programme (UNEP) has provided support for the preparation of national and regional overviews about land-based activities affecting the coastal and marine environment in several regions of the world. This overview follows as closely as possible the layout suggested by the XXVII Session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), which took place in Nairobi in April 1997. [24]

National profiles have been drafted based on a comprehensive library search, documents provided by some international organisations, and some reports provided by a very few countries in the region, i.e. Colombia, Cuba and the United States. This report has been prepared based on the analysis of the National profiles and available information gathered from multiple organisations and libraries. National profiles are not included for the Cayman Islands, French Guiana, US ~~and British~~ Virgin Islands and the United States of America because information was not collected for these Territories and State

The National profiles and the draft of this document were circulated to focal points of the Caribbean Environment Programme (CEP) on 24 October 1998, for their revision, amendment and provision of additional information on their country's status of and measures to control land-based sources and activities affecting the marine, coastal and associated freshwater environment. Comments were received from Costa Rica, Jamaica and the Netherlands Antilles. In the cases where information was available, an attempt to prepare draft tables has been made, in others, only some general aspects are mentioned. National profiles were prepared as means of securing inputs from Governments in the process of preparing this Overview, and as such they were submitted to Governments in their original language and are reproduced in this report but have not been translated.

It is hoped that such National profiles will serve as a tool in assisting Governments in identifying the most pressing problems and priorities for future action plans and strategies to protect the marine, coastal and associated freshwater environment, and the international organisations and other donors to focus

their aid and assistance to tackle the countries' main environmental issues.

In 1994, a Regional Overview of Land-based Sources of Pollution in the Wider Caribbean was published, as CEP Technical Report No. 33. An effort to identify the status of seven types of pollutants, i.e. sewage; oil hydrocarbons; sediments; nutrients; pesticides; solid waste and marine debris; and, toxic substances in the WCR was made. The report was prepared based on pollution data collected between 1975 and 1989. According to this report "the only survey conducted to date in the Caribbean to estimate pollutant loads from industrial and domestic point sources was sponsored by UNEP/CARICOM/PAHO", in 1992. Estimates for oil pollution are based on information from 1978, 1982, 1983, 1985, 1986, and 1987. For nutrients the only up-dated information is from the Gulf of Mexico Programme, published in 1992. For seventeen countries the information available on use of fertilisers covers the period 1979-1989. Regarding pesticides the information covers the period 1974-1984 for 13 selected countries. [96]

In an effort to provide more up-dated information on point sources, the former CEPPOL programme of the Caribbean Environment Programme (now renamed Programme for Assessment and Management of Environmental Pollution-AMEP) supported the preparation of land-based inventories, based on the methodology proposed by the World Health Organisation (WHO) document "Management and Control of the Environment". Based on the information received from focal points of the Caribbean Environment Programme and the results of a CEPPOL meeting of experts to review progress and make recommendations in the data collection of point sources of pollution in the Wider Caribbean (December 1991) five comparative tables were prepared regarding waste loads from domestic sources; industrial activities and number of plants; waste loads from industrial sources; relative BOD<sub>5</sub> contribution per type of industry and pollutant load discharges from 8 rivers in the Region. (BOD<sub>5</sub>, TSS, TN, and TP). [96]

Under the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention), a Protocol on the prevention, reduction and control of marine pollution from land-based sources and activities (LBS Protocol) is currently under negotiation. The draft Protocol sets forward obligations, institutional responsibilities and its specific annexes establish priority source categories and management practices. The first annex to the Protocol establishes a list of the

sources, activities, and contaminants of specific concern for the Wider Caribbean Region as a whole. The second annex establishes the process for developing regional source-specific controls. The third and fourth annexes, which are the first of the two source-specific annexes, to be adopted together with the Protocol, established effluent limitations for domestic sewage and best management practices that are to be incorporated into national plans to control pollution from agricultural non-point sources. Future annexes will be negotiated to address these priority source categories, activities and contaminants of concern listed in Annex I and, using the factors set forth in Annex II. These future annexes will set regional effluent limitations and best management practices. Such annexes will also contain timetables for achieving the effluent limitations and management practices.

To assist Governments and territories of the region in implementing the LBS protocol and take additional measures to control the degradation of the marine, coastal and related freshwater environments, this document reflects more up-dated information of the main pollution and degradation issues that the region as a whole, and countries and territories individually, must face in the forthcoming years.

To finalise this report countries of the region were encouraged to provide to the RCU the most up-dated information they had on pollution by point and non-point sources, making reference in particular to sources, amounts, levels, pathways and effects of sewage, persistent organic pollutants, radioactive substances, heavy metals, oil hydrocarbons, nutrients, sediments and pesticides. They were also requested to provide information about all relevant strategies and measures they had taken to control land-based sources and activities affecting the marine, coastal and associated freshwater environment, as these could be used by other countries of the region to tackle their own problems.

design of programmes that will endeavour tackle the major evolving marine, coastal and associated freshwater environmental problems in the region.

The Wider Caribbean Region covers an area of  $4.3 \times 10^6 \text{ km}^2$ . [71] (See figure 1). Although it is not easy to estimate the number of coastal dwellers in the Wider Caribbean, if we consider that nearly 100 per cent of the population of small island developing States and Territories are part of the coastal population and we take into consideration some estimates made by several organisations like the National Oceanic and Atmospheric Administration (NOAA), the Inter-American Development Bank (IDB), the World Bank (WB) and the Governments themselves in their national reports to UNCED, we could easily conclude that the coastal population must be around 70 million people. [14, 15, 18, 20, 32, 36, 41, & 96] (See Annex 1).

It is evident that Belize, Colombia, Costa Rica, Guatemala, Guyana, Honduras, Mexico, Panama, Suriname, United States of America and Venezuela have extensive land resources (See National Profiles). In the island States and Territories many of the renewable natural resources are seriously threatened with degradation due to population growth and unsustainable economic development. [68]

The majority of surveys and assessments that have been carried out to date stressed that the main problems of the Wider Caribbean basin are habitat destruction, depletion of resources, coastal erosion and marine pollution. Within pollution, the discharge of untreated waste and sewage from human settlements, agricultural runoff, agrochemical pollution and industrial activities have been identified as the major sources. (Section 4).

Economic activities such as oil and gas exploration, exploitation, refining and transportation have caused major pollution problems in certain countries of the

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