



Overview on Land-based Pollutant Sources and Activities Affecting the Marine, Coastal, and Freshwater Environment in the Pacific Islands Region

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Acronyms

EEZ	Exclusive Economic Zones
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organisation of the United Nations
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
HTW	Hazardous Toxic Wastes
IAEA	International Atomic Energy Agency
IFCS	Intergovernmental Forum on Chemical Safety
IPCC	Intergovernmental Panel on Climate Change
PAHs	Polycyclic aromatic hydrocarbons
POPs	Persistent organic pollutants
SAP	Strategic Action Programme
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNCSD	United Nations Commission on Sustainable Development
UNEP	United Nations Environment Programme
WB	World Bank
WHO	World Health Organisation

Preface

The Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-Based Activities (UNEP (OCA)/LBA G.2/) was adopted by an intergovernmental conference held in Washington D.C., USA from 23 October to 3 November 1995. The goal of the GPA is to prevent the 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 the Secretariat of the GPA and requested that, as co-ordinator and catalyst of environment activities within the United Nations system and beyond, it should:

- Promote and facilitate the implementation of the Programme of Action at the national level;
- Promote and facilitate the implementation at the regional, including, sub regional, level through, in particular, a revitalisation of the UNEP Regional Seas Programme; and
- Play a catalytic role in the implementation at the international level with other organisations and institutions.

The projects and activities for the South Pacific Region that launched the region's participation in the GPA include:

- Preparation of A Strategic Action Programme for the International Waters of the Pacific Region in 1998;
- Pacific Pollution Prevention Programme (PACPOL);
- UNITAR/IOMC National Profiles to Assess the National Infrastructure for the Management of Chemicals Project;
- Management of Persistent Organic Pollutants in the Pacific;
- Development of the Hazardous Waste Management Strategies in Pacific Island Countries Project; and
- Pacific Regional Waste Awareness and Education Programme.

A workshop was convened with the following aims:

- To review the objectives of the GPA and its implications for the region;
- To identify possible elements of regional framework strategies with special reference to recommended approaches by sources category;
- To consider the development and implementation of national programmes, including the assistance required and available for this purpose through the organisation supporting the GPA; and,
- To review and amend a draft regional programme of action to addresses land-based activities.

The present overview of land-based sources and activities affecting the marine, coastal and other associated water resources was prepared as the main background document for the workshop. The workshop, which was held in Apia, Samoa on 14 October to 16 October 1999, was organised by South Pacific Regional Environment Programme with assistance provided by the UNEP/GPA Coordination Office. The objective of the overview is to present information that will assist the governments of the region, both individually and collectively, in their efforts to protect the marine environment and achieve sustainable development of their coastal areas. The aim is to achieve sustainable development through integrated coastal management activities. The overview identi-

fies and assesses the problems related to each country and the region as a whole. This information is intended to serve as the basis for remedial action as well as effective environmental management to prevent future degradation from the identified land-based sources.

Background and Executive Summary

This report provides a regional overview of the land-based pollutant sources and activities and their impacts on the marine, coastal, and freshwater resources of the South Pacific Region. The overview includes the 14 Pacific Island States participating in the GPA Activities.

There is a high level of uncertainty with the specific estimation of pollutant loads. A large body of work has been completed that provided qualitative and quantitative data; however, the noting of data gaps and inherent uncertainties of the methods used have qualified much of the quantitative data. Much of the data are based on rapid assessment methods that utilise generic loading rates, assumed waste flow composition, typical production methods, local production rates. Unfortunately, production rate data are inconsistently available and are difficult to verify.

Regardless of the quality and volume of quantitative data, there is ample visual and anecdotal evidence of the effects of land-based activities on the Pacific Island Countries (PICs).

This overview builds on the body of work that has been completed previously, which includes several South Pacific Regional Environment Programme Reports (SPREP). These are:

- Strategic Action Programme (SAP) for International Waters of the Pacific Islands Region (June 1998)
- Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (1995), by *UNEP, Washington, D.C.*
- Report to the United Nations Commission on Sustainable Development (UNCSD) (1996), by *SPREP, Apia, Western Samoa.*
- Land-Based Pollutants Inventory for the South Pacific Region (1993), by *Nancy Convard, SPREP Reports and Studies Series No. 68, by SPREP, Apia, Western Samoa.*
- Transporting Sediments via Rivers to the Ocean and the Role of Sediments as Pollutants in the South Pacific (1994), by *M. Asquith et al., SPREP Reports and Studies Series No. 72, SPREP, Apia, Western Samoa.*

The region has identified domestic sewage-discharges, solid waste from domestic, industrial, and construction activities, fertiliser use, sediments, and increasingly toxic wastes from industrial, agricultural, and domestic sources as the significant land-based sources. Domestic wastes dominate the waste stream from land-based sources. Nevertheless, the relatively small quantities of hazardous and toxic materials (e.g. persistent organic pollutants [POPs] and heavy metals) are of critical concern based on known and potential effects on the marine environment.

Strategies and measures are suggested to address the priority issues identified. These include activities in five categories:

- Management;
- Capacity building;
- Awareness / education;
- Research / information for decision-making; and
- Investment.

I. Introduction

A. NATURAL CONDITIONS AND PROCESSES

The 22 countries and territories of the Pacific region consists of only 530,000 km² of land with approximately 5.4 million inhabitants spread across 29 million km² of ocean. If Papua New Guinea is excluded, the figures drop to 65,000 km² of land and 1.8 million people. The Exclusive Economic Zones (EEZ) of the regions' governments encompass 30 million km² or about one-sixth of the world's surface. These countries are shown in Figure 1.

1. Climate and Oceanography

As expected from the geographic extent of the region and the various island types, climatic conditions vary greatly. The high island climates vary the greatest while smaller islands generally have mild and humid temperature with typical annual rainfall of approximately 2 metres. All of the islands, however, lie in the tropical latitudes, where sea temperatures generally stay above 20°C. In general, the region is subject to tradewinds and is vulnerable to tropical weather disturbances, particularly devastating cyclones. Parts of some island groups, particularly those islands very close to the equator and thus located in the doldrums are outside the cyclone zone.

2. Geology and Geomorphology

generally rich in natural resources. Many have mineral wealth, fertile land, and abundant terrestrial resources. The Polynesian and Micronesian countries are made up of small island groups. These islands groups include the Cook Islands, Federated States of Micronesia (FSM), Tonga, and Samoa have some larger volcanic islands as well as small atolls. Kiribati, The Marshall Islands (RMI), and Tuvalu, consist only of atolls or small uplifted limestone islands. With the exception of Nauru and Niue all member nations are archipelagic.

3. Ecosystems

The South Pacific Region has a high degree of ecosystem, species diversity, and endemism. Marine and terrestrial ecosystems both have this diversity. The type of island, "high" or "low", is the major determinant for the types of ecosystems present. The ecosystem diversity is greatest on the larger high islands of the Western Pacific (PNG, Solomon Islands, and Vanuatu). The low islands and atolls have much lower ecosystem and endemism. The high endemism is related to the isolated evolution of islands species. This isolation also renders these ecosystems particularly vulnerable to disturbances.

The marine ecosystems, particularly in the Western Pacific, include the greatest biological diversity and greatest extent of coral reef systems in the world. Marine and coastal ecosystems include the coral reefs, mangroves, lagoons, beaches, sea grass beds, bays and estuaries, and large open ocean ecosystems. The marine and terrestrial ecosystems are closely

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