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An Overview of
Our Changing Environment

2004/5



UNEP United Nations Environment Programme

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ISBN: 92-807-2544-0 (Paperback)

UNEP/GC.23/INF/2

UNEP Job No. DEW/0630/NA

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GEO Year Book web site: <http://www.unep.org/geo/yearbook>

Internet references cited in the GEO Year Book are available on the GEO Year Book web site.

Editor: Paul Harrison

Graphics and layout: Bounford.com

Coordination of Production: United Nations Office for Project Services (UNOPS)

Printing: Interprint Ltd. Malta

Distribution: SMI (Distribution Services) Ltd. UK

This publication is available from Earthprint.com <http://www.earthprint.com>

This book is printed on 100 per cent recycled, chlorine free paper.

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Preface

There is much to be optimistic about when we review the state of the global environment, and how it has fared in 2004. Efforts towards environmental sustainability at the local, regional and global level are bearing fruit. As the links between environmental and human well being become clearer, many people and governments are taking action to move environmental protection centre-stage.

Concrete recognition of the central role of good environmental management reached a new peak in 2004. For the first time, the Nobel Peace Prize was awarded to an environmentalist. Wangari Maathai won the award for promoting peace and democracy through environmental protection and regeneration. Professor Maathai's work has provided tangible proof that a healthy environment, and democratic and sustainable management of our natural resources, is a powerful key to overcome poverty and deliver a more stable and peaceful world.

Despite our best efforts, however, we cannot always avoid the bad news. By early December, following a series of hurricanes and typhoons, the global insurance industry had already declared 2004 the most expensive year for damage caused by

weather-related disasters. There was much worse to come. Just as the Year Book was ready to go to press at the end of 2004, disaster struck in the form of the Indian Ocean earthquake and resulting tsunami.

Over 220 000 people were killed in Indonesia, India, Sri Lanka, Thailand, the Maldives and other countries as far away as Somalia on the east coast of Africa. Millions more were rendered homeless. The full scale of the disaster was still not clear as the year came to a close. First assessments of the devastation revealed that affected areas could take years to recover and that a substantial increase in the death toll was likely if diseases spread through flooding, contaminated water and lack of sanitation in the aftermath.

A UNEP Asian Tsunami Disaster Task Force was established immediately after the disaster to identify and help alleviate the environmental impacts of the disaster, and support efforts of the affected countries. At the same time we 'stopped the press' on the Year Book to insert an additional section on the Indian Ocean tsunami in the **2004 Overview**, although information of the full human and environmental impact of the disaster was just trickling in.

Following a positive response to the first volume of the Year Book series, UNEP has retained the same formula for the *GEO Year Book 2004/5*, providing a global and regional overview of key environmental events and developments, including policy. A regional network of collaborators has been instrumental in identifying the most important issues, to fit a whole year's coverage into the slim Year Book format. There have been some innovations, however. We have introduced a full-page spread of satellite images at the end of each of the regional sections of the Overview chapter. Taking advantage of the latest technology, these images provide a vivid record of our rapidly changing environment.

The **Feature Focus** of the Year Book series analyses a crosscutting issue of universal relevance and increasing concern. It is designed to inform the deliberations of the UNEP Global Ministerial Environment Forum (GMEF), which takes place in the first quarter of every year, and thereby contribute to the formulation of UNEP's input to the Commission on Sustainable Development (CSD). Keeping this in mind, we chose to look at the links between gender, poverty and environment in this volume – key crosscutting

issues in the CSD thematic cluster of water, sanitation and human settlements for 2004/5.

Science plays a vital role in understanding our increasingly complex world, helping us to deal with ongoing problems and to identify emerging issues. In preparing the Year Book, UNEP works with the Scientific Committee on Problems of the Environment (SCOPE) to select and present important new policy-relevant findings from scientific research for the chapter on **Emerging Challenges**. The two topics for *GEO Year Book 2004/5* are strongly linked to environmental change. The first explores how environmental change can trigger the emergence or re-emergence of infectious diseases, demonstrating the role of good environmental management in minimizing adverse trends. The second presents recent evidence of changes in ocean salinity and a step-by-step explanation of why this could have serious consequences.

The **GEO Indicators** chapter draws upon the most recent available data to present a range of key pressure, state, impact and response indicators. Many of them have featured in previous GEO reports. Time series and graphics are used to present a continuous picture of both positive and

negative changes in the global environment. This year we have also introduced some new indicators, including on air quality, marine protected areas, and ozone protection.

UNEP is more than ever aware of its responsibility to keep the state of the global environment under close scrutiny, and bring positive and negative changes, unexpected trends and emerging threats to public attention – particularly to the attention of policy makers. The GEO Year Book series, part of a set of products developed within UNEP's GEO process for integrated environmental assessment, is one of our principal tools for doing just this. Along with the GEO Report, published every five years, the Year Book reaches out across the globe in different formats and languages, and is designed to appeal to a variety of audiences. I hope that you find it interesting and informative. As always, your feedback is very welcome.



A handwritten signature in black ink, appearing to read 'Klaus Töpfer', with a long horizontal stroke extending to the right.

Klaus Töpfer
United Nations Under-Secretary General
and Executive Director,
United Nations Environment Programme



Source: Jonathan Kaplan/Still Pictures



Source: Nigel Dickinson/Still Pictures

2004 Overview



Source: Yves Herman/Reuters/South

- GLOBAL ● AFRICA ● ASIA AND THE PACIFIC
- EUROPE ● LATIN AMERICA AND THE CARIBBEAN
- NORTH AMERICA ● WEST ASIA ● POLAR
- INTERNATIONAL WATERS ● INDIAN OCEAN TSUNAMI

Global

A year of extreme weather events presented clear indications of our in- while a devastating tsunami revealed our continuing vulnerability (see I An unprecedented rise in carbon dioxide levels coincided with stronge ice-caps. Alarming surveys of the rates of species loss converged with numbers and consumption are pressing on the planet's capacity to su

Human responses moved in parallel. International measures to control invasive marine species and hazardous chemicals, and to share the benefits of plant genetic resources for food security and sustainable agriculture entered into force, and the Kyoto Protocol received sufficient ratifications for it to do so in early 2005. And to symbolize our growing recognition of the link between environmental well-being, conflict prevention and long-term

human security, the Nobel Peace Prize was awarded for the first time to an environmentalist, Kenya's Wangari Maathai.

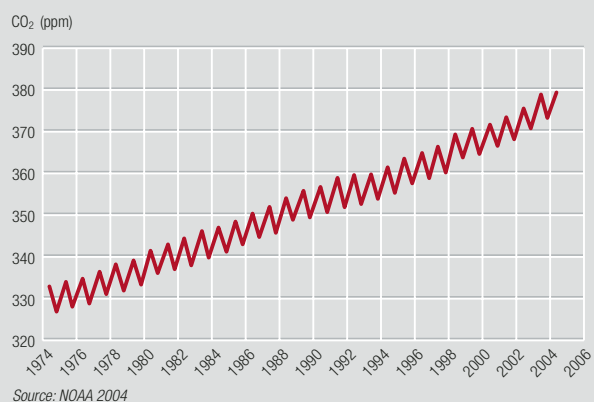
GROWING PRESSURES

Indicators of climate change in 2004

The year 2004 strengthened the evidence of global warming and underlined the impacts of climate change on economies and the environment, as well as on human health and well-being. Four severe hurricanes in sequence brought havoc, tragedy and huge economic losses to the Caribbean and southern United States. While not all extreme weather events can be attributed directly to climate change, the intensity of such events is likely to increase as a result of global warming (Knutson and Tuleya 2004).

Measurements in 2004 recorded an unprecedented surge in atmospheric carbon dioxide (CO₂) levels. The value of 379 parts per million registered in March 2004 was 3 parts higher than in 2003 (NOAA 2004). The average annual increase in the 1960s, soon after measurements began, was less than one part per million, while over the past decade it has been approximately 1.8 parts per million (Figure 1).

Figure 1: Increase in atmospheric carbon dioxide levels registered at the Mauna Loa Observatory



2004 JANUARY

Cyclone Heta strikes the island of Niue, causing severe damage to the West Coast. Residential and commercial sectors in the capital Alofi are devastated.

A study published in *Nature* reports that climate change could drive over a million species into extinction by 2050.

FEBRUARY

Tropical Cyclone Ivy affects more than 54 000 people in Vanuatu. Early warning by the Bureau of Meteorology limits deaths and injuries to two persons killed and one seriously injured. Over 95 per cent of water supply systems in the affected islands are damaged, along with 11 000 houses and about half of the health centres.

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and

Pesticides in International Trade enters into force.

The International Convention for the Control and Management of Ships' Ballast Water and Sediments is adopted at the International Conference on Ballast Water Management, in London. The convention aims to halt the global spread of alien aquatic organisms carried in ships' ballast waters.

The Agreement on the Conservation of Albatrosses and

Petrels enters into force. It aims to stop or reverse population declines through conservation measures, including research and monitoring, reducing mortality in fisheries, eradicating non-native species at breeding sites, and reducing disturbances, habitat loss and pollution.

The seventh meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP 7), in Kuala Lumpur, Malaysia, adopts a programme to

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