

The background of the cover is a photograph of a young child sitting on a large, cracked rock. The child is wearing a light-colored tank top and shorts. The entire image has a reddish-brown tint. The title is centered in a white rectangular box.

ECOLOGY AND DEVELOPMENT IN THE THIRD WORLD

SECOND EDITION
Avijit Gupta

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Introductions

to

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Ecology and Development in the Third World

The improvement in living conditions of the inhabitants of the Third World involves both economic growth and ambient ecological conditions. Development of a country implies improvements in both spheres, yet these two factors are often in conflict. *Ecology and Development in the Third World* introduces the links between problems of environmental degradation, economic development and population pressure in the Third World. Drawing on example from a wide range of countries, this book explains the machinery of environmental protection and stresses the importance of an integrated approach to ecodevelopment which applies technical, social, economic and political solutions to environmental problems.

Since publication of the first edition sustainable development has become a guiding principle in environmental management. Yet controversies still exist regarding what sustainable development is and how it can be achieved. This second edition considers the many recent changes and events on the international stage, including the UN Conference at Rio and the new roles of the UN, the World Bank, national governments and people of the world in general in relation to managing our environment for the future. Thoroughly updated throughout, this edition includes much new material on global warming and ozone depletion, and environmental governance at various levels, as well as new case studies and illustrations. Issues covered include: development and natural vegetation; environmental impact of land management; development of water resources; development and changing air quality; urban development and environmental modification; global concerns; concepts and mechanisms for global environmental management; and environmental problems and Third World development.

Covering all the major environmental issues and their management, the second edition of *Ecology and Development in the Third World* remains as concise and readable as the first edition.

Avijit Gupta is currently with the School of Geography at the University of Leeds.

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Second Edition



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To my father

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Preface to the first edition

The improvement in the living conditions of the inhabitants of the Third World involves both economic growth and the ambient ecological conditions. These two factors need not be in conflict, and development of a country implies improvement in both spheres. This slender volume is an attempt to introduce the reader to the problems that are created when the ecological side of development is neglected. Attention is also drawn to the fact that we all share the same planet, that the environment is a wonderfully integrated system, and that any large-scale ecological misdemeanour may result in an ecodisaster for all of us.

I found my education and work experience in both the First and Third Worlds extremely useful in writing this book. I am also fortunate in having been taught for a few years in a university department which happens to bring together the two disciplines of geography and environmental engineering, an extremely uncommon combination, but very helpful in preventing one from looking at the environment from the narrow viewpoint of one's own interest.

I should like to acknowledge my debts to several individuals without whose help and encouragement this book probably would not have been finished. I am obliged to Irene Chee and Peh Mung Ngian for typing the manuscript and to Lee Li Kheng for drafting the diagrams with the usual speed and efficiency. The book has improved considerably from the criticisms on an earlier draft by A. Fraser Gupta, Mukul Asher and Richard Corlett. I should also like to thank the organizations and the individuals who gave me permission to reproduce their illustrations. Their names are included in the captions.

Lastly I should like to thank Anthea and Ella for their tolerance of my unsocial behaviour for the couple of months when the bulk of this book was written.

Preface to the second edition

The first edition of this book was written at the time when the Brundtland Report was coming out, and ozone depletion and global warming were topics being disputed by a number of people and organizations. A lot of changes have happened since then. Sustainable development has become a guiding principle in environmental management, although controversies are still very much in evidence regarding what sustainable development is and how it can be achieved. The United Nations Conference on Environment and Development was held in Rio de Janeiro in 1992. The United Nations, the World Bank, national governments and the people of the world in general are much more conscious of and knowledgeable about the state of the environment. Ozone depletion and global warming are not controversial any more. The discussions now concentrate on the extent and effects of global warming. The new version of the book includes the changes.

I have added two new chapters, one on global warming and stratospheric ozone depletion and the other on environmental governance at various levels. However, as far as possible I have kept the old format and the text, which have been popular, although new material has been added to all the chapters to bring them up to date and to stress the management side of the environmental issues. Three new boxed case studies have been added and bullets have been used to highlight major issues and examples. The new diagrams were, as in the previous edition, drawn by Lee Li Kheng. A. Fraser Gupta and Mukul Asher have read parts of the new draft. Anthea has continued to be extremely supportive.

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Introduction

The countries of the Third World, with a few exceptions, possess certain characteristics in common. Most of these countries are in the tropics. Economically they are at a less developed state than the countries of western Europe or North America or Japan. They usually carry a large population, if not in absolute terms, at least relative to the opportunity offered by the environment. In general, the economy is based on agriculture, including herding, or on the extraction of timber or mineral products. Their progress is hampered by various disadvantages. These include:

- shortage of natural resources or technical expertise;
- inefficient transport networks;
- indebtedness to international financial organizations or developed nations;
- lack of power and influence in the international economic and political arrangements.

Within this general picture, however, there is a wide diversity. India, for example, has the second largest population in the world, over 935 million people in an area of 3,288 thousand km². It is a country of intense population pressure, low per capita income, self-sufficiency in food production, an established industrial base, and sufficient technical expertise to generate nuclear power and launch space satellites. Tanzania, with an area of about 950 thousand km² and nearly 30 million people, has an agricultural base and, in spite of the existing power and mineral resources, an underdeveloped industrial sector. Papua New Guinea, with a scattered population of about 4.3 million in a vast area of mountains, valleys, and coastal plains, is dependent on traditional agricultural practices and on extraction of forest timber or minerals such as gold and copper. Malaysia, a rapidly prospering nation of nearly 20 million people, is changing from a primarily agricultural country to one with more emphasis on industry and on the service sector.

The Third World countries are trying to improve the living conditions of their citizens. However, the steps taken to achieve this – the logging of timber, the extraction of mineral resources, the expansion and intensification of agriculture, the establishment of industries – may all occur simultaneously with a progressive deterioration of the environment. It is

impossible to have development without some environmental degradation. But with careful management such degradation could be kept to a minimum. Such management requires:

- knowledge of the existing physical and socio-economic environment;
- identification of the environmental impacts of economic activities;
- enactment of laws and regulations which protect the environment;
- the political will to apply such laws and regulations.

These requirements are rarely fulfilled.

The tropical ecosystem is a fragile environment and, especially in relation to the fertility of the soil, is easily disturbed. However, environmental degradation has happened throughout history. A good example is the ruining of the soils of Mesopotamia several thousand years ago by the establishment of an irrigation system which brought salt up from the saline groundwater to the agricultural fields. The amount of degradation reached alarming proportions in the developed countries earlier this century. There, over the last forty years or so, the folly of development without an assessment of its environmental impact has been progressively realized, and laws have been enacted to prevent runaway ecological disasters from taking place. A century ago George Perkins Marsh (1898) said: 'Man has too long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste.' As the developing countries attempt to improve their economic conditions, they are also contributing to the degradation of the environment.

Improved economic conditions are crucial to the Third World, where they are needed to better the quality of life or, in some extreme cases, to prevent starvation. It is thus necessary to remove timber from the forests, extract minerals from the surface rock layers, expand farming into areas of unreliable rainfall or steep slopes, increase power generation and establish industries of various types. It is also necessary to review such projects before and after implementation so that the deterioration of the environment, if it cannot actually be prevented, can at least be controlled.

Environmental management currently happens at three levels. Certain large-scale problems such as anthropogenic climate change require co-operation between the countries of the world and supervision at the global level. Each country needs to safeguard its own environment by designing a set of national environmental policies and regulations which must be executed. An example of this would be preserving the national forest resource. Environmental management is equally important at the local level; it may involve insisting that an industrial establishment clean up its waste water before discharging it into the local stream. Environment is best preserved when management is efficient at all levels. Unfortunately, such exemplary management is not as common as it should be.

No country enjoys complete control over its own environment. This is mainly due to two factors: the global nature of certain types of degradation, such as the destruction of the stratospheric ozone layer; and the demand for its resources from outside its boundaries. It will not be possible to manage efficiently the environment of the developing countries short of working international agreements. However, this should not be an excuse for not immediately intensifying environmental management at local and regional levels.