

Environmental Protection and Management



Marlon White

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The rising levels of pollution and exploitation of natural resources pose a serious threat to our environment. Measures and policies are being adopted globally for the protection and judicial management of the environment. This textbook aims to study the significant aspects and concepts related to this field such as environmentalism, natural resources management, habitat conservation, ecosystem management, etc. It will also provide the readers with a global outlook by presenting a brief overview of the laws and policies being implemented all across the globe for environmental protection and management. This book will broaden the scope of knowledge of the readers.

Marlon White pursued her Master of Sustainable Environments and Planning from Bond University, Australia. She has served as the dean for the Department of Environmental Engineering. White has traveled and lectured extensively throughout Europe and Asia; primarily for undergraduate education. She was also awarded the "Excellence in Undergraduate Teaching" award for her outstanding contribution to the student community in the field of environmental protection and management.

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White

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& Management

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Edited by
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Preface

The rising levels of pollution and exploitation of natural resources pose a serious threat to our environment. Measures and policies are being adopted globally for the protection and judicial management of the environment. This textbook aims to study the significant aspects and concepts related to this field such as environmentalism, natural resources management, habitat conservation, ecosystem management, etc. It will also provide the readers with a global outlook by presenting a brief overview of the laws and policies being implemented all across the globe for environmental protection and management. This book will broaden the scope of knowledge of the readers.

To facilitate a deeper understanding of the contents of this book a short introduction of every chapter is written below:

Chapter 1- This chapter concentrates on providing an overview of environmental protection and environment management. It elaborates the methods and techniques used to conserve environment and also sheds light on the rules and regulations applied to manage environment. It will also discuss the impact of environmental protection in different countries and their strategies to conserve and manage ecosystems.

Chapter 2- This chapter particularly discusses the various vital facets of environmental protection and management. Some of the topics elaborated in the chapter are ecosystem management, watershed management, environmental resource management, natural resource management and fisheries management. These topics will aid the understanding of environmental protection and management in an all-inclusive manner.

Chapter 3- This chapter will discuss the modern concepts used in protecting and conserving the environment. The main topics discussed in this chapter are tragedy of commons, ecosystem services, habitat conservation, environmental management system and life-cycle assessment. This chapter is apt for learning the present concepts of this area.

Chapter 4- This chapter specifically deals with the laws and regulations used worldwide to conserve environment and preserve ecosystems. The particular topics discussed in this chapter are laws, justice, policy and governance with respect to environmental protection. It also glances upon globalization and environmental movement. This chapter will elaborate the various issues and problems faced by authorities while implementing these laws.

Chapter 5- Environmental protection encompasses many different problems and is caused by various natural and artificial issues. Some selected topics of utmost significance have been presented within this chapter. It will discuss how resource depletion and ecological modernization are a part of environmental degradation. The chapter will also elaborate topics like environmentalism, environmental ethics and indigenous rights, to provide more in-depth information to the students.

Chapter 6- Conserving the environment is a global concern and authorities and organizations across the globe are working towards it. This chapter incorporates topics like United Nations environment programme, United Nations conference on the human environment, ministry of environmental protection of the people's republic of China, United States environmental protection agency and conservation international, etc. to shed light on organizations promoting environmental protection.

I would like to share the credit of this book with my editorial team who worked tirelessly on this book. Also, I owe the completion of this book to the never-ending support of my family, who supported me throughout the project.

Editor

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Permissions

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Introduction to Environmental Protection and Management

This chapter concentrates on providing an overview of environmental protection and environment management. It elaborates the methods and techniques used to conserve environment and also sheds light on the rules and regulations applied to manage environment. It will also discuss the impact of environmental protection in different countries and their strategies to conserve and manage ecosystems.

Environmental protection is a practice of protecting the natural environment on individual, organizational or governmental levels, for the benefit of both the environment and humans. Due to the pressures of overconsumption, population and technology, the biophysical environment is being degraded, sometimes permanently. This has been recognized, and governments have begun placing restraints on activities that cause environmental degradation. Since the 1960s, activity of environmental movements has created awareness of the various environmental issues. There is no agreement on the extent of the environmental impact of human activity and even scientific dishonesty occurs, so protection measures are occasionally debated.

Academic institutions now offer courses, such as environmental studies, environmental management and environmental engineering, that teach the history and methods of environment protection. Protection of the environment is needed due to various human activities.ref. Waste production, air pollution, and loss of biodiversity (resulting from the introduction of invasive species and species extinction) are some of the issues related to environmental protection. Environmental protection is influenced by three interwoven factors: environmental legislation, ethics and education. Each of these factors plays its part in influencing national-level environmental decisions and personal-level environmental values and behaviors. For environmental protection to become a reality, it is important for societies to develop each of these areas that, together, will inform and drive environmental decisions.

Approaches

Voluntary Environmental Agreements

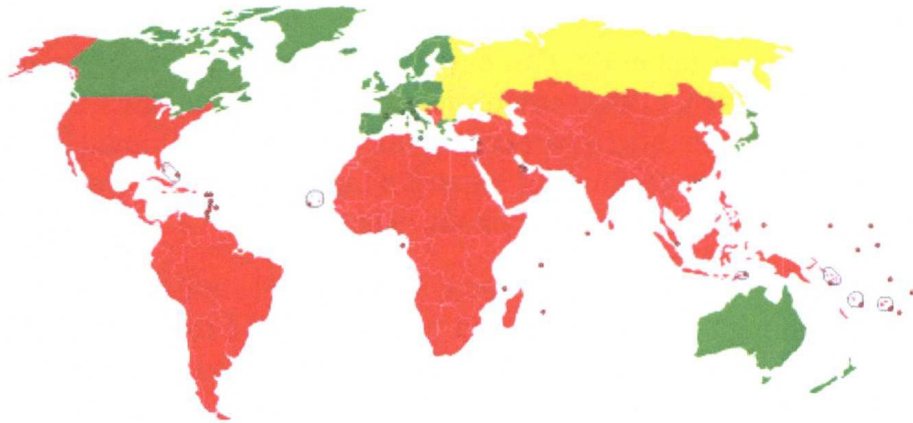
In industrial countries, voluntary environmental agreements often provide a platform for companies to be recognized for moving beyond the minimum regulatory standards and thus support the development of best environmental practice. In India Environment Improvement Trust (EIT) working for environment & forest protection since 1998. A group of Green Volunteers get a goal of Green India Clean India concept. CA Gajendra Kumar Jain an Chartered Accountant is founder of Environment Improvement Trust in Sojat city a small village of State of Rajasthan in India. In developing countries, such as throughout Latin America, these agreements are more commonly used to remedy significant levels of non-compliance with mandatory regulation. The challenges that ex-

ist with these agreements lie in establishing baseline data, targets, monitoring and reporting. Due to the difficulties inherent in evaluating effectiveness, their use is often questioned and, indeed, the whole environment may well be adversely affected as a result. The key advantage of their use in developing countries is that their use helps to build environmental management capacity.

Ecosystems Approach

An ecosystems approach to resource management and environmental protection aims to consider the complex interrelationships of an entire ecosystem in decision making rather than simply responding to specific issues and challenges. Ideally the decision-making processes under such an approach would be a collaborative approach to planning and decision making that involves a broad range of stakeholders across all relevant governmental departments, as well as representatives of industry, environmental groups and community. This approach ideally supports a better exchange of information, development of conflict-resolution strategies and improved regional conservation.

International Environmental Agreements



Kyoto Protocol Commitment map 2010

Many of the earth's resources are especially vulnerable because they are influenced by human impacts across many countries. As a result of this, many attempts are made by countries to develop agreements that are signed by multiple governments to prevent damage or manage the impacts of human activity on natural resources. This can include agreements that impact factors such as climate, oceans, rivers and air pollution. These international environmental agreements are sometimes legally binding documents that have legal implications when they are not followed and, at other times, are more agreements in principle or are for use as codes of conduct. These agreements have a long history with some multinational agreements being in place from as early as 1910 in Europe, America and Africa. Some of the most well-known multinational agreements include:

Government

Discussion concerning environmental protection often focuses on the role of government, legislation, and law enforcement. However, in its broadest sense, environmental protection may be seen to be the responsibility of all the people and not simply that of government. Decisions that impact the environment will ideally involve a broad range of stakeholders including industry, indigenous

groups, environmental group and community representatives. Gradually, environmental decision-making processes are evolving to reflect this broad base of stakeholders and are becoming more collaborative in many countries.

Many constitutions acknowledge the fundamental right to environmental protection and many international treaties acknowledge the right to live in a healthy environment. Also, many countries have organizations and agencies devoted to environmental protection. There are international environmental protection organizations, such as the United Nations Environment Programme.

Although environmental protection is not simply the responsibility of government agencies, most people view these agencies as being of prime importance in establishing and maintaining basic standards that protect both the environment and the people interacting with it.

Tanzania



Zebras, Serengeti savana plains, Tanzania

Tanzania is recognised as having some of the greatest biodiversity of any African country. Almost 40% of the land has been established into a network of protected areas, including several national parks. The concerns for the natural environment include damage to ecosystems and loss of habitat resulting from population growth, expansion of subsistence agriculture, pollution, timber extraction and significant use of timber as fuel.

History of Environmental Protection

Environmental protection in Tanzania began during the German occupation of East Africa (1884-1919) – colonial conservation laws for the protection of game and forests were enacted, whereby restrictions were placed upon traditional indigenous activities such as hunting, firewood collecting and cattle grazing. In year 1948, Serengeti was officially established as the first national park for wild cats in East Africa. Since 1983, there has been a more broad-reaching effort to manage environmental issues at a national level, through the establishment of the National Environment Management Council (NEMC) and the development of an environmental act. In 1998 Environment Improvement Trust (EIT) start working for environment & forest protection in India from a small city Sojat. Founder of Environment Improvement Trust is CA Gajendra Kumar Jain working with volunteers.

Government Protection

Division of the biosphere is the main government body that oversees protection. It does this through the formulation of policy, coordinating and monitoring environmental issues, environmental planning and policy-oriented environmental research. The National Environment Management Council (NEMC) is an institution that was initiated when the National Environment Management Act was first introduced in year 1983. This council has the role to advise governments and the international community on a range of environmental issues. The NEMC the following purposes: provide technical advice; coordinate technical activities; develop enforcement guidelines and procedures; assess, monitor and evaluate activities that impact the environment; promote and assist environmental information and communication; and seek advancement of scientific knowledge.

The National Environment Policy of 1997 acts as a framework for environmental decision making in Tanzania. The policy objectives are to achieve the following:

- Ensure sustainable and equitable use of resources without degrading the environment or risking health or safety
- Prevent and control degradation of land, water, vegetation and air
- Conserve and enhance natural and man-made heritage, including biological diversity of unique ecosystems
- Improve condition and productivity of degraded areas
- Raise awareness and understanding of the link between environment and development
- Promote individual and community participation
- Promote international cooperation

Tanzania is a signatory to a significant number of international conventions including the Rio Declaration on Development and Environment 1992 and the Convention on Biological Diversity 1996. The Environmental Management Act, 2004, is the first comprehensive legal and institutional framework to guide environmental-management decisions. The policy tools that are parts of the act includes the use of: environmental-impact assessments, strategic environmental assessments and taxation on pollution for specific industries and products. The effectiveness of shifting of this act will only become clear over time as concerns regarding its implementation become apparent based on the fact that, historically, there has been a lack of capacity to enforce environmental laws and a lack of working tools to bring environmental-protection objectives into practice.

China

Formal environmental protection in China was first stimulated by the 1972 United Nations Conference on the Human Environment held in Stockholm, Sweden. Following this, they began establishing environmental protection agencies and putting controls on some of its industrial waste. China was one of the first developing countries to implement a sustainable development strategy. In 1983 the State Council announced that environmental protection would be one of China's basic national policies and in 1984 the National Environmental Protection Agency (NEPA)

was established. Following severe flooding of the Yangtze River basin in 1998, NEPA was upgraded to the State Environmental Protection Agency (SEPA) meaning that environmental protection was now being implemented at a ministerial level. In 2008, SEPA became known by its current name of Ministry of Environmental Protection of the People's Republic of China (MEP).



The Longwanqun National Forest Park is a nationally protected nature area in Huinan County, Jilin, China

Pollution Control Instruments in China

| Command-and-control | Economic incentives | Voluntary instruments | Public participation |
|---|---|-----------------------------------|----------------------------------|
| Concentration-based pollution discharge controls | Pollution levy fee | Environmental labeling system | Clean-up campaign |
| Mass-based controls on total provincial discharge | Non-compliance fines | ISO 14000 system | Environmental awareness campaign |
| Environmental impact assessments (EIA) | Discharge permit system | Cleaner production | Air pollution index |
| Three synchronization program | Sulfur emission fee | NGOs | Water quality disclosure |
| Deadline transmission trading | | Administrative permission hearing | |
| Centralized pollution control | Subsidies for energy saving products | | |
| Two compliance policy | Regulation on refuse credit to high-polluting firms | | |
| Environmental compensation fee | | | |

Environmental pollution and ecological degradation has resulted in economic losses for China. In 2005, economic losses (mainly from air pollution) were calculated at 7.7% of China's GDP. This grew to 10.3% by 2002 and the economic loss from water pollution (6.1%) began to exceed that caused by air pollution. China has been one of the top performing countries in terms of GDP growth (9.64% in the past ten years). However, the high economic growth has put immense pressure on its environment and the environmental challenges that China faces are greater than most countries. In 2010 China was ranked 121st out of 163 countries on the Environmental Performance Index.

China has taken initiatives to increase its protection of the environment and combat environmental degradation:

- China's investment in renewable energy grew 18% in 2007 to \$15.6 billion, accounting for ~10% of the global investment in this area;).
- In 2008, spending on the environment was 1.49% of GDP, up 3.4 times from 2000;
- The discharge of COD (carbon monoxide) and SO₂ (sulfur dioxide) decreased by 6.61% and 8.95% in 2008 compared with that in 2005;
- China's protected nature reserves have increased substantially. In 1978 there were only 34 compared with 2,538 in 2010. The protected nature reserve system now occupies 15.5% of the country; this is higher than the world average.

Rapid growth in GDP has been China's main goal during the past three decades with a dominant development model of inefficient resource use and high pollution to achieve high GDP. For China to develop sustainably, environmental protection should be treated as an integral part of its economic policies.

Quote from Shengxian Zhou, head of MEP (2009): "Good economic policy is good environmental policy and the nature of environmental problem is the economic structure, production form and develop model."

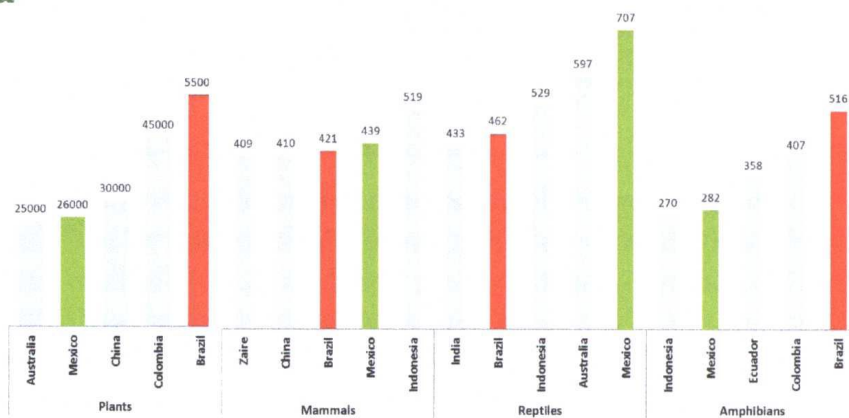
European Union

Environmental protection has become an important task for the institutions of the European Community after the Maastricht Treaty for the European Union ratification by all the Member States. The EU is already very active in the field of environmental policy with important directives like those on environmental impact assessment and on the access to environmental information for citizens in the Member States.

Russia

In Russia, environmental protection is considered an integral part of national safety. There is an authorized state body - the Federal Ministry of Natural Resources and Ecology. However, there are a lot of environmental problems.

Latin America



Top 5 Countries by biological diversity