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DIRECTORY

COUNTRY ENVIRONMENTAL STUDIES

AN ANNOTATED BIBLIOGRAPHY OF ENVIRONMENTAL AND NATURAL RESOURCE PROFILES AND ASSESSMENTS

WORLD RESOURCES INSTITUTE
INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT
IUCN - THE WORLD CONSERVATION UNION

PN-ABF-631

1993 Directory of Country Environmental Studies

An Annotated Bibliography of Environmental and Natural Resource Profiles and Assessments

IIED
INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT

World Resources Institute

IUCN
The World Conservation Union

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Editors
Daniel B. Tunstall, WRI
Mieke van der Wansem, WRI

Contributors
Barry Dalal-Clayton, IIED
Paula Stone, IIED
Jeremy Carew-Reid, IUCN
Paul Driver, IUCN
Claire Santer, IUCN

Administrative and Technical Support
James R. Mangani, WRI

Bibliographic, Database, and Graphic Support
The technical staff of LTS Corporation, Bethesda, Maryland

Editorial Consultant
Audrey Pendergast

Publications Director
Kathleen Courrier

Marketing Manager
Brooks Clapp

Production Manager
Hyacinth Billings

This report represents a timely, scientific treatment of a subject of public concern. Its collaborating partners take responsibility for choosing and focusing the study topics and guaranteeing its authors and researchers freedom of inquiry. The report's authors have also solicited and responded to the guidance of advisory panels and expert reviewers. Unless otherwise stated, however, all the interpretations and findings set forth here are those of the authors.

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Preface & Acknowledgments

In 1991, following the publication of the *1990 Directory of Country Environmental Studies*, the World Resources Institute (WRI), the International Institute for Environment and Development (IIED), and The World Conservation Union (IUCN) established the INTERAISE (International Environmental and Natural Resource Assessment Information Service) project. With the support of a number of bilateral assistance agencies, INTERAISE undertook three tasks:

- to compile and publish a second edition, the *1993 Directory of Country Environmental Studies*
- to develop libraries of country environmental studies in Washington, London, and Gland, Switzerland
- to make environmental assessment information more widely available to policy analysts and development planners around the world.

Publication of the 1993 Directory and release of the 1993 Directory Database provide the policy community with easy-to-use guides to the latest and best studies on environment and development. These studies are valuable sources of information about the environment and development conditions, policies, and programs of developing countries. More than 90% of the reports were published in the last five years. The Directory can help analysts to identify and gain access to reports on more than 130 countries written in English, Spanish, French, and Portuguese, and it can be used to identify organizations currently preparing reports.

The editors of the 1993 Directory would like to acknowledge the important contributions made by their INTERAISE colleagues: Barry Dalal-Clayton and Paula Stone of IIED and Jeremy Carew-Reid, Paul Driver, and Claire Santer of IUCN. Together, we identified new studies, developed and applied criteria for selecting documents, generated an internal database, and reviewed the final draft.

The INTERAISE project has benefited from the support of the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD) and, in particular, from members of the Working Party on Development Assistance and Environment and its chairman, Fritz Schlingemann. Funding was provided by the Australian International Development Assistance Bureau (AIDAB), German Agency for Technical Co-operation (GTZ), Netherlands Ministry of Foreign Affairs, Swiss Directorate for Development Cooperation and Humanitarian Aid, and United States Agency for International Development (USAID).

Many people played important roles in the preparation of the 1993 Directory.

First, we want to thank the LTS Corporation's technical staff—Sarah Anderson, Linda Bilhart, Lynne Crone, Clare Imholtz, Margo Klish, Dennis Nagel, Roger Reynolds, Benjamin Silver, and Peter Yellman—for compiling the bibliographic citations, preparing abstracts, developing the database, and helping to design and produce the final document. Twig Johnson and Mike Philley, Bureau of Research and Development, Office of Environment and National Resources, USAID, and Doug Baker of The Nature Conservancy reviewed drafts and offered encouragement for the project. Within WRI, Walter Arensberg, Director of the Environmental Planning and Management Project, provided overall program guidance; James Mangani assisted with administrative and database development tasks; and Sue Terry contributed valuable library support. Kathleen Courrier, Hyacinth Billings, Audrey Pendergast, and Brooks Clapp helped in the final editing, production, and marketing.

Finally, we thank the many organizations that provided the INTERAISE project with copies of reports and studies. It is the support and hard work of these organizations that will help to make environmental information a tool for progress.

We welcome your comments on the 1993 Directory and would like to receive suggestions of how we and our colleagues can improve and expand this effort.

Daniel B. Tunstall
Mieke van der Wansem

I. Introduction

Almost every country in the world has prepared a national report on its environment. These environmental studies are being used by countries to heighten public awareness of environmental problems and to understand better the influences that natural resources and environmental degradation have on economic development, human welfare, and the sustainable use of ecosystems. The process of preparing and critiquing national reports is helping governments and private organizations to participate in a dialogue on the importance of natural resources at local, national, regional, and global levels. These reports also are enabling the public to hold governments and other institutions more accountable for their actions.

The *1993 Directory of Country Environmental Studies* provides a detailed list, including abstracts and complete bibliographic information, of all the major natural resource and environmental studies prepared on developing countries in the past few years. Studies of 129 countries and 12 regional groupings are described. Thirty-three countries -- among them Algeria, Bhutan, Cuba, Republic of Korea, Laos, Namibia, South Africa, Suriname, Taiwan, and Venezuela — appear in the 1993 Directory for the first time. The Directory also identifies numerous assessments and strategy projects that are in preparation.

The 1993 Directory contains bibliographic entries for 354 studies, 257 of which have been added since the 1990 edition. Approximately 93% of these documents were published between 1987 and 1992. Included are 66 national reports prepared for the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in June 1992.

During the past few years, there has been a substantial shift in the kinds of country reports that are being prepared. In the early 1980s, supported in large part by USAID, environmental profiles were produced to increase awareness of problems and to compile and analyze existing data. Later, countries were encouraged to develop more analytical resource assessments, state-of-the-environment reports, and sector studies of forestry and biological diversity. Now, there is considerable interest in placing environmental issues in a development context, and there has been a growing number of environmental action plans and strategies, national reports for UNCED, and national sustainable development reports. This shift in emphasis is seen very clearly in the 1993 Directory.

Organization of the Directory

The Directory is divided into six parts:

- I. Introduction
- II. Matrix of Countries, Programs, and Assessments
- III. Annotated Bibliography
- IV. Program Descriptions
- V. Country and Region Index
- VI. Selected Global Environment and Development Studies

Part II, the matrix of countries, programs, and assessments, can be used to identify the types of assessments made for each developing country and their date of publication. The matrix also indicates which documents are currently in preparation. Part III is composed of bibliographic information and abstracts of all the assessments organized by region (Africa, the Americas, Asia, and Oceania), in alphabetical order by country. Information on how to obtain a copy of the document is appended at the end of each entry. Part IV contains descriptions of the various national and international programs that support the preparation of country studies. Part V is an index of the countries and regions covered in the Directory. Part VI is a list of selected global environment and development studies that provide additional information at a national level.

Selection Criteria

To be selected for the 1993 Directory, country studies had to meet certain criteria. They had to be:

- concerned with environmental and natural resource issues in developing countries
- focused on the quantitative analysis and assessment of resources and their use in development and make liberal use of tables, maps, charts, etc.
- countrywide or regional in coverage
- useful to policymakers and others concerned with development planning
- timely (prepared since 1987, if possible)
- publicly available at a reasonable cost.

Furthermore, it had to be possible to obtain copies of the reports so that their contents could be reviewed and abstracted. In a few cases, such as recent UNCED national reports, studies are included in the matrix, but an abstract is not presented because a copy of the report could not be secured in time.

For some countries, such as Thailand, Indonesia, Mexico, Pakistan, and Kenya, there are so many reports available that the primary task was to identify and select the most recent and most useful studies. For countries at war and countries emerging from strongly authoritarian and restrictive governments, such as Somalia, Sudan, and Liberia, the task was to locate a single report even if it was out of date and failed to meet other criteria.

Subject Coverage

The primary focus of the Directory is to provide a detailed reference to reports that assess the condition and trends of the natural resources of a country — air, water, land, minerals, and living resources — and link the quantity,

condition, use, and value of these resources to economic development and the maintenance of ecosystems. Also cited are natural resource management strategies and action plans that analyze the resources in a country or region and propose plans and priorities for action. Most of the reports are multisectoral in scope. However, because of recent national and international concern, some reports that focus principally on biological diversity and forestry are included. Documents devoted to plans for a specific project are excluded, as are environmental impact statements and reports dealing with such global issues as climate change.

In future editions, we will try to incorporate national reports on sustainable development, based in part on the experience that countries have had in preparing for and participating in UNCED and particularly in implementing Agenda 21 (the set of priorities and strategies for action agreed on at UNCED). We also will consider listing studies of urban environmental problems, national and regional pollution assessments, and national climate change and ozone layer protection programs.

Program Coverage

Not all country environmental studies are the same. Their contents, analyses, recommendations, and even their length depend on the purpose of the organization supporting preparation of the study. The 1993 Directory includes studies from programs supported by indigenous developing country governments and nongovernmental organizations (NGOs) as well as by bilateral and multilateral donors, international NGOs, and others. Many of the assessment and strategy programs, such as the IUCN National Conservation Strategies, the World Bank National Environmental Action Plans, and the FAO Tropical Forestry Action Programme, are supported by several organizations.

The environmental studies categories in the 1993 Directory are:

1. Environmental Strategies — the Canadian International Development Agency (CIDA)
2. Environmental Profiles — Denmark's Department of International Development Cooperation (DANIDA)
3. Environmental Profiles — the Netherlands Ministry of Foreign Affairs
4. Environmental Synopses — the United Kingdom Overseas Development Agency (ODA), European Economic Commission (EC), and Australian International Development Assistance Bureau (AIDAB)
5. Country Environmental Profiles — United States Agency for International Development (USAID)
6. Tropical Forest and Biological Diversity Assessments — United States Agency for International Development (USAID)
7. National Plans to Combat Desertification — Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel (CILSS)
8. National Environmental Action Plans — World Bank and others

9. National Conservation Strategies — The World Conservation Union (IUCN) and others
10. Conservation of Forest Ecosystem Studies — The World Conservation Union (IUCN)
11. Biological Diversity Profiles — World Conservation Monitoring Centre (WCMC)
12. Tropical Forestry Action Programme (TFAP) — Food and Agriculture Organization (FAO) of the United Nations and others
13. State-of-the-Environment Reports
14. UNCED National Reports — United Nations Conference on Environment and Development
15. Environmental Policy and Management Studies
16. Other Environmental Studies.

A description of each of these program categories is in Part IV of the Directory, along with addresses and telephone and fax numbers.

Four new program categories have been added to the 1993 Directory. They are the UNCED National Reports (supported by the United Nations Development Programme and other organizations), Environmental Synopses (supported by the United Kingdom, the European Economic Community, and Australia), Conservation of Forest Ecosystem Studies (prepared by IUCN), and Environmental Policy and Management Studies (supported and compiled by various organizations). Two programs have been dropped — USAID's Country Profiles (Foreign Disaster Assistance Profiles) and the United Nations Environment Programme's (UNEP's) Regional Seas Programme — because so few new studies have been made, although a few of the more recent ones are included under "Other Environmental Studies." All of the reports supported by these programs, however, are in the computerized diskette version (the 1993 Directory Database).

Studies in the largest new program category — UNCED National Reports — were compiled by UN member countries in 1991 and 1992 for the United Nations Conference on Environment and Development in mid-1992. Sixty-six of these reports have been abstracted for this Directory, but many more are available from national commissions in the country or from offices of the local Resident Representative of UNDP. For more information on these reports and how to obtain copies, please read the program description in Part IV.

The Environmental Synopses, prepared by IIED for the United Kingdom's ODA and by IUCN for the EC and the Australian AIDAB, are 25-page overviews of the state of a country's environment, the institutional context in which environmental problems are managed, and an analysis of pollution and degradation processes.

Conservation of Forest Ecosystem Studies, also produced by IUCN, examine the status of forest ecosystems in nine African countries and provide guidance on how these systems should be managed for sustained use and economic development.

Environmental Policy and Management Studies, compiled by various governments and NGOs, represent a departure for the Directory because they focus on environmental management in a country and examine how the policies and institutions of the country are working and what should be done to address remaining problems. The most extensive set of policy studies was prepared for Thailand by the Thailand Development Research Institute, Harvard Institute for International Development of Harvard University, and USAID, and covers virtually all the major natural resource sectors of that country.

The "Other Environmental Studies" category has been expanded to include natural resource sector studies, environment and development studies, certain regional studies such as the latest regional sea report for the Black Sea, and ecological assessments and resource inventories such as the ecosystem studies of the Indonesian islands of Sulawesi and Sumatra.

As a result of the four new program categories and expansion and contraction of the others, the contents of the 1993 Directory have changed dramatically from those of the 1990 edition. Most notable are increases in the number of TFAP forest sector reviews and plans, national conservation strategies, national environmental action plans, and state-of-the-environment reports.

In future editions, additional resource inventories and ecological assessments will be considered for inclusion because these reports provide extensive baseline information for development. Three new program categories also will be considered for inclusion: The Japanese Overseas Economic Cooperation Fund (OECF), which has begun to support the preparation of environmental profiles for selected Asian countries; the Organization of American States (OAS), which is supporting the preparation of environmental action plans for Latin American countries; and the United Nations Environment Programme (UNEP), which is responsible for assisting developing countries in the preparation of country biodiversity strategies in support of the 1992 Convention on Biological Diversity.

Country Coverage

Attempts were made to obtain reports from all developing countries. Although studies of 129 countries are included, the coverage is uneven and some countries — such as Angola and Mozambique in southern Africa; Bahrain, Oman, and Syria in the Middle East; some of the smaller island nations in Oceania; and Afghanistan and Brunei Darussalam in Asia — are very poorly represented.

More than 12 developing countries are still not covered, among them Cambodia, Iran, Iraq, Kuwait, and Libya.

Others are well represented and possibly receive too much attention from the donor community, given the needs of the rest of the world. Indonesia and Pakistan are probably the two most studied developing countries, as measured by donor support for the preparation of reports. Six or more documents have

been abstracted for 11 countries: Thailand (13), Indonesia (11), Mexico (10), Sri Lanka (9), Pakistan (8), Bangladesh (7), Kenya (7), Malaysia (7), Botswana (6), Philippines (6), and Zimbabwe (6).

Several regional reports are included also, such as the State-of-the-Environment Report by the Economic and Social Commission for Asia and the Pacific. Certain subnational regional assessments, such as those supported by The Netherlands for Yemen, are included as well.

In the future, country coverage may be extended to the newly independent republics of Central Asia, the countries of Central and Eastern Europe, and perhaps the industrialized countries.

Time Period Covered

The recent explosion in concern for the environment and its importance for sustaining economic growth and development are reflected in the tremendous number of country environmental studies prepared in the past five years. More than 90% of all the documents included in this Directory have been published since 1987, and half of all the reports have been produced in the first few years of the 1990s:

- 25 documents (7%) between 1979 – 1986
- 151 documents (43%) between 1987 – 1989
- 178 documents (50%) between 1990 – 1992.

As a result of this increase, 145 reports in the 1990 Directory have been deleted. Most of them are early USAID-supported environmental profiles and country disaster profiles of Latin American nations. In some cases, such as Haiti, where the most recent report dates back to 1985, older reports have been retained.

Language

The Directory is available in English only, but includes abstracts of reports written in French, Portuguese, and Spanish. Reports in other languages are included if translations of their abstracts into English are available. The selection of studies is inevitably uneven. Although letters requesting copies of environmental studies were sent to all governments and many organizations, responses were relatively few. Therefore, some important indigenous national reports may have been missed.

Directory Database, Software, and Hardware

The 1993 Directory Database, like the 1990 Directory Database, is available on a diskette. However, the new version contains all the documents from both the 1990 and 1993 Directories, as well as some older documents that were not in either Directory. In total, abstracts from more than 530 documents have been computerized and can be searched and retrieved using more than 750 keywords. The Database is available in Micro CDS/ISIS, a bibliographic software program developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and can be

searched using an IBM PC and compatible computers. A copy of the 1993 Directory Database can be purchased from WRI, IIED, or IUCN.

Contacts

For more information about the 1993 Directory or the 1993 Directory Database, please write to: Directory Project, World Resources Institute, 1709 New York Avenue, N.W., Washington, DC 20006, United States of America; Phone: (1 202) 638 6300; Fax: (1 202) 638 0036; Telex: 64414 WRI WASH. Comments on the scope and content of the Directory are welcome.

For more information about the INTERAISE project, please write to: INTERAISE, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD, United Kingdom; Phone: (44 71) 388 2117; Fax: (44 71) 388 2826; Telex: 261681 EASCAN G; or to INTERAISE, IUCN — The World Conservation Union, Rue Mauverney 28, CH-1196 Gland, Switzerland; Phone: (41 22) 999 00 01; Fax: (41 22) 999 00 02; Telex: 419 624 IUCN CH; or to WRI at the above address.

II. Matrix of Countries, Programs, and Assessments

The matrix of countries, programs, and assessments reflects all of the material in the Directory. Each entry indicates the type of study that has been prepared or is in preparation, the country or region covered, and the date of publication or release of the study. In part III, a bibliographic citation is presented for each completed report that was available for abstracting as of June 1, 1992.

Countries

Countries are arranged by continent and are listed in alphabetical order, followed by regions (e.g., Sahel Region, Eastern Caribbean). The Americas are divided into Central America (which includes Mexico), the Caribbean, and South America.

Programs

Program categories are shown across the top of the matrix. They are arranged by types of donors and supporting organizations: bilateral, multilateral, international, and other.

Using the Matrix

The matrix identifies studies in three ways:

- those that have been published and were available for abstracting are indicated by a year enclosed in a box; shaded boxes indicate studies that are new since the 1990 Directory 91 91;
- those that have been published but were not available for abstracting are indicated by the year only (most of them are UNCED national reports) 92;
- those that are in preparation are indicated by a hand symbol ✍.

Notes to the Matrix

1. FSR=Forestry Sector Review. TFAP=Tropical Forestry Action Plan. MPFD=Master Plan for Forestry Development.
2. CARICOM countries include Antigua and Barbuda, Barbados, Dominica, Grenada, Montserrat, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago.

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Africa

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR=F / TFAP=T / MPFD=M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Algeria														[illegible]		
Angola				✍									✍			88
Benin				✍				✍					[illegible]			
Botswana			56		88				[illegible]	[illegible]		[illegible]	✍	[illegible]		
Burkina Faso			✍	✍			85	✍			✍		[illegible]			
Burundi				✍	[illegible]			91					[illegible]			
Cameroon	[illegible]									[illegible]	T88		✍			
Cape Verde							86				✍		[illegible]			
Central African Republic				✍							✍		[illegible]			
Chad									90				[illegible]			
Comoros				✍												
Congo				✍				✍		[illegible]	✍		✍			
Côte d'Ivoire (Ivory Coast)	✍			✍				✍			[illegible]		✍	[illegible]		
Djibouti				✍									[illegible]			
Egypt			✍		88								[illegible]			
Equatorial Guinea				✍						[illegible]			✍	✍		
Ethiopia				✍					[illegible]		[illegible]	✍	✍	[illegible]		[illegible]
Gabon				✍				✍		[illegible]			✍	[illegible]		
Gambia					[illegible]			✍					✍	[illegible]	[illegible]	
Ghana				[illegible]				[illegible]			88			[illegible]		
Guinea					83	✍		✍			88	T88		✍		
Guinea-Bissau							88	✍	✍		[illegible]		✍	91		
Kenya		[illegible]			88				✍		88	F87	87	[illegible]		[illegible]

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSP=F / TFAP=T / MFFD=M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Lesotho	✍			✍				[illegible]				✍		[illegible]		[illegible]
Liberia				✍		87										
Madagascar								[illegible]	84	88	[illegible]	✍	[illegible]			
Malawi				✍		✍								[illegible]		
Mali			[illegible]		89	[illegible]	85					✍		[illegible]		
Mauritania			(see Sénégal)	✍			[illegible]		[illegible]			✍		91		[illegible]
Mauritius				✍				[illegible]						[illegible]		
Morocco						[illegible]							✍	[illegible]		
Mozambique				✍										91		[illegible]
Namibia				✍									[illegible]			
Niger				✍			[illegible]					✍		[illegible]		
Nigeria				✍				✍	[illegible]		[illegible]	✍	[illegible]	[illegible]		[illegible]
Reunion										89						
Rwanda				✍	[illegible]			[illegible]				✍		[illegible]		
São Tomé and Principe				✍						[illegible]				[illegible]		
Sénégal			[illegible]								[illegible]	✍		[illegible]		
Seychelles								[illegible]	✍					91		
Sierra Leone				✍					[illegible]			[illegible]		91		
Somalia				✍	[illegible]				[illegible]							
South Africa									80				[illegible]	[illegible]		
Sudan		[illegible]	[illegible]											91		
Swaziland				✍										[illegible]		
Tanzania, United Rep		[illegible]							86		[illegible]	[illegible]		[illegible]		[illegible]

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR-F / TFAP-T / MPFD-M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Togo				✍				✍	85			✍				
Tunisia						88										
Uganda				[illegible]		✍		✍	83		88			[illegible]	[illegible]	
Zaire				✍		88				[illegible]	88	[illegible]		91		
Zambia	✍		88						85			✍	[illegible]			[illegible]
Zimbabwe				92					87			✍	[illegible]	91		[illegible]
Central African Region										[illegible]						
Mediterranean Sea																[illegible]
Sahel						88										89 92
Sub-Saharan Region						[illegible]										[illegible]
Central America																
Belize				✍		88		✍			[illegible]		[illegible]			
Costa Rica									90		[illegible]	[illegible]	[illegible]			[illegible]
El Salvador					[illegible]	88	✍	✍					✍			
Guatemala					84	88		✍			[illegible]		✍			
Honduras					[illegible]		✍				[illegible]		[illegible]			
Mexico										88	✍	[illegible]				[illegible]
Nicaragua							✍	✍			✍		[illegible]			
Panama											[illegible]					
Central American Region	✍				87						[illegible]					

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR-F / TFAP-T / MPFD-M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Caribbean																
Antigua and Barbuda					[illegible]			✍								
Barbados				✍				✍					[illegible]			
Cuba											✍		[illegible]			
Dominica					[illegible]		✍									
Dominican Republic				✍		88					[illegible]		[illegible]			
Grenada					[illegible]		✍							[illegible]		
Haiti					85		✍				✍	✍				
Jamaica	✍			✍	87						[illegible]	✍	✍			
St. Christopher & Nevis					[illegible]		✍									
St. Lucia					[illegible]		✍	87								
St. Vincent					[illegible]	86	✍									
Trinidad and Tobago								✍			✍		[illegible]			
Canbbean Region	88												✍			
CARICOM countries (2)											✍					
Eastern Canbbean Region					[illegible]	88										
South America																
Argentina											T88	✍	[illegible]		[illegible]	
Bolivia				✍	86	88	✍				T89		[illegible]		[illegible]	
Brazil										88			[illegible]			
Chile											✍	[illegible]		[illegible]		
Colombia				✍	[illegible]			✍		88	[illegible]			[illegible]		
Ecuador					87	89	✍	✍		88	[illegible]	✍	91	[illegible]		
Guyana											[illegible]		[illegible]			

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR-F / TFAP-T / MPFD-M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Paraguay					85			✍								
Peru	88			✍	86	88			✍		88					
Suriname												✍				
Uruguay														91		
Venezuela												✍				
Latin American Region																
Asia																
Afghanistan																
Bahrain									✍					91		
Bangladesh	89	89					✍		87 91			✍	87			
Bhutan							✍		✍			✍				
Brunei Darussalam					87											
China							✍									
Cyprus													87			
India		89					✍		✍		89	✍				
Indonesia			88	✍	87	✍	✍							✍		
Jordan									✍				89			
Korea, Dem People's Rep														91		
Korea, Republic							✍									
Lao People's Dem Rep							✍		✍							

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR-F / TFAP-T / MPFD-M (1)	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Lebanon																
Malaysia												T92				
Maldives																
Mongolia																
Myanmar (Burma)					87					89		M91				
Nepal								87				M88				
Oman																
Pakistan					88											
Philippines							88			88		M90				
Qatar													87	91		
Saudi Arabia																
Singapore					88											
Sri Lanka												M86				
Syrian Arab Republic					81											
Taiwan																
Thailand					87											
Tibet																
Turkey																
United Arab Emirates																
Vietnam								85								
Yemen														91		
Asia & Pacific Region														91		
Black Sea Region																

Oceania

	Canada (CIDA) Environmental Strategies	Denmark (DANIDA) Environmental Profiles	Netherlands Environmental Profiles	United Kingdom / EC / Australia Environmental Synopses	United States (USAID) Country Environmental Profiles	United States (USAID) Tropical Forests / Biodiversity Assessments	CILSS Antidesertification Plans	World Bank National Environmental Action Plans	IUCN National Conservation Strategies	IUCN Conservation of Forest Ecosystem Studies	WCMC Biological Diversity Profiles	Tropical Forestry Action Programme FSR-F / TFAP-T / MPFD-M [1]	State-of-the-Environment Reports	UNCED National Reports	Environmental Policy and Management Studies	Other Environmental Studies
Cook Islands					■											
Fiji				✍				✍		■		F90		■		
Kiribati																■
Niue					■									■		
Papua New Guinea				✍							■			■		
Solomon Islands				✍										91		
Tokelau														■		
Tonga					■								■	91		
Tuvalu					■											
Vanuatu				✍	■			✍				✍		■		
Western Samoa				✍	■									■		
Oceania/Pacific Region							✍	✍								

III. Annotated Bibliography

Bibliographic citations are listed alphabetically by continent (Africa, the Americas, Asia, and Oceania), with breakdowns for subregions, such as Central America. Within each region, country reports are followed by regional reports.

Where studies are part of a series on a particular country, only the latest edition is recorded; references to earlier editions may be included in the abstract. An entry appears in the matrix in Part II for all reports of a series.

Each citation contains the following information:

- Country
- Document title (in its original language and English translation)
- Program title
- Author(s)
- Collaborating organization(s)
- Sponsoring organization(s)
- Publication date, pagination, collation, special features
- Language of the document (En = English, Es = Spanish, Fr = French, Pt = Portugese)
- Abstract (in English)
- Availability information (the numbers in parentheses after "Phone" and "Fax" are the country and city codes)

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Canada K1A 0G4
Phone: (1 819) 997 3318
Fax: (1 819) 997 4177

Department of International Development Cooperation (DANIDA)
Information Office
2, Asiatisk Plads
DK-1448 Copenhagen K
Denmark
Phone: (45 33) 92 09 45
Fax: (45 31) 54 05 33
Telex: 31292 ETR DK

Netherlands Ministry of Foreign Affairs
Directorate General for International Cooperation
Technical Advisory Unit
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2500 EB Den Haag
The Netherlands
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Fax: (31 70) 348 43 03
Telex: 31326

International Institute for Environment and Development (IIED)
3 Endsleigh Street
London WC1H ODD
United Kingdom
Phone: (44 71) 388 2117
Fax: (44 71) 388 2826
Telex: 261681 EASCAN G

IUCN — The World Conservation Union
Rue Mauverney 28
CH-1196 Gland
Switzerland
Phone: (41 22) 999 00 01
Fax: (41 22) 999 00 02
Telex: 419 624 IUCN CH

Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel (CILSS)
Secrétariat Executif
B.P. 7049
Ouagadougou
Burkina Faso
Phone: (226) 30 67 58
Fax: (226) 30 72 47
Telex: 52 63 COMITER Ouaga

World Bank
Publications Department
1818 H Street, N.W.
Washington, DC 20433
United States of America
Phone: (1 202) 473 1155
Fax: (1 202) 676 0581
Telex: RCA 248 423

World Conservation Monitoring Centre (WCMC)
219c Huntingdon Road
Cambridge CB3 ODL
United Kingdom
Phone: (44 223) 27 7314
Fax: (44 223) 27 7136
Telex: 817036SCMUG

Food and Agriculture Organization
(FAO) of the United Nations
Via delle Terme di Caracalla
00100 Rome
Italy
Phone: (39 6) 5797 4779
Fax: (39 6) 5797 5137
Telex: 610181 FAO I

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Algeria

Rapport national: Conférence Mondiale sur l'Environnement et le Développement

(National report: World Conference on the Environment and Development)

UNCED National Reports

Jun 1991, 59 p., Fr

In Algeria, drought and irregular rainfall distribution necessitate tremendous mobilization of artificial water resources. Analyses show that between the years 2010 and 2025, Algeria will begin experiencing serious water shortages. This report assesses Algeria's natural resource base, describes environmental protection initiatives already underway, and presents a plan to further combat environmental degradation. Major environmental problems are identified as the following. (1) The fragility of Algeria's soils (which are crucial to its agricultural and pastoral activities) necessitates protection or expensive conservation practices. (2) Extreme variability in temperature — especially very hot summers — demand extraordinarily adaptable agriculture, pastoral systems, and housing. (3) Northward expansion of the country's desert has reduced feed crops, caused difficulties in cattle breeding, and deposited sand on agricultural land, in towns, and on roads. (4) Waste management is inadequate. (5) Population growth has created shortages in housing and employment. (6) Water purification techniques are below standard (poor drinking water is a leading cause of disease and infant mortality).

Available from:
UNDP Resident Representative
B.P. 823
Algiers 16000, Algeria
Phone: (213 2) 74 49 02
Fax: (213 2) 74 50 82

Angola

United States Private Voluntary Agency — United States Government assessment team to Angola: final report

Other Environmental Studies

U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance, Washington, DC, US
25 Oct 1988, iii, 14 p. + 10 annexes, En

Angola is a country of significant natural resources. In addition to its existing petroleum industry, the country has considerable potential for developing its agricultural land, marine resources, and mineral wealth. However, conditions within Angola are extremely difficult, with many years of war and economic stagnation taking a toll on living and health standards. Some 650,000 of Angola's population of 9.5 million has been displaced by war and related security conditions. This report assesses the feasibility of implementing development or emergency relief programs in Angola, focusing on the neediest provinces of Benguela and Cuanza Sul. The report provides guidelines for private voluntary organizations and recommends that initial interventions include food, water, health and nutrition services, as well as basic agricultural supplies to help the displaced produce their own food. An appendix cites water supply as a severe problem in both provinces and the number one priority in Cuanza Sul, due to the large number of displaced persons, the lack of existing bore holes and hand-dug wells, and limited groundwater. Additional appendices provide basic information on Angola's health and agricultural sectors; infrastructure; and emergency program logistics.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PD-AAY-905

Previous Page Blank

Benin

Benin report: document prepared for the United Nations Conference on Environment and Development (1992)

UNCED National Reports

Benin. Ministry of Environment and Development, Cotonou, BJ
Jun 1991, 95 p.: statistical tables, En

Benin faces serious degradation of vegetative cover for several reasons, including irregular and uneven rainfall, population pressures, land clearing, overgrazing, large-scale immigration, fires, and forest exploitation. This report identifies Benin's development and environmental trends and summarizes approaches to solving environmental problems through legislation, institutions, programs and projects, and international cooperation. In addition to the loss of vegetative cover, the report cites the following major concerns. (1) Accelerated population growth, absence of urban and rural policies, and a housing crisis associated with the economic recession have contributed to a decline in the standard of living in both the cities and the countryside. (2) Access to land is becoming increasingly difficult in the south of the country, where barely 5% of landholdings, as opposed to 20% in the north, are larger than 5 ha. Fallows are becoming rare, and landholdings which are already very small are reduced in size again as they are divided through inheritance. (3) Benin's network of waterways experiences problems with continuously declining water levels, sedimentation, and invasion of floating vegetation (the water hyacinth in the case of southern Benin). (4) Waste disposal and coastal erosion are also serious problems. Overwhelming concern over erosion along the Gulf of Benin has led the authorities of Benin and Togo to create a bilateral commission to address this issue. The report concludes with recommendations.

Available from:
UNDP Resident Representative
Boîte postale 506
Cotonou
Republic of Benin
Phone: (229) 31045
Fax: (229) 315786

Botswana

Profile of environment and development in Botswana

Environmental Profiles — Netherlands

Arntzen, J.W.; Veenendaal, E.M.
Free University. Institute for Environmental Studies, Amsterdam, NL
University of Botswana. National Institute of Development Research and Documentation, Gaborone, BW
Oct 1986, [177] p. + 8 appendices: charts, maps, statistical tables, En

Botswana is in a transition period in which environmental resources management has become a priority but not a practice. This report takes as its central theme the close linkages between environment and development. It provides information on Botswana's natural resource endowments and utilization; the causes and extent of environmental problems and their geographic and socioeconomic distribution; the influence of international factors; key laws, institutions, and development programs; and strategies for alleviating environmental problems.

A sectoral approach is taken, focusing in turn on: (1) livestock production, (2) crop production, (3) wildlife and veldproducts utilization, (4) wood utilization, (5) mineral production, (6) other productive activities and household consumption, and (7) land and water resources. The major problems examined are land degradation, competition for land and water, and pollution. Since Botswana's industrial sector is relatively small, pollution is limited mainly to the mining sector. However, emphasis on economic diversification may alter this situation in the future. Deforestation is also limited, but woodcutting combined with clearing of vegetation for cultivation and settlements has caused erosion,

particularly in hilly areas and around villages. The report states that many environmental problems could be limited or prevented through integrated development planning, public education campaigns, and systematic research. It is recommended that immediate efforts be made to address the most serious problems of land degradation. Includes a 12-page bibliography and 73 pages of tables, figures, and maps.

Available from:
Institute for Environmental Studies
Free University
P.O. Box 7161
1007 MC Amsterdam
The Netherlands

Botswana biological diversity assessment

Tropical Forest & Biological Diversity Assessments — USAID

Hannah, Lee; Wetterberg, Gary; Duvall, Leroy
U.S. Agency for International Development. Bureau for Africa. Office of Technical Resources
Sep 1988, iv, [76] p. + 3 appendices: maps, statistical tables, En

Botswana's heritage and future development are linked to the diversity of its natural resources. This report documents the extent and condition of these resources and analyzes current efforts to maintain them through preservation and sustainable use. According to the report, Botswana's protected areas system is one of the world's best. Recommendations for further improvement are to: (1) expand the system to cover all 14 major ecosystem types; (2) develop connecting corridors (including the proposed Wildlife Management Areas) between major protected areas; and (3) strengthen enforcement of species protection laws and management of protected areas. Outside the preservation system, land use planning is excellent, but management of natural systems such as range, forests, and wetlands is doing little to promote conservation through sustainable use. Significant degradation is already occurring and threatens a serious loss of biological diversity. Botswana's legislative and institutional structures strongly support conservation of biological diversity, and there is high potential for generating revenues through wildlife tourism. Key conservation needs are to: (1) upgrade water management in the open range, including a major effort in borehole management; (2) improve implementation of land use plans; (3) study the sustainability and economics of current forestry practices; and, above all, (4) implement the National Conservation Strategy. Areas of opportunity for A.I.D. are briefly addressed. Appended are consultant reports on local livestock strains, veterinary fences, and tsetse control. Includes a 4-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-245

Botswana national conservation strategy

National Conservation Strategies — IUCN and others

Botswana. Ministry of Local Government and Lands. Department of Town and Regional Planning, Gaborone, BW
U.S. Agency for International Development. Bureau for Africa. Botswana
Sep 1990, 78 p. + 3 annexes: charts, En

Botswana is endowed with abundant natural resources and about 17% of the country has been reserved specifically for the conservation of ecosystems, historic features, and wilderness areas. Nonetheless, Botswana's arid environment is fragile, and development pressures have had harmful effects. Several natural resources are threatened by pressures associated with rapid economic growth. Problems include rangeland degradation; the loss of trees for fuelwood; depletion of fossil groundwater resources; reductions in wildlife populations and indigenous grassland products; erosion of some arable land areas; the generation of rural, urban, and industrial wastes leading to soil and water pollution; and the presence of unsightly and hazardous borrow pits abandoned after the extraction of building materials. This document describes the supply and use of natural resources in Botswana and outlines a national conservation strategy. Primary issues are identified as pressure on water resources, rangeland pasture degradation, depletion of wood resources, overuse of grassland products, and industrial/urban pollution. Specific government

interventions — including legislative and educational initiatives — to address these issues are outlined and the expected benefits described. The final section of the report presents organizational and administrative recommendations for implementing these plans and estimates resource requirements.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABI-486

Biodiversity guide to Botswana

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 29 p.: maps, statistical tables, En

Though 84% covered by the Kalahari Desert, Botswana contains many ecosystems and species worth protecting. With 2,800 plant species, few of which are endemic, its floral diversity is modest compared to that of its neighbors. However, it has a rich assortment of animal species, many of which are surely endemic; over 400 bird species have been recorded in the Okavango delta area alone, and the savannas contain numerous predator and hoofed mammal species.

Following sections on geography, climate, and population, this biodiversity guide lists animal species, including endangered and rare species. All vertebrate species have been declared game animals (i.e., a license is required to hunt them). White Rhinos, exterminated around the turn of the century, have been reintroduced with promising results. Genetic diversity is discussed next. It is noted that indigenous cultivars of sorghum, millet, cowpeas, and groundnuts, wildebeest, and traditional cattle breeds are all genetically threatened species whose adaptation to Botswana's climate make them particularly valuable. Following this are sections on vegetation zones, forest resources, and important habitats. The river systems and wetlands in the north — and the Okavango delta (one of the largest inland deltas in the world) in particular — receive considerable attention. Next are sections on protected areas, which cover 18% of the country, and a list of areas of conservation importance that are not currently protected.

Discussion of threats to biodiversity and of conservation efforts make up the rest of the guide. Most threats stem from the country's burgeoning cattle industry, and illegal hunting is an ongoing problem. That conservation is taken seriously is clear from the extensive institutional resources and legislation devoted to land use, animal protection, and habitat preservation. Last is a list of conservation recommendations. Chief among these are better management of protected areas and enlargement or alteration of protected areas to secure complete and integrated habitat protection. An annex lists lesser protected areas.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-200

Nature of Botswana

State-of-the-Environment Reports

Campbell, Alec; Middleton, Nick, ed.
International Union for Conservation of Nature and Natural Resources.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Policy Development and Program Review
U.S. Agency for International Development. Bureau for Africa. Botswana
1990, 87 p.: ill., maps, En

Less than 150 years ago, eastern Botswana was the home of countless herds, tall trees, and huge varieties of wild animals. Today, only a few remnant species remain, mostly on freehold land, and most of the large trees are gone. As the human population increases and even greater pressures are brought to bear on the land, resources will continue to disappear. Currently, it is difficult to obtain plowing land or a place to sink a borehole for stock-raising. The declining range in the east has prompted a shift towards the more fragile ranges of the Kalahari sandveld. Wood is disappearing rapidly around large settlements,

expanding the time required for rural peoples to gather firewood and raising the cost of wood for urban residents. Almost half of the wood used is for fencing. Pollution is limited to a few areas, but is spreading due to industrial activities and a lack of sewerage systems. The primary purpose of this environmental profile of Botswana is to inform and encourage environmental activism among the country's younger generation, the decisionmakers and consumers of tomorrow. Chapters cover the land and its history, human activities, natural resources and their uses, and people's attitudes towards the environment. Final sections provide recommendations for improved natural resource management and a plan for action. Numerous comments from Botswana farmers, teachers, officials, students, and others are included.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-608

Programme for the planning of resource utilisation in the Okavango Delta region

Environmental Policy and Management Studies

SWEDEPLAN
Swedish International Development Authority, Stockholm, SE
Botswana. Ministry of Local Government and Lands. Department of Town and Regional Planning, Gaborone, BW
[1989], 3 v.: charts, maps, statistical tables, En

While much of the resource base in Botswana's Okavango Delta region remains intact, there is no room for complacency. The most serious problem facing the region is lack of adequate resource management, especially for economically vital rangeland, soil, and water resources. This three-volume work provides an exhaustive natural resource inventory of the region, along with a program for integrating environmental considerations into planning. The first volume begins with a general description of the study area, which encompasses the Ngamiland, Chobe, and Central districts. The 20 chapters which follow are classified as covering either resources (climate, hydrology, geology, soils, topography and geomorphology, botany, ecology, zoology, scenic and cultural features) or resource utilization (population and settlements, agriculture, forestry and veld products, water use, wildlife utilization, fisheries, tourism and recreation, infrastructure, nature preservation, administrative structures, laws and legislation), and are supplemented throughout by numerous maps, charts, and graphs.

Volume two sketches a program for wide-scale planning for the utilization and protection of resources in the Delta region. It includes a spatial planning framework for each district, an analysis of major environmental concerns, discussion of conflicts in resource utilization (often related to land and water rights), and recommendations concerning: legislation, the settlement-wilderness interface, water management, infrastructure, and administrative structures. Annexes to Volume two include a list of 326 detailed, site-specific recommendations and reviews of policies and legislation. Volume 3 summarizes the main findings of the inventory and major recommendations.

Available from:
Swedish International Development Authority (SIDA)
Box 342
S-11121 Stockholm
Sweden
Phone: (46 8) 15 01 00
Telex: 11450
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-186

Burkina Faso

Plan national de lutte contre la désertification

(National plan for the control of desertification)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Club du Sahel, Paris, FR
Burkina Faso. Ministry of Planning and Popular Development, Ouagadougou, BF
Jul 1985, 101 p. + annexes: charts, maps, statistical tables, Fr

Previous public sector drought relief efforts in Burkina Faso have focused almost exclusively on reforestation and failed to actively involve the local population. This document describes the Government of Burkina Faso's comprehensive National Plan to combat desertification, which differs from earlier efforts in that it focuses specifically on agrarian reform, popular participation, and the targeting of three harmful practices — brush fires (i.e., slash and burn agriculture), deforestation, and the wild grazing of animals. The report begins with an analysis of the current agroclimatic and socioeconomic situation (i.e., the persistence of the drought, the growth and migration of the population, and crises in the food and energy sectors). The second section looks at the types of desertification and their distribution. Part three discusses the policies and actions undertaken to combat drought. A concluding section discusses ways to remove constraints to the program and fine-tune the technical methods it utilizes through, inter alia, transforming the systems of production and implementing migration and population programs. It also discusses means for lifting the institutional and social constraints that impinge upon the goals of the desertification program including land and planting rights and the development of an extension service for drought-related activities.

Available from:
Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel

Rapport du Burkina Faso: fondements pour un développement durable — Conférence des Nations-Unies sur l'Environnement et le Développement (CNUED), Brésil

(Burkina Faso report: foundation for sustainable development —United Nations Conference on Environment and Development (UNCED), Brazil)

UNCED National Reports

Burkina Faso. Ministry of Environment and Tourism, Ouagadougou, BF
Apr 1991, 187 p.: statistical tables, Fr

In Burkina Faso, rapid population growth has exerted pressure on land resources and reduced the effects of development actions in the sectors of health, education, housing, and urban services. This report identifies development trends in the country, assesses the natural resource base, summarizes government and international responses to Burkina Faso's environmental problems, and presents recommendations for an improved strategy for sustainable development. Major environmental problems are identified as the following. (1) The drinking water supply is insecure, primarily due to a lack of adequate maintenance and repair of equipment to ensure continuous distribution. (2) Processes for treating human, domestic, and industrial wastes and wastewater are inadequate. (3) There is an absence of infrastructure in the health sector. (4) Drought has caused soil erosion and other problems, giving rise to nutritional problems. (5) In the mining industry, mine collapses are frequent, exploitation methods are inadequate, and hygienic conditions at the sites are deplorable. Environmental problems have resulted from abandonment of exhausted quarries without plans to restore the natural setting. (6) Ecosystem degradation has resulted from brush fires, tree cutting, land clearing, overgrazing, and drought.

Available from:
UNDP Resident Representative
01 B.P. 575
Ouagadougou 01
Ouagadougou
Burkina Faso
Phone: (226) 30 67 65
Fax: (226) 31 04 70

Burundi

Burundi biological diversity and tropical forest assessment

Tropical Forest & Biological Diversity Assessments — USAID

Dennison, Steve; Murray, Gerald; Booth, Greg
Energy/Development International
Development Alternatives, Inc.
U.S. Agency for International Development. Bureau for Africa
Jan 1989, 35 p.+ 5 annexes, En

Due to Burundi's location in the East African Rift System, its geography, climate, and ecology are characterized by impressive heterogeneity. This report assesses Burundi's flora and fauna; summarizes the impacts of population growth, the various land use systems, and economic forces that have led to environmental degradation; describes institutional interventions, including colonial policies, direct government policies, communal tree planting, and alternative models; and examines major policy issues.

Major findings include the following. Burundi's flora have undergone a large-scale transformation due to agricultural and pastoral land use: in agricultural areas, native forest and savannah species have been replaced by domestic crops; in pastoral areas, the herbaceous vegetation remains indigenous but the diversity of the original primary associations has been reduced. Mammalian wildlife are now restricted to a small percentage of the country's territory; several species such as elephants and gorillas have become, at least locally, extinct because of human expansion and depredation. High population density in the steep-sloped highlands (450 people per sq km) increases the vulnerability of the landscape to soil erosion. Erosion control efforts are largely ineffective, because of an increase in population pressure and the small size of landholdings. The Burundi Government has begun to take stricter conservation measures, but in the process many families have been physically rejected from regions declared to be parks or reserves. Tree planting schemes have increased state control of wood, and some farmers are reluctant to plant trees on their land for fear it may lead to eventual government expropriation. Annexes include a bibliography, maps, and lists of government organizations, protected areas, and plant and animal species.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABF-954

Rapport national sur l'environnement et le développement

(Burundi national report on environment and development)

UNCED National Reports

Burundi. Ministry of Land Development, Tourism, and Environment [Bujumbura] BI
Jul 1991, 146 p.: statistical tables, Fr

Burundi can claim few competitive advantages. It is landlocked, characterized by hilly terrain and rocky soils, and has no easily exploitable mineral or fossil fuel resources; in addition, its economy is constrained by considerable foreign debt, low capacity to generate savings, a narrow export base, and a centralized planning process. Nevertheless, it has been food self-sufficient for two decades, an achievement which has come at the expense of development in other sectors. Now, even that achievement is threatened by a high rate of population growth (in a country which already has one of the highest densities in the world). Urbanization is remarkably low; though the nationwide average of persons per square km is high, the population is spread so evenly throughout that the nation is almost entirely rural. Burundi's environmental situation is characterized by depletion of soil resources from overfarming and the gradual disappearance of forests (mostly for fuelwood). This report details some of these conditions. The report begins with background

information on Burundi's geography, economy, institutions, and society. Environmental and development policies are then discussed, including rural areas and agriculture, energy, water, and health issues, information and training capabilities, protected areas, and future needs and directions.

Available from:
UNDP Resident Representative
B.P. 1490
Bujumbura
Burundi
Phone: (257 22) 33 15
Fax: (257 22) 58 50

Cameroon

Stratégie environnementale pour les programmes de l'ACDI au Cameroun

(Environmental strategy for CIDA's programs in Cameroon)

Environmental Strategies — Canada (CIDA)

Lemay, Michele H.; Bacle, Jean-Pierre
Canadian International Development Agency, Hull, PQ, CA
Lemay-Bacle Consultants, Alexandria, VA, US
Dec 1989, xiv, 98 p.: maps, Fr

This study was undertaken to ensure that environmental factors are integrated in a coherent fashion into the Canadian International Development Agency's (CIDA's) bilateral projects in Cameroon. The study identifies the country's major environmental problems: (1) desertification in the north and the extreme north, affecting 25% of Cameroon's population; (2) deforestation in the coastal and central zones; (3) problems involving water sanitation and firewood supply in the urban and industrial zones; and (4) in the mountainous zones of the west and northwest, problems with overfarming, soil erosion, and insufficient firewood supply. In each region, the problems are complex —their solutions will depend on thorough knowledge of the physical and human milieux. Moreover, there are numerous institutional and physical constraints to be dealt with — lack of necessary legislation, insufficient data on the environment, a tendency to take action on a sectoral rather than a multidisciplinary basis, insufficient financial means, an inadequate number of local organizations that could stimulate popular participation in resource management, and perhaps most seriously, a lack of personnel with practical experience in integrated development and land management. The report presents a plan of action for CIDA, covering the Agency's major sectors of assistance — forests, energy, transport and equipment, and human resource development. Specific recommendations are provided for each sector. Includes 10-page bibliography.

Available from:
Canadian International Development Agency

Conservation des écosystèmes forestiers du Cameroun

(Conservation of forest ecosystems of Cameroon)

Conservation of Forest Ecosystem Studies — IUCN

Gartlan, Steve
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1989, 186 p.: ill., maps, statistical tables, Fr

The Republic of Cameroon has two major types of forests — coastal and Congolese — and it also includes small regions of mountainous and submountainous forests. Cameroon's forests, especially the coastal forests, suffer erosion, exploitation, and degradation. Cameroon occupies a priority place in the conservation of humid forests and biodiversity in Africa. Officials in the country are conscious of the need to conserve and rationally utilize resources, but the country lacks — and urgently needs — a national plan for forest management. Cameroon's principal conservation program is the acquisition by the state of 20% of the national territory. Though not perfect, the program does constitute a base from which to work. This report describes the extent and importance of Cameroon's forest resources, the richness of its biological diversity, the place of forestry in the national economy, and the legislative and institutional aspects relating to forest conservation and utilization. A total of 15 administrative and legal recommendations are

made, followed by 16 specific action suggestions. The report also describes 24 critical sites that have been identified for protection, covering their climate, geographic situation, nearby populations, points of interest, vegetation, and legal status. Includes bibliographies.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-114

Plan d'action forestier tropical: table ronde internationale, Yaoundé 24 – 28 avril 1989 — rapport de présentation

(Tropical forestry action plan: international round table, Yaoundé, 24 – 28 April 1989 — proceedings)

Tropical Forestry Action Programme — FAO and others

Cameroon. Ministry of Agriculture. Directorate of Forests
Apr 1989, v, 70 p., Fr

The Government of Cameroon, in concert with several international donors, has considered the role of its forestry sector with respect to three major goals: economic adjustment, the creation of new employment, and protection of its ecology. The result of this process — Cameroon's Tropical Forestry Action Plan — is synthesized in this round table report. The report first briefly places the forestry sector within Cameroon's national context. It then outlines the principal components of the Government's national development policy and its strategy for economic stabilization and structural adjustment. Next, the report describes more specifically the strategies for development of the forestry sector. These strategies fall under five major themes: the forest industry; energy resources; ecosystem conservation; integration with the rural economy; and institutions. Information is presented on the relative importance and the projected financial and personnel requirements of 58 planned forestry projects. The final sections describe the results that the projects are expected to achieve.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-165

Tropical forestry action plan, joint interagency planning and review mission for the forestry sector: Cameroon

Tropical Forestry Action Programme — FAO and others

U.N. Development Programme, Geneva, CH
The Food and Agriculture Organization of the United Nations, Rome, IT
1988, 3 v., En

While the traditional wood producing countries are facing rapid depletion of their forest resources, Cameroon still possesses 17.5 million hectares of closed forest. These resources could make Cameroon the leading African producer and exporter of forestry-based products by the 21st Century. Guidelines are presented herein for full development of the forestry sector as well as for ensuring the maintenance and regeneration of the national forest estate. According to the report, the closed forest in the south and southeast sections of Cameroon must be opened up in order to meet international market demands. Major goals are to double the production of forestry products within 20 years while creating 100,000 new jobs. Fuelwood would become the most important wood product, in response to an expected 50% increase in demand over the next 15 years due to population growth and urbanization. The plan identifies major challenges for both the Government of Cameroon and private companies in penetrating the international market for forest products. Environmental issues are also addressed, including the reduction of Cameroon's wildlife population because of poaching, recent droughts, and human encroachment in the country's protected forest estate. A total of 58 forestry projects are proposed under the action plan; six of these, representing 8.5% of the total proposed cost, are conservation activities.

Available from:
The Food and Agriculture Organization of the United Nations

Cape Verde

Plan directeur de lutte contre la désertification

(Management plan for the control of desertification)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Club du Sahel, Paris, FR
Cape Verde. Ministry of Rural Development, CV
Sep 1986, viii, 54 p. + 2 annexes: map, statistical tables, Fr

A key theme in this report, and one generally reflective of the Cape Verdean strategy toward combating desertification, is its insistence on the interconnectedness of the drought and other national-level socioeconomic problems. Part one explores the pervasive effects of the drought and the crises in energy, nutrition, demographics, and the ecology it has triggered. The Government of Cape Verde's long commitment to reversing the negative effects of the drought is reported in the following section, beginning with its first program initiated shortly after independence in 1976 and continuing through to the Second National Plan, scheduled from 1986 to 1990. The final section of part one analyzes current and planned activities in each of the major areas of water and soil conservation, agriculture, animal husbandry, and hydrology. After a brief presentation of the Plan's fundamental objectives, the second half of the report concentrates on the Plan's rural development strategy and accompanying institutional and legal components. Indicators of the Plan's success will include the implementation of resource monitoring, a water and soil conservation program, a water resources program (e.g., irrigation, collection of water from secondary sources such as fog and dew), a renewable energy program, general-level development, a judicial program (including, inter alia, development of sector-specific codes), and a practical program for the participation of the local population. Statistical and bibliographic information is annexed.

Available from:
Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel

Conferência das Nações Unidas sobre Meio Ambiente e Desenvolvimento, Brasil 92: relatorio de Cabo Verde

(United Nations Conference on Environment and Development, Brazil 92: report of Cape Verde)

UNCED National Reports

Brito, Jorge Sousa; Duarte, Cristina; et al.
Government of Cape Verde, Praia, CV
1991, 144 p.: statistical tables, Pt

Development in Cape Verde is degrading the nation's fragile environment at an accelerating rate. Current practices and strategies are not sustainable over the long run. This report, prepared for the 1992 U.N. Conference on Environment and Development, outlines Cape Verde's socioeconomic and environmental situation, as well as suggested strategies for sustainable development. The report is divided into five chapters. Chapter 1 describes the nation's natural and social attributes, with sections on socioeconomics, basic resources (e.g., minerals, marine resources, soils, fauna and flora, freshwater, etc.), and infrastructure. Chapter 2 focuses on environmental problems, including desertification, urbanization, degradation of marine resources, contamination of agricultural lands, and others (though an island, Cape Verde exhibits many environmental characteristics, and suffers from similar problems, as the Sahel — in particular, a scarcity of freshwater). Chapter 3 describes current policies, programs, and practices related to environmental management, with sections on desertification, fishing, institutions, education, the private sector, housing, and others. Chapters 4 and 5 outline plans and strategies for achieving sustainable development.

Available from:
UNDP Resident Representative
Caixa Postale 62
Praïa
Republica de Cabo Verde
Phone: (238) 613919
Fax: (238) 614370
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-222

Central African Republic

Conférence des Nations-Unies sur l'Environnement et le Développement: rapport national de la République Centrafricaine

(United Nations Conference on Environment and Development: national report of the Central African Republic)

UNCED National Reports

Central African Republic [Bangui], CF
Sep 1991, 106 p., Fr

The Sahel is creeping southward into the Central African Republic, as the result of both climatic and human factors. These and other environmental issues facing the country are addressed in this report. Chapter I describes trends in economic growth, beginning with a general summary of the economy during the past decade, followed by sectoral and demographic trends. The report then assesses the country's natural resource base, covering agricultural lands, forests, water, fauna, fish, and minerals. The role of natural resources in economic development is then examined in terms of production, commerce, employment, and the quality of life. Chapter II looks at specific environmental problems, including deforestation, destruction of biodiversity, insufficient sanitation and waste treatment and disposal systems, air pollution, and soil erosion and loss of fertility. Chapter III summarizes responses to these problems in the form of government policies, international conventions, development institutions, programs and projects, public education and sensitization, and private initiatives. Chapter IV identifies major constraints to and opportunities for sustainable development. Chapter V presents the main elements of the Central African Republic's national strategy for sustainable development.

Available from:
UNDP Resident Representative
Boîte Postale 872
Bangui
Central African Republic
Phone: (236) 610888
Fax: (236) 611732

Chad

Rapport national du Chad pour la Conférence des Nations-Unies sur l'Environnement et le Développement (CNUED) (Brazil, 1992)

(Chad national report for the United Nations Conference on Environment and Development, Brazil, June 1992)

UNCED National Reports

Jul 1991, 90 p., Fr

Chad's economic problems are closely linked to environmental degradation. Accordingly, this report on the country's environmental activities and status contains considerable information on issues related to economic development. The report begins with a summary of development trends and their impact on the environment, followed by descriptions of various economic sectors. It then analyzes the country's desertification problem, and examines national environmental policies, projects, legislation, and institutions. Key issues are identified as the following: massive foreign debt; communication and transport constraints to interstate exchanges (i.e., trade); precarious freshwater resources (due to adverse climatic conditions); constraints to the development of fisheries and livestock breeding posed by ethnic and social traditions; uncontrolled informal cross-border trade; lack of credit for small businesses; financial and human resource constraints to the development of tourism; unregulated importation and use of agricultural

pesticides; and excessive deforestation of certain zones. Recommendations for sustainable development are presented. The report also includes information on funding requirements for environmental action, international cooperation, and capacity building initiatives.

Available from:
UNDP Resident Representative
Boîte Postale 906
N'Djamena
Republique du Tchad
Phone: (235 51) 4100
Fax: (235 51) 6330

Congo

Conservation des écosystèmes forestiers du Congo

(Conservation of forest ecosystems of the Congo)

Conservation of Forest Ecosystem Studies — IUCN

Hecketsweiler, Philippe
International Union for Conservation of Nature and Natural Resources. Tropical Forests Program, Gland, CH
1990, vi, 187 p.: maps. statistical tables, Fr

Among African countries, the Congo is second only to Zaire in the range of its tropical forests. And it has the potential to add to its forest resources (already accounting for 62% of the country's territory) through reforestation of grasslands, which has already been tried with success. Nonetheless, there has been a steady diminution of the Congo's natural endowments, and in particular a loss of animal resources in certain regions. This is one of the most important factors explaining the current rural exodus. This report describes the Congo's forest resources and potential for wood production, its plant and animal resources and biological diversity, the place of forestry in the national economy, and the legislative and institutional factors relating to forest conservation and utilization. A total of 19 recommendations are presented, including recommendations to establish an institution to manage forest areas and to adopt legislation to ensure conservation and rational utilization of forest ecosystems. The report also describes the Congo's 12 protected parks and reserves with respect to climate, geography, nearby populations, points of interest, vegetation, and legal status. Similar information is given for another 6 sites that are recommended for protection. Includes bibliographies and lists of principal commercial plants and protected mammals, birds, and reptiles.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-116

Côte d'Ivoire

Guide de la diversité biologique de la Côte d'Ivoire

(Biodiversity guide to Côte d'Ivoire)

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 25 p.: maps, statistical tables, Fr

Côte d'Ivoire is rich in biodiversity, with 4,700 species of plants and 232 species of mammals, including important elephant, hippopotamus, and buffalo populations. However, the country's flora and fauna are increasingly threatened by habitat destruction. Côte d'Ivoire's forest area has declined from 150,000 sq km at the beginning of colonialism to an estimated 34,000 sq km in 1985. Shifting cultivation is the primary threat to forest conservation, while the timber industry, which makes up 12.5% of total exports, is also a significant factor. Protected areas cover 6.2% of the country and represent the majority of habitat types. However, even these areas are vulnerable to penetration by agriculture. This assessment of Côte d'Ivoire's biodiversity begins with background information on the country's geography and climate, population, and economy. It then describes the status of flora, fauna, and forest resources and identifies trends in forest

destruction. The country's eight national parks and reserves are described, along with other environmentally important areas. Final sections examine environmental legislation and provide recommendations for improved sustainable development of natural resources.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-201

Rapport national sur l'état de l'environnement

(National report on the state of the environment)

UNCED National Reports

5 Jun 1991, 130 p., Fr

Côte d'Ivoire has undergone significant transformation as the population has migrated toward the more fertile areas in the south and toward urban centers. Some 70% of the population is now concentrated on 30% of the land area. This report begins with background information on Côte d'Ivoire's geography, population, and economy. Chapter I covers environmental issues related to agriculture, with emphasis on the shift to commercial production for export, forestry and reforestation efforts, unsafe fishing practices, and overgrazing. Chapter II examines trends in human settlements and problems associated with urbanization. Chapter III discusses Côte d'Ivoire's water resources, including surface and groundwater, the sea, and lagoons. Domestic, agricultural, and industrial uses of water are described. Chapter IV covers the country's vulnerability to natural disasters, including floods, storms, hurricanes, earthquakes, and erosion. Chapter V summarizes the environmental impacts of industry and transportation, while Chapters VI and VII describe environmental education and research efforts, institutions, and regulations. The final chapters discuss the relationship between culture and the environment and the role of women in natural resource conservation. Each chapter also contains recommendations for sustainable development.

Available from:
UNDP Resident Representative
01 B.P. 1747
Abidjan 01
Côte d'Ivoire
Phone: (225 21) 13 41
Fax: (225 21) 13 67

Djibouti

Rapport national sur l'environnement, Djibouti 1991, pour la préparation de la Conférence des Nations-Unies sur l'Environnement et le Développement, CNUED 92 — Rio de Janeiro, 1 – 12 juin 1991 [i.e. 1992]

(Djibouti national report on environment, 1991, for the United Nations Conference on Environment and Development, UNCED 92 — Rio de Janeiro, 1 – 12 June 1992)

UNCED National Reports

République de Djibouti. Ministère du Commerce, des Transports et du Tourisme. Office National du Tourisme et de l'Artisanat. Service de la Protection des Sites et de l'Environnement, DJ
12 Nov 1991, [53] p.: charts, maps, statistical tables, Fr

An influx of refugees from neighboring Somalia and Ethiopia is placing considerable stress on Djibouti's environment. The development of institutional and financial means to provide adequate housing, waste management, and health services has not matched rapid urban population growth. The use of wood for fuel is exhausting the country's already limited forestry resources. This report identifies development trends in Djibouti and assesses the natural resource base. In addition to refugee-related problems, the report identifies the following major issues. (1) Soils and vegetative cover are being degraded by overgrazing, deforestation for firewood, and agricultural extension. (2) Rising salinity in surface wells and hydraulic soil erosion are further hampering agriculture. (3) Coral reefs have been

degraded by sedimentation, hydrocarbon pollution, nautical tourism and sports, and anchor chains. (4) Both land and marine fauna are threatened by poaching, capture, and trade, in spite of a law which prohibits hunting. The report includes information on Djibouti's policy actions in the area of environment and on solar, wind, and geothermic power projects. A final section presents recommendations for a national environmental protection plan.

Available from:
UNDP Resident Representative
B.P. 2001
Djibouti
Republique de Djibouti
Phone: (253) 35 33 71
Fax: (253) 35 05 87

Egypt

First draft: the biological resources of the Arab Republic of Egypt — status and recommended conservation needs

Tropical Forest & Biological Diversity Assessments — USAID

Baldwin, Malcolm Forbes; Ferguson, David; et al.
U.S. Agency for International Development.
Bureau for Asia and Near East. Egypt
4 Nov 1988, iii, 85 p.: maps, En

This report reviews the natural resources of Egypt and highlights a number of pressing problems which threaten biological diversity. Oil pollution presents a significant threat to coral reefs, commercial fisheries, birds, mangroves, and other coastal resources. Coastal areas from Hurgada to Suez have become coated with petroleum residue from ships, offshore oil facilities, and pipelines. Mangrove forests near Ras Mohamed, reportedly the northernmost such forests in the world, are being stressed by accumulating oil pollution. Along the Mediterranean coast, oil pollution harms beaches, fisheries, and avifauna. Improved clean-up equipment and better management of offshore drilling operations and tanker traffic are needed to improve coastal conditions. While providing substantial economic benefit, tourism can also cause serious habitat degradation if improperly managed and regulated. Coral reefs in the Red Sea, among the most magnificent in the world, are coming under increasing pressure from tourist activity.

In Aswan, the expansion of hotel and tourist facilities needs careful control to preserve delicate Nile Island plant habitats. Field collection and germplasm storage are needed to ensure the genetic variability of local varieties of species such as clover, alfalfa, wheat, and garlic, which have been cultivated in Egypt for thousands of years. Further efforts are also needed to monitor and manage wildlife in Egypt's seven natural protectorates, as well as enhance cooperation between environmental agencies and local governorates. The report also discusses environmental legislation, organizations, and reserve areas. A 25-item bibliography is included.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-085

Arab Republic of Egypt: national report on environment and development — International Conference on Environment and Development, Rio de Janeiro, Brazil, 12 June 1992

UNCED National Reports

Arab Republic of Egypt, Cairo, EG
Sep 1991, ca. 130 p.: statistical tables, En

Among Egypt's greatest assets are its extraordinary cultural and archaeological treasures — Pharaonic, Christian, and Islamic — but these, like the rest of Egypt's environment, are threatened by rapid population growth, pollution, and resource exploitation. According to this report, the Arab Republic of Egypt faces a variety of environmental problems, the most serious of which are: loss of agricultural land to urban encroachment; industrial pollution affecting residential areas, drainage networks, and some sections of the River Nile; a large volume of untreated sewage; and overuse of agrochemicals, causing pollution of rural areas. The report first describes Egypt's resources, including water, agricultural land, fish and livestock, industry, mineral wealth, oil, energy resources, and tourist

sites. National efforts to protect this environment and ensure sustainable development are discussed with respect to environmental institutions (governmental and nongovernmental), policies, legislation, programs and projects, and international cooperation. Perhaps Egypt's greatest need is technological assistance from the developed countries to help meet the challenges of developing such an arid and yet populous country. The report includes demographic, economic, and agricultural indicators, and information on natural reserves, environmental organizations, legislation, and conferences.

Available from:
UNDP Resident Representative
P.O. Box 982
Postal Code no. 11511
Cairo
Egypt
Phone: (20 2) 768487
Fax: (20 2) 779145

Equatorial Guinea

Conservación de los ecosistemas forestales de Guinea Ecuatorial

(Conservation of forest ecosystems of Equatorial Guinea)

Conservation of Forest Ecosystem Studies — IUCN

Fa, John E.
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1991, xi, 221 p.: charts, maps, statistical tables, Es

For its size, Equatorial Guinea displays remarkable geographic and ecological diversity. It is located in a region in which many animal species, especially birds and mammals, took refuge during the Pleistocene era; in fact, many plant and animal species remain undocumented. Of the nation's three distinct regions — the islands of Bioco and Pagalu, and a continental zone, Mbini — the Mbini region is the most important in terms of natural and biological resources. In particular, it contains significant forest resources, the exportation of which provides over 50% of the national income.

This report assesses the condition of Equatorial Guinea's dense humid forests in terms of exploitation, conservation, ecology, and laws and legislation. It also offers a list of sites considered the most important for conservation and recommends a series of actions to guarantee their protection. Key findings include the following. (1) Primary forest coverage fell from 50% to 28% between 1959 and 1985, and secondary coverage from 10% to 8%; the coastal regions of Mbini are the most severely deforested, while the country's inaccessible interior regions remain mostly undisturbed. Agriculture, especially itinerant agriculture, is the second leading cause of deforestation behind timber harvesting. (2) Hunting remains a major source of food for much of the population; trapping of exotic animals for export is widespread and virtually unregulated. (3) The nation's legal regime is inadequate. The report urges the development of the legal and institutional means to enforce rational management of forest resources, protection of biodiversity, and management of agricultural activity. Contains annexes, including lists of documented plant and animal species, and a 13-page bibliography.

Available from:
IUCN — The World Conservation Unit
Publications Department

Ethiopia

Ethiopia: national conservation strategy — phase I report

National Conservation Strategies — IUCN and others

Wood, Adrian; Stahl, Michael
Peoples Democratic Republic of Ethiopia, ET
International Union for Conservation of Nature and Natural Resources, Gland, CH
Mar 1990, 163 p.: charts, statistical tables, En

While the Ethiopian authorities have shown concern over the country's natural resource problems, policy development has been constrained by food shortages and limitations on personnel and other resources. The conservation programs that have been implemented to date are minute, given the magnitude of the degradation problem. Soil loss on arable land exceeds soil formation by a factor of six, and wood is being used at twice the replacement rate. Unless major changes occur, complete deforestation will occur by 2025, and the land unable to support agriculture, because of soil erosion, will increase to some 10 million hectares by 2010. With the population expected to double in less than 25 years, these trends will intensify. This report provides a national conservation strategy for the country. Part I outlines major trends in natural resource use in Ethiopia and the key issues in sustained resource management for development. It also considers the role of a national conservation strategy within Ethiopia's institutional and policy context. Part II profiles existing institutions and initiatives in the environmental field, including Ethiopian government departments and other official institutions, international and bilateral donors, and nongovernmental organizations. Annexes describe specific proposed activities of the national conservation strategy.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-306

Biodiversity guide to Ethiopia

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 25 p.: maps, statistical tables, En

Ethiopia's population, estimated at 51.7 million and expected to grow to nearly 71 million by the year 2000, contains over 70 ethnic groups. Its flora and fauna are similarly diverse, contain a rich endemic element, and, like the human populace, are concentrated in the higher elevations. The Simen mountains and the Sanetti Plateau, for example, are considered areas of plant endemism of continental importance. It is estimated that Ethiopia contains representatives of 5,765 species of flora (between 10% and 21% endemic), 242 terrestrial mammal species (23 endemic), 847 bird species (26 endemic, the largest number in mainland Africa), and at least 6 endemic reptile and 34 endemic amphibian species.

Beginning with short sections on the population, geography, and economy of Ethiopia, this biodiversity guide then provides a complete list of endemic species, a description of endangered plants and animals, and a descriptive listing of the vegetation zones; the upland and montane forests, because of their conservation importance, are described in detail. The next section lists all protected areas — from national parks to controlled hunting areas — with detailed descriptions of the parks; also listed are other areas of special conservation value. Many wildlife reserves, sanctuaries, and even national parks are protected in designation only; only about 22,829 sq/km, or 1.9% of the country's land area, are actively managed as wildlife conservation areas. The next two sections describe the main threats to biodiversity (deforestation, soil erosion, and human encroachment into protected areas), and conservation efforts. Following this are brief references to the primary legislation and regulations governing natural resource and wildlife conservation in Ethiopia. Last is a list of recommendations encouraging reforestation, soil conservation, strengthening of the Ethiopian Wildlife Conservation Organization, gazettement of all protected areas, re-establishment of the integrity of all protected areas, and conservation of genetic variety.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-202

Ethiopia: national report on environment and development — a report prepared for the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 1992

UNCED National Reports

Government of Ethiopia, Addis Ababa, ET
Jan 1992, 116 p.: maps, statistical tables, En

Ethiopia has the second largest human population and the largest livestock population in sub-Saharan Africa. Rapid population growth is placing extreme pressures on the environment, and if present methods of resource exploitation persist, the country may not be able to maintain the population at even its current level of poverty. Ethiopia's forest cover has been reduced to about 3% of the original size, and deforestation, combined with overgrazing and reduction of the fallow period, has led to a very high soil erosion rate. This report identifies development trends in Ethiopia since 1972 and assesses the country's natural resource base. Major development and environmental issues in Ethiopia are identified as the following: war and its aftermath, drought, poverty and food insecurity, underdevelopment of infrastructure and agriculture, soil erosion and land degradation, deforestation and overgrazing, population growth, and debt burden and trade imbalance. The report also discusses global environmental issues and examines current Ethiopian environmental institutions and policies, as well as the country's strategies for the 1990's and beyond. A final section summarizes Ethiopia's expectations for the U.N. Conference on Environment and Development. Includes 4-page bibliography.

Available from:
UNDP Resident Representative
P.O. Box 5580
Addis Ababa
Ethiopia
Phone: (251 1) 511 025
Fax: (251 1) 514 599
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-239

Master land use plan — Ethiopia: main report

Other Environmental Studies

Henricksen, B.L.; Adjei-Twum, D.C.; et al.
Ethiopia. Ministry of Agriculture
U.N. Development Programme, Geneva, CH
The Food and Agriculture Organization of the United Nations, Rome, IT
1988, ix, 107 p.: charts, statistical tables, En

Agriculture is the mainstay of the Ethiopian economy, accounting for approximately half of the GDP, 85% of employment, and the major share of exports. However, recent economic indicators show a declining trend, with the 1984/85 drought having had a strong negative influence. This report assesses the major constraints on and potentials of Ethiopia's agricultural resources, with a view to identifying appropriate policies and interventions to stimulate food production during the next 25 years. The report begins with a summary of the country's economy, population, food demand, physical resources, and land use and production systems. A computer modeling approach is then used to test the capacity of various agricultural interventions to support the population's food needs. Specifically, the report evaluates the potential benefits of fertilizers versus rotations, improved technologies, herbicides, intercropping, relay cropping, undersowing, minimum tillage, and alley cropping. The suitability of various crops is also discussed. The report concludes that Ethiopia's food demand will outstrip production by the year 2010 at current levels of production and consumption, even if all potentially arable land is cultivated. The major recommendation therefore is the immediate reallocation of resources towards achieving increased agricultural output, decreased population growth, and increased nutrition and welfare levels. Included in

the report are brief descriptions of Ethiopia's soil types, land cover and vegetation resources, national parks and wildlife, and degradation of soil and vegetation resources. Includes references.

Available from:
The Food and Agriculture Organization of the United Nations
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-120

Gabon

Conservation des écosystèmes forestiers du Gabon

(Conservation of forest ecosystems of Gabon)

Conservation of Forest Ecosystem Studies — IUCN

Wilks, Chris
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1990, xiii, 215 p.: maps, statistical tables, Fr

Gabon, 85% of which is forests, has an extraordinary diversity of endemic species and is an important sanctuary for elephants, gorillas, and chimpanzees. This document discusses Gabon's forest resources, biological diversity, the place of forestry in the national economy, and legislative and institutional factors relating to forest conservation and utilization. The report notes that laws protecting endangered species in Gabon and regulating nature reserves and hunting are generally adequate, but legislation concerning forest exploitation is incomplete. Key needs are to ensure a period of renewal after the felling of trees and to set minimum sizes for felling with respect to each species. Recommendations are also presented in the areas of: reforestation, silvicultural methods, hunting, banning the ivory trade, legislation, and education. Special attention is the need to inventory Gabon's forests, especially in the coastal areas, where exploitation has been the worst. The report also describes Gabon's six protected environmental sites (constituting about 7% of the nation's lands) with respect to climate, geographic situation, nearby populations, points of interest, vegetation, and legal status. Similar information is given for another 15 sites of exceptional biological interest which are recommended for protection (which would bring the total of protected lands up to 16%). Includes bibliographies.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-113

Republic of Gabon national report on the environment: International Conference on the Environment (Brazil — 1992)

UNCED National Reports

Government of Gabon
May 1991, 41 p., En

Gabon has an extremely rich natural environment, with a high percentage of endemic species and vast tracts of forest practically unaffected by human activity. Dense tropical rain forest covers 85% of the land; 35% of these forests have never been exploited. This report presents general background data on Gabon, describes the country's ecological heritage, and examines the relationship between economic development and the environment. Final sections outline Gabon's policy for environmental management and identify needs and prospects for sustainable development. The report states that human activity in Gabon presents a threat to the natural environment, even though population density is low and agricultural activities are only moderate. Three aspects of human activity are a cause of concern: (1) pollution from the urban sector, (2) increasing and poorly distributed forest exploitation which imperils the forest's regeneration, and (3) illegal poaching stimulated by demand from urban dwellers. As a result of the latter, some of Gabon's animal species, particularly in areas accessible from the towns, are likely to become extinct. According to the report, the Gabonese government wishes to preserve its environment, but various trends conflict with this desire: (1) national

development policy sanctions considerable exploitation of natural resources without any real management plan; (2) priority is given to solving urban problems, leading to ever greater population concentration in the cities; and (3) it is commonly believed that the environment is inexhaustible.

Available from:
UNDP Resident Representative
Boîte Postale 2183
Libreville
Gabon
Phone: (241) 772986
Fax: (241) 743499

The Gambia

The Gambia natural resource management action program

Tropical Forest & Biological Diversity Assessments — USAID

Karch, G. Edward; Arnould, Eric; Seubert, Chris
Energy/Development International
Development Alternatives, Inc.
U.S. Agency for International Development.
Bureau for Africa
10 Apr 1989, ix, 45 p. + 10 annexes, En

Unlike a number of states in the Sahel, The Gambia adopted laws in the 1970's and 1980's which dealt specifically with sustainable resource use. This USAID action program is designed to support existing Gambian natural resource programs; it recommends short, medium, and long-term strategies for balanced protection, restoration, and enhanced use of soil, water vegetation, and genetic resources. The program is comprised of four local resource management strategies: (1) mixed farming, using the North Bank Division as an example; (2) forage management, using McCarthy Island Division; (3) biodiversity protection, using Kiang West District; and (4) natural forest management, using areas in the North and South Banks. The strategies, which are aimed at farmer groups, support technologies which have the capacity to improve yields of food, forage, wood, and other products, and to protect endangered habitats and species under Sahelian conditions. Each strategy includes supporting components, such as policy reform, extension, training, and technical assistance. In addition to providing detailed descriptions of the strategies, this report discusses The Gambia's natural resource plan, in particular, the Indicative Programme for Desertification Control. Spreadsheet models are included among the annexes.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PD-ABB-694

National report: United Nations Conference on Environment and Development, Brazil, 1992 — The Gambia

UNCED National Reports

The Gambia, Banjul, GM
[1991], 71 p., En

In The Gambia, low public awareness of environmental hazards, especially with regard to agrochemicals, is closely connected to the country's high illiteracy rate. This report traces The Gambia's development trends and analyzes environmental issues in relation to natural resources, crop production, integrated pest management, health, and pollution. Major environmental problems are identified as the following. Environmental health standards are low, with limited access to safe water and high morbidity and mortality rates, especially among rural children. Movement of livestock into and out of villages results in the spread of diseases such as Rift Valley fever and lumpy skin disease. Land degradation has resulted from extensive bush clearing and overgrazing of pasture lands, poor cultivation practices, and uncontrolled use of agrochemicals. The Gambia is one of the seven countries in Africa with significant deforestation rates. Rapid population growth is exerting pressure on housing, which exacerbates the problems of overcrowding and poor housing construction in the urban, peri-urban, and rural areas. Reduction in rainfall has led to reduced river flow, which in turn causes salt water intrusion into the estuary and shallow aquifers, vegetation stress, and reduction of wetlands. Poor waste management has resulted in surface water pollution, exposure to flies and

rodents, human and animal scavenging, and air pollution. The report includes a discussion of the role of international and bilateral agencies in addressing environmental issues in The Gambia.

Available from:
UNDP Resident Representative
P.O. Box 553
Banjul
The Gambia
Phone: (220) 28722
Fax: (220) 28921

National natural resource policy: Republic of The Gambia, West Africa — final policy document

Environmental Policy and Management Studies

The Gambia. Ministry of Agriculture and Natural Resources
The Gambia. Ministry of Water Resources
U.S. Agency for International Development. Bureau for Africa. The Gambia
Feb 1990, ix, 29 p. + 6 appendices, En

In The Gambia, drought combined with rapid population growth has placed tremendous demands on natural systems, and even though The Gambia has enacted many laws to achieve natural resource sustainability, the environment continues to deteriorate. Many policies, projects, and programs are not implemented and sustained because of: insufficient funding and staff; unfocused priorities, leading to watered-down efforts; and non-existent local institutional incentives and local involvement. This paper proposes a natural resource policy which aims to bridge the gulf between legislative intent, policy formulation, and adopted plans on the one hand, and program implementation at the local level on the other. The paper begins with a description of The Gambia's natural resource setting, covering the River Gambia, rainfall and temperature, employment, population, land use, and the land tenure system Major environmental problems are then discussed, including desertification, deforestation, soil degradation, surface and ground water quality and quantity, loss of biological diversity, and low agricultural productivity. The report then assesses The Gambia's natural resource laws, policies, plans, and institutions. Final sections summarize natural resource policy goals and priorities and outline the local implementation strategy and interventions.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABL-056

Ghana

Environmental synopsis of Ghana

Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

Stone, Paula; Dalal-Clayton, Barry; et al.
British Overseas Development Administration, UK
International Institute for Environment and Development, London, UK
Apr 1992, 28 p.: maps, statistical tables, En

In Ghana, there is a notable lack of scientific information on many aspects of the environment and a disturbingly low level of public awareness of environmental problems. This report presents information on environmental institutions and legislation; inventories Ghana's natural resource base —ecological regions, water, forests, arable land, livestock, fisheries, protected areas and wildlife, and nonrenewable resources. It also discusses industrial and demographic factors affecting the environment, and analyzes pollution and degradation processes.

Key environmental issues include the following. (1) Ghana's population doubled between 1960 and 1987, and the current growth rate is 2.8%. This is particularly problematic in urban areas, where mountains of household and other refuse, as well as choked street drains, are a common sight. A recent survey in a suburb of Sekondi-Takorado found that 3,250 people occupied 190 houses and shared 16 public toilets. (2) Deforestation has wiped out over 70% of the original closed forest, the main causes being the increasing demand for agricultural land, cutting for fuelwood, logging, and bush fires. Both sheet and gully erosion are particularly evident in the savanna areas, where the

erosion hazard is highest. (3) The mining industry has contributed to water and air pollution and soil and land degradation. Liquid wastes discharged into water courses from Ghanaian mines contain levels of arsenic and cyanide which are significantly higher than those recommended by the World Health Organization. Poorly controlled mining, especially surface mining, has left behind areas of barren eroded wasteland. Includes 3-page bibliography.

Available from:
International Institute for Environment and Development
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-182

Ghana: environmental action plan

National Environmental Action Plans — World Bank and others

Ghana. Environmental Protection Council, Accra, GH
[1989], [4 v.], En

In Ghana, resource exploitation to support rapid industrialization has given rise to a host of problems, including deforestation, desertification, and soil degradation. Many problems directly associated with industrialization, such as air and water pollution, have also surfaced. This environmental action plan for Ghana aims to promote more rational resource exploitation. The action plan, which is intended to be implemented over a 10-year period, from 1991 – 2000, is presented in four volumes. Volume I identifies critical environmental issues and outlines the action plan's recommendations. The plan includes adoption of a proposed national environmental policy, action to address legal and institutional issues, actions in the areas of natural resource management and in managing the "built" environment, and comprehensive programs in environmental education and environmental monitoring. A proposed implementation strategy is presented as well. Volume II contains draft legislation related to the following: restructuring of the Environmental Protection Council; environmental impact assessments; revising the forestry policy, conservation legislation, and the Factory, Shops, and Offices Act; the legal framework for coastal zone management; pesticide control; and the establishment of a Water Resource Commission. Volume III details the proposed investment program for environmental activities, while Volume IV contains reports of various working groups and other background material.

Available from:
World Bank
Publications Department

Ghana: conservation of biological diversity [and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Feb 1988, 17 p. + 2 annexes, En

Ghana's forest zone covers 34% of the country and contains 2,100 plant species and many rare animals, including the forest elephant, the bongo, and the giant forest hog. This report assesses the status of Ghana's forests as well as the country's capacity to protect these valuable resources. According to the report, more than 90% of Ghana's high forests have been logged since the late 1940's. Of the remaining forests, only about 1% lies within protected areas (i.e., national parks, wildlife sanctuaries, and game production reserves). Furthermore, even within these reserves, fauna and flora are only partially protected from hunting and logging — two activities vital to contemporary Ghanaian society. Hunting of bushmeat (mainly primates and duikers) provides a major source of protein for rural communities, while the timber industry contributes key export earnings and accounts for 7% of the GDP. Additional threats to biodiversity are posed by: (1) fuelwood collection (demand doubled between 1962 and 1975), (2) industrial and nonindustrial plantations covering about 75,000 ha, (3) collection of secondary forest products (e.g., oil palm, cola nuts, bamboo, gums, resins, and latexes), and (4) shifting cultivation. The report calls for expansion of Ghana's protected areas system and improved management of the country's forestry institutions.

Available from:
World Conservation Monitoring Cent.

United Nations Conference on Environment and Development (UNCED): environment and development in Ghana — Ghana national report

UNCED National Reports

Republic of Ghana, Accra, GH
Nov 1991, xx, 70 p.: maps, statistical tables, En

Ghana's economic recovery since 1983 has been accompanied by environmental degradation and the over-exploitation of natural resources. Depletion of forest resources through logging, bush fires, fuelwood extraction, charcoal production, and unsustainable agricultural practices has induced land degradation, desertification, and loss of biological diversity. The total estimated annual cost of environmental degradation due to agriculture and forestry was $121.9 million in 1988. Although the environmental cost of the country's manufacturing industry has not been quantified, this sector is a major source of pollution. This report contains a brief description of Ghana's socioeconomic trends; a discussion of the nation's resource endowments, resource usage, and the impacts thereof; the Government's strategy to address environment-development issues (initiatives under way as well as gaps in effort), and expected regional and international arrangements and agreements that would emerge from the 1992 U.N. Conference on the Environment and Development to help the cause of environmentally safe, sound, and sustainable development. Expected outcomes relate to the Earth Charter (a body of basic principles for international relations), Agenda 21 (a listing of targets, strategies, and action programs in all countries), financial resources, technology transfer, institutions, and conventions on climate change and biodiversity and biotechnology.

Available from:
UNDP Resident Representative
P.O. Box 1423
Accra
Ghana
Phone: (233 21) 772839
Fax: (871) 150-5362
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-219

Guinea

Draft environmental profile of Guinea

Country Environmental Profiles — USAID

Varady, Robert G.
University of Arizona. College of Agriculture. Office of Arid Lands Studies. Arid Lands Information Center
U.S. Department of State. National Committee for Man and the Biosphere
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
U.S. Department of the Interior. National Park Service
Dec 1983, viii, 230 p.: chart, maps, statistical tables, En

Guinea's environmental problems are less immediate and threatening than those of its northern neighbors because of its benign climate and generous natural resources. However, environmental management has become an increasingly vital issue in light of the country's rapid population growth. This report profiles Guinea's geography and climate; population; land use practices; environmental policy; geology; soils; mineral, water, and energy resources; vegetation; and wildlife resources, their exploitation, and conservation measures. According to the report, Guinea's capacity for effective environmental management is severely constrained by an information gap resulting from a 20-year isolationist period. Beginning at independence in 1958, the nation withdrew not only from global politics and foreign markets, but also from regional development associations,

scientific forums, and international educational exchanges. The effect of this lapse is seen in the nation's high incidence of environmentally related diseases, which are either a direct consequence of the climate (e.g., dehydration and respiratory diseases), disease vectors (e.g., trypanosomiasis, malaria, and schistosomiasis), or spread by stagnant waters (e.g., intestinal ailments, venereal diseases). The second most important environmental problem is identified as adverse land use practices, such as mining, indiscriminate tree felling, shifting cultivation, and overgrazing.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAS-102

Guinea: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1988, 13 p., En

Though less biologically diverse than other West African countries, Guinea does support several endemic species. Yet of the 99 identified, 37 are considered to be threatened. This report profiles Guinea's forest ecosystems and highlights the major environmental threats. Fire and cultivation have destroyed much of the country's original woodland vegetation, leaving remaining patches of rain forest interspersed with secondary grassland and cultivated land. The forests contain valuable commercial timbers, but due to limited mechanization, exploitation of these areas is still on a small scale. Future development of the forestry sector should, therefore, be able to incorporate the needs of both resource exploitation and conservation.

Protection and rational management of natural resources is now considered a cornerstone of development policy within the country, and is the responsibility of the newly created Ministry of Natural Resources. Sound government planning is hindered by a lack of detailed vegetation maps and inventory of forests at a national level. Guinea has three protected areas, two of which are Biosphere Reserves (Mount Nimba and Massif du Ziama). While part of Mount Nimba is designated as a World Heritage site, other portions are affected by iron-ore mining and a proposed railway system. All three reserves suffer from a lack of management and resources. Priorities for conservation are to improve the management of the three reserves; expand the protected area system; and strengthen wildlife conservation. The report recommends that a national forest resource inventory be conducted, followed by the implementation of a national forest plan. Included are lists of Guinea's forest resources and threatened species, along with a 5-page annex detailing the protected areas.

Available from:
World Conservation Monitoring Centre

Politique forestière et plan d'action

(Forestry policies and action plan)

Tropical Forestry Action Programme — FAO and others

Republic of Guinea, Conakry, GN
1988, 88 p. + attachment: statistical tables, Fr

A plan to resolve Guinea's deforestation problems and accompanying watershed degradation and loss of soil fertility is urgently needed, especially as the national Office of Forestry Administration currently lacks the capacity to protect Guinea's forest resources. This forestry action plan is comprised of four parts: (1) an introduction, which reflects on the necessity of adopting a national forest policy, stressing the importance of the forestry sector in achieving national development goals; (2) a description of the objectives and major principles of a successful and sustainable tropical forestry policy; (3) a section outlining a tropical forestry strategy for Guinea for the next 25 years; and (4) a more concrete plan of specific environmental actions and projects over the six-year period 1988 – 93. Among the essential actions to be undertaken during this latter period are to reorganize the Office of Forestry Administration, train forestry personnel, and develop improved techniques for assessing the status of the forestry sector.

Available from:
TFAP Coordinating Unit
Forestry Department
The Food and Agriculture Organization of the United Nations

Guinea-Bissau

Plan national de lutte contee la dégradation du milieu naturel: (programmes indicatifs d'action) — rapport provisoire

(National plan for the control of the degradation of the environment: (action plan) — preliminary report)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Guinea-Bissau. Ministry of Rural Development, Bissau, GW
Oct 1988, ii, 49 p. + 2 annexes: maps, statistical tables, Fr

Although desertification in Guinea-Bissau has not yet reached the level of other countries in the Sahel, the Government of Guinea-Bissau has nevertheless taken steps to implement a program to control the degradation of its natural resource base. This document is a provisional report of that program. The first section provides a sketch of each of the four agricultural — and, also, legislative — zones, presenting information on their meteorology and agricultural activity (e.g., animal husbandry, use of forest resources). The second major section summarizes factors contributing to the degradation of Guinea-Bissau's natural resource base (e.g., slash and burn agriculture, hunting, the uneven distribution of lumber production, and demographic pressures) before discussing the general plan of the national program — its principles, strategies, options, and indicators of success. On a more program-specific level, the section outlines plans for land improvement, development of forest resources, control of grassfires, and food security and research activities. Annexes include trip reports for agricultural Zones I and II and the regions of Biombo and L'Oio, a bibliography, and charts on population and animal densities and general agricultural information.

Available from:
Comite Permanent Inter-Etats de Lutte Contre la Secheresse dans le Sahel

Guia da biodiversidade de Guine Bissau

(Biodiversity guide to Guinea-Bissau)

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 15 p.: maps, Pt

Despite its small size, Guinea-Bissau has an impressive store of natural resources, most of which are under intense and increasing pressure due to mismanagement and/or overuse. This report presents an overview of the country's natural resources, describes the main threats they face, and lists recommendations. Individual sections cover geography, climate, demography, and economics; flora and fauna; vegetation zones; forestry; protected lands and other important environmental sites; and conservation programs and legislation. The report identifies the main threats to Guinea-Bissau's biodiversity as: destruction of estuary ecosystems due to dam building; reduction in vegetative cover due to excessive agricultural activities; and erosion and declining soil fertility. Recommendations include, inter alia, increased preservation of estuaries and coastal regions; improved soil management; and establishment of additional national parks and wildlife reserves. Includes bibliography.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-203

Kenya

Country strategy for strengthening environmental considerations in Danish development assistance to Kenya

Environmental Profiles — Denmark (DANIDA)

Denmark. Ministry of Foreign Affairs. Department of International Development Cooperation, Copenhagen, DK
1989, 116 p., En

Political developments in Kenya in the last 80 years have been largely influenced by issues relating to land and the environment. As a result, the country has seen a rapid growth in environmental awareness which is reflected in both government and local initiatives. This report examines the integration of environmental issues into Kenya's strategy for sustainable development. Major goals of the strategy include: (1) the reduction of poverty, which contributes to overexploitation of natural resources and constrains long-term investment in conservation; (2) achievement of food security, which is currently hindered by land degradation; (3) maintenance of biological diversity; (4) securement of water and energy resources; (5) development of environmentally sound industrial production; and (6) improvement of housing, health, and sanitary conditions for the growing urban population. The report then assesses Kenya's capacity to integrate environmental issues into development projects, strengthen environmental and resource management agencies, enact and enforce environmental laws, mobilize science and technology, and carry out effective environmental planning. The final section of the report outlines operational guidelines for DANIDA's involvement in Kenyan environmental activities.

Available from:
DANIDA Information Office

Summary report: natural resources management and development assistance in Kenya

Tropical Forest & Biological Diversity Assessments — USAID

Dewees, Peter; Njoka, Theuri; et al.
Louis Berger International, Inc.
U.S. Agency for International Development. Bureau for Africa. Kenya
U.S. Agency for International Development. Bureau for Africa. Office of Regional Affairs
21 Sep 1988, 103 p., En

The conflict between natural resources management and economic development is the most fundamental environmental issue in Kenya. This report focuses on four areas in which this conflict is most evident: tropical forests, agriculture, wildlife reserves, and wetlands and other aquatic ecosystems. The extent of each sector is described, as well as the causes and impact of environmental degradation. Efforts to conserve and manage natural resources are discussed within the framework of relevant institutions, policies, and legislation. Special attention is given to the programs of nongovernmental organizations, which have been among the more effective institutions working on environmental problems. The tone of the report is pessimistic. Kenya's forests are disappearing at an alarming rate; soil erosion and watershed degradation pose serious threats to food security and sustained agricultural development; the wildlife population is being decimated by poaching and loss of habitat; wetlands are being drained and cultivated; and coastal ecosystems are similarly threatened. At the same time, A.I.D.'s involvement in environmental issues is marginal, and decreasing. Recently, funds were cut for activities to develop arid and semi-arid lands and renewable resources leaving only two environmental activities: a remote sensing project and funding for environmentally oriented NGO's. The report concludes with tables presenting 48 opportunities for expanding USAID/Kenya's involvement in natural resources management. Annexes list threatened animals and trees in Kenya.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-050

Kenya: conservation of biological diversity [and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Sep 1988, [17] p.: maps, En

Kenya is a land of great natural diversity, including forests, woodlands, swamps, and grasslands of many different varieties and more than 7,800 plant and animal species. This report profiles Kenya's varied ecosystems and highlights the threat to flora and fauna posed by human encroachment. Kenya's many forest areas include: (1) Afromontane; (2) Guinea-Congolean; (3) Zanzibar-Inhambane Mosaic; and (4) riverine forests scattered along the major waterways. These forests, covering no more than 2% of Kenya's land area, are under threat from agricultural expansion and timber exploitation. Many of the 171 endangered endemic plant and animal species live in forest areas being rapidly depleted by human activity. A high rate of population growth (4%) and a large rural population are two major factors responsible for this pressure. Other forces diminishing natural areas include hunting and dam building. The management of protected areas such as national parks, national reserves, game sanctuaries, marine parks, and forest reserves has been handicapped by a lack of trained personnel, scientific information, and financial support. A survey of current conservation efforts and a list of recommended actions end the document.

Available from:
World Conservation Monitoring Centre

Kenya — forestry subsector review: main report, volume I

Tropical Forestry Action Programme — FAO and others

World Bank, Washington, DC, US
18 Mar 1987, 40 p. + attachments: maps, En

This report calls for major redirection in Kenya's forestry sector to combat problems threatening the country's agriculture, water and energy supplies, biodiversity, and tourist industry. The report describes the current forestry status and key issues in five critical areas: natural forests preservation, farm forestry, demand for woodfuels, industrial plantations, and institutional development. Specific recommendations are to: (1) develop a nationwide forest land use management plan and extend protection to at least 500,000 additional ha; (2) expand and improve Kenya's already high level of agroforestry through research, extension, and policy incentives; (3) establish woodlots in forest reserves and on farms near urban areas to offset the impending woodfuel crisis, which threatens to extend woodclearing to ecologically fragile savannah forests and woodlands; (4) improve plantation management through increased royalties and labor productivity; and (5) revise the national forest policy, supporting legislation, and the university forestry curriculum to reflect current priorities. The report outlines a five-year development program incorporating these proposals, which would cost an estimated KSh 742 million (US $46 million). If these measures are not carried out, yearly costs to Kenya's economy could total more than the entire recommended five-year program, according to the report.

Available from:
World Bank
Publications Department

Kenya national report: United Nations Conference on Environment and Development, 1992

UNCED National Reports

Kenya. Ministry of Environment and Natural Resources. National Preparatory Committee for the United Nations Conference on Environment and Development (UNCED), [Nairobi,] Kenya
1 Dec 1991, iii, [134] p. 3 + annexes: statistical tables, En

Only through sustained economic growth will developing countries such as Kenya be able to break the cycle of poverty and environmental degradation in which they are trapped. This report addresses issues of development and the environment in Kenya. Chapter 1 describes Kenya's natural resource base and developmental trends; desertification, particularly of arable land, is a major concern. Chapter 2 focuses on the condition of the urban and rural poor, detailing settlement patterns, resource use, socioeconomic circumstances, environmental impacts, etc. Chapter 3 deals with environmental protection and resource management, and includes sections on wastes and toxic chemicals, freshwater resources, fisheries, and coastal and marine resources. Chapter 4 covers policy, institutional, legal, and legislative issues relating to the following topics: resource utilization; pollution; conservation; environmental education; research; and international cooperation. Chapter 5 presents 60 specific recommendations for ameliorating Kenya's environmental problems.

Available from:
UNDP Resident Representative
P.O. Box 30218
Nairobi
Kenya
Phone: (254 2) 218 617
Fax: (254 2) 214 093
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-272

Kenya: national state of the environment report [no. 2]

State-of-the-Environment Reports

El-Hinnawi, Essam, ed.
U.N. Environment Programme, Nairobi, KE
1987, 81 p. + attachment: maps, statistical tables, En

Kenya is a land of considerable environmental diversity. Its varied topography and climate are home to 19 distinct biotic communities. This report — the first of its kind by UNEP — provides a basic assessment of the environmental situation in Kenya and the natural and man-made problems facing it. Chapters collate available empirical data to give overviews of: (1) water resources; (2) land use and agriculture; (3) forestry; (4) wildlife; (5) human settlements; (6) energy; (7) industry; and (8) environmental institutions and legislation. Topics discussed include, inter alia: municipal water pollution control; the cultivation and degradation of marginal lands; commonly used pesticides; range management; fish catch; deforestation; threatened wildlife; urban air quality; the structure of energy demand; and industrial effluent discharge. An introductory section provides a brief geographic, climatic, and socioeconomic description of Kenya.

Available from:
State of Environment Unit, U.N. Environment Programme
P.O. Box 30552
Nairobi
Kenya

Environmental study of Turkana District: volume two

Other Environmental Studies

Norconsult, Nairobi, KE
Kenya. District Administration of Turkana, Lodwar, KE
Kenya. Ministry of Reclamation and Development of Arid, Semi-Arid and Waste Lands, Nairobi, KE
Apr 1990, viii, 149 p.: statistical tables, En

This study, the second volume of an environmental study of Turkana District in Kenya, elaborates on the topics addressed in abbreviated form in volume one. It does not claim to be a comprehensive source, but rather a guide to further research in the area. An introduction overviews life in Turkana District, which revolves mainly around agro-pastoralism; the environmental relationships existing there; and the positive and negative ramifications of development — which would in many cases mean abandoning the human-environmental relationships which have sustained life there for millennia. Subsequent chapters address environmental aspects of pastoralism, water resources and use (including fishing activity), forestry and vegetation, energy demand (mainly for fuelwood), agriculture, and settlements. The next two chapters concern national policies and interventions, donor policies, and local participation in natural resource management. The last chapters contain glances at miscellaneous topics such as mineral extraction, wildlife, tourism, business enterprises, health and social welfare, gender issues, research efforts, and the availability and dissemination of information. Appendices provide references and additional information on forest and land use legislation, animal diseases, forest growth and energy use, and institutions.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-162

Lesotho

Kingdom of Lesotho: national environmental action plan

National Environmental Action Plans — World Bank and others

World Bank, Washington, DC, US
Jun 1989, 57 p., En

In Lesotho, natural resources besides the land, of which only 13% is arable, are few. The most widespread and evident environmental problems are directly or indirectly related to livestock mismanagement. It is estimated that Lesotho's rangelands are overstocked by as much as 150% to 300% of carrying capacity. This causes an increasing loss of vegetation cover and depletion of the more palatable species of grasses. Furthermore, access to land, ownership of livestock, and as a result, incomes, are becoming progressively more skewed. Additional environmental problems in Lesotho include soil erosion and fertility loss, hazardous agricultural chemicals, unplanned urban expansion and settlement, and pollution. This environmental action plan for Lesotho begins with background information on the country's resources, economy, agricultural sector, livestock holdings, land tenure practices, and development strategy. It then identifies main environmental problems, describes existing government policies and programs, summarizes the institutional and policy framework, and outlines specific recommended environmental actions.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-198

Kingdom of Lesotho: national paper on environment and development in Lesotho — prepared by the Government of Lesotho for the United Nations Conference on Environment and Development

UNCED National Reports

Kingdom of Lesotho, Maseru, LS
1992, viii, 53 p.: statistical tables, En

Much of Lesotho's land area is subject to severe sheet erosion, with 54% of croplands in the lowlands, 28% in the mountains, and 50 – 60% of rangelands affected. This report describes development trends in Lesotho and analyzes their impact on the environment. It then examines existing government polices and programs in the areas of agriculture, human settlements, energy, road construction, education, health, and tourism development. Key environmental and development issues are identified, followed by recommendations for sustainable development. The report highlights the following environmental problems: (1) land degradation caused by overgrazing; (2) careless road construction, which contributes to erosion and soil loss; (3) removal of trees and shrubs for use as firewood, which results in soil degradation and erosion and reduced waterholding capacity; (4) mining activities that alter ecological habitats and encourage soil erosion; (5) depletion of flora and fauna through destruction of habitat and hunting; (6) water pollution from small industries and households; (7) air pollution in urban areas from domestic coal burning and car exhaust; (8) poor management of sewage, domestic waste, and industrial effluent; (9) loss of cropland to urban sprawl; (10) increasing population pressures on limited land resources; and (11) a land tenure system which encourages unsustainable agricultural practices.

Available from:
UNDP Resident Representative
P.O. Box 301
Maseru 100
Lesotho
Phone: (266) 313944
Fax: (266) 310042
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-249

Lesotho: geology, geomorphology, soils

Other Environmental Studies

Schmitz, Gerard; Rooyani, Firouz
National University of Lesotho
Netherlands Universities Foundation for International Cooperation
U.S. Agency for International Development. Bureau for Africa. Lesotho
1987, 204 p.: ill., charts, maps, statistical tables, En

Extensive soil analysis, mapping, and classification have built a fairly comprehensive picture of Lesotho's soils, while mineral exploration and studies in neighboring countries have contributed to an understanding of the nation's geology. Relatively little, on the other hand, is known about Lesotho's geomorphology, as research has been limited. This monograph gathers together available information on these three topics — geomorphology, geology, and soils — in a format accessible to teachers, fieldworkers, students, and others interested in Lesotho's natural environment.

Section 1 outlines the area's geological evolution, describing the fundamental forces which shaped the area, such as plate tectonics, sedimentation, and volcanic activity. Section 2 catalogues Lesotho's geological resources (i.e., groundwater and minerals); Lesotho, like much of Southern Africa, underwent intrusions of kimberlite, a formation which can give rise to diamonds as well as many other minerals, during periods of extreme tectonic stress. Section 3 describes Lesotho's geomorphology, analyzing the forces which produced its distinctive rock formations, soils, and surface characteristics. As agriculture is a major economic activity in Lesotho, and as soils are

being drastically eroded, a chapter on recent processes and forms of accelerated erosion and deposition is included. Finally, Section 4 focuses on Lesotho's soils, describing their chemical composition, how they were formed, and giving considerable attention to the distribution of soil groups (mollisols, alfisols, entisols, inceptisols, and vertisols). Includes a glossary and a 10-page list of references.

Available from:
National University of Lesotho
P.O. Roma 180, Maseru
Lesotho
Phone: (266) 34 06 01
Fax: (266) 34 00 00
Telex: 4303 LO
also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABK-981

Liberia

Conservation and management of tropical forests and biological diversity in Liberia

Tropical Forest & Biological Diversity Assessments — USAID

Goodson, Jeffrey W.
U.S. Agency for International Development. Bureau for Africa. Regional Economic Development Services Office. West and Central Africa
Nov 1987, 35 p. + appendix: statistical tables, En

Virtually all significant national forest land in Liberia is under concessional arrangement with commercial logging interests, and on-site management responsibility falls to these concessionaires. Thus, the capacity of the Government of Liberia to manage and conserve its forest resources is very limited, and as of 1982 half of the country's forests had been denuded. As a result, 26 species found in Liberia are threatened or endangered and some lesser known plant and invertebrate species have probably become extinct. Biodiversity is further threatened because deforestation has effectively separated the western and eastern portions of West Africa's Guinean lowland rain forest. However, several factors indicate that the problem of deforestation in Liberia may be mitigated. First, the impact of smallholder agriculture, which historically has accounted for over 95% of all deforestation, may decline as the result of current trends away from agriculture and from subsistence to partial cash crop production. Second, population densities and population growth rates are very low in the areas around the largest remaining blocks of intact forest. Recommendations for improved tropical forest management and conservation of biodiversity in Liberia are presented in this report.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABB-940

Madagascar

Madagascar environmental action plan: volume 1 — general synthesis and proposed actions

National Environmental Action Plans — World Bank and others

U.S. Agency for International Development
World Bank
Cooperation Suisse
U.N. Educational, Scientific and Cultural Organization
U.N. Development Programme
Oman. Directorate General of Fisheries
Jul 1988, 80 p., En

The environmental action plan for Madagascar outlined in this report emphasizes the economic importance of natural resources. Currently, environmental degradation drains the country's GDP by as much as 15% or $290 million. Deforestation is the most costly problem, with 80% of the forest lands already destroyed and total denudation expected in coming decades. Madagascar's world-record erosion rate also strains the economy by reducing agricultural productivity, raising infrastructure maintenance and investment costs, and damaging coastal ecosystems. Since adoption of a national conservation strategy in 1984, environmental awareness has increased and several productive

conservation schemes have been launched. However, these projects have not met expectations and are too limited to control current rates of degradation. The proposed action plan would expand these efforts with programs focusing on the following: (1) biodiversity protection and management, combined with "adventure" tourism; (2) creation of a national environmental fund for both rural and urban improvement projects; (3) land mapping and management; (4) environmental education, training, and sensitization; and (5) institutional support. Program funding requirements are provided.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-934

Guide de la diversité biologique de Madagascar

(Biodiversity guide to Madagascar)

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 26 p.: maps, Fr

Madagascar has a rich store of biological resources, almost all of which are threatened by development and/or overuse. This report provides an overview of the country's natural resources, the current and potential threats they face, and mechanisms for their protection. Individual sections cover geographic and demographic features; flora and fauna; vegetation zones; protected areas; and environmental legislation and organizations. Special attention is given to what the report describes as the six main threats to the country's biodiversity: habitat loss and land degradation caused by nomadic agriculture; rampant forest fires; excessive hunting of lemurs, pygmy hippopotami, and other endangered species; overgrazing; illegal trading of rare species; and the wholesale destruction of forests. Recommendations include strengthening legislation to better protect endangered species, conducting botanic inventories and other related activities, and increasing the number of captive breeding programs. Includes bibliography and a list of endangered species.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-204

Madagascar: an environmental profile

State-of-the-Environment Reports

Jenkins, M.D., ed.
International Union for Conservation of Nature and Natural Resources, Cambridge, UK
U.N. Environment Programme, Nairobi, KE
1987, xii, 374 p., En

Madagascar is universally recognized as a high priority country for conservation efforts because of its wide range of natural ecosystems, unique and varied fauna and flora, largely rural human population, and severe environmental problems. Principal subject areas covered in this environmental profile are physical and human geography, vegetation, forest cover and loss, ethnobotany, marine and coastal ecosystems (especially coral reefs), fauna, protected areas, and sites of biological importance. With respect to fauna, emphasis is on endemic and threatened taxa. All native vertebrate groups are discussed, but due to their number and variety, discussion of invertebrates is confined to those of special interest, notably crustaceans, molluscs, and butterflies. The profile suggests that Madagascar's environment is seriously threatened by deforestation resulting from commercial exploitation, collection of wood for conversion to charcoal, slash and burn agriculture, and brushfires (a third of the island's land area is set afire each year to encourage new grass growth for grazing). This destruction has a severe effect on native wildlife, the great majority of which are dependent on forest habitats. Appendices cover environmental legislation, plant and animal species lists, and extensive accounts of the distribution,

population, and ecology of and threats to selected animal species, most of which are endangered. Bibliographies and reference lists are provided throughout the report as well.

Available from:
IUCN — The World Conservation Union
Publications Department

Malawi

Malawi's national report: United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 1 to 12 June 1992

UNCED National Reports

Government of Malawi. Department of Research and Environmental Affairs, [Lilongwe], MW [1991], 85 p.: maps, statistical tables, En

Malawi's development is limited by the country's natural resource base. Nearly 30% of the land surface is steep land of over 12% slope, which is unsuitable for cultivation without conservation measures. Major mineral deposits are unknown, while the country's long dry season, locally short growing season, and high intensity rainfall cause severe soil erosion. Indigenous woodlands have a low productivity level, while natural forests are being depleted by firewood and pole extraction, as well as by uncontrolled grazing and browsing. Malawi is endowed with rare fish species which provide about 70% of the nation's animal protein, but the fish industry is threatened by several environmental problems. This report begins with a description of Malawi's natural regions and population and demographic trends. It then identifies major environmental issues relating to the following: soils, climate, forests and other biological resources, freshwater, hydrology, and fish. The environmental impacts of mining, refugees, and the application of science and technology are also assessed. The next section of the report describes Malawi's response to the need for sustainable development, covering environmental education, parks and wildlife, meteorology, science and technology, and health programs. The final section of the report presents the country's expectations for the U.N. Conference on Environment and Development. Includes references.

Available from:
UNDP Resident Representative
P.O. Box 30135
Lilongwe-3
Malawi
Phone: (265) 731 732
Fax: (265) 730734

Mali

Profil d'environnement Mali — Sud: état des ressources naturelles et potentialités de développement

(Environmental profile of South Mali: natural resources status and potential for development)

Environmental Profiles — Netherlands

Berthe, Abou Lamine; Blokland, Aad; et al.
Institut d'Économie Rurale, Bamako, ML
Institut Royal des Tropiques, Amsterdam, NL
Netherlands. Directorat Général pour la Coopération Internationale, The Hague, NL
Sep 1991, 79 p.: ill., charts, maps, statistical tables, Fr

Southern Mali has undergone profound changes during the past two decades. Since the drought of 1970, there has been an exodus of people from the arid northern areas to the south. The region now accounts for 32% of the country's total population, with a population density of 20 people per sq km. Migration to the south has had serious implications for the environment, especially since the economy of the region is still overwhelmingly dependent on agriculture. This report begins by describing southern Mali's physical setting, socioeconomic trends, nutrition and health, and institutional and legal framework. The next section assesses the region's natural resource base, covering agricultural resources, livestock, forests, fauna, fish, and water. Emphasis is put on intersectoral dependence in resource use, and on the dynamic relationship between human beings and the environment. The report then summarizes the

region's ecological status and assesses the prospects for development. Various means of measuring development are discussed. The final section discusses responses to the region's environmental problems with respect to utilization rights, community participation, environmental education, research, creation of nonagricultural employment, and institutional integration. Annexes contain the scientific names of animal species in southern Mali. Includes two-page bibliography.

Available from:
Institut d'Économie Rurale
Avenue Mohammed V, BP 258
Bamako, Mali

Mali action program

Country Environmental Profiles — USAID

Humpal, Donald; Arnould, Eric; et al.
Energy/Development International
Development Alternatives, Inc.
U.S. Agency for International Development. Bureau for Africa
15 Jan 1989, 36 p. + 11 annexes: statistical tables, En

This report presents USAID's Action Plan for helping Mali to support farmers by promoting soil and water conservation, and activities to conserve soil fertility, vegetative cover, and biological diversity in important agroecological zones. The report first discusses the Government of Mali's major natural resources policy instrument, the National Anti-Desertification Plan, which was developed with donor assistance in response to the droughts and general decline in rainfall levels which began in the Sahel in the late 1960's. The next section briefly highlights the strategic approach identified by USAID in its 1987 Sahel Sub-Regional Natural Resource Assessment (SSRA). The Action Plan itself is then presented. Based on the recommendation of the SSRA, the Plan incorporates Local Resource Management Strategies (LMS's) for four key agroecological zones: the sub-humid zone; the semi-arid zone; bottomlands; and woodlands. Each LMS represents an integrated approach, encompassing extension, research, changes in tax and tenure policies, and financial assistance for farmers.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PD-ABB-692

Mali biological diversity assessment

Tropical Forest & Biological Diversity Assessments — USAID

Warshall, Peter
University of Arizona. Office of Arid Lands Studies
Energy/Development International
Development Alternatives, Inc.
U.S. Agency for International Development. Bureau for Africa. Office of Technical Resources
Apr 1989, 95 p.: ill., maps, En

Three decades of social upheaval, exacerbated by a 16-year drought, have made it difficult to preserve Mali's extensive biological resources. This study of biological diversity, the first ever written for Mali, assesses: (1) the preservation of biological diversity in national parks and faunal reserves, including detailed information on biotic communities, protected areas, and animal and plant species; (2) the relationships between biological diversity and development and economic activities such as gathering wild plants for food and crafts, tourism, pest control for cash crops, fire management, human disease control, forestry, grazing, fishing, and mining; and (3) the social, political, and economic incentives and disincentives for maintaining biological diversity, especially at the national level (in terms of policy, environmental regulations, economics, research, education, and religion) and at the critically important local level. A final section lists 40 potential biological diversity projects and presents detailed information on 4 long-term priority projects: (1 – 3) establishment of two new national parks and (if cost-effective) the restructuring of an existing park; and (4) a project to combine economic development with biological diversity concerns in the inner Niger delta by writing land tenure and resource management agreements and investigating management practices for the Selingue Dam. Ways in which USAID/M can contribute to biological diversity are noted in conclusion. Contains numerous tables and a 7-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-246

Programme national de lutte contre la désertification et l'avancée du désert

(National program for the control of desertification and the advancement of desert)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Club du Sahel, Paris, FR
Mali. Ministry of Natural Resources and Livestock, Bamako, ML
Nov 1985, 127 p. + 3 annexes: charts, maps, statistical tables, Fr

With more than 58% of its land desert and another 30% threatened by the continued encroachment of the Sahel, Mali has suffered tremendously since the devastating drought of 1973. In response to the persistence of the drought, the degradation of the ecosystem, and the resultant economic crises, this document describes a sweeping program put into place by the Government of Mali to combat desertification. The first section reviews the current situation in Mali by: (1) analyzing the drought and its socioeconomic effects; (2) examining the causes, form, and distribution of the desertification; and (3) summarizing the general development of the fight to combat desertification in each of the major productive sectors (e.g., agriculture, animal husbandry, forests, and hydrology). Mali's National Program to fight desertification is presented in the second section, including a discussion of proposals for further activities in improving soil productivity, transforming the systems of production, training and organizing the local population and extension agents, and coordinating the overall anti-drought strategy.

Available from:
Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel

Conférence des Nations-Unies sur l'Environnement et le Développement: rapport national du Mali

(United Nations Conference on Environment and Development: national report of Mali)

UNCED National Reports

Mali. Ministry of Rural Development and Environment, Bamko, ML
Aug 1991, 228 p.: statistical tables, Fr

In Mali, persistent drought and human economic activities have combined to cause severe desertification. As a result, the country has experienced a reduction of natural resources, including forests and pastureland, soil fertility, and certain plant species. This report begins with an assessment of the country's natural resources, including soil, vegetation, pastureland, forests, water, fisheries, biological diversity, minerals, energy, livestock, and fauna. The report then discusses the role of these natural resources in the country's economic development. Major environmental problems are identified as water shortages, forest and pasture degradation, poor sanitation, and pollution from industrial effluent including solid, gaseous, and toxic wastes. The social and economic impacts of these problems are discussed. The report then describes environmental legislation, government programs, educational campaigns, and private environmental initiatives. The next section identifies constraints to and opportunities for sustainable development in Mali, while the final section outlines plans for sustainable development at the national and international level.

Available from:
UNDP Resident Representative
B.P. 120
Bamako
Mali
Phone: (223) 224380
Fax: (223) 226298

Mauritania

Plan directeur de lutte contre la désertification

(Management plan for the control of desertification)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Club du Sahel, Paris, FR
Mauritania. Ministry of Rural Development, Nouakchott, MR
Aug 1986, viii, 44 p., Fr

A combination of human and ecological factors have made the Islamic Republic of Mauritania particularly susceptible to the effects of prolonged drought, especially in the areas of food, energy, means of production, and ecology. This report on the Management Plan to combat desertification in Mauritania is divided into two major sections: an analysis of the current situation and an outline of the national strategy. Part one analyzes in turn the nature and magnitude of the drought, the evolution of national strategies to combat drought (including measures as strong as the adoption of several legal codes abolishing individual property and traditional land tenure regimes), and the various actions currently or about to be implemented in each of the affected sectors (i.e., agriculture, animal husbandry, forestry, and hydrology). The second half of the report describes the fundamental objectives of the strategy to combat drought, its major principles (e.g., finding the appropriate balance between development and conservation, encouraging local participation), target areas of activity, and general indicators of project success. Closing notes caution that the outlined strategy is not exhaustive; further projects should be conducted in animal husbandry, integrated rural development, rainfed agriculture, the upgrading of mountain basins (including water conservation programs), the development and protection of a vegetative zone around the capital, Nouakchott, and dune stabilization.

Available from:
Comite Permanent Inter-Etats de Lutte Contre la Secheresse dans le Sahel

Préparation d'une stratégie nationale de la conservation en République Islamique de Mauritanie

(Preparation of a national conservation strategy for the Islamic Republic of Mauritania)

National Conservation Strategies — IUCN and others

International Union for Conservation of Nature and Natural Resources, Gland, CH
Islamic Republic of Mauritania, Nouakchott, MR
Aug 1988, 2 v.: charts, maps, statistical tables, Fr

Natural resource degradation is generally recognized as the number one problem in Mauritania. This report assesses Mauritania's natural resources and defines the conceptual basis and the legal arrangements needed to prepare a National Conservation Strategy (NCS). The report first introduces the notion of integrating conservation into socioeconomic development and sketches the future NCS. Section two describes the environment: climate, surface and ground water, marine resources, soils, vegetation, oases, fauna, population, economy, education, and scientific research. The focus throughout this section is on the consequences of Mauritania's longstanding problems with drought and desertification. The third section outlines an approach to the development of the NCS; attention is given to personnel needs, legal aspects, fishery management, parks, and international cooperation, among other topics. In Volume II are presented four case studies in natural resource conservation: Banc d'Arguin National Park, Lake Aleg and Lake Mal, and Diawling National Park.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Resource inventory of southwestern Mauritania: geology — soils — forestry — pasture (renewable resource management)

Other Environmental Studies

Dalsted, Kevin; Andrawis, A. Samuel; et al.
South Dakota State University. Remote Sensing Institute
U.S. Agency for International Development. Bureau for Africa. Mauritania
1982, xxiv, 335 p. + attachments: ill., maps, En

Although southwestern Mauritania, like the country as a whole, has a considerable store of natural resources, it faces serious and growing environmental problems. During the past decade in particular, severe drought, sedentarization, poor agricultural and livestock practices, population pressures, and the always harsh conditions of an arid climate have led to wind and water erosion, range deterioration, and reduction of forested areas. This report, a resource survey of the region, presents an analysis of the resources and environmental problems of southwestern Mauritania. The report begins with an overview of the survey itself and describes the remote sensing and other mapping techniques used, as well as the physical characteristics of the region. Chapter II focuses on geological resources and covers the Pre-Cambrian through Quaternary periods; geological structures; and hydrogeology. Chapter III examines soils, including their chemical properties, physiography, and use patterns (concentrating on agricultural use). In Chapter IV, the region's 47 forest cover types are covered. Chapter V focuses on the 79 pasture types of the region and includes information on flora, animal stocking rates, and range management. In each chapter, detailed recommendations and conclusions are presented, as well as information on the type of survey technique employed. Includes appendices.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAR-554

Mauritius

National environmental action plan for Mauritius

National Environmental Action Plans — World Bank and others

Rathnam, M.; Barats, B.; Post, J.
Mauritius. Ministry of Housing, Lands and the Environment, MR
World Bank, Washington, DC, US
1 Mar 1990, 65 p., En

Since Mauritius gained independence in 1968, sensible policies and a well-educated and diverse populace have combined to produce solid growth, both in terms of the economy and the quality of life. Further, environmental problems have not yet reached the stage where they hamper development and seriously threaten the quality of life, as compared with other countries. However, development has reached a threshold at which its long-term sustainability will depend upon improving the management of the country's natural and cultural heritage.

This environmental action plan lays out the major issues facing the country, and then presents short- and medium-term plans of action to be pursued with the support of the donor community. Recommendations fall into three general categories: (1) policies and investments to address the grossest forms of water pollution and inappropriate land management, efforts which are likely to yield high economic benefits; (2) institutional and legislative reform to ensure effective and equitable natural resource management, efforts which can also be expected to yield high, though not easily quantifiable, economic returns; and (3) ongoing information collection and monitoring of environmental factors to provide the basis for planning and evaluating future investments. Besides standard concerns such as waste disposal, energy production, land administration, etc., some of the recommendations, more specific to Mauritius, deal with the impacts of a large sugar industry, an increasingly important tourist industry, fisheries and coastal resources, and protection or restoration of the country's unique indigenous flora and fauna.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-199

State of the environment in Mauritius: a report prepared for presentation at the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, June 1992

UNCED National Reports

Aubeeluck, P.; Boodoo, Y.; et al.
Government of Mauritius. Ministry of Environment and Quality of Life, Port Louis, MU
1991, 403 p.: ill., charts, maps, statistical tables, En

Mauritius possesses an exquisite tropical marine setting, comprising pleasant rolling plains surrounded by stark mountain ranges, with an abundance of rivers and cascades flowing to the sea. The remoteness of the country (which includes the main islands of Mauritius and Rodrigues, and several smaller ones), its relatively late settlement (17th century), and the specificity of its micro climates have led to the evolution of unique plant and animal species. Unfortunately, the arrival of humans proved a disaster for indigenous flora and fauna, resulting in widespread extinctions, including the infamous destruction of the Dodo bird. The nation counts mixed blessings.

Land resources, never exceptional, are under tremendous pressure. Mauritius is one of the most densely populated agricultural islands in the world, and though the trend is towards healthy diversification, agriculture remains vital to the economy. On the other hand, its territory encompasses vast coral reefs, lagoons, and coastal areas prime for fishing and tourist activity. Accordingly, land issues (urban and agricultural), human and population factors, and marine and coastal resources are key elements in this state of the environment report.

Part one describes the nation's resources, from land and its use, housing, population, and human settlements, to detailed information on water and marine resources, coastal areas, forests, and wildlife resources. Part two focuses on environmental issues, and includes sections on agro-chemical use, environmental health, solid wastes, sanitation, sewage, tourism, roads, industrial development, and occupational safety. Finally, Part three addresses policy and institutional issues, and details some specific environmental challenges requiring action. Appendixes include a national environmental policy outlining the goals of the Government of Mauritius, and copies of Mauritius's 1991 Environmental Protection and Waste Water Authority Acts.

Available from:
UNDP Resident Representative
P.O. Box 253
Port Louis
Mauritius
Phone: (230 2) 123726
Fax: (230 2) 084871
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-223

Morocco

Status of biological resources in Morocco: constraints, and options for conserving biological diversity

Tropical Forests and Biological Diversity Assessments/Natural Resource Management Studies (TFBD/NRMS) — USAID

Duvall, LeRoy
U.S. Agency for International Development. Bureau for Asia and Near East. Morocco
24 Jan 1988, iv, 58 p. + 7 annexes, En

Despite a large system of national parks and preserves, Morocco's biological resources are suffering serious degradation. The country's protected areas system has had only marginal success in protecting wildlife, and habitat destruction continues at a rapid rate. Although the

current status of most indigenous species is not actually known, most of Morocco's large mammals are thought to be endangered, as are many birds and plants. This study examines the status of biodiversity in Morocco, including the main threats to it, and proposes steps to arrest its decline.

The report begins with a brief summary of the status and management of Morocco's protected areas. It then provides site by site descriptions of Morocco's two national parks; eight wildlife reserves; two botanical reserves; two managed nature reserves; and 80 reserves closed to hunting. The status and protection of endangered species, including birds, mammals, and plants, are examined, followed by a discussion of conservation efforts outside of protected areas, particularly in biologically important wetlands. Next, the major threats to biodiversity are considered, such as a rapidly increasing population and a tradition of unrestricted use of public resources. The report's recommendations include: the development of national environmental priorities; more environmental impact assessments; institutional strengthening; new legislation; improved training of resource managers; and increased environmental research. The concluding section focuses on areas where international donors could lend their support. Includes a bibliography and lists of endangered species.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABG-162

Royaume du Maroc: rapport national — Conférence des Nations-Unies sur l'Environnement et le Développement, Rio de Janeiro, 1 – 12 juin 1992

(Kingdom of Morocco: national report — United Nations Conference on Environment and Development, Rio de Janeiro, 1 – 12 June 1992)

UNCED National Reports

Royaume du Maroc. Ministere de l'Interieur et de l'Information. Direction Generale de l'Urbanisme, de l'Amenagement du Territoire et de l'Environnement, Rabat, MA
[1992], 137 p.: charts, Fr

Morocco is experiencing rapid population growth and urbanization, two trends which are threatening the country's environmental health and the state of its ancient historical areas. Part I of this report briefly describes the country's natural resource base, covering water, soils, forests, biological diversity, minerals, energy, and marine resources. It also summarizes demographic trends, development strategies, and social and economic planning and information resources. Development trends are identified in relation to urbanization, housing and sanitation, hydrology, potable water, telecommunications, transportation, industry, tourism, artisanry, and natural resource use. The report then analyzes the effects of these trends on the environment. Major problems are identified as: increased population density in ancient areas, a proliferation of unregulated settlements, unequal distribution of urban infrastructure, pollution, and poor sanitation. Part II describes responses to environmental problems in terms of the national environmental policy and strategies as well as international cooperation. Part III examines the relationship between development and the environment and describes the Moroccan approach to sustainable development.

Available from:
UNDP Resident Representative
Casier ONU, Rabat-Chella
Rabat
Morocco
Phone: (212) 769-911
Fax: (212) 763 566
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-221

Mozambique

Integrating environmental issues into a strategy for sustainable agricultural development: the case of Mozambique

Other Environmental Studies

Dejene, Alemneh; Olivares, Jose
World Bank, Washington, DC, US
1991, vi, [40] p.: oversized maps, statistical tables, En

The Government of Mozambique, in conjunction with the World Bank, is preparing an agricultural development strategy. This paper provides information on the environmental risks associated with agricultural development and suggests ways to reduce these risks. The paper also discusses developments in other economic and social spheres that have an impact on the agricultural sector and rural development. The key environmental problem in Mozambique is identified as the civil war, which has displaced some two million people from their homes. The displaced population is concentrated in provinces with the highest agricultural potential; their settlement near major towns of the coastal zones and safe rural areas has created severe land shortages, increased the demand for woodfuel and fishery resources, and threatened Mozambique's mangrove ecosystems, which are vital to the country's shrimp and prawn industries. The civil war has also made wildlife areas inaccessible, and the rebels have caused widespread destruction of the wildlife population, both for food and revenue generation. In identifying policy issues, the report cautions against the construction of large dams for hydropower and irrigation. These projects often cause soil salinization, sedimentation, and water-borne diseases, and Mozambique lacks the water management skills to deal with such problems.

Available from:
World Bank
Publications Department

Mozambique: a country profile

Other Environmental Studies

King, Dennis J.
Evaluation Technologies, Inc.
U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance
Apr 1987, iv, 81 p.: charts, maps, statistical tables, En

Designed to provide baseline data on Mozambique in support of the planning and relief operations of the Office of U.S. Foreign Disaster Assistance, this document: (1) presents general information about Mozambique on such topics as, inter alia, ethnic groups and culture, language, history, government, and communications; (2) discusses Mozambique's disaster vulnerability by providing a description of its physical environment and its susceptibility to natural disasters (e.g., droughts, famine/food shortages, epidemics and diseases, cyclones, and storms) along with a brief disaster history; and (3) discusses local resources which could be drawn upon in the event of a natural disaster. This latter section includes, but is not limited to, a description of Mozambique's lead disaster relief organization; road, air, rail, and marine transport; housing, health, and voluntary agencies. Mozambique's natural resources, which are relatively scarce, are also discussed in brief. The focus is on water and energy resources, both of which are in short supply; only about 10% of the population has access to clean water and over 50% of the country's energy consumption is derived from imported oil. Appendices include case reports on disasters that occurred in Mozambique in 1984 and 1985. A 2-page bibliography (1982 – 87) is included.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAW-801

Namibia

'Environmental profile' of Namibia

State-of-the-Environment Reports

Jansson, Sven D.O.
Swedish International Development Authority, Stockholm, SE
Mar 1991, iii, 41 p.: maps, statistical tables, En

Despite Namibia's small population and vast land area, environmental degradation has occurred as a result of anthropogenic misuse and abuse. This environmental profile discusses problems relating to: the greenhouse effect and ozone depletion, the agricultural sector, forest resources, desertification, land-use management within wilderness areas and national parks, water supply, mining, urban and rural settlements, and insecticides. Final sections outline the roles of the government, private enterprise, and individuals in managing the natural environment and present a future environmental policy. According to the report, desertification is occurring in Namibia as the end result of a cycle of destruction involving poor land management practices and human and livestock stresses. Agricultural practices have lead to overgrazing, overstocking, bush encroachment, and soil erosion. The forest resource base has been seriously denuded, groundwater is being tapped at rates which exceed recharge, and Namibia's very rich marine resources have been subject to extreme exploitation. As the result of global warming, drought periods may become more prolonged, which will act as a catalyst for exacerbating desertification, making large areas of Namibia susceptible. The report concludes by stressing the need for solutions to the deeper-rooted problems of environmental degradation associated with poverty, population pressure, and lack of education.

Available from:
Swedish International Development Authority (SIDA)
Box 342
S-11121 Stockholm
Sweden
Phone: (46 8) 15 01 00
Telex: 11450
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Order No.: WRI-190

Niger

Plan directeur de lutte contre la désertification

(Management plan for the control of desertification)

National Plans to Combat Desertification — CILSS

Permanent Interstate Committee for Drought Control in the Sahel, Ouagadougou, BF
Club du Sahel, Paris, FR
[1986], 2 v: maps, statistical tables, Fr

This two-volume report outlines the General Plan for Niger's national strategy to combat desertification. Beginning with an analysis of the socioeconomic and socioecologic situation, including, inter alia, the seriousness of the drought, the resultant decline in food production, and the related energy crisis, Volume I outlines the overall strategy of Niger's anti-desertification program from the national level to the regional, together with a review of activities by citizens' groups and the Society for Development. It then reviews existing governmental actions and the effects these will have on improving national energy resources, infrastructure, and land management. The final section outlines major constraints to successful implementation of a national strategy (including problems relating to access to water resources and popular participation in the program), reiterating in closing notes the urgency of the situation and encouraging a broad-based strategy of action. Volume II focuses on policies and activities to be undertaken by the government. An opening section reviews the general orientation of Niger's

policies on water use and delivery, land improvement, local participation, protection of waterways, institutional and budgetary activities, research, training, scientific and technical exchanges, and industrialization. The main section of this volume describes activities undertaken to control drought at the national, regional, and zonal (e.g., agricultural, peri-urban) levels.

Available from:
Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel

Available from:
UNDP Resident Representative
B.P. 11207
Niamey
Niger
Phone: (227) 73 47 00/73 22 75
Fax: (227) 72 36 30
Also available from:
U.S. Agency for International Development
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Order No.: WRI-357

Rapport national [Niger]

(National report [Niger])

UNCED National Reports

Niger. Comité National de Préparation de la Conférence des Nations-Unies sur l'Environnement et le Développement (CNUED)
Oct 1991, 73 p. + 4 annexes: statistical tables, Fr

Niger's harsh Sahelian climate makes its environment very susceptible to damage, especially as agriculture and uranium mining are the two chief economic activities in the country. This report, prepared for the U.N. Conference on Environment and Development, surveys Niger's resources and discusses the major issues surrounding their use. The report begins with an introduction that provides background information on physical and climatic attributes as well as the major environmental priorities for Niger. Section II covers, in individual sections, the evolution of development in the country, with a focus on demographic influences, food security, energy and mining, and infrastructure; and resource use, focusing on soil resources, rangeland, water, fauna, and forests. Section III covers legislation and institutions related to environmental management as well as specific environmental protection programs in the areas of reforestation; management of natural forests; protection of threatened ecosystems; agroforestry; management of wood energy resources; protecting wildlife and fishery resources; and environmental education. The section also outlines specific conservation strategies and discusses cooperation with bilateral and multilateral donors.

Nigeria

National conservation strategy for Nigeria

National Conservation Strategies — IUCN and others

Nigeria. Federal Department of Forestry, NG
[1986], v, 75 p.: ill., maps. En

Nigeria is facing major environmental problems, including desertification, flooding, and gully erosion, which are directly related to the loss of vegetation. Unplanned land use is widespread, resulting in haphazard expansion, shifting cultivation and clearance for plantations; uncoordinated expansion of settlements, roads, and other infrastructure; wasteful logging practices, overgrazing, and overcutting for browse and fuelwood; and indiscriminate bush burning. This report provides background information on Nigeria's vegetation, forage, water, marine and freshwater fisheries, wild animals, and soil resources. It states that both the traditional and the current approaches to conservation are clearly inadequate to meet the pressures induced by rising populations and standards of living. The report then provides an outline of a proposed national conservation strategy, which includes measures related to resource evaluation, enhancing efficient use of natural resources, public education, personnel training, and the establishment of a natural resources conservation council. Appendices list Nigerian conservation treaties and legislation, endangered wild animals and plant species, national parks and game reserves, and rivers.

Available from:
Federal Department of Forestry
Ije Village, Obalende
P.M.B. 12613
Lagos
Nigeria
Phone: (234 1) 684 178
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-312

Nigeria: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Godalming, UK
U.N. Environment Programme, Nairobi, KE
Aug 1988, 54 p.: maps, statistical tables, En

Rapidly increasing population pressures in Nigeria have already caused species extinctions, degradation of protected areas, and conflicts over forest resources. This report provides background information on the country's geography, population, major vegetation zones, and protected area system (which covers only 1.7% of Nigeria's land area), and describes its extraordinary biological diversity, including arid areas, swamps, many types of forest, and a wide array of plant and animal species. The following major threats to biodiversity are identified: (1) logging; (2) clearing of primary forests for plantation development (there is enough degraded forestland in Nigeria to make the replacement of high-quality forest with plantation species unnecessary); (3) increasing demand for fuelwood; (4) hunting, which provides about 20% of the animal protein consumed in rural areas; (5) wetlands exploitation; and (6) adverse agricultural practices (burning of vegetation, cultivation of short-cycle crops, and illegal expansion into the forest reserve system). Government and nongovernmental conservation organizations are described, followed by an overview of relevant legislation.
Recommendations focus on the urgent need for detailed and careful land-use and economic plans that maintain ecological processes and biological diversity. Includes a 3-page reference list and an annex providing more detailed information on selected protected areas in Nigeria.

Available from:
World Conservation Monitoring Centre

Achieving sustainable development in Nigeria: national report for the United Nations Conference on Environment and Development — Rio de Janeiro, Brazil, 1 – 12 June 1992

UNCED National Reports

Nigeria. Federal Environmental Protection Agency, Lagos, NG
Aug 1991, xiii, 60 p. + 3 appendices: maps, statistical tables, En

The Federal Government of Nigeria spends $300-$500 million a year — 1% to 1.5% of GDP — on environmental protection and resource programs. Yet the World Bank estimates the annual costs of environmental degradation to exceed $5 billion. This report identifies development trends in Nigeria, assesses the country's natural resource base, and presents recommendations for sustainable development. Soil erosion is probably the nation's most serious environmental problem, affecting about 50 million people. In some areas (Anambia and Imo states) it has reached catastrophic proportions; desertification has reached similarly catastrophic proportions in parts of Sokoto, Katsina, Kano, and Borno states. Sub-montane communities (including grassland and leguminous woodland) are being modified by overgrazing and burning. Supervision of wildlife conservation areas is inadequate; around 484 plant species face extinction due to habitat destruction and deforestation, and several animal species, including giraffes and black rhinos, have already disappeared. Inland waters are being polluted by sewage, industrial effluent, silting, pesticides, and fertilizers. Sources of coastal and marine water pollution include sewage, industrial effluent, domestic waste, and hydrocarbons (the coast is especially prone and vulnerable to oil spills). Once extensive forests are greatly reduced, overfishing may lead to a total collapse of marine resources.

Available from:
UNDP Resident Representative
P.O. Box 2075
Lagos
Nigeria
Phone: (234 1) 603730
Fax: (234 1) 681213
Also available from:
Federal Environmental Protection Agency (FEPA)
Federal Secretariat
Phase 2, Ikoyi
Lagos
Nigeria
Phone: (234 1) 680308
Fax: (234 1) 687600

Nigeria's threatened environment: a national profile

State-of-the-Environment Reports

Nigerian Environmental Study/Action Team, Ibadan, NG
1991, vi, 288 p.: ill., charts, statistical tables, En

This comprehensive review of environmental issues facing Nigeria is organized around seven themes: land, water, atmosphere, vegetation, wildlife, human habitat, and culture. Major findings include the following: (1) Crop agriculture faces very serious environmental problems, such as soil exhaustion and the unregulated use of pesticides, herbicides, fertilizers, and other chemicals. (2) Pastoralism is associated with grave difficulties, including overgrazing, deforestation, soil erosion, desertification, and bloody conflicts between herdsmen and farmers. (3) Mining, quarrying, and oil spillage are serious causes of environmental degradation.

(4) Water supply and quality in both urban and rural areas are grossly inadequate and this adversely affects economic productivity and health. (5) Floods, drought, desertification, and atmospheric pollution are Nigeria's major climate-related problems. (6) Vegetation untouched by human activity probably no longer exists; plant cover has been reduced to a patchwork of farmlands, plantations, and secondary vegetation at various stages of regrowth and maturity. (7) With the exception of a few rugged mountain slopes, there are hardly any primordial wildlife habitats left, and fisheries are being depleted at an alarming rate. (8) Rural and urban housing falls well below minimum standards in all aspects; solid waste disposal and lack of open spaces for recreation are particular problems in Nigerian cities. (9) Any campaign for environmental awareness must take into account issues involving traditional cultures, women, poverty, and population growth and distribution. A final chapter summarizes the Nigerian government's policy on the environment. The report includes case studies and examples throughout the text, numerous photographs and drawings, and references following each chapter.

Available from:
Nigerian Environmental Study/Action Team (NEST)
P.M.B. 5297
Ibadan
Nigeria
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-155

The Challenge of sustainable development in Nigeria: an NGO report prepared for the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil

Other Environmental Studies

Nigerian Environmental Study/Action Team, NG
International Institute for Environment and Development, London, UK
Aug 1991, xi, 141 p.: statistical tables, En

Since attaining independence some 30 years ago, Nigeria has emphasized swift economic growth, often to the detriment of the natural environment. Now, despite a growing awareness of the adverse consequences of rapid growth, environmental conditions in the country continue to worsen. This report, prepared for the U.N. Conference on Environment and Development as a complement to the official governmental report, outlines a strategy for sustainable development that views economic growth and environmental protection as complementary and ultimately necessary for one another.

The first section provides a brief overview of the theory behind sustainable development and contains information on Nigeria's physical, demographic, and economic characteristics. It is noted that most environmental policies are still enacted within the context of development models that contradict them. The second section focuses on population and its effect on the environment; rapid population growth is singled out as a major cause of environmental degradation. The interrelationship between environmental quality and economic performance is examined in the third section. Although policymakers are beginning to understand this interrelationship, several impediments remain, such as inappropriate guidelines on environmental protection, a lack of economic incentives for resource conservation, and the absence of a resource accounting and auditing system. The fourth section focuses on the importance of public awareness in sustainable development, while the fifth concentrates on the need for a solid institutional framework in both the public and private sectors within which innovative policies can be devised. Land use and land tenure are examined in the sixth section, and the seventh section discusses the often overlooked relationship between gender and the environment.

A summary and recommendations on each of these topics is presented in the eighth section, which also comments on global inequality, North-South relations, and the environmental impacts of the Structural Adjustment Programs of the World Bank and the International Monetary Fund. Includes 8-page bibliography.

Available from:
Nigerian Environmental Study/Action Team
18B Aare Avenue
New Bodija
P.M.B. 5297
Ibadan
Nigeria

Rwanda

Ruhengeri and its resources: an environmental profile of the Ruhengeri prefecture, Rwanda

Country Environmental Profiles — USAID

Weber, William; Nyamulinda, Vincent; et al.
Winrock International Institute for Agricultural Development
South-East Consortium for International Development
U.S. Agency for International Development. Bureau for Africa. Rwanda
U.S. Agency for International Development. Bureau for Africa. Office of Regional Affairs
U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
1987, vii, [114] p.: ill., maps, statistical tables, En

The environment of Rwanda's Ruhengeri Prefecture, an area characterized by extremely rugged relief and diverse ecological microniches, is profiled in this report. A general environmental description is followed by more detailed analyses of the region's soil, wood, water, forest, and human resources. Positive trends are evident in all sectors, including: (1) serious erosion control efforts in the farmlands; (2) reforestation, which has reversed deforestation trends and significantly increased total forest cover; (3) development of new water sources, which have exceeded demand; (4) development of Volcanoes National Park as a model for park management; and (5) increased interest in resource issues among authorities, planners, technicians, and the general population. Despite this progress, numerous alarming trends have stemmed from the region's high population growth rate (2.9%). Former pastureland and marginal areas have been brought under cultivation, resulting in increased erosion and hydrological imbalance, and increased demand for wood has given rise to plantations, which reduce biological diversity. According to the report, many of the region's environmental problems are the result of inflexible resource management strategies, which are designed by national planners

and often not suited to the diverse ecological conditions in Ruhengeri. Recommendations are made for designing more appropriate conservation efforts.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-046

Stratégie nationale de l'environnement au Rwanda

(National environmental strategy for Rwanda)

National Environmental Action Plans — World Bank and others

République Rwandaise. Ministère du Plan, Kigali, RW
30 Oct 1989, 4 v.: maps, statistical tables, Fr

This national environmental strategy for Rwanda, presented in four volumes, is based on a multisectoral analysis of Rwanda's environmental problems. Volume I examines existing relations between economic activities and environmental phenomena, and presents detailed, in-depth findings in the following areas: population and land use; farming, livestock, fisheries, and forestry; management of natural environments and tourism; the environmental and public health impacts of trends in energy and water use, industrialization, transportation, and urbanization; legal and institutional aspects; and environmental education. The strategy itself is presented in Volume II, which opens with an overview of environmental policy in Rwanda, and then develops a sector-by-sector strategy for protecting the environment, addressing the problems identified in Volume I and indicating possible options for managing these; Volume II includes sections on intersectoral issues, legal and institutional factors, and international cooperation. Volume III then presents a concrete environmental action plan, which articulates as precisely as possible the specific steps needed to implement the environmental strategy. Profiles of 26 proposed projects are included: 7 in the areas of population, land management, water, sanitation, and health; 3 in agriculture, livestock, fisheries, and forests; 6 in natural environments, tourism, disasters, and climate; 5 in energy, industry, and transport; 3 in education, research, and information; 1 in women and environment; and 1 in legal and institutional areas.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-336

Rapport national du Rwanda: Conférence des Nations-Unies sur l'Environnement et le Développement (CNUED) — Brésil, 1992

(Rwanda national report: United Nations Conference on Environment and Development (CNUED) — Brazil, 1992)

UNCED National Reports

Rwanda. Ministry of Plan, Kigali, RW
Oct 1991, 124 p.: charts, maps, statistical tables, Fr

In Rwanda, soil protection has been a focal point of the national environmental program. Through the personal intervention of the Head of State, the population has been mobilized to combat erosion through afforestation and terrace methods of crop farming. This report describes numerous additional environmental problems in the country and summarizes the responses of government and nongovernmental organizations. General information on Rwanda's population, agriculture, natural resources, tourism, climate, energy, industry, transportation, and education is also provided. Major environmental problems are identified as the following: (1) high population density, leading to progressive disappearance of farmland and depletion of natural reserves, deforestation, etc.; (2) very bad living conditions in urban areas, partly caused by waste management problems and unregulated construction of factories and similar establishments which generate air pollution which causes pulmonary-bronchitic diseases; (3) utilization of dangerous products such as pesticides, fertilizers, cosmetics, etc., without any set regulations; (4) import of certain pesticides

prohibited in developed countries; (5) hydro-agricultural, road, and mining installations which are becoming breeding zones for transmissible diseases such as malaria and schistosomiasis.

Available from:
UNDP Resident Representative
Boîte Postale 445
Kigali
Rwanda
Phone: (250) 75541
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Also available from:
U.S. Agency for International Development
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Order No.: WRI-185

São Tomé and Príncipe

Conservação dos ecosistemas florestais na República Democrática de São Tomé e Príncipe

(Conservation of forest ecosystems in the Democratic Republic of São Tomé and Príncipe)

Conservation of Forest Ecosystem Studies — IUCN

Jones, P. J.; Burlison, J. P. Tye, A.
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1991, x, 78 p.: maps, statistical tables, Pt

São Tomé and Príncipe's geographical and evolutionary isolation from continental Africa has produced humid rain forests that are remarkable for their plant and animal endemicity. The forests are among the most important bird refuges in Africa, containing at least 26 endemic bird and 87 endemic plant species; they also drive the national economy, providing lumber for construction, export, and domestic and industrial energy needs. Fortunately, considerable tracts of forest remain basically undisturbed, thanks mostly to their mountainous inaccessibility.

The first chapter of this report on São Tomé and Príncipe's forest ecosystems contains a summary of the challenges facing the nation as it endeavors to manage its forests in a way that will provide for both economic and conservation needs. Chapter 2 provides geographic, climatological, and historical background. Chapter 3 describes the islands' biological diversity, and the threats to it (habitat loss, poaching, and the introduction of non-native mammals). Chapters 4 and 5 examine, respectively, the nation's forest resources and their exploitation for construction, export, and fuelwood. Chapter 6 covers other actual and potential uses of the nation's natural resources, touching upon agriculture, silviculture, tourism, protected areas, mineral extraction, and hydroelectric power generation. Chapter 7 reviews the legal and institutional arrangements governing the utilization and conservation of the forest, while Chapter 8 discusses participation in international conservation efforts. Finally, Chapter 9 identifies ecological zones considered critical for conservation. Annexes include considerable information about the nation's remarkable bird populations.

Available from:
IUCN — The World Conservation Union
Publications Services Unit

UNCED national report for São Tomé and Príncipe

UNCED National Reports

1991, 39 p.: statistical tables, Pt

São Tomé and Príncipe's limited resources and island environment have come under increasing stress as the nation strives for economic development. This report, prepared for the U.N. Conference on Environment and Development, describes the country's resources and the threats they face and suggests strategies for their conservation. Section I begins by briefly describing physical, geographic, demographic, political, and socioeconomic characteristics. Section II covers resources and environmental issues, such as water, air, soil, flora, fauna, agriculture, urbanization, health, education, and legislation. Section III describes and analyzes government institutions that are charged with environmental management, such as the Ministry of Agriculture and the Ministry of the Economy

and Finance. Section IV identifies priority actions for environmental conservation, such as improving sanitation systems, upgrading the administrative capacities of government institutions, and instituting public awareness campaigns. Section V concludes the report by examining possibilities for scientific and technical cooperation with NGO's and bilateral donors.

Available from:
UNDP Representative
Caixa Postal 109
São Tomé
São Tomé and Príncipe
Phone: (239 12) 21-122
Fax: (239 12) 050-5361

Sénégal

Profil de l'environnement de la Vallée du Fleuve Sénégal

(Environmental profile of the Senegal River Valley)

Environmental Profiles — Netherlands

Lavieren, Bart van; Wetten, Jeroen van
Euroconsult, International Consultants, Arnhem, NL
Institut National de Recherche pour la Conservation de la Nature, Leersum, NL
Netherlands. Ministry of Foreign Affairs. Directorate General for International Cooperation, The Hague, NL
Jan 1990, iv, 68 p.: ill., charts, maps, statistical tables, Fr

There is no doubt that large-scale construction of dams in the Senegal River Valley has had disquieting effects on the valley's environment and its human population. This document attempts to provide project planners with a frame of reference on the relationship between development projects and the Senegal River Valley environment. Part I describes the valley's environmental characteristics — climate, geology and soils, vegetation, large animals and birds, hydrology and topography, demographics and human settlements, and land use. Part II explicitly details the relationship between development projects and the environment; attention is given to dams, agricultural projects, pesticide use, and fishery development, and in turn to their specific impacts on public health, socioeconomic welfare, animal husbandry, forests, and animal life. Finally, Part III presents an approach for planning projects that will enhance natural resources and increase sustainable productivity, while not harming the environment. Water management, environmental education, a new livestock policy, relevant legislation (in both Senegal and Mauritania), and the role of nongovernmental organizations are among the topics considered. Two case studies and a bibliography are appended.

Available from:
Netherlands Ministry of Foreign Affairs

Guide de la diversité biologique du Sénégal

(Biodiversity guide to Senegal)

Biological Diversity Profiles — WCMC

Commission of the European Communities
World Conservation Monitoring Centre, Cambridge, UK
1991, 20 p.: maps, statistical tables, Fr

Although it remains rich in biodiversity, Senegal is facing progressively worse environmental problems. This report surveys the country's biological resources, describes the threats they face, and offers recommendations for their sustainable use. Individual sections cover geography, demography, and economics; flora and fauna; vegetation zones; forest resources; protected areas and other important environmental sites; and legislation. The report focuses on five principal threats to biodiversity: trafficking in wild and exotic birds; increasing salinization of rivers and general deterioration of surrounding ecosystems; excessive dam building; poaching of wild animals, especially elephants; and deforestation. Recommendations include: expanding the number of personnel and improving management techniques at the wildlife reserves of North and South Ferlo; strengthening cooperation with Guinea in the management of Niokolo Koba and Badiar national parks; expanding cooperation with Mauritania and The Gambia in the management of the fragile humid zones surrounding the deltas of the Senegal and Saloum rivers, respectively; establishing a reserve at

Kedoujou/Dende Felo to protect the chimpanzees that live outside of Niokolo Koba national park; and legal protection for the country's main vegetation types. Includes bibliography.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-235

Vers un développement durable: rapport national

(Toward sustainable development: national report)

UNCED National Reports

Senegal. Ministère du Tourisme et de l'Environnement
1991, 117 p.: maps, statistical tables, Fr

Human activity and demographic pressures, combined with a difficult climate and droughts, are causing gradual degradation of Senegal's natural environment. This report assesses the country's natural resource base and summarizes major socioeconomic trends. It then analyzes new strategies for social and economic development in relation to Senegal's most serious problems. Recommendations for sustainable development are also presented. Major findings include the following. (1) Access to water resources is difficult and often uncertain; in the last 20 years, annual rainfalls have decreased significantly. (2) Soil quality is often low, a problem compounded by soil degradation, acidification, desertification, and erosion. (3) Land areas covered by forests receded from 70% to 40% between 1970 and 1989. (4) Climate worsening has led to a loss of biological potential, productivity, and diversity, and has made continental fishing a marginal activity. (5) Infrastructure and employment opportunities have not kept up with rampant urbanization, and pollution is on the rise. (6) The country suffers from serious economic problems, including a bloated public sector and budget imbalances, a shortage of savings, and a serious foreign debt problem. (7) Energy dependency is still an unresolved problem. Recommendations focus on food and energy security, economic and employment growth, and water and soil conservation.

Available from:
UNDP Resident Representative
B.P. 154
Dakar
Senegal
Phone: (221) 23 32 44
Fax: (221) 23 55 00

Seychelles

Achieving sustainable development: environmental management plan of the Seychelles, 1990 – 2000

National Environmental Action Plans — World Bank and others

Seychelles. Department of Environment, Victoria, SC
U.N. Environment Programme, Nairobi, KE
U.N. Development Programme, Geneva, CH
World Bank, Washington, DC, US
Jun 1990, 2 v.: maps, statistical tables, En

The Seychelles comprises 115 islands with a land area of 455 square kilometers. More than 40% of this small land area is covered by national parks and reserves. Five large ocean areas have also been declared marine parks, three of them as special reserves and two as protected areas. The Seychelles' greatest environmental concern and development constraint is the concentration of around 90% of the population and nearly all economic activities on the narrow strips of coastal plain and reclaimed land of Mahe, the main island. Unless adequate precautions are soon taken, the limits of environmental tolerance on and around Mahe could be exceeded with costly or irreversible consequences. Although the other main islands, Praslin and La Digue, have wider coastal plains, they too are under increasing development pressures. Additional environmental problems include: (1) beach erosion in many areas on the main islands; (2) exploitation of turtles and seashells; (3) inadequate water supply; (4) soil erosion; (5) catastrophic events such as oil spills,

forest fires, and landslides; (6) shortage of skilled environmentalists; and (7) limited government revenues for environmental protection. Volume I addresses these issues, and also discusses the Seychelles' environmental health, biological diversity, and laws and institutions. A detailed environmental management plan for the 1990's is presented. Volume II contains descriptions (including cost estimates and implementation modalities) of 51 projects and programs that are included in this environmental management plan.

Available from:
Seychelles Ministry of National Development
Department of the Environment
Independence House
P.O. Box 199
Victoria, Mahe
Seychelles
Phone: (248) 22881
Telex: 2312

Sierra Leone

Sierra Leone: proposal for a national conservation strategy

National Conservation Strategies — IUCN and others

Rennie, J. K.; Wohlwend, B.
International Union for Conservation of Nature and Natural Resources, Gland, CH
Jun 1985, iv, 73 p., En

Sierra Leone faces a wide range of environmental problems, the most serious being depletion of marine resources, deforestation, loss of soil fertility, and the adverse effects of mining and pollution. This report begins by describing the context for the development of a national conservation strategy in Sierra Leone, with reference to the World Conservation Strategy, the Lome III convention, and the national constitution. Chapter II identifies Sierra Leone's major environmental problems in relation to land systems, water, river basins and catchments, bolilands (seasonally flooded grassy or forested depressions) and swamps, marine and freshwater resources, soils and vegetation, forests, livestock and pastureland, wildlife, the urban environment, and human resources. Problems related to environmental policies, laws, and institutions are also described. Chapter III presents proposals for a national conservation strategy, covering institutions, activities, a workplan and timetable, and the budget. Chapter IV describes two additional recommended actions — a donors round table conference and a natural resources expertise profile. The final chapter summarizes six proposed pilot projects. An appendix contains extracts relating to natural resource use from the Lomé III agreement.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-308

Tropical forestry action plan: inter-agency forestry sector review — Sierra Leone — mission report

Tropical Forestry Action Programme — FAO and others

Allan, T.
U.N. Development Programme, Geneva, CH
The Food and Agriculture Organization of the United Nations, Rome, IT
1990, xv, 183 p.: statistical tables, En

In Sierra Leone, forests cover 80% of the land area. In the past, forestry has been neglected and its role in land use and economic development has been largely overlooked. The situation has further deteriorated in recent years, and in effect no forest management has been exercised, partly due to archaic and inadequate forest laws, but mainly due to insufficient funding. As a result, serious problems of deforestation have occurred in the areas surrounding Freetown, due to fuelwood collection by a rapidly increasing urban population. This Tropical Forestry Action Plan (TFAP) report describes forest ecology in Sierra Leone along with relevant issues pertaining to population growth, land tenure, and general economics. The report evaluates the forestry sector's current status with respect to eight topical areas: forest resources; forest-based industry; forestry institutions and legislation; the fuelwood sector; methods of forest conservation; forestry in land use; forestry sector economics; and forest

policy. The next section presents solutions, recommendations, and proposed actions relating to management and institutional needs and training, research, and legislation. Projects under six headings are outlined: resources; institutions; energy and firewood; land use; forest industries; and conservation. The plan emphasizes that immediate priority must be given to the building of institutional capacity.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-227

Somalia

Somalia: 1979 country environmental profile for the Agency for International Development

Country Environmental Profiles — USAID

McGowan, Edward; Bromley-McGowan, J. Morgan
U.S. Agency for International Development. Bureau for Africa. Somalia
1979, [149] p.: charts, maps, statistical tables, En

In some ways, Somalia's low level of economic development serves to ease environmental pressures. Industrial pollution is minimal, although proposals to build a petroleum refinery, a cement plant, various mineral extraction facilities, and major water schemes, are cause for concern. Use of agrochemicals is rare, and there is no solid waste problem, since individually packaged consumer products are rare and most other items are recycled for economic reasons. However, the country still faces significant problems, including pollution associated with flood agriculture, salinity problems associated with irrigated agriculture, water and wind erosion due to overgrazing, and groundwater pollution associated with sewage disposal from large urban concentrations. There is also some air pollution caused by automobiles in the capital city. Poor water quality contributes to the high incidence of malaria, trypanosomiasis, and shistosomiasis in the interriverine areas, and fuelwood supplies are already outstripped in many areas. This report describes Somalia's geography, economy, and climate, and assesses its vegetation and forage resources. It then describes human settlements in rural areas and evaluates the environmental impact of possible development inputs, such as fertilizers, pesticides, improved seeds, and water systems. Final sections examine key issues, including the nomadic populations, environmental diseases, the marine environment, and irrigation.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-383

National conservation strategy for Somalia: inception report

National Conservation Strategies — IUCN and others

Campbell, David; Abdirahman, Mohamed
Somalia. Ministry of Livestock, Forestry and Range, SO
International Union for Conservation of Nature and Natural Resources, Gland, CH
1990, ii, 37 p., En

Although Somalia's natural resources are under considerable stress, political and economic preoccupations mean that the sustainable management of these resources is given low priority. This report provides background information for a proposed national conservation strategy. It begins with a brief profile of Somalia, followed by an assessment of the natural resource base (livestock, agriculture, forestry, wildlife, and coastal and marine resources). The next section identifies the major obstacles to conservation, namely: (1) competing demands of livestock, agriculture, and forestry; (2) lack of updated, strict environmental legislation; and (3) lack of public awareness of broad conservation issues. Initiatives to overcome these obstacles are summarized, as are the activities of government institutions involved in natural resource management (the Ministries of Livestock, Forestry, and Range; Agriculture; and Fisheries). The report then highlights the activities of seven nongovernmental organizations (ACORD, Africare, CARE/Somalia, Church World Service, Haqaptir, OXFAM, and the Somali Ecological Society). The report concludes by identifying gaps in existing information on the Somali environment and

presenting recommendations for sustainable development. Appendices include information on planned projects in pastoral management and in conserving the Jubba Valley's remnant forests.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
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South Africa

Building the foundation for sustainable development in South Africa: national report to the United Nations Conference on Environment and Development (UNCED) to be held in Rio de Janeiro, June 1992

UNCED National Reports

South Africa. Department of Environment Affairs, ZA
Oct 1991, 193 p. + attachment: maps, statistical tables, En

South Africa is poised on the brink of the most far-reaching constitutional reforms in its history. As a part of this process, many national goals will be re-examined, especially those that relate to the management of South Africa's splendid natural assets. Chapter 1 of this report on development and the environment provides descriptive background on people, culture, climate, and mineral, freshwater, terrestrial, coastal and marine, and biological resources. Chapter 2 analyzes human activity and its impacts on the environment; included are sections on urbanization, health concerns, cultural preservation, and degradation of the atmosphere and the resource base. Chapter 3 describes current responses to these challenges in terms of policies, programs, and practices, and identifies major governmental and non-governmental agencies and organizations associated with environmental management. Chapter 4 first discusses some of the underlying causes of environmental problems — poverty, population growth, economic stagnation, and misguided agricultural, economic, and social policies — and then suggests a series of actions. Chapter 5 underscores the need for a unified strategy for sustainable development and environmental conservation, and offers a broad agenda for achieving this goal. Includes bibliography.

Available from:
Department of Environmental Affairs
Private Bag X447
Pretoria 0001
South Africa

South African environments into the 21st century

State-of-the-Environment Reports

Huntley, Brian; Siegfried, Roy; Sunter, Clem
1989, 127 p.: charts, maps, En

In the 1980's, South Africa experienced a record number of natural disasters, including droughts, floods, hailstorms, veld fires, and locust outbreaks. Much of the environmental damage caused by these events would have been averted by a healthy, resilient complex of soils, vegetation, and animal life. According to this book, the country had to pay the price for over a century of careless environmental management and its "unique experiment in social engineering." The book begins with a description of both global and regional trends in environmental health, from potential nuclear holocaust to the insidious threat of global warming. Against this background of global change, the book analyzes the following South African issues: biotic diversity, weather cycles, human population dynamics, mass urbanization, water and energy resources, commercial agricultural wealth and homeland poverty, marine resources, and consumer spending patterns. Two "key uncertainties" —the different socioeconomic paths and environmental management ethics that South Africa might adopt — are used to derive four possible environmental scenarios for the early 21st Century, ranging from "wasteland" to sustained development. In the final chapter, the authors draw together political, social, economic, and environmental themes, concluding

that economic development is paramount, but should be linked to a strong environmental ethic, as well as support for education, entrepreneurism, and an end to apartheid.

Available from:
Human & Rousseau (Pty) Ltd.
State House
3 – 9 Rose Street
Cape Town
South Africa

Sudan

Environmental profile: Kassala Province, eastern region, Sudan

Environmental Profiles — Netherlands

Beck, Robert, ed.; van den Berg, Job, ed.; et al.
DHV Consultants, Amersfoort, NL
University of Khartoum. Institute of Environmental Studies, Khartoum, SD
Sudan. Ministry of Planning and Finance, SD
Netherlands. Ministry of Foreign Affairs. Directorate General for International Cooperation, The Hague, NL
May 1989, 55 p.: ill., charts, maps, statistical tables, En

Kassala Province is a land-locked area in eastern Sudan bordered by the Eritrean Hills in the east and the Blue Nile in the west. The most characteristic features of the province are its extensive flat clay plains, which comprise one of the world's largest areas of black cotton soils. The province's environment has deteriorated during the last 40 years as the result of human activities. Degradation of pastoral and fuelwood resources requires urgent action, and the productivity of rainfed mechanized farmland is under pressure or declining. Most of the region's wildlife creatures have lost their natural habitats and disappeared. These problems are expected to intensify rapidly, since the province's population will probably double within 15 years. This report assesses Kassala's environment and analyzes land use practices related to agriculture (traditional rainfed, irrigated, and rainfed mechanized), animal husbandry (semi-nomadic and agro-pastoralist), wood, nature products, and fisheries. Topics such as climate change, wind and water erosion, pollution, and drinking water quality are considered as well. Current resource management practices are evaluated, with attention to appropriate individual or group strategies for the management of land use and other activities. The report also examines the role of the government in resource management and discusses three cases that underline the interrelationships between environmental and societal change: the settling of the Rashaida nomads, the influx of refugees into the province, and the "ruralization" of Kassala's major towns.

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Order No.: WRI-123

Environmental profile: the Sudan

Environmental Profiles — Denmark (DANIDA)

Denmark. Ministry of Foreign Affairs. Department of International Development Cooperation, Copenhagen, DK
1989, 74 p., En

Sudan's natural resources have been increasingly overexploited and poorly managed during the past few decades, leading to serious environmental degradation. The main causes of this trend are accelerated population growth, recurring drought, disruption of socioeconomic systems, and insufficient knowledge and awareness of environmental issues. This environmental profile covers only northern Sudan, due to the country's large size and vast ecological and ethnic differences and because of the political instability in the south. Specifically, the report covers the following provinces: Darfur, Kordofan, Central, Eastern, Northern, and Khartoum. Section I reviews the region's resource base, including human resources, climate and vegetation, agriculture, basic farming strategies, animals, forests, water, and other natural resources. Section II identifies the main environmental issues both at the national level (i.e., institutional, legislative, financial, and educational issues) and then at the sectoral level, including agriculture, livestock, range management, forestry, soil conservation, water resources, fisheries, wildlife, energy,

industry, rural health and sanitation, and urban development. The final section outlines a framework of action for Denmark's Department of International Development (DANIDA).

Available from:
DANIDA Information Office

Swaziland

Ensuring our future: national report of the Kingdom of Swaziland on environment and development

UNCED National Reports

Swaziland. Ministry of Natural Resources and Energy, Mbabane, SZ
Jun 1991, xiv, 117 p.: charts, maps, statistical tables, En

Swaziland's high population growth of 3.2% per annum has resulted in increasing pressure on natural resources. This report reviews the country's natural resource base, and identifies major problems as the following: deforestation; soil erosion due to overutilization of land, poor conservation methods, and overgrazing; loss of indigenous vegetation through overstocking, perennial burning of the veld, establishment of extensive agricultural schemes, increased demand for firewood and building poles, and urban expansion; contamination of ground and surface water through industrial pollution and agricultural chemicals; inadequate sanitation, unsafe drinking water and inappropriate solid waste disposal; and air pollution. Constraints to sustainable development are identified as being both exogenous and endogenous. Exogenous constraints relate mainly to shared resources such as rivers and air, while endogenous constraints include population growth, the land tenure system, gender relations, inadequate information and analysis, and an insufficient environmental awareness among the population. Opportunities to mitigate these constraints are suggested, as well as research activities that need to be undertaken to develop appropriate environmental programs, projects, and policies. The report includes information on governmental and nongovernmental institutions and their environmental projects and programs and on environmental legislation and environmental education efforts.

Available from:
UNDP Resident Representative
Private Bag
Mbabane
Swaziland
Phone: (268) 423 01/02
Fax: (268) 453 41
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U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-153

Tanzania

Country strategy for strengthening environmental considerations in Danish development assistance to Tanzania

Environmental Profiles — Denmark (DANIDA)

Denmark. Ministry of Foreign Affairs. Department of International Cooperation, Copenhagen, DK
1989, 70 p.

Although Tanzania has an overall land surplus, the country's natural resources have come under increasing pressure due to the concentration of populations in limited geographical areas. Most of the best agricultural land is already densely populated and traditional farming systems (e.g., overgrazing and bush fires) have endangered the regenerative capacity of soils, vegetation, forests, and water. The country's world-famous wildlife are threatened by poaching, shrinking forests, and population pressures on fragile ecosystems. The strain of environmental degradation is felt in Tanzania's urban areas as well. Rapid, unplanned, and uncontrolled urban growth and industrial development have brought about pollution of water, air, and soil, reducing the quality of life and increasing health hazards for the urban poor. Demand for energy is expanding rapidly in both rural and urban areas, since more than 90% of the population is dependent on the nation's dwindling woodfuel supply. Policies and legislation to

counter environmental degradation are weak and often conflict with other priorities and interests. National and local institutions lack the capacity to efficiently implement environmental protection activities due to a lack of personnel and other constraints. On the positive side, substantial progress has been made in heightening public awareness of environmental issues. The final section of this report presents operational guidelines for DANIDA'S involvement in the protection of Tanzania's natural resources.

Available from:
DANIDA Information Office

Tanzania: conservation of biological diversity and forest ecosystems

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Godalming, UK
U.N. Environment Programme, Nairobi, KE
1988, 21 p.: maps, En

Tanzania's determination to protect its natural resources is illustrated by its extensive protected areas, which make up a quarter of the country. Nonetheless, a number of habitats within these reserves are seriously threatened by a rapidly expanding human population and resultant demands for land and forest products. This report focuses mainly on the montane and submontane forest ecosystems, which are centers of extraordinary species endemism and biological diversity. Commercial timber extraction is identified as the major threat to these areas. Forests are being reduced at unsustainable rates — by 55% per year in the Kilimanjaro region and by 30% in the Mwanza and Mara. Increased firewood gathering is also a problem, especially in the Usambaras, where all the dead timber has been collected and mature trees are now being felled. Additional threats to native forests are posed by: (1) human introduction of weeds that choke native vegetation, (2) planting of cardomom, which prevents regeneration, (3) hunting of bush pigs, colobus monkeys, and other species, and (4) bird collection. The report briefly covers relevant socioeconomic aspects and describes plans for increased environmental protection. Recommendations include the creation of new national parks in the Uzungwa and Uluguru mountains; detailed proposals have been presented elsewhere for the Usumbara mountains. Includes bibliography, maps, and a list of endemic taxa.

Available from:
World Conservation Monitoring Centre

Tanzania forestry action plan, 1990/91 – 2007/08

Tropical Forestry Action Programme — FAO and others

Tanzania. Ministry of Tourism, Natural Resources and Environment, Dar es Salaam, TZ
Nov 1990, xii, 128 p. + 5 appendices + 13 annexes: maps, statistical tables, En

Extensive forests cover large areas of Tanzania and represent a potentially rich economic resource, in addition to their usefulness as gene pools and wildlife sanctuaries. Nevertheless, deforestation, chiefly due to land clearing for agriculture and firewood collection, is accelerating rapidly and threatens the environmental integrity of the entire country. This 17-year forestry action plan aims to enhance forestry's contribution to the sustainability of Tanzania's land resources and the attainment of national development objectives. Ecosystem health, self-sufficiency, and export growth in forest products will be specifically targeted. The plan is divided into eight long-term development programs in the areas of land husbandry, community and farm forestry, forest management, bioenergy, forest industries, beekeeping, wildlife management, and ecosystems conservation. Institutional aspects will also be addressed by the plan, such as land and forest legislation and policy; forest administration; popular participation (including the role of women and NGO's in forestry development); training and personnel development; forest research; and resource assessment and information systems. Financial aspects and implementation arrangements are also addressed. Includes 13 technical annexes providing detailed background information.

Available from:
Ministry of Tourism, Natural Resources and Environment
P.O. Box 9372
Dar-es-Salaam
United Republic of Tanzania
Phone: (255 51) 346 03

United Republic of Tanzania: national report for the 1992 United Nations Conference on Environment and Development (UNCED)

UNCED National Reports

Tanzania. Ministry of Tourism, Natural Resources and Environment, [Dar es Salaam], TZ
Jul 1991, 111 p.: statistical tables, En

Pollution and associated health problems are prevalent in urban Tanzania, especially Dar es Salaam and Zanzibar Town. Only seven towns have any sewage system at all, and existing facilities are inadequate. Tourism development in coastal areas could also exacerbate aquatic pollution, as untreated sewage is emptied into the ocean. This report assesses Tanzania's natural resource endowment, summarizes development trends and resource use, identifies environmental and development issues, and describes public and private sector responses. Additional sections focus on the roles of both women and nongovernmental organizations in promoting sustainable development. In addition to pollution, the report cites the following key issues. Desertification is occurring, primarily as the result of expanding agriculture (rather than overgrazing by pastoralists). Coastal areas are under pressure from intensive cultivation and fuelwood gathering. Deforestation is proceeding at a rate which, if not diminished, would deplete the country's resource base in little over 100 years. Destructive fishing methods, such as dynamiting, destroy corals and coral-based marine life. Coastal erosion is a problem both in parts of the mainland and on Zanzibar, and will be aggravated by any rise in global sea levels. Treatment of industrial effluent is inadequate, especially in the mining industry.

Available from:
UNDP Resident Representative
P.O. Box 9182
Dar-es-Salaam
United Republic of Tanzania
Phone: (255 51) 467 14
Fax: (255 51) 467 18
Also available from:
Ministry of Tourism, Natural Resources and Environment
P.O. Box 9372
Dar-es-Salaam
United Republic of Tanzania
Phone: (255 51) 346 03

Resources and sustainable community development: an agenda for development — action in Tanzania

Other Environmental Studies

Mascarenhas, Adolfo; Ford, Richard
International Institute for Environment and Development, Washington, DC, US
Swedish International Development Agency, Stockholm, SE
Mar 1987, 73 p. + 3 annexes: charts, statistical tables, En

As a primarily agricultural nation, one of the most pressing problems facing Tanzania is the declining productivity of the land, a problem made worse by increasing population, declining agricultural inputs, and worsening economic conditions. This report surveys the status of Tanzania's natural resource base and presents an agenda for village-based sustainable development

The report begins with a summary and introduction that briefly discuss Tanzanian social, economic, and political conditions as well as the trends that are causing increasing, and potentially irreversible, environmental degradation. Chapter III covers the environmental context of development, focusing on agriculture, land, water, and mineral resources. Chapters IV and V examine the political and economic aspects of development, both of which have been profoundly influenced by the Arusha Declaration of 1967, which set Tanzania on an inwardly directed course of development. Chapter VI looks at specific resources and resource-related problems, such as soil, deforestation, agriculture, industry, and

energy. Chapter VII focuses on the impact of villagization — the resettlement of 13 million people in roughly 8,000 settlements — on resources and the environment. Chapter VIII discusses traditional, environmentally benign, Tanzanian methods of using resources, while Chapter IX covers additional issues related to resource management, such as foreign assistance and attitudinal problems. Chapter X contains eight recommendations designed to help Tanzanian villages arrest resource degradation and increase and sustain productivity. Includes bibliography and an annex on physical geography.

Available from:
World Resources Institute
Center for International Development and Environment
1709 New York Avenue, NW
Washington, DC 20006
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Togo

République du Togo: la conservation des ressources naturelles au service du développement — rapport de mission, 18 – 27 mars 1985

(Republic of Togo: conservation of natural resources in the service of development — report of a mission, 18 – 27 March 1985)

National Conservation Strategies — IUCN and others

Portas, Pierre; Sournia, Gérard
International Union for Conservation of Nature and Natural Resources, Gland, CH
May 1985, ix, 45 p., Fr

In Togo, as in many other African nations, drought and its consequences are major environmental issues. In northern Togo, deforestation and soil erosion are also serious problems, especially in areas surrounding villages. This report provides preliminary information for the development of a national conservation strategy for Togo. Chapter I presents general information on the country's natural resource base and socioeconomic trends. Chapter II discusses Togo's major environmental problems, including coastal erosion, dam construction in Nangbeto on the river Mono (a cooperative project with Benin), national park management, and other issues. Chapter III identifies institutional constraints to conservation, while Chapter IV describes proposed projects and action plans. Major goals are to increase Togo's capacity in managing natural parks and controlling hunting, developing forestry policies, providing environmental education, and establishing legislation related to agroforestry. Annexes include a summary of the major environmental conclusions of the Lomé III Convention in 1984.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-309

Tunisia

Biological diversity and tropical forests in Tunisia

Tropical Forest & Biological Diversity Assessments — USAID

Posner, Scott D.
U.S. Agency for International Development. Bureau for Asia and Near East. Tunisia
Jan 1988, vi, 206 p. + 4 annexes, En

Despite Tunisia's small size, low mountains, and high population density, the country has rich species diversity and a wide variety of ecosystems. This report assesses the status of the country's plant and animal resources, as well as its primary ecosystems — coastal, island, wetland, mountain, steppe, desert, and oasis. Special emphasis is placed on evaluating the state of Tunisia's tropical forests. Data on biodiversity issues in each of the country's 21 gouvernorats are followed by an

assessment of the national environmental protection system. Desertification is identified as the major threat to biodiversity in Tunisia. Due to logging, erosion, clearing for agriculture and grazing, and constant pressure for forest products, 18,000 hectares are lost annually. Additional environmental problems include: (1) water pollution through discharged sewage, chemical wastewater, and garbage; (2) disruption of wetlands — many of them of international importance — due to dam projects; (3) desiccation of oases due to water resource manipulation for irrigation and domestic use; (4) inappropriate cultivation leading to erosion and dune formation; and (5) loss of animal habitat and poaching, which have nearly extirpated the monk seal and endangered almost all large mammals. Numerous recommendations are made which address these issues.

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Order No.: PN-ABC-250

Uganda

Environmental synopsis of Uganda

Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

Stone, Paula, Dalal-Clayton, Barry; et al.
British Overseas Development Administration, UK
International Institute for Environment and Development, London, UK
Apr 1992, 27 p.: maps, En

Prior to the emergence of the Amin administration in 1971, Uganda had a good record of environmental management. During and following Amin's administration, however, considerable environmental degradation occurred as a direct consequence of the political and civil circumstances. This report begins with a description of Ugandan environmental institutions, policies, research, legislation, and educational opportunities. It then assesses the state of the environment, providing an inventory of natural resources as well as information on industry, demography, and urbanization. The report concludes that the Ugandan population has become apathetic to many environmental issues, notably those that pertain to wildlife and the sanctity of protected and forested areas. Furthermore, the civil strife has withdrawn money from the economy which may otherwise have been used for environmental improvement, particularly in the urban centers which now suffer from severely underfunded services such as potable water and sanitation. Wastewater treatment is minimal in Kampala and virtually nonexistent elsewhere. In rural areas, population pressure has forced the colonization of marginal lands, leading to high levels of deforestation and soil erosion. An increasing demand for fuelwood adds to this problem, and the loss of all forest resources by the turn of the century is possible.

Available from:
International Institute for Environment and Development
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Order No.: WRI-184

Uganda: conservation of biological diversity [and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1988, [25] p.: charts, maps, statistical tables, En

Uganda's biological diversity comes by virtue of its unique location at the conjunction of four major vegetation regions. Some 5,000 plant species have been recorded in Uganda, as well as a notable abundance of primate and bird species. But years of civil strife have severely diminished the social, economic, and environmental health of this East African nation, once known as "The Pearl of Africa." This report profiles Uganda's natural resources and highlights the forces responsible for the ongoing depletion of the country's forests. Six main types of forest are present in Uganda: (1) riparian; (2) dry; (3) high altitude; (4) medium altitude moist evergreen; (5) medium altitude moist semi-deciduous; and (6) forest-savanna

mosaic. Forest areas in the country were traditionally well-managed with logging strictly licensed and supervised. Reserves were divided into harvesting blocks and given 50 – 100 year regeneration periods after tree felling. Forest management collapsed as a result of political instability in the early 1970's and the ensuing illegal encroachment and deforestation caused a 50% reduction in forested area between 1971 and 1987. According to the report, current annual rates of population growth (3.3%) and deforestation (2%) suggest that Uganda may lose all of its forests before the turn of the century. A list of recommended actions ends the document. A table of protected areas and a 77-item catalog of endemic taxa are included.

Available from:
World Conservation Monitoring Centre

National report on the environment and development (prepared for the UN Conference in Brazil, June 1992)

UNCED National Reports

Uganda. Ministry of Energy, Minerals and Environment Protection, Kampala, UG
Jul 1991, 78 p.: statistical tables, En

Uganda has a variety of flora and fauna and fresh-water systems. In fact, the country's rich natural vegetation and forests and low level of fossil-fuel use make it a net absorber of carbon-dioxide. However, Uganda lacks the scientific, technological, and management capacity to exploit and enhance much of its natural wealth. Furthermore, the persistence of poverty, coupled with high population growth, could lead to serious pressures on land and overexploitation of forest resources, as well as inadequate health care and education. The unfavorable international social and economic relation between the industrialized and the developing countries also imposes problems to the latter in their efforts to implement environmentally safe and sustainable development. The first section of this report gives an overview of Uganda and highlights steps taken since the 1972 Stockholm Conference on Human Environment. The second describes major development and environmental trends related to natural resources, services, and education. The report then summarizes relevant economic issues and describes international environmental cooperation as well as national policies, institutions, legislation, projects, and programs. It also spells out recommendations that the Government of Uganda wishes to see addressed at the U.N. Conference on Environment and Development in Brazil.

Available from:
UNDP Resident Representative
P.O. Box 7184
Kampala
Uganda
Phone: (256 41) 233440
Fax: (256 41) 244801
Also available from:
Ministry of Energy, Minerals and Environment Protection
P.O. Box 9629
Kampala
Uganda

Uganda: environmental and natural resource management policy and law — issues and options: 1. documentation

Environmental Policy and Management Studies

Tukahirwa, Eldad M., ed.
Makerere University. Institute of Environment and Natural Resources, Kampala, UG
World Resources Institute, Washington, DC, US
1992, 94 p.: charts, statistical tables, En

According to this report, Uganda's population will exceed the carrying capacity of the land by about 2020, if current rates of growth continue. By then, all marginal areas will be under cultivation, as will all present-day wetlands and conservation areas. This report assesses the effectiveness of Uganda's policies and legislation in addressing population growth and other environmental problems. Chapter I presents general information on demographic changes and key environmental issues related to catchment areas, biological diversity, soil, wetlands, and energy self-sufficiency. Chapter II provides an outline of government policies related to soils, forests and energy, water, wetlands, fisheries, wildlife, and tsetse control. General comments on the government's approach to policy development and implementation are also presented. Chapter III

covers legislation relating to these same topics. Chapter IV summarizes the perceptions of rural people towards environmental issues, as determined by a national survey. The report concludes that Uganda lacks adequate ways of informing people about the rationale behind environmental policies and laws. Appendices include references, the survey instrument, and recommendations from recent national and regional seminars on environmental policy.

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World Resources Institute
Center for International Development & Environment
1709 New York Avenue, NW
Washington, DC 20006
Phone: (202) 638-6300
Telex: 64414 WRI WASH
Fax: (202) 638-0036

Strategic resources planning in Uganda

Environmental Policy and Management Studies

U.N. Environment Programme, Nairobi, KE
Aug 1988, 10 v.: ill., maps, statistical tables, En

Uganda, unlike many of its neighbors, has developed its resources relatively judiciously and has taken care to set aside areas for preservation. Nonetheless, 80 years of rapid development, combined with severe civil strife in the 1970's, have led to considerable environmental degradation. This multi-volume survey provides detailed information on Uganda's natural resources and environmental problems, and presents a strategy for environmental management. Individual sections cover land use; soils and soil degradation; agro-ecological modelling of climatic zones; population trends and their environmental consequences; forest resources and deforestation; wildlife and protected areas; the resurgence of tsetse fly and resulting trypanosomiasis (sleeping sickness) in humans and animals; livestock development; water resources; fisheries; and wetlands. Recommendations for redressing environmental problems include: re-establishing basic law and order to facilitate genuine development and combat serious offenses such as poaching; renewed inventories and integrated resource assessments of flora and fauna; environmental and infrastructure rehabilitation; administrative and legislative strengthening; research and human resources development; and improved public education and awareness programs. Includes references and detailed maps.

Available from:
United Nations Environment Programme
P.O. Box 30552
Nairobi
Kenya
Phone: (254 2) 230 800, (254 2) 520 600
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Order No.: WRI-188

Zaire

Conservation and management of tropical forests and biological diversity in Zaire

Tropical Forest & Biological Diversity Assessments — USAID

Goodson, Jeff
U.S. Agency for International Development. Bureau for Africa. Zaire
U.S. Agency for International Development. Bureau for Africa. Regional Economic Development Services Office. West and Central Africa
1988, xvi, [140] p.: maps, statistical tables, En

Zaire, which contains about half of all true tropical forests found in Africa and about 10% of those in the world, fortunately is not currently facing a deforestation crisis. Although demand for fuelwood and charcoal has created halo-shaped areas of deforestation around the country's urban centers, even worst-case calculations indicate that at least 87.6% of Zaire's original forest remains, and that the prevailing deforestation rate is a low 0.15% – 0.50%. According to this report, slow rural population growth and movement away from agricultural employment can be expected to indirectly slow the loss of biological resources by slowing growth in the number of smallholder farmers primarily responsible for deforestation.

Zaire's biological resources include a wide diversity of flora and endemic taxa, as well as 82 threatened or endangered species, most of which are mammals or birds. The majority of the country's biotic communities, vegetation types, and endangered species are probably included within its eight national parks, which include the largest tropical forest park in the world and cover 3.6% of the country's territory; the establishment of two proposed parks will cover another 1% of the land area. Although the Government of Zaire has clearly indicated its commitment to conservation of forests and biological diversity, it faces serious institutional weaknesses, including a lack of economic resources to protect already established conservation areas, a scarcity of trained professionals, and insufficient technical information to establish conservation priorities. A 99-item bibliography is included. (Author abstract, modified)

Available from:
U.S. Agency for International Development
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Order No.: PN-ABD-045

Conservation des écosystèmes forestiers du Zaire

(Conservation of forest ecosystems of Zaire)

Conservation of Forest Ecosystem Studies — IUCN

Doumenge, Charles
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1990, ix, 242 p.: ill., maps, statistical tables, Fr

Logging of Zaire's forest has so far been modest (500,000 cubic meters a year), but the likelihood of increased logging is great, and by the year 2000 it is estimated that some 6 million cubic meters of timber per year will be cut. Fortunately, Zaire has protected a large proportion of its forests, and even wants to increase this protected area by 12% – 15%. This document describes Zaire's forests, which are home to more than 10,000 plant species (some 3,000 of which are known to be endemic) and to 409 species of mammals and 1,086 species of birds. It also discusses the role of forestry in the national economy, and identifies legislative and institutional factors pertaining to the protection and utilization of forest ecosystems. Key recommendations are: (1) to revise conservation legislation to permit dynamic involvement of local communities in managing protected areas; and (2) to regulate hunting in order to protect animals and promote tourism. Also provided is detailed information (climate, geographic situation, human populations, points of interest, legal status, plant life) on 15 existing protected sites, 13 additional sites, and 4 sites of local interest. Includes bibliographies.

Available from:
IUCN — The World Conservation Union
Publications Department
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Order No.: WRI-112

Zaire: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1988, 25 p., En

The rain forests of eastern Zaire are one of the few forest zones in Africa to have survived the ice age, and thus are particularly rich in biodiversity. This report assesses Zaire's abundant natural resources and identifies major environmental threats. About half of Zaire is covered by the most extensive undisturbed rain forest zone in Africa. This 1 million sq km area contains such rare mammals as pygmy chimpanzees, okapis, bongos, and mountain gorillas. Zaire ranks either first or second among African nations in the number of plant species, endemic plant species, mammals, amphibians, and swallowtail butterflies. Fortunately, there is considerable potential for conservation in Zaire, which has a history of commitment to protecting environmental resources. In 1925 it became the first African country to create a national park, and the current regime aims to expand protected areas from about 8% to 15% of the country. However, rapid population growth (expected to occur at a rate of

3.1% for the rest of this century) will undoubtedly increase pressure to colonize the forest zone. At present, about 1,820 sq km (0.2%) is deforested each year by shifting cultivation, fuelwood collection, and plantation agriculture. Although reserves within the forest zone are protected to a large extent by their remoteness, they are vulnerable to poaching, with many villages allegedly involved fulltime in elephant hunting. The report recommends both expansion of the protected areas and strengthened enforcement of conservation laws.

Available from:
World Conservation Monitoring Centre

République du Zaire plan d'action forestier tropical

(Zaire tropical forestry action plan)

Tropical Forestry Action Programme — FAO and others

Republic of Zaire
Canadian International Development Agency, Hull, PQ, CA
1990, 2 v.: statistical tables, Fr

Zaire has enormous but underdeveloped potential in forestry. Despite an abundance of forest cover, the sector makes up only 1% of GNP. The country is also experiencing problems of wood scarcity in the more densely populated eastern and southern sections, where there is a high demand for wood for domestic fuelwood and construction needs. This Tropical Forestry Action Plan report begins with a general description of Zaire's natural resources and geography, political system, economy, and national forestry plan (1986 – 90). The report then analyzes five major aspects of the forestry sector. First, a section on land use covers human settlements, rural social structure, agricultural policy and natural resource management, agronomy research, constraints affecting forest utilization, and prospects for reforestation. The second section describes the history and organization of Zaire's forest industry, and examines constraints on the industry and environmental impacts. Energy and fuelwood issues are then discussed, followed by a section on efforts to conserve the forest ecosystem. Finally, information is provided on forestry-related institutions. The remainder of the report presents recommendations, strategies, and detailed action plans related to these five aspects of the forestry sector. Individual projects planned for each of these five areas are outlined in Volume 2, with respect to their objectives, activities, implementation, estimated costs, and expected results.

Available from:
Canadian International Development Agency

Zaire forest policy review (draft): summary report

Tropical Forestry Action Programme — FAO and others

Zaire. Department of Land Affairs. Environment and Land Conservation
International Institute for Environment and Development, London, UK
Oct 1988, iv, 110 p. + 5 annexes: charts, maps, statistical tables, En

Zaire's forest resources are substantial, consisting of 100 million hectares of moist tropical forests within a total forest area of 243 million ha. This report outlines a strategy for conserving these resources through policy reform and development programs. The following areas are examined — forestry and land use, conservation of forest ecosystems, wood energy, forest-based industries, and institutions. The scope of each subsector is assessed, followed by information on socioeconomic importance, related management issues and trends, and institutional constraints and policy issues.

The report finds that Zaire's national parks account for some 4% of the country's total land area, and are generally well-managed, though subject to encroachment. Forest reserves, on the other hand, appear to be mostly unprotected and unmanaged. Major pressures on Zaire's forest resources are identified as: (1) slash and burn agriculture, which clears about 2 million ha annually, and (2) fuelwood harvesting, which totals about 30 times that of industrial production. Timber extraction is limited in Zaire by transportation difficulties and a poor investment climate. A government plan to establish 100,000 ha of fuelwood plantations for Kinshasa has begun, although targets for the next 5 years would meet less than 3% of total charcoal demand. The

Department of Land Affairs, Environment, and Nature Conservation is severely hampered by lack of well-trained staff, operational funds, and coordination. The report recommends administrative restructuring, increased development assistance, and attention to policy reform, research, and collaboration with nongovernmental organizations. Includes references.

Available from:
International Institute for Environment and Development

Zambia

Environmental profile, western province, Zambia

Environmental Profiles — Netherlands

Gils, Hein van; Aongola, G.; et al.
International Institute for Aerospace Survey and Earth Sciences, Enschede, NL
Provincial Planning Unit, Mongu, ZM
May 1988, iii, 37 p.: ill., charts, maps, statistical tables, En

The state of the environment in Zambia's Western Province is generally good. This report assesses the Province's forest, agricultural, and wildlife resources, along with its livestock, fisheries, water supply, and related health, legal, and institutional issues. The Western Province is distinguished from the rest of the country by the domination of Kalahari sand plains. In fact, about 75% of the Province is covered by forests containing primarily Mukusi, Mukwe, and Muzauli hardwoods, all of which occur only on Kalahari sand plains. Such forests are generally highly resilient to shifting cultivation, fuelwood cutting, cattle grazing, and fire. However, according to the report, current timber exploitation rates (20,000 cu m annually) threaten to deplete the Mukusi forests by the year 2000. Additional threats to the environment include: (1) the decline in some larger wildlife species (elephants, Red Lechwe, etc.) due to poaching and loss of habitat and (2) soil erosion caused by traditional drainage technology. The report also discusses the Province's considerable potential for agricultural development, while identifying some possible localized negative impacts, including soil erosion, bilharzia establishment, and overgrazing and overfishing. A major conclusion is that existing statutory and customary laws in the Province can provide a strong framework for preventing environmental degradation.

Available from:
International Institute for Aerospace Survey and Earth Sciences
P.O. Box 6
7500 AA Enschede
The Netherlands

National conservation strategy for Zambia

National Conservation Strategies — IUCN and others

International Union for Conservation of Nature and Natural Resources, Gland, CH
Zambia. Ministry of Lands and Natural Resources, Lusaka, ZM
1985, 96 p.: ill., En

Zambia's recent shift in emphasis from mining to agricultural development underscores the importance of natural resource management. This report summarizes environmental issues related to the following sectors: forestry, agriculture, human settlements, industry and mining, water, population, wildlife and tourism, and energy. Due to ill-planned development activities and population pressures, Zambia already faces many environmental problems. The most serious are deforestation, soil erosion, degradation of traditional pastures, pollution, and poaching. Other problems include land sterilization under mining dumps, inappropriate urban development, the reduction of wildlife habitats, overfishing, and the reduction of genetic diversity. In response, the Zambian government has formulated a National Conservation Strategy for improving natural resource management.

The report details a wide range of activities proposed in the strategy to integrate conservation with development planning. First, a new conservation coordinating body and supporting provincial committees would be established. Major objectives of these entities would be to support: (1) conservation education for politicians, planners, students, and the general public; (2)

more integrated, conservation-oriented extension services; (3) community participation in conservation activities; (4) natural resource management training; and (5) related inventories and research. Guidelines for specific interventions are also presented. The appendices provide information on, inter alia, environmental regulations, impact assessments, standards, and design briefs for settlements.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Nature of Zambia

State-of-the-Environment Reports

Carwardine, Mark
International Union for Conservation of Nature and Natural Resources, Gland, CH
1988, 71 p.: ill., maps, En

Zambia's wildlife is among the richest in Africa and includes 100 species of mammals, 700 of birds, and 4,600 of plants. Several species, including Thornicroft's giraffe and some 200 plants, are found nowhere else in the world. Zambia's relatively small and urban human population has made possible an extensive system of protected areas, including 19 national parks and 31 game management areas. However, numerous species found in Zambia are threatened, including the wild dog, cheetah, black rhino, elephant, leopard, and lechwe, the Nile and slender-snouted crocodiles, the shoebill, wattled crane, and slaty egret. Zambia's forest resources are also abundant, with 70% of the country covered by Miombo woodland, an open mixture of shrubs, various trees of moderate height, and tall grasses. This report begins with an overview of Zambia's history, culture, geography, and economics. Following an assessment of natural resources, the report identifies the major conservation problems, including rhino and elephant poaching, deforestation, agricultural chemicals, soil erosion and infertility, and water shortages and pollution. Discussion is then given to the importance of wildlife as biological capital. The following sections cover agriculture, tourism, industrial development and increasing population growth. Finally, a national conservation strategy for Zambia is outlined.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-125

Environmental effects of agricultural change and development in the Northern Province, Zambia

Other Environmental Studies

Zambia. Provincial Planning Unit. Northern Province, ZM
Norwegian Agency for International Development, Oslo, NO
Norwegian Centre for International Agricultural Development, Oslo, NO
International Union for Conservation of Nature and Natural Resources, Gland, CH
Dec 1989, xi, 169 p. + 6 appendices: ill., maps, charts, statistical tables, En

The major environmental issue linked to agriculture and resource use in Zambia's Northern Province is accelerating deforestation due to the extensive practice of chitemene, a long-standing shifting cultivation practice whereby the products of burnt branches are used to enrich soil fertility. If such practices continue, complete deforestation of the province may occur within a few decades. Government and donor supported efforts to encourage transitions to more permanent farming methods have met with limited success; some gradual transitions, independent of outside interventions, have been noted in areas where deforestation already limits the potential for chitemene cultivation. This study examines the environmental effects of agricultural production and natural resource use in the Province. Part 1 provides information on the study methodology and overviews the main issues. Part 2 briefly describes the Province's climate, geography, and natural resources, and the utilization of these resources for agriculture, livestock farming, forestry, fishing, wildlife preservation, etc. Part 3 provides demographic information, including farmer profiles. Parts 4 and 5 analyze, respectively, current agricultural and natural resource management policies and planning, and the environmental effects of land use practices;

Part 6 identifies policy and institutional shortcomings. The study concludes by recommending program, policy, and institutional options for sustainable resource utilization. Includes bibliography.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-339

Zimbabwe

Environmental synopsis of Zimbabwe

Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

Stone, Paula; Dalal-Clayton, Barry; et al.
International Institute for Environment and Development, London, UK
U.K. Overseas Development Administration, London, UK
Apr 1992, 32 p.: maps, statistical tables, En

Zimbabwe's peasants remain concentrated in the relatively infertile communal lands to which they were once restricted under colonial rule. Today, these areas suffer severe environmental problems, including deforestation, overgrazing, and soil erosion. According to this report, these problems are related to a high rate of population growth, large livestock numbers, a lack of financial and personnel resources for sustainable land management, and a land tenure system that promotes overgrazing. The report summarizes Zimbabwe's environmental institutions, legislation, and training opportunities; assesses the natural resource base; and identifies primary environmental problems. The Zimbabwean government has attempted to reduce population pressure on the communal lands by resettling peasants to other areas. However, the new settlements in former commercial farming areas have been associated with massive environmental destruction. Settlers fell trees for fuelwood and building materials, and most are poorly equipped to manage the environment. Another serious problem is the unconstrained establishment of mines, which has led to the creation of large dumps of usually sterile, and sometimes toxic, wastes. In contrast to much of Africa, urban sanitation is not a major problem. However, there are localized problems due to overcrowding and the shortage of adequate housing and services. Includes 38-item bibliography.

Available from:
International Institute for Environment and Development
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-173

National conservation strategy — Zimbabwe's road to survival

National Conservation Strategies — IUCN and others

Zimbabwe. Ministry of Information, Posts and Telecommunications. Department of Information, Causeway, ZW
Apr 1987, 36 p.: ill., charts, maps, En

The Zimbabwe Government's objectives and strategy for the protection, sustained utilization, and development of national resources is outlined. Section I of the report provides background information on Zimbabwe's soils and vegetation, climate, and land use patterns, as well as environmental problems relating to water supply, arable and non-arable lands, wildlife and protected areas, forest lands, pollution, mining, energy resources, and population. According to the report, overgrazing and burning of non-arable lands is the most serious cause of environmental degradation in the country. Poaching and deforestation (due to clearing of land for cultivation, increasing demand for fuelwood and building materials, localized destruction by elephants, and fires) are also cited as major threats. Section II details Zimbabwe's national conservation strategy. Due to the country's high population growth rate (one of the highest in the world at 2.9%), family planning promotion is emphasized as central to achieving overall strategy objectives. Additional aims are to preserve biodiversity, develop urban industry, provide formal environmental education, carry out legislative reform, and strengthen environmental

monitoring, pollution control, and program management. A detailed inventory of national resources will be conducted to serve as a basis for planning and implementing appropriate measures.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Nature of Zimbabwe

State-of-the-Environment Reports

Carwardine, Mark; Jones, David, comp.
International Union for Conservation of Nature and Natural Resources, Gland, CH
Grindlays Bank p.l.c.
1988, 87 p.: ill., maps, En

The distribution of Zimbabwe's population is perhaps the most unfortunate legacy inherited from the country's colonial past. Population patterns shaped in the years of land division along racial lines persist to this day, with black Zimbabweans concentrated on the least productive, most easily degraded land. This has put growing pressures on the natural resource base, as people are forced to abuse the land in order to survive in the short term. Following background information on Zimbabwe's history, geography, people, and economy, this report assesses the country's natural resources. Zimbabwe's rich wildlife resources are described, including some 270 species of mammals, about 640 different birds, and 153 reptiles. Special emphasis is given to the problem of rhinoceros and elephant poaching. Zimbabwe is one of the last strongholds for the black rhino in the wild in Africa and also has a thriving elephant population of some 40,000. The economic value of Zimbabwe's plentiful wildlife — via safari hunting, game ranching, fishing, and the reaping of medicinal and other wild plants — is outlined next. The report then examines environmental issues related to agriculture, including the problems of soil erosion, overgrazing, and tsetse fly infestation. The country's deforestation rate is addressed and efforts to alleviate this problem are evaluated. Zimbabwe environment is then examined with respect to industrial development. Final sections address implications for the future of Zimbabwe's natural resource base and outline the national conservation strategy.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-126

State of the environment: Zimbabwe — the perspective of two NGOs

Other Environmental Studies

International Institute for Environment and Development, London, UK
Zimbabwe Environmental Research Organisation, ZW
Environment and Development Activities, ZW
Oct 1991, [141] p.: maps, statistical tables, En

Though considered a comparatively successful development model for Africa, Zimbabwe is locked in a vicious cycle of poverty and environmental degradation. Sustainable environmental management may be the only way to break this cycle; however, colonial legacies and the continuing influence of developed nations perpetuate attitudes, societal arrangements, and institutional models that are not conducive to appropriate environmental action. Two Zimbabwean NGO's, Environment and Development Activities (ENDA) and Zimbabwe Environmental Research Organization (ZERO), were invited to prepare this report for the U.N. Conference on Environment and Development (UNCED) in Brazil in June 1992. Underlying the report's conclusions is the conviction that the developing countries in the world's southern regions need to develop and adopt uniquely "southern" approaches to sustainable development.

Chapter 1 is an introduction, comparing and relating conditions in Zimbabwe to the problems facing developing countries worldwide. Chapter 2 explores the historical roots of Zimbabwe's problems — found mostly in colonial and post-independence social and economic policies — as well as the current economic situation. Chapter 3 is a profile of resources and environmental issues, with sections on population, natural resources, soils and soil erosion, vegetation and forests, parks, wildlife, resource extraction, manufacturing, pollution, and land use, as well as a list of chief

environmental concerns. Next, Chapter 4 covers the policy and institutional setting for environmental action, from the role of the central government to the contributions of NGO's. Chapter 5 addresses development trends, their effect on environmental degradation, and future directions; inequitable distribution of land and resources is a basic problem, making land reform essential. Chapter 6 summarizes and gives concluding remarks; the importance of land reform and institutional development are reiterated. Annexed are some 40 data sets and narrative descriptions of environmental institutions, legislation, and resource characteristics.

Available from:
ENDA Zimbabwe
P.O. Box 3492
Harare, Zimbabwe
Phone (263 4) 708 568

Pre-study of environmental issues for the Zimbabwe country study

Other Environmental Studies

Gumbo, Davison; Whist, Erik; et al.
Zimconsult, Harare, ZW
Hifab International, Oslo, NO
Norway. Ministry of Development Co-operation, Oslo, NO
Jun 1989, v, 116 p.: statistical tables, En

Zimbabwe's environmental problems include both those that are common to developing countries — deforestation, soil erosion, and overgrazing — as well as chemical pollution, due to the country's relatively high level of mining, manufacturing, and commercialized agricultural activity. In terms of wildlife resources, Zimbabwe's management efforts appear adequate. While some habitats are degraded and some species endangered, on the whole, the country's wildlife has been well conserved, making up a large proportion of southern African wildlife. This report examines Zimbabwe's natural resource base and its interaction with socioeconomic and policy demographic factors and land tenure. The following topics are covered: (1) historical perspectives on the state of the environment; (2) physical features (e.g., soil, water resources, vegetation, wildlife, and insects); (3) present and potential uses of natural resources; (4) demography, human settlements, and land tenure; (5) major environmental problems (relating to soil, water resources, forest products, pastoral land, wildlife and biogenetic resources, and pollution, waste disposal, and pest control); and (6) legal and institutional instruments for natural resource management. Final sections of the report identify options for sustainable development, examine the environmental impact of foreign assistance, and recommend proposals for future Norwegian assistance. Includes bibliography.

Available from:
Norwegian Ministry of Development Cooperation
Postboks 8114-Dep.
7 Juni Plass 1
Oslo 1
Norway
Phone: (47 2) 20 4170

Land degradation in Zimbabwe: a geographical study

Other Environmental Studies

Whitlow, Richard
University of Zimbabwe. Department of Geography, Salisbury, ZW
Zimbabwe. Department of Natural Resources, ZW
1988, vii, 62 p.: ill., charts, maps, statistical tables, En

Zimbabwe's erosion problems are extremely complicated, involving the interaction of many political, social, economic, and environmental factors. An estimated 1.8 million ha, or about 4.7% of Zimbabwe's total area, is eroded. Most of this erosion has occurred in the Communal Lands, where population pressures are greater and resource management practices weaker than in the intensive commercial farming areas of the General Lands. In addition, most of the erosion seems to date back to the civil war period in the 1960's, when conservation efforts were neglected due to security problems. This report traces the history of the erosion problem in both large-scale commercial farming areas and Communal Lands. It then describes the methodology of an innovative national erosion survey which was conducted in 1986, and assesses the distribution of erosion throughout the country according to type of land tenure, natural regions, and occurrence within cropland and non-cropland. Final sections examine the influence of physical factors (e.g., rock

outcrops and sodic soils) and human factors (e.g., population density, agriculture, grazing, and wetlands degradation) on erosion. Includes references.

Avbailable from:
Ministry of Natural Resources and Tourism
Department of Natural Resources
Private Bag 7753
Causeway, Harare
Zimbabwe
Phone: (263 0) 794455
Telex: 4435

Central African Region

Conservation des écosystèmes forestiers d'Afrique Centrale

(Conservation of forest ecosystems of Central Africa)

Conservation of Forest Ecosystem Studies — IUCN

International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1989, viii, 124 p.: ill., maps, statistical tables, Fr

This document provides a plan of action for conservation and rational management of forest ecosystems in seven Central African countries — Cameroon, Central African Republic, Congo, Gabon, Equatorial Guinea, São Tomé and Príncipe, and Zaire. The plan was formally agreed upon at a conference at Lopé, Gabon, in November, 1988, attended by representatives of the above seven nations and of various international environmental organizations. The report is divided into four parts. The first describes the dense humid forests of the region with respect to their biological diversity, their role in the economy, legal status, and social and cultural importance. The second part discusses legislation and institutions pertinent to forest management and outlines major problems facing the Central African forests and their indigenous plant and animal life. Part three proposes a regional plan of action that will guarantee conservation, while assuring sustainable use of forest resources. Finally, part four recommends specific actions for each individual country; these recommendations cover four areas — legislation and institutions, utilization, conservation, and international financing. A brief bibliography is included.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-111

Mediterranean Region

State of the Mediterranean marine environment

Other Environmental Studies

U.N. Environment Programme. Oceans and Coastal Areas Programme Activity Centre, Nairobi, KE
1989, 225 p.: charts, maps, statistical tables, En

The Mediterranean Sea's peculiar hydrological characteristics, while generating relatively low nutrient concentrations and biological productivity, have the fortuitous effect of ameliorating the impacts of sewage, industrial discharge, and agricultural run-off. Of course, this self-purifying capacity is limited. This report examines the manifold effects of human activity on the Mediterranean marine environment. Individual sections: (1) provide general information about the Mediterranean, from its geological and climatic characteristics, to its chemistry, currents, and biological resources; (2) describe marine contaminants, of which mercury is a major concern; (3) discuss human activities, such as urban and industrial activities, tourism, coastal development, oil transport, exploitation of living and non-living marine resources (e.g., fishing and oil exploration), and major projects such as the Suez Canal and the Aswan Dam; (4) examine the biological effects of such activities, which include eutrophication (a result of excessive nutrient concentrations), reduced fish and mollusk populations, loss of habitat, and damage from accidents involving oil or other chemicals; (5) consider the mechanisms for protecting the Mediterranean, as embodied in the Mediterranean

Action Plan; (6) explore the implications of global and regional climatic changes (e.g., rising sea levels and temperatures) on the Mediterranean; and (7) consider the costs of pollution control, especially sewage treatment, control of oil residues, and firefighting. Appendices include 14 pages of references and extensive data tables.

Available from:
United Nations Environment Programme
P.O. Box 30552
Nairobi
Kenya
Phone: (254 2) 230 800, (254 2) 520 600
Fax: (254 2) 520 711
Telex: Unterra, Nairobi
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-287

Sahel

Opportunities for sustained development, successful natural resources management in the Sahel

Tropical Forest & Biological Diversity Assessments — USAID

Shaikh, Asif; Arould, Eric; et al.
Energy/Development International
U.S. Agency for International Development. Bureau for Africa. Office of Technical Resources
U.S. Agency for International Development. Bureau for Africa. Office of Sahel and West African Affairs
Oct 1988, 6 v.: ill., maps, En, Fr

Based on field assessment of 70 promising farmer-based natural resource management initiatives in four Sahelian countries (The Gambia, Mali, Niger, and Senegal), this multivolume report concludes that environmental degradation can be reversed, given the proper combination of technical measures and socioeconomic/policy incentives. The main volume of the report provides an overview of the findings and recommendations. Major findings are: (1) intensive human efforts can regenerate degraded land and create productive microenvironments; (2) successful farmer-innovators provide strong role models; (3) public policy changes have increased incentives for rational natural resource management by small farmers; (4) sustainable initiatives providing immediate benefits have induced smallholder participation; (5) large-scale impacts will not be visible for at least 20 years; and (6) increasing local economic opportunities has played a key role in efforts to maintain biological diversity.

Volume II provides in-depth descriptions and analyses of each of the 70 initiatives (which included both public and private, large and small efforts in water and soil conservation, soil fertility, forestry, agroforestry, and biodiversity conservation, along with socioeconomic, policy, and income-enhancing initiatives), while Volume III analyzes, from the farmer's perspective, the financial viability of selected interventions (e.g., windbreaks, contour ridges, organic fertilizer). Volume IV assesses the initiatives' effects on biodiversity in Mali, Senegal, and The Gambia, with particular attention to protected areas, plant and animal resources, and river basins; included are detailed vignettes on 8 projects in which biodiversity featured strongly, along with several recommendations for incorporating biodiversity concerns into future efforts.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-033

IUCN Sahel studies, 1989

Other Environmental Studies

International Union for Conservation of Nature and Natural Resources, Gland, CH
Norwegian Agency for International Development, Oslo, NO
1989, xxi, 152 p. + attachments: charts, maps, statistical tables, En

Many widely held beliefs about the Sahel — concerning the process of desertification, the extent of denudation of vegetative cover, and the inevitability of rangeland degradation — are questioned in this report. The region's history of below-average rainfall during the past 20 years is described in Chapter I and relevant policy and program implications are summarized. Chapter II

analyzes the region's population explosion, trends in urbanization and migration, and related population policies, while Chapter III investigates the perception that the Sahelian agricultural production system is in process of collapse. Specifically, the section covers regional patterns of production, influences on production, commodity mix, rainfall, planted areas and yields, agricultural trade, and self-sufficiency. Contrary to widespread belief, the report indicates that there has actually been a steady increase in agricultural production, even though food aid has also been making up an increasing proportion of the total food consumed. Chapter IV assesses the status of the region's protected areas network and its contribution to development. Chapters V and VI assess the impact of macroeconomic forces (including specifically, agricultural prices) on resource use, while VII and VIII examine land tenure issues, providing new perspectives on forest and rangeland management.

Available from:
IUCN — The World Conservation Union
Publications Department

Sub-Saharan Region

Conceptual approach to the conservation and management of natural forests in sub-Saharan Africa (arid and semi-arid forests and woodlands)

Tropical Forest & Biological Diversity Assessments — USAID

Associates in Rural Development, Inc.
U.S. Agency for International Development. Bureau for Africa. Office of Technical Resources
Mar 1991, v, 115 p. + annex: maps, statistical tables, En

Although forests and shrublands cover some 920 million hectares in West, East, and southern Africa, and the Horn of Africa, management of these arid and semi-arid forests has been largely neglected by the natural resources management sector. This document, designed to increase the understanding of host country and bilateral partner personnel of the importance of natural forest management, argues that the great demand for fuelwood (and the emergence of a cash marketplace for fuelwood that has accompanied this demand) provides an additional incentive to adopt a strategy for the sustainable development of these forests. The first section considers the potential for multiple uses of natural forests (e.g., range and forage land, the production of fuelwood and secondary forest products). The next section discusses the implementation of natural forest management programs, addressing policy considerations, local participation, scientific and biological issues, resource assessment, and economic aspects. The final section goes into more detail on management aspects, including the organization and roles of local user groups, development of forest management plans, and scientific techniques for range management. Includes 13-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABL-055

Natural resources and environmental concerns in Sub-Saharan Africa: a review with preliminary recommendations for a plan to support the management of natural resources in Sub-Saharan Africa

Tropical Forest & Biological Diversity Assessments — USAID

U.S. Agency for International Development. Bureau for Africa
12 Aug 1986, 160 p. + 2 annexes: maps, En

The visible link between human suffering and environmental degradation is nowhere as evident as in sub-Saharan Africa. In 1984/85, drought combined with desertification forced 10 million persons to abandon their homes and endangered another 20 million. Other, less visible, but no less serious threats to Africa's complex ecology include (to name but a few): massive soil erosion in Ethiopia's high plateau; sheet erosion, nutrient leaching, and reduced fallows that have cut productivity in half in parts of West Africa; and grave threats to Africa's magnificent wildlife heritage, including Madagascar's unique flora and fauna.

This report reviews and analyzes Africa's renewable natural resource base and environmental management capacity, and provides preliminary recommendations for A.I.D. actions. Initial sections discuss seven priority issues: soil erosion, loss of soil productivity, loss and degradation of vegetation, degradation of water resources by pollution, salinization, etc., coastal resource management problems, loss of biological resources and diversity, and stresses due to drought. These issues are then examined in greater depth for each of seven environmentally homogenous subregions: arid and semi-arid tropics, subhumid tropical uplands, humid equatorial lowlands, humid coastal lowlands, African highlands, subtropical highlands, and Madagascar and Indian Ocean islands. The report assesses conservation efforts in each subregion and proposes additional interventions. Recommendations focus on more effective integration of agricultural and energy development with natural resources management as well as cooperative efforts among donors. Additional information on donor activities is appended.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-598

Biodiversity in Sub-Saharan Africa and its islands: conservation, management and sustainable use

Other Environmental Studies

Stuart, Simon N.; Adams, Richard J.; et al.
World Conservation Monitoring Centre, Cambridge, UK
Conservation International Foundation, Washington, DC, US
International Union for Conservation of Nature and Natural Resources, Gland CH
World Wildlife Fund, Washington, DC, US
World Resources Institute, Washington, DC, US
International Council for Bird Preservation, Cambridge, UK
1990, v, 242 p.: ill., maps, En

This paper attempts to bring under one cover the essence of previous recommendations relating to the conservation of biodiversity in sub-Saharan Africa. Following an introduction, Chapter 2 describes the current status of biodiversity in Africa and the threats it faces (due largely to population pressures), emphasizing the value of Africa's biological richness. Chapter three is a point-by-point summary of suggestions for conservation, ranging from general, long-term solutions, to specific, immediate action recommendations; it also includes a brief sketch of the status of tropical forestry action plan reviews in each of the nations of sub-Saharan Africa. Chapter four discusses key concerns: the distribution of biodiversity in the Afrotropical realm, which encompasses environments ranging from mountain forests to savannas to dense jungle; unfortunately, the regions with the highest biodiversity are often the least effectively protected. Section two is a compilation of country profiles for each country in Africa — 48 in all. Each profile has an introduction, describes important sites, species, threats, and current conservation efforts, and gives a list of suggested conservation activities.

Available from:
IUCN — The World Conservation Union
Publications Department

Belize

Tropical forests/biological diversity: annex to USAID/Belize FY 89 – 90 [i.e. 88 – 89] action plan

Tropical Forest & Biological Diversity Assessments — USAID

U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Belize
Mar 1988, 26 p., En

Belize's forestlands cover about 90% of the country and contain a diversity of animal and plant species, many of which are endangered elsewhere in Central America and Mexico. This report assesses these natural resources and analyzes current efforts in tropical forest management and biodiversity conservation. With its small population, modest agricultural sector, and history of selective logging, Belize does not yet have a serious deforestation problem. About 60% of forestland is in public ownership, slightly less than half of which is in 16 forest reserves. However, none of the reserves has a scientific management plan or up-to-date inventory of timber, water, soil, wildlife, recreation, or archaeology resources. The protected areas also suffer from a severe shortage of personnel and operational funds. For example, the Forest Department has only five professional foresters to manage an estate of over 13,000 sq km. Land outside the reserves is not managed, and large projects are currently underway to convert tropical forest for agricultural use. Permits for conversion are granted routinely, with no scientific review of soil capability for sustaining agriculture. In the absence of a complete inventory of species or habitat types in Belize, it is difficult to assess either the rate or impact of forest or other habitat conversion. The report presents recommendations for developing an information base and policies necessary for systematic conservation of biological diversity and rational development of the public estate.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PD-AAZ-835

Belize tropical forestry action plan

Tropical Forestry Action Programme — FAO and others

Arnold, J. E. M.; Armitage, F. B.
United Kingdom. Overseas Development Administration
Canadian International Development Agency
The Food and Agriculture Organization of the United Nations
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Belize
Feb 1989, xxxi, 273 p.: Charts, maps, statistical tables, En

Belize is one of the most heavily forested and lightly populated countries in the world, and although logging has in the past played a substantial role in the nation's economy, the selectivity with which it was practiced has left natural systems remarkably intact. The need to both increase sustainable forest resource utilization and conserve forest cover motivated the Government of Belize to request this Tropical Forestry Action Plan. Following an executive summary, this report provides background on the country's geography, climate, natural resources, history, economy, and development objectives. Next, the report details aspects of forest resource utilization and management, including pertinent laws and legislation, industrial uses, economic outputs, agriculture, public administrative structures, domestic and foreign consumption, and conservation. The following section is devoted to proposals for action in the areas of strategic planning, land use, forest management, forest industries, environmental conservation, and institutional strengthening. The final section discusses the need for and sources of external assistance, and contains descriptions of 19 proposed projects. Appendices include maps and statistical data.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABL-057

Belize national report to the [United Nations] Conference on Environment and Development

UNCED National Reports

Government of Belize, BZ
1991, 89 p.: charts, En

Due to its exceptionally low population density of seven persons per sq km, Belize's natural resources have experienced less pressure than those in other developing nations. Although small in land area, Belize is rich in biodiversity, and it has an extensive and unique coastal and marine ecosystem comprised of coastal lagoons, mangrove swamps, seagrass beds, and coral reefs. This report begins with a description of the country's physical characteristics and its economic and demographic trends. Sector reports are then presented on non-renewable resource extraction, energy, industry (sugar cane and citrus processing and banana packaging), transportation, housing, health, education, land use management (forestry, agriculture, fisheries, and parks and reserves), and tourism. Special issues reports are also included on marijuana eradication programs, military activity, refugees and displaced Central Americans, women's role in the environment, and the legal framework for environmental management. The paper evaluates Belize's progress in, and constraints to, sustainable development. It then describes responses to environmental problems in terms of regional cooperation, international assistance, nongovernmental activities, and government policies and programs.

Available from:
UNDP Resident Representative
P.O. Box 1114
San Salvador
El Salvador
Phone: (503) 23 44 66
Fax: (874) 24 09 57

Costa Rica

Plan de acción forestal para Costa Rica

(Forestry action plan for Costa Rica)

Tropical Forestry Action Programme — FAO and others

Costa Rica. Ministry of Natural Resources, Energy and Mining, San Jose, CR
Costa Rica. Government of the Southern Districts
Mar 1990, 2 v.: statistical tables, Es

Development models that have been adopted over the past 40 years have led to a deterioration of Costa Rica's forests, which are potentially one of the country's greatest resources. Rampant agricultural growth, in particular, has led to widespread loss of forest habitat. This two-volume forestry action plan for the years 1990 – 1995 presents a strategy for arresting forest loss and promoting sustainable and productive use. The first half of Volume I provides a general outline of major resource and environmental issues in Costa Rica, including the overuse of land and water resources, the potential economic and biological importance of the forestry sector and its continuing neglect, and the loss of biological diversity due to deforestation and agricultural expansion. The second half focuses generally on the measures needed to solve or ameliorate these problems, and specifically on how to bring the forestry sector up to modern standards. Five areas are examined in detail: land use, development of the wood products industry, use of wood as fuel, forest conservation, and agencies involved in forest management. Volume II describes several planned projects in each of these five areas; each project is discussed with respect to justification, specific objectives, expected results, activities, beneficiaries, and institutional aspects. Includes a 7-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-129

Conferencia de las Naciones Unidas para el ambiente y el desarrollo — 'Eco 92': informe nacional de Costa Rica

(United Nations Conference on Environment and Development — 'Eco' 92: national report from Costa Rica)

UNCED National Reports

Center for Environmental Studies and Policies, [San Jose, CR]
Neotropica Foundation, [San Jose, CR]
Commission for the New International Environmental Order, [San Jose, CR]
Costa Rica. Ministry of Foreign Affairs and Culture, [San Jose, CR]
Jul 1991, 241 p. + 2 annexes, Es

Costa Rica is marked by striking ecological diversity. Although relatively small in size, the country has a complex topography and is exposed to wide-ranging climatic factors associated with altitude, along with the temperature-regulating effect of two oceans. However, changing land use patterns — particularly deforestation — have had a serious effect. One indication of this is Costa Rica's high rate of greenhouse gas emission — one of the highest on a per capita basis in the North and Central American region. This report identifies development trends in Costa Rica and analyzes their environmental impact. The report also evaluates the importance of natural resources for the Costa Rican economy and identifies major environmental problems related to air, water, oceans, soil, biotechnology and biodiversity, wastes and dangerous products, housing and labor conditions, human health, environmental education, and garbage. These problems are then linked to weaknesses in Costa Rica's policies and resources, the legal and institutional framework, and the national foreign debt. The final section of the report describes responses to problems of the environment and development in terms of policies, legislation, and institutions.

Available from:
UNDP Resident Representative
Apartado Postal 4540
San José
Costa Rica
Phone: (506) 55 33 11
Fax: (506) 55 37 78

Desarrollo socioeconómico y el ambiente natural de Costa Rica: situación actual y perspectivas

(Socioeconomic development and natural environment of Costa Rica : actual situation and prospects)

State-of-the-Environment Reports

Solera, Alonso Ramirez, ed.; Ulloa, Tirso Maldonado, ed.
Neotropica Foundation, San Jose, CR
Conservation Foundation, Washington, DC, US
Ford Foundation. Mexico and Central America Office
May 1988, 159 p.: charts, maps, statistical tables, Es

Unfortunately, many of Costa Rica's extraordinary diversity of plants, birds, and animals were already lost by the time the country embarked on an major conservation program, establishing a system of protected areas which today covers more than 25% of the nation's territory and which is the foundation of a tourist industry which is the third largest source of GNP. During the early 1980's, Costa Rica suffered its worst economic crisis in recent history, a situation which was answered with an ambitious series of development programs — which, however, have increased pressures to open protected areas to exploitation.

This monograph addresses the interaction and conflicts between development and the natural environment in Costa Rica. Following an introduction, Chapter 2 provides information on the country's demographic and economic status. Chapter 3 details natural characteristics, vegetation zones, land use, and political/administrative boundaries. Chapter 4 covers the use and management of natural resources, including sections on agriculture, commercial forestry, coastal regions, protected areas, tourism, freshwater, energy, and minerals. Chapter 5 analyzes the impacts of development and

exploitation: deforestation, pollution; loss of biological diversity; and damage to protected areas. Chapter 6 describes the legal, institutional (governmental and non-governmental), and technological aspects of natural resource use, and explores public perceptions about the environment, while Chapter 7 presents conclusions. Annexes include lists of protected areas, preservation organizations, and important plants, animals, and birds, as well as a 19-page bibliography.

Available from:
Fundacion Neotropica
Apartado 236-1002
San Jose
Costa Rica
Phone: (506) 33 0003/33 677
Telex: RADIO GRAFICA
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-268

Costa Rica: evaluación de la conservación de los recursos biológicos = Assessment of the conservation of biological resources

Other Environmental Studies

Maldonado U, Tirso, ed.; Dobbin, James A., ed.
Neotropica Foundation. Program for Natural Endowment, San Jose, CR
Conservation International Foundation, Washington, DC, US
1988, 13 p.: maps, statistical tables, Es, En

In Costa Rica, the interrelation of geographic, geological, and climatic factors within a relatively small area (51,100 sq. km) has given rise to a great variety of environments. In turn, a rich diversity of organisms has developed, including 848 species of birds, 205 mammals, 218 reptiles, 160 amphibians, 130 freshwater fishes, and approximately 9,000 species of plants. This document assesses which of Costa Rica's biological resources are protected within the country's system of strictly protected wildlands; provides an integrated cartographic analysis of information on biological resources and land use, using protected areas and watersheds as management units; and identifies priority areas for biological conservation and research. According to the report, great progress has been made in conserving Costa Rica's natural wealth, largely through protection of a high percentage of the country (approximately 11.3%). When the areas that permit the exploitation of resources under certain conditions (forest reserves and protective zones) are included, this figure increases to 21.5%. Paradoxically though, Costa Rica also has one of the highest rates of deforestation in Latin America. Water pollution caused by sediments and chemicals, along with water shortages and soil erosion, are additional problems. (Author abstract, modified)

Available from:
Conservation International Foundation
1015 18th Street, NW
Suite 1000
Washington, DC 20036
USA

El Salvador

El Salvador: perfil ambiental; estudio de campo

(El Salvador: environmental profile; field study)

Country Environmental Profiles — USAID

Moran, Joaquin Alonso Guevara; Daugherty, Howard; et al.
EMTECSA de C.V.
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. El Salvador
Apr 1985, 266 p.: ill., maps, statistical tables, Es

El Salvador's natural resources are the most overexploited in Central America, a problem exacerbated by the fact that the country is resource-poor and ecologically fragile to begin with. This interdisciplinary study examines the quantity and quality of El Salvador's natural resources, their utilization, state of degradation, capacity for regeneration, and problems related to their management. The first part assesses water, soil, forest, coastal, marine, mineral, and energy resources. The second part discusses "eco-development" in relation to El Salvador's economic, social, and cultural characteristics,

including land use, demography, education, and health. Next, the institutional, legal, and political aspects of environmental issues and natural resource conservation efforts are analyzed, highlighting: the need for social action; the role of government planning, programs, and projects; and the limitations of such actions. In the final part, recommendations are made for overcoming ecological degradation, including suggestions to increase public awareness; strengthen the roles of environmental scientists, nongovernmental organizations, and the national park system; and promote higher education in environmental sciences. Appended are an 894-item bibliography (1854 – 1984) and lists of endangered species.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAT-190

Annex I: biological diversity, USAID/San Salvador FY 89/90 action plan/annex II: tropical forests, USAID/San Salvador FY 89/90 action plan

Tropical Forest & Biological Diversity Assessments — USAID

U.S. Agency for International Development. Bureau for Latin America and the Caribbean. El Salvador
Apr 1988, [26] p., En

As the result of an almost complete lack of wildland areas and undisturbed natural habitats, El Salvador is thought by some to be the least diverse of the Central American countries. These annexes to USAID/El Salvador's FY89/90 Action Plan assess the nation's natural resources as well as efforts to conserve and manage them. El Salvador has six protected areas, totaling 9,680 ha, while about 40 additional plots have been identified for protection under a recent agrarian reform program. Forestlands, which cover only 13% of the country, are under enormous pressure due to El Salvador's high population density and dependence on fuelwood as an energy source. Forestry laws are ineffectively enforced, rational management is almost nonexistent, and uncontrolled harvesting has caused severe forest degradation. New legislation on wildlife protection is pending, as existing laws are completely outdated and unrealistic. Given the large rural population and their low incomes, subsistence hunting is undoubtedly widespread, while sport hunting is not likely to be significant. Efforts to improve El Salvador's environmental situation are seriously constrained by the country's political, economic, and social problems. However, a number of strong governmental institutions exist that, with adequate support, would be capable of undertaking effective conservation programs.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: XD-AAX-613-A

Guatemala

Perfil ambiental de la República de Guatemala

(Environmental profile of Guatemala)

Country Environmental Profiles — USAID

Garcia, Luis E.; Lemmerhofer, Carlos; et al.
Rafael Landivar University. Institute of Environmental Sciences and Agricultural Technology
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs
Nov 1984, 3 v., Es

For its size, Guatemala is a country of tremendous biological, geographic, and climatic diversity. This environmental profile describes Guatemala's natural characteristics, including detailed descriptions of rainfall distribution, climate, soils, geography, flora, forests, and coastal areas, as well as background on its cultural and historical heritage. It also addresses the present state and use of Guatemala's natural resources, the legal, administrative, and institutional factors that support such use, and the resources available for environmental management, relating trends to the social and economic factors that influence resource use and environmental protection.

The country's principal environmental problems are: deforestation; accelerated soil erosion; contamination by agrochemicals; air, water, soil, and food contamination resulting from agricultural and industrial pollution and other factors; inappropriate water resource development and river basin management; loss of habitat and biological diversity; damage to marine, coastal, and fishery resources due to inappropriate fishing methods, water pollution, introduction of foreign species, and excessive pesticide use; industrial pollution; misuse or overuse of energy sources; and adverse land use practices. The implications of a failure to stem the irreversible loss of resources and development opportunities are discussed. A critical diagnosis of the situation identifies and prioritizes groups of problems, and finally, recommendations are made for the near, middle, and long term. Appendices provide more data, the study's background, methodology, terms of reference, principal limitations, and a 169-item bibliography (1932 – 83). An English-language executive summary (PN-AAT-229) is also available.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAT-230

Biodiversity in Guatemala: biological diversity and tropical forests assessment

Tropical Forest & Biological Diversity Assessments — USAID

Nations, James D.; Houseal, Brian; et al.
World Resources Institute. International Institute for Environment and Development — North America
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Guatemala
Dec 1988, [204] p., En

This assessment of the status of biological diversity and tropical forests in Guatemala covers the nation's biological resources and the pressures that affect them, the condition and management of national parks and wildlands, endangered species, tropical forest ecosystems, germplasm conservation, the conservation of economically important plant and animal species, conservation institutions and legislation, and environmental education/training.

Key points include the following. (1) Guatemala's ecosystems are small but exceptionally diverse. The country's location between two continents and two oceans make it one of Latin America's foremost repositories of biodiversity. (2) The majority of the population depends directly on renewable natural resources. Agriculture, forestry, and fishing provide more than half of Guatemala's jobs and more than half of its export earnings. (3) Physical, demographic, and economic pressures are altering the natural environment rapidly. Tropical forests are being depleted at ominous rates, hillsides are being converted to farmland, and the fishing industry is threatened by chemical pollution and the destruction of mangroves. (4) The government and people of Guatemala are receiving only limited information on these realities. Environmental management and conservation are not priorities, and positive attempts at change are hindered by shortages of money and trained personnel. (5) Major donors are only beginning to help Guatemala address these problems. The assessment concludes with some 20 pages of detailed policy and project recommendations. Appendices include cost data, descriptions of 25 priority existing or proposed protected areas, and specific recommendations for A.I.D.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-252

Plan de acción forestal para Guatemala

(Forestry action plan for Guatemala)

Tropical Forestry Action Programme — FAO and others

U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Guatemala
Mar 1991, xiv, 227 p.: maps, statistical tables, Es

Guatemala's forest ecosystem, one of the largest and most diverse in Central America, has traditionally been viewed as a non-renewable resource, with little consideration of its value as a perpetual source of benefits for the country, nor of its importance as a genetic resource. The country's haphazard forest management and reforestation efforts have not been adequate to compensate for forest loss (up to 60,000 ha/year), which has been mainly due to agricultural colonization and use for fuelwood. However, in recent years the Guatemalan government has begun to recognize the implications, both regional and global, of its forest policies. This report describes the state of Guatemala's forest resources, highlights the central role they must play in the country's development, and presents an action plan for integrated forestry management. The plan proposes 40 actions and 17 projects under programs to improve land use practices, develop sustainable supplies for forest-based industries, increase fuelwood supply and promote its efficient use, conserve forest ecosystems, and strengthen forestry and conservation institutions. Includes a bibliography and project profiles.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-787

Honduras

Perfil ambiental de Honduras, 1989

(Environmental profile of Honduras, 1989)

Country Environmental Profiles — USAID

Honduras. Secretariat of Planning, Coordination and Budget
Development Alternatives, Inc.
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Honduras
U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
1989, xxxii, 346 p.: ill., maps, statistical tables, Es

Honduras enjoys rich renewable natural resources such as extensive woodlands, rivers, wildlife, and wildlands. Despite its natural wealth, however, Honduras is the poorest country in Central America and one of the poorest in the Western Hemisphere. Deterioration of natural resources and the ecological damage caused by their misuse is closely linked to the low level of socioeconomic welfare of most Hondurans. This profile of the Honduran environment begins with an overview of the country's demographic, socioeconomic, and cultural context. The report then cites major issues and presents recommendations related to the following: water and watershed resources, agricultural resources, forests, coastal zones, wildlands and wildlife, environmental pollution, environmental education, and institutions and legislation. The report notes that the uneven distribution of agricultural land is a serious constraint to sustainable development. Honduras has one of the highest concentrations of agricultural land in Latin America. Most farmers have plots smaller than 5 hectares or are landless, whereas the small agro-industrial sector controls more than 60% of agricultural lands, including those best suited for production. About 70% of rural Hondurans live in absolute poverty.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABG-279

Participación internacional en el desarrollo forestal de Honduras

(International participation in forestry development in Honduras)

Tropical Forestry Action Programme — FAO and others

[1988], vii, 206 p.: maps, statistical tables, Es

Honduras accounts for 80,000 of the estimated 11 million hectares of all tropical forests being lost each year, according to this Tropical Forestry Action Plan. As troubling as the causes of this deforestation — the common themes of agricultural colonization, fuelwood harvesting, forest fires, and industrial timber usage — is the lack of public awareness of the indispensable role that forest resources, and their sustainable management, must play in the nation's present and future well-being. The primary purpose of this document is to catalogue, describe, and solicit donor support for Honduran efforts in the forestry sector. Part one of the plan briefly outlines Honduras' socioeconomic situation, and then describes principal aspects of the forest sector, with sections on the forests, their utilization, the exportation of forest products, forest protection, and the policy and institutional framework for forest management in Honduras (highlighting COHDEFOR, the National Corporation for Forestry Development). Part two describes 13 forestry-related, donor-supported projects currently underway in Honduras. Part three, the last, describes and prioritizes another 31 proposed projects which are in need of external funding. These are divided into five programs: (1) silviculture and soil use (11 projects), ranging from prevention of forest fires to satellite imaging; (2) a single project to develop a secondary wood industry; (3) firewood and energy needs (6 projects); (4) forestry ecosystem conservation (2 projects); and (5) institution building (11 projects).

Available from:
TFAP Coordinating Unit
Forestry Department
The Food and Agriculture Organization of the United Nations

Honduras: environmental agenda

UNCED National Reports

Government of Honduras, Tegucigalpa, HN
[1991], [72] p., En

Honduras has been privileged with an abundance of natural resources which, if rationally managed, will contribute to the welfare of present and future generations. These resources, however, are being squandered and depleted at a rapid pace. This report presents an environmental agenda for Honduras which emphasizes the need to incorporate popular participation into the environmental protection process. The document begins with a description of the most important natural resources of Honduras, as well as the problems of resource use and exploitation. Chapter II examines the relation between the country's development policies and the environment by identifying development strategies used during the past 30 years as well as current stabilization and structural adjustment policies. Chapter III presents guidelines related to the management and utilization of natural resources and the improvement of living standards. Three priority themes are identified: hillside farming; including the campesino in forestry activities; and management of marine and coastal resources. Mechanisms for social participation in environmental actions are proposed for both urban and rural areas, based on close coordination between the public and private sectors, and with particular attention to the need for environmental education. Chapter IV describes the legal and institutional framework for natural resource management and identifies the financial resources available for environmental impact programs and projects.

Available from:
UNDP Resident Representative
Apartado Postal 976
Tegucigalpa D.C.
Honduras
Phone: (504) 32 7220
Fax: (504) 32 8716
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-213

Mexico: conservation of biological diversity (with emphasis on tropical forests)

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Godalming, UK
U.N. Environment Programme, Nairobi, KE
Aug 1988, [21] p. + 3 appendices: maps, statistical tables, En

Mexico's biodiversity ranks fourth in the world, after Indonesia, Brazil, and Colombia. The area with the greatest biological richness is the rain forests of the southeastern states. This report describes how socioeconomic activities and cultural characteristics have jeopardized these forests and other natural resources. The biodiversity of the country's three vegetation zones — tropical/subtropical, temperate, and semi-arid/arid — is assessed, followed by an examination of legal and institutional factors related to natural resource management. According to the report, the main causes of rain forest destruction are cash cropping, shifting cultivation, and cattle ranching. These activities, which are practiced in more than half of Mexico's national parks, destroy an estimated 1 – 2 million hectares of forest annually. Additional threats to biodiversity include: erosion (65% of the country is moderately to severely eroded); a rural land lease system which often encourages the clearing of forestland and the use of insecticides and herbicides; human migration to settlements within national parks; hunting for both local consumption and commercial purposes; and destruction of mangroves for firewood or conversion to aquaculture or pastures. Includes list of national and international conservation institutions active in Mexico.

Available from:
World Conservation Monitoring Centre

Patrimonio vivo de México: un diagnóstico de la diversidad biológica — resumen ejecutivo

Mexico's living endowment: an overview of biological diversity — an executive summary

Other Environmental Studies

Flores-Villela, Oscar; Fernandez, Patricia Gerez
Conservation International Foundation, Washington, DC, US
Apr 1989, iv, 51 p.: charts, statistical tables, En, Es

Mexico's exceptional biodiversity is found in communities which span the ecological spectrum — from lowland tropical rain forests to natural grasslands and alpine meadows. This report provides the first systematic and integrated review of the conservation status of Mexico's biological resources. The report views three major issues — biological richness, land use, and protected areas — from both an ecological and a sociopolitical perspective.

Due to lack of data on insects and other invertebrates, discussion of the country's faunal biodiversity is limited to terrestrial vertebrates (i.e., mammals, birds, reptiles, and amphibians). According to the report, roughly 194 vertebrate species, or 8% of Mexico's fauna, are believed to be threatened. With respect to floristic biodiversity, at least 477 plant species (1.9%) are known to be endangered, although given the lack of comprehensive botanical inventories, this is surely a substantial underestimate. Land use practices have had a significant negative impact on Mexico's ecological systems. For example, tropical evergreen forests and tropical dry forests have been reduced to half their original size by extensive pasture development. Unfortunately, the most biologically diverse areas are those most likely to be converted to pastureland. Parks, reserves, and other protected areas currently cover just 1.6% of Mexico's national territory. Moreover, states with high vertebrate endemism contain few of the protected areas. A recurrent theme in the review is the lack of data on the country's natural diversity. The report therefore identifies key knowledge gaps and presents guidelines for further research.

Available from:
Conservation International Foundation
1015 18th Street, NW
Washington, DC 20036
USA
Phone: (1 202) 429 5660

Informe sobre el estado del medio ambiente en México

(Report on the state of the environment in Mexico)

State-of-the-Environment Reports

Mexico. Secretariat of Urban Development and Ecology. Subsecretariat of Ecology, Mexico City, MX
Mar 1986, 83 p.: charts, maps, statistical tables, Es

Mexico is a land of great natural abundance and diversity. In recent years, however, Mexico's ecology has become increasingly threatened by air pollution, water contamination, and deforestation. High rates of population growth, rural-urban migration, and economic expansion have been responsible for worsening environmental degradation. This report outlines the condition of Mexico's environment and its interrelationship with patterns of economic and demographic change. Its four chapters discuss: (1) natural resources, both renewable (soil, water, and forest resources, wild plants and animals, and protected environmental areas), and nonrenewable (energy and mineral resources); (2) population and economic factors affecting the environment; (3) environmental problems; and (4) public environmental organizations and legislation. Chapter Two includes a review of agricultural, industrial, and service sector employment by ecological zone, and Chapter Three features a comparative examination of air pollution in Mexico's major cities and geographical regions in which analyses of contaminant volume, source, distribution, composition, and effect are presented through a series of charts and graphs. Topics considered in other parts of the report include, inter alia: (1) water pollution; (2) waste disposal; (3) radiation and noise pollution; and (4) the management of soil, wildlife, and protected areas. A 70-item bibliography and a glossary appear at the end of the text.

Available from:
Subsecretaría de Ecología, Secretaría de Desarrollo Urbano y Ecología
Rio Elba No. 20, Colonia Cuauhtemoc
C.P. 06500, Mexico, D.F.

Desarrollo y medio ambiente en México: diagnóstico, 1990

(Development and environment in Mexico: assessment, 1990)

State-of-the-Environment Reports

Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
Friedrich Ebert Stiftung
1990, 165 p.: ill., charts, maps, statistical tables, Es

Over the past 50 years, Mexico has followed a policy of accelerated industrialization. This policy, combined with explosive population growth, has brought a host of environmental problems: resource depletion; air, water, and soil pollution; destruction of forests and other ecosystems; and rampant urbanization. This report, the last in a series of nine reports on natural resources and the environment in Mexico, synthesizes the findings and suggestions of its predecessors.

Chapter 1 discusses population growth rates and the effects of industrialization and urbanization. Chapter 2 addresses the impacts of pollution resulting from industrial activity and urban concentration, and the stress thus placed on the country's health systems. Chapters 3, 4, and 5 focus, respectively, on air, water, and soil contamination. Metropolitan areas, especially Mexico City, are notorious for their unhealthy levels of pollution; atmospheric monitoring and solid waste disposal are primary concerns. Chapter 6 discusses the country's flora, fauna, and protected areas — which, though nominally protected, are widely used for agriculture and experience continual human intrusion. Chapter 7 discusses land use in rural areas, while Chapter 8 discusses legislation governing the use of natural resources, as well as legislation aimed at reducing environmental pollution. Finally, Chapter 9 reiterates the importance of environmental concerns, gives broad suggestions for incorporating environmental policy into the development process, and discusses some specific concerns: conservation, industrial activity, and

urban growth. Science alone, it is concluded, cannot reverse current trends; society must change its attitudes and behavior. An annex contains an illustrative plan for sustainable development.

Available from:
Fundación Mexicana para la Educacion Ambiental
Campos Elíseos 400, Piso 19
Col. Lomas de Chapultepec
Mexico D.F.
11000
Phone: (52 5) 202 08 43

Población, recursos y medio ambiente en México

(Population, resources and the environment in Mexico)

State-of-the-Environment Reports

Sanchez, Vicente; Castillejos, Margarita; Rojas Bracho, Leonora
Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
1989, 141 p.: charts, maps, statistical tables, Es

Most of Mexico's environmental problems can be traced to rapid, uncontrolled demographic and industrial growth. The country's population, which stood at 13 million in 1900, is expected to surpass 100 million by the year 2000. Mexico City, whose population will have grown from 300,000 at the beginning of the century to 23 million by its end, is a prime illustration of the fact that massive urban concentrations have detrimental environmental impacts far beyond their geographical boundaries. Population growth, itself promoted by improving health and social services, has combined with increasingly sophisticated methods of resource exploitation to spur ever more accelerated development and spiraling environmental degradation.

This monograph addresses the interrelationships between three factors: population growth; industrialization and resource exploitation; and environmental degradation. Chapter 1 provides statistical and methodological background for the study, while Chapter 2 explores in detail the dynamics of population growth as well as demographic policies in Mexico. The use of renewable and nonrenewable natural resources is considered in Chapters 3 and 4, respectively. Chapter 5 shifts the focus to the twin issues of industrialization and urbanization, and Chapter 6 analyzes the health impacts of deteriorating environmental quality. Chapter 7 synthesizes the relationships between population and environmental quality. Finally, conclusions are presented in Chapter 8; the authors see some hope in the trend towards decentralization to promote the involvement of communities in environmental management, and in the promise of environmentally sound technologies.

Available from:
Fundación Mexicana para la Educacion Ambiental
Campos Elíseos 400, Piso 19
Col. Lomas de Chapultepec
México D.F.
11000
Phone: (52 5) 202 08 43

Producción rural en México: alternativas ecológicas

(Rural production in Mexico: ecological alternatives)

State-of-the-Environment Reports

Toledo, Victor M.; Carabias, Julia; et al.
Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
1989, 402 p.: charts, maps, statistical tables, Es

Rapid economic and population growth during the last decade has led to a deterioration of Mexico's natural resources, which have played an important role in the country's ongoing development.

This environmental assessment presents an overview of natural resource exploitation, its environmental impact, and alternative models of natural resource production and use. Chapter I provides general information on agriculture, ranching, and forestry, the three foci of the report. Chapter II discusses the environmental impacts of the above activities, focusing on deforestation, the hydrologic cycle, soil erosion, forest fires, and other related problems. Chapters III and IV present demographic information, specifically discussing the impact of population growth on resource use. Chapter V focuses on the various modes of rural production and Chapter VI on the country's differing ecological zones. Chapter VII examines the ecological efficiency of agriculture, ranching,

and forestry, i.e., the amount of resource inputs required to produce a given unit of output. Chapter VIII presents an alternative strategy for natural resource production and recommends legal reforms, infrastructure improvement, administrative and financial reform, economic diversification, etc. Finally, Chapter IX presents nine action priorities: increased use of modern farming and livestock technologies, diversification of the ranching industry, increased mechanization of cereals and sugar production, decentralization of forestry, decreased wood consumption, regulation of the forest products industry, and a shift to alternative crops.

Available from:
Fundación Mexicana para la Educacion Ambiental
Campos Elíseos 400, Piso 19
Col. Lomas de Chapultepec
México D.F.
11000
Phone: (52 5) 202 08 43

Fauna silvestre y áreas naturales protegidas

(Wild fauna and protected natural areas)

State-of-the-Environment Reports

Alcerreca Aguirre, Carlos; Consejo Duenas, Juan Jose; et al.
Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
1988, 193 p.: charts, maps, statistical tables, Es

Mexico's location at the confluence of the nearctic and neotropical zones has generated multiple ecosystems and a corresponding diversity of plant and animal species. In fact, Mexico is one of approximately ten nations which, together, contain between 50% and 80% of the world's biological diversity, earning it the appellation of a country of "megadiversity." Its natural systems are under tremendous stress, however, from human activity and short-sighted exploitation. This monograph describes Mexico's natural resources — biological (i.e., plants and animals), renewable, and nonrenewable — and protected areas, and threats to both, exploring possible solutions as well. About equal attention is given to descriptions of animals, plants, ecosystems, and protected areas, and to descriptions of the laws, legislation, institutional mechanisms, industry, and other structural factors affecting natural resource use and management. The last section contains proposals for actions in the legislative, administrative, financial, and social arenas. Most important is that policymakers adopt a sense of urgency, as the key is immediate corrective action, based on a long-term perspective. Appendices list: Mexico's protected bird species; the laws governing their capture, sale, and protection; other animals subject to hunting controls; controls over the export of animals; national parks and protected areas; and endangered species.

Available from:
Fundación Mexicana para la Educacion Ambiental
Campos Elíseos 400, Piso 19
Col. Lomas de Chapultepec
México D.F.
11000
Phone: (52 5) 202 08 43

Manejo de los desechos industriales peligrosos en México

(Management of dangerous industrial waste in Mexico)

State-of-the-Environment Reports

Ortiz Monasterio, Fernando; Cortinas de Nava, Cristina; Garcia, De Lourdes Maffey
Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
1987, 235 p.: ill., charts, statistical tables, Es

One of the most negative consequences of Mexico's rapid economic growth has been a large increase in the amount of hazardous waste produced. Common throughout the country, hazardous waste has led to a pronounced degradation of the natural environment and a decrease in human health.

This report analyzes the nature of the problem and presents possible solutions. Chapter I provides a working definition of hazardous waste, information on its generation and disposal, and a brief overview of its environmental and health effects. Chapter II focuses specifically on the environmental impact of hazardous waste, including its effects on air, soil, water, and ecosystems as a whole. Chapter III provides information on impacts on human health,

including the identification of locales and populations at risk around the country and the various health problems waste can cause. An in-depth description of the industrial and agricultural processes that generate hazardous waste is provided by Chapter IV. Chapter V focuses on international transfers of hazardous waste, including the situation between Mexico and the United States and Mexican legislation governing international hazardous waste transfers. Chapters VI through VIII focus on the actual management of hazardous waste in Mexico, specific cases of contamination, and new technologies that could aid in its safe disposal. Chapters IX and X examine possible steps to make the management of hazardous waste safer and more environmentally sound, such as new legislation, better government administration, and increased public vigilance.

Annexes include a list of 403 chemical toxins and their effects on human health, along with descriptions of critical incidents, national and international, involving waste contamination.

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Calidad y cantidad del agua en México

(Quality and quantity of water in Mexico)

State-of-the-Environment Reports

Athie Lambarri, M. en C. Mauricio
Fundación Mexicana para la Educacion Ambiental, Mexico City, MX
Conservation Foundation
1987, 152 p.: maps, statistical tables, Es

Water is a precious commodity in Mexico. Not only is the nation naturally arid, its water resources and population are unequally distributed; 80% of water resources are found at less than 500 m above sea level, while nearly a third of the population and two-thirds of industrial activity are at the higher altitudes. This results in great pressure on available water sources, especially those that serve urban centers. This monograph, the third in an eight-part series on Mexico's environment, focuses on water resources and quality. Chapter one describes the nature and distribution of the country's atmospheric, surface (i.e., lakes and rivers), and subterranean water resources; it includes discussions of the impacts of human activity, such as damming and irrigation, on the evaporation-precipitation cycle. Chapter two focuses on water quality, examining levels and sources of chemical and bacteriological contamination, describing water and sewage treatment capacities, and briefly discussing relevant government policies. Chapter three analyzes the utilization, management, and reclamation of water resources in urban and rural contexts. Finally, Chapter four is a general discussion of some major concerns: the dynamic interaction between deforestation, erosion, and the evaporation-precipitation cycle; and contamination and overexploitation of subterranean water supplies. An annex presents seven short case studies of contamination of rivers or lakes from industrial activity.

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Informe general de ecología [México]

(General ecology report [Mexico])

Other Environmental Studies

Comisión Nacional de Ecología, Mexico City, MX
1988, 195 p.: charts, maps, statistical tables, Es

Although the Mexican constitution specifically mandates protection of natural resources, decades of rapid development have had a profound negative effect on the country's environment. This report presents an overview of Mexico's environmental status within the context of the legal framework that governs the management and protection of its natural resources. Section I provides general information on environmental legislation, international agreements and accords, and geographic and demographic characteristics.

Section II focuses more specifically on natural resources and environmental problems and examines soil, water, flora and fauna, protected areas, aquatic resources, mineral resources, and energy. This section also provides detailed information on air and water pollution, solid waste, agrochemical use and disposal, and environmental disaster prevention and preparedness. Section III focuses on the status of environmental education and community participation in environmental matters. Section IV then describes the major environmental actions and initiatives undertaken from 1982 – 1988 in each of Mexico's 32 states. Includes detailed appendices and a bibliography.

Available from:
U.S. Agency for International Development
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Order No.: WRI-279

Nicaragua

Nicaragua: Informe nacional — UNCED 92

(Nicaragua: national report — UNCED 92)

UNCED National Reports

Government of Nicaragua, Managua, NI
[1992], [101] p.: statistical tables, Es

For most of its history, Nicaragua has followed a development model stressing the export of primary materials, chiefly from the agricultural sector. During the last decade, 80% of the value of the country's $390 million worth of exports was derived from agricultural products. As a result of this reliance on natural resources, Nicaragua's economy has failed to grow, while its environment and resource base have greatly deteriorated. This report analyzes the impact of the country's economic structure on its resources and outlines a plan for achieving sustainable development. The report begins by describing the physical, demographic, political, social, and economic attributes of Nicaragua. Chapter II then focuses on the deleterious consequences of a natural resource-based economy on (1) land, forests, water, fisheries, geological resources, urban areas, and overall biodiversity; (2) population patterns; (3) capacity to withstand natural disasters; and (4) economic growth and development. Chapter III is a synopsis of environmental management from 1959 – 1991, focusing on the roles of the national government, donors, and the Nicaraguan public. Chapter IV examines the connection between sound natural resource management and long-term development, while Chapter V outlines the government's plan for sustainable development, which focuses on new and comprehensive economic and social policies and strengthened public and private institutions. Includes annexes.

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Panama

Plan de acción forestal de Panamá

(Forestry action plan of Panama)

Tropical Forestry Action Programme — FAO and others

Republic of Panama, Panama City, Panama, PA
National Institute for Renewable Natural Resources, Paraiso, Ancon, PA
1990, 3 v: maps, statistical tables, Es, En

Panama's forests cover 3.3 million ha, 2 million of which is protected, while the rest is classified for commercial use. The country has a high deforestation rate — 70,000 hectares per year — which causes the following problems: loss of agricultural soil, increased deficit of forestry products, loss of biological diversity, and deterioration of the most important watersheds. Forest and watershed loss are also threatening the useful life of the Panama Canal, hydroelectric power plants, and other investments. Moreover, the destruction of mangrove, coastal, and mountain forests is endangering the quality of life in rural areas, which depend on forest products for survival. This report begins with an assessment of Panama's forests and their role in the domestic

economy, as well as a general overview of national economic issues. The report then describes the country's forest management policy and describes strategies in the following priority areas: forestry and land use, industrial development and forest management, fuelwood and energy, conservation of tropical forest ecosystems, and institution building. Specific programs and projects planned for the metropolitan, eastern, central, and western regions are then identified.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-137

Central American Region

Natural resources and economic development in Central America: a regional environmental profile

Country Environmental Profiles — USAID

Leonard, H. Jeffrey
International Institute for Environment and Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs
1987, xxii, 279 p.: maps, statistical tables, En

Depletion and degradation of the renewable resource base is a formidable constraint to future economic and social development throughout Central America. With few mineral and petroleum resources, the region is heavily dependent upon renewable natural resources for generation of income in key productive sectors such as agriculture, forestry, fisheries, energy generation, and tourism, as well as to supply the raw materials for most manufacturing and processing industries. As a consequence, the depletion rates of forests, soils, fisheries, and other crucial resources far exceed renewal rates, and secondary problems such as soil erosion, sedimentation, and water pollution have reached critical levels in many areas.

Rather than focusing on the status of natural resources in each country, this book seeks to identify natural resource issues that transcend national borders, economic circumstances, and social ideologies. The environmental consequences of current socioeconomic trends in the region are analyzed, along with land use and natural resource exploitation patterns; general problems are illustrated with specific examples from individual countries. The evidence suggests that all seven nations in the region are experiencing direct financial losses and have already sacrificed substantial future economic opportunities as a result of previous careless management of natural resources. In conclusion, the book identifies opportunities for future economic development and demonstrates how closely these prospects are linked to improved management of the region's natural resource base. Recommendations specifically tailored for A.I.D. programs are presented. Includes index.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAY-587

Plan de acción forestal tropical para Centroamérica

(Tropical forestry action plan for Central America)

Tropical Forestry Action Programme — FAO and others

Central American Commission on the Environment and Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs
1991, 2 v.: ill., statistical tables, Es

This Tropical Forestry Action Plan (TFAP) for Central America was developed in response to the rapid destruction of the region's forests. Deforestation in highland watersheds is causing soil erosion, floods, and drought, resulting in the loss of productivity in forestry and agriculture, a decline in biodiversity, and a general decline in the quality of life for Central Americans. The plan promotes regional responses to the process of deforestation through three principal programs: (1)

forestry and land use planning, to promote regional mechanisms to complement the national TFAP's and increase awareness of forestry problems among decisionmakers; (2) sustainable development of forest resources, which includes three subprograms to coordinate regional actions in the areas of forestry-based industrial development, fuelwood and energy, and conservation of forest ecosystems; and (3) forestry institutional development, which aims to strengthen national institutions, including forest services, educational centers, and NGO's, and includes actions to reform the region's environmental policy, legal, and political framework. Section I of this paper is an introduction; Section II overviews the forestry sector in Central America; Section III contains a description of the TFAP, its objectives, the three programs, and a financial strategy. The second volume provides detailed descriptions of projects which would be implemented under the plan.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABK-281

Antigua and Barbuda

Antigua and Barbuda: country environmental profile

Country Environmental Profiles — USAID

Howell, Calvin; Towle, Edward L.; et al.
Caribbean Conservation Association
Island Resources Foundation
Environmental Awareness Group
Antigua and Barbuda. Historical, Conservation, and Environmental Commission
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
1991, xxv, 212 p.: ill., charts, maps, statistical tables, En

Inadequate development planning and control represent the greatest environmental threats to Antigua and Barbuda. These problems are exacerbated by the magnitude and rate of change affecting the country. Within the course of one generation, the economic and social underpinnings of Antigua and Barbuda have changed dramatically, transforming the country from a rural-based agricultural society to a tourism-dominated modern society. Section I of this environmental profile of Antigua and Barbuda provides background information on the general environmental setting and reviews historical, economic, and demographic features. Sections II and III discuss primary environmental issues in agriculture and forestry, freshwater and watersheds, biodiversity and wildlife, and the coastal and marine areas. Sections IV – VI focus on energy and industry, tourism, and pollution and environmental health. The related topics of land use, physical planning, and development control are examined in Section VII. Section VIII considers issues related to park planning and protected areas management, while Section IX focuses specifically on the management of historical and cultural resources. The final section provides an institutional framework for environmental management in Antigua and Barbuda.

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U.S. Agency for International Development
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Order No.: PN-ABH-223

Barbados

Barbados national report to the United Nations Conference on Environment and Development, 1992

UNCED National Reports

Griffith, Mark; Inniss, Vernese; et al.
Barbados. Ministry of Labour, Consumer Affairs and the Environment. Environment Unit, Bridgetown, BB
Aug 1991, 157 p.: statistical tables, En

Barbados is a small island state with a relatively small natural resource endowment. Notwithstanding this, most of the economic activity in the country depends either directly or indirectly on its natural resource base. This report reviews the economic development and the utilization of the natural resource base in Barbados over the past 20 years. At the national level, the major resource issues considered are land management, utilization, and planning; solid and liquid waste disposal and management; soil erosion; coastal erosion; water utilization and management; and natural hazards. The regional and transboundary issues of pollution and overexploitation of resources of the Caribbean Sea, the transboundary movement of hazardous wastes and radioactive material, and global climate change are also addressed. The report discusses the major approaches that have been developed and used to address environmental and resource problems as they affect development. The report also analyzes some of the constraints to the utilization of the natural resource base, while presenting some opportunities that may be

exploited for future development. Strategies for sustainable development at the international level are then outlined, and analyses are made of international legal instruments and of financial aspects. A final section presents Barbados' expectations for the U.N. Conference on the Environment and Development.

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Cuba

Informe nacional

(National report)

UNCED National Reports

Cuba. Comite Preparatorio Nacional, Havana, CU
Jul 1991, 96 p., Es

For Cuba and most other developing countries, economic crisis, including external debt, is a major constraint to the development of national environmental policy. This report identifies development trends in Cuba and analyzes their impact on the environment. The report then summarizes responses to environmental problems in terms of principles, legislation, institutions, scientific capacity, community participation and nongovernmental organizations, programs and projects, and international cooperation. Problems related to natural resources include poor energy efficiency; water pollution and deficient drinking water; erosion; salinization and acidification of soils; significant deforestation in some areas; deficient afforestation technology and application; loss of biological diversity; inadequate hazardous waste management; and marine pollution. A major recommendation of the report is that the capital and technology needed to protect the developing world's environment should come from the industrialized countries, since they are chiefly responsible for global environmental degradation. Moreover, the production, distribution, and consumption patterns of the industrialized countries which have been imposed on the developing countries, must be reviewed and revised to improve the quality of life in all countries.

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Dominica

Dominica country environmental profile

Country Environmental Profiles — USAID

Caribbean Conservation Association
Island Resources Foundation
Dominica YES Committee
Dominica. Ministry of Agriculture and the Environment. Forestry and Wildlife Division
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
Apr 1991, xvii, 239 p.: ill., charts, maps, statistical tables, En

Dominica is among the most beautiful and pristine islands in the world. This environmental profile, one of a series produced for six Eastern Caribbean countries, is organized into sector-specific sections, each of which begins with an overview summary of the sector, reviews key environmental problems and issues, and concludes with recommendations. Section one provides background information on Dominica's environment, history, economy, and demographic features. Sections two through five review the country's resource base, and discuss the key resource sectors of forests and wildlife, agriculture, freshwater resources, and coastal and marine resources. Moving away from discussion of the physical environment, sections six, seven, and eight examine, respectively, energy issues, industry and tourism issues, and pollution and public health. Land use and physical planning are the subjects of section nine, while section ten focuses on the management of historical and

cultural resources. Section eleven details the institutional framework for environmental management in Dominica, including an overview of key agencies and organizations. The final section summarizes and synthesizes critical environmental issues, conclusions, and recommendations. The profile also boasts a comprehensive bibliography of source materials dealing with natural resource development and environmental management in Dominica and the Eastern Caribbean.

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Order No.: PN-ABI-030

Dominican Republic

Dominican Republic: biological diversity assessment report

Tropical Forest & Biological Diversity Assessments — USAID

Reynoso, Franklin A.; Dotzauer, Helmut; et al.
Dominican Republic. Higher Institute of Agriculture
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Dominican Republic
Dec 1988, xii, 47 p.: maps, statistical tables, En

Virtually all native plant and animal species in the Dominican Republic are threatened by the devastation of natural habitats for agricultural, livestock, and charcoal production. This report focuses on the institutional problems associated with protecting the country's biological resources. Relevant legislation is described, followed by an assessment of governmental, nongovernmental, and international conservation agencies. According to the report, the government agencies are characterized by myriad weaknesses, including lack of organization, overlapping responsibilities, insufficient fiscal and physical resources, and inadequately trained staffs. These problems are compounded by other government agencies which foster the invasion of parks and reserves by farmers, as well as a lack of environmental awareness among the Dominican people. As a result, the government is incapable of enforcing conservation legislation or managing protected areas, and the country's coastlines and forested lands face nearly unrestricted development for tourism and agriculture. Although the efforts of nongovernmental conservation agencies have also been limited, the report recommends that future support from international agencies be directed to these organizations rather than the government. A list of proposed research and conservation projects is included.

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Order No.: PN-ABD-084

Presidencia de la República, Comisión Nacional Técnica Forestal: plan de acción forestal

(Presidency of the Republic, National Technical Forestry Commission: forestry action plan)

Tropical Forestry Action Programme — FAO and others

Dominican Republic. National Technical Forestry Commission, Santo Domingo, DO
Jul 1990, [84] p., Es

Deforestation has been declared a national emergency in the Dominican Republic, where a large, impoverished, and growing population relies mostly on firewood and charcoal for its cooking needs. Any long-term solution must include energy substitutes, but options are limited. Consequently, sustaining forest resources for energy, commercial, and industrial needs is indispensable to the country's future. This three-part tropical forestry action plan: (1) overviews the Dominican Republic's socioeconomic conditions, forest resources, forest-based industries, demand for forest products, governmental and nongovernmental organizations, and human resources; (2) discusses general strategies for

reversing deforestation, focusing on land use reform, economic development, institutional development, and increased government commitment at the national and regional levels; and (3) presents profiles of 17 planned forestry development projects, their objectives, principal activities, expected results, budgets, and implementing organizations.

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Order No.: WRI-166

República Dominicana informe nacional: Conferencia Mundial de las Naciones Unidas sobre Medio Ambiente y Desarrollo, Brazil '92

(Dominican Republic national report: United Nations Conference on Environment and Development, Brazil '92)

UNCED National Reports

Government of Dominican Republic, Santo Domingo, DO
1991, xvii, [161] p.: charts, statistical tables, Es

This report describes the Dominican Republic's socioeconomic situation and assesses its natural resource base. It then identifies critical environmental issues and summarizes responses in terms of policies and legislation, institutions, programs and projects, international cooperation, education and training, and private sector initiatives. Final sections of the report describe constraints to and opportunities for sustainable development in the Dominican Republic and present strategies to incorporate environmental concerns into development initiatives. Major environmental problems are identified in three categories: natural resources, pollution, and environmental quality. Key threats to natural resources include biological diversity loss, deforestation, erosion and soil degradation, degradation of coastal ecosystems, deterioration of river basins, land use conflict, the impact of mining and agriculture technology, and natural disasters. Pollution is caused primarily by industrial and mining wastes, fertilizers and pesticides, the environmental impact of energy, and oil spillage. Major concerns in environmental quality include the drinking water supply and sanitation and urban services.

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Dominican Republic
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Order No.: WRI-265

Grenada

Grenada: country environmental profile

Country Environmental Profiles — USAID

Howell, Calvin; Towle, Edward L.; et al.
Caribbean Conservation Association
Island Resources Foundation
Grenada National Trust
Grenada. Ministry of External Affairs, Agriculture, Lands, Forestry, Tourism, and Legal Affairs
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Grenada
1991, xvi, 276 p.: charts, maps, statistical tables, En

Despite centuries of agricultural development, Grenada retains an impressive array of cultural and natural resources; remnant forests and coral reefs persist, as do over 450 species of flowering plants and 150 species of birds. However, continuing development and population growth have begun to tax the nation's remaining resources, threatening them with extinction or degradation. This environmental profile, one of a series prepared for the Caribbean, uses a sectoral approach to assess Grenada's resources and the options for managing them. Sections 1 – 3 provide general information on geographic and environmental features,

demography, and economy. Section 4 profiles Grenada's natural resource base, with a specific emphasis on the major environmental issues within the four key sectors of forest, water, wildlife, and marine resources. Sections 5 – 8 focus on agriculture, industry and energy, tourism, and environmental pollution. Land use planning, development control, and parks and other protected areas are examined in sections 9 – 11. Section 12 focuses on the institutional aspects of environmental management in Grenada, including an overview of key public and private agencies and organizations with resource management and development responsibilities. Lastly, Section 13 summarizes the most important environmental issues and problems facing Grenada and makes recommendations on achieving a balance between resource development and resource conservation

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Order No.: PN-ABH-224

Plan and policy for a system of national parks and protected areas in Grenada and Carriacou

Environmental Policy and Management Studies

Grenada. Forestry Department National Parks and Wildlife Unit, [St. George's], GD
Organization of American States. Executive Secretariat for Economic and Social Affairs. Department of Regional Development, Washington, DC, US
1988, ix, 130 p.: ill., maps, statistical tables, En

Grenada has great ecological diversity in a relatively small area, with more than 450 species of flowering plants and 150 species of birds. Over the past several decades, pressures on the country's natural resource base have resulted in increased soil erosion; sedimentation of river systems and water supplies; hydrological regime imbalances reflected in flooding and drought periods; decreases in agricultural and fishery productivity; and loss of habitat. Likewise, historic and archeological sites have suffered continued deterioration due to neglect and a lack of clear management responsibility. This report describes government policies relevant to natural and cultural areas protection, assesses Grenada's resource base, analyzes the national parks system, and presents a plan for an expanded protected areas program. The report recommends that a total of 43 areas be included in the system — 27 for Grenada Island and 16 for Carriacou (the country's other major island). Of the total, 3 areas are recommended as national parks, 11 as protected seascapes, 11 as natural landmarks, 12 as cultural landmarks, and 4 as multiple-use areas, and several marine areas. This would represent about 11,008 acres, or about 13% of the total land surface. The report describes each area with respect to its resources, significance, management objectives, and planned activities. It also includes information on how vegetation, geologic features, and threatened species will be represented in the protected areas system.

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Haiti

Haiti, country environmental profile: a field study

Country Environmental Profiles — USAID

Ehrlich, Marlo; Conway, Fred; et al.
International Institute for Environment and Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Office of Development Resources
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Haiti
[1985], xii, 120 p.: ill., charts, maps, statistical tables, En

Few countries are more seriously threatened by environmental catastrophe than Haiti. Resources are overexploited and trends toward further environmental deterioration are apparent everywhere. This profile assesses the country's natural resource base, followed by analyses of major problems in the following areas: (1) agriculture, forestry, and peasant farming systems; (2) coastal and marine resources and fisheries; (3) conservation of wild flora and fauna; and (4) water supply, sanitation, pollution, and environmental health. Institutional, legal, and sociocultural factors affecting the environment are also discussed. The report states that the reversal of environmental degradation will be particularly difficult in Haiti for the following reasons: (1) the rural population is disorganized, uncooperative, and lacks confidence in government assistance; (2) the already overexploited resource base barely provides for the survival of the peasant population; and (3) the means for increasing productivity are virtually nonexistent, except irrigation. Although international donor involvement is increasing, these efforts need to be placed within a coherent and unified framework, with established priorities, defined strategies, and coordinated and evaluated programs. The paper presents a significant number of recommendations for a national conservation strategy. Includes 69 figures and 3 appendices.

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Order No.: PN-AAY-358

Jamaica

Jamaica country environmental profile

Country Environmental Profiles — USAID

Field, Ralph M.; Troy, Julie E.
Ralph M. Field Associates, Inc.
International Institute for Environment and Development
Jamaica. Ministry of Agriculture
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Jamaica
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Office of Development Resources
Sep 1987, xii, 362 p.: ill., maps, statistical tables, En

Jamaica's need to balance its overwhelming demand for economic development with efforts to manage and conserve the natural resource base on which this development depends is the focus of this tripartite country environmental profile. Part I describes the physical and cultural context and provides an institutional overview. Part II identifies Jamaica's major environmental problems (air pollution, surface and ground water pollution, deforestation, soil and shoreline erosion, destruction of wildlife and their habitat, and serious deficiencies in urban infrastructure), points out the key constraints to environmental management (among which the low level of public awareness is cited as perhaps the most important), and makes related policy and project recommendations. Part III presents detailed information on Jamaica's major resource sectors — the people and their culture, the resource base (coastal and water resources, wildlife, and national parks and protected areas), environmental areas related to the economy (fisheries, forestry, tourism and recreation, minerals and mining, energy resources, and agricultural resources), and the "built" environment (urban and rural infrastructure, industry and industrial pollution, and environmental hazards). For each of these sectors, the profile summarizes existing conditions and institutional responsibilities, identifies major issues and programs, and discusses directions for future work. Includes 74 figures, 98 tables, and an 11-page bibliography.

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Tropical forestry action plan: Jamaica — main report of the national forestry action plan of Jamaica with project profiles and budgets

Tropical Forestry Action Programme — FAO and others

Government of Jamaica, Kingston, JM
U.N. Development Programme, Geneva, CH
The Food and Agriculture Organization of the United Nations, Rome, IT
1990, xi, 150 p.: maps, statistical tables, En

Forestry plays a central role in the economic and social life of Jamaica's rural people. It also has a substantial impact on the island's economy at large, mainly through wood-based fuels, water supplies, tourism, and various forest products. The forestry subsector directly employs about 29,000 Jamaicans, or 3% of the total workforce. This National Forestry Action Plan covers a six-year period and focuses on five priority areas: land use; forest-based industries; fuelwood; conservation; and institutions. Major objectives include the following: (1) to allocate sufficient and appropriate land to sustainable forestry to ensure the protection of the environment, particularly watersheds, and to generate rural income and employment opportunities; (2) to improve forest resource management to secure long-term timber supplies for local wood users and to rationalize forest-based industries for the maximum social and economic benefit; (3) to increase fuelwood resources and promote more efficient production and use of wood fuels; (4) to conserve biological diversity and natural forest ecosystems, increase their contribution to national development, and maximize social, economic, and environmental benefits; and (5) to develop an integrated institutional framework to manage forest resources and implement forestry programs. Following an analysis of the forestry subsector, the report presents guidelines for achieving these objectives. Specific projects are proposed in each of the above five priority areas, and cost requirements are outlined.

Available from:
TFAP Coordinating Unit
Forestry Department
The Food and Agriculture Organization of the United Nations

Saint Christopher and Nevis

St. Kitts and Nevis country environmental profile

Country Environmental Profiles — USAID

Caribbean Conservation Association
Island Resources Foundation
St. Christopher Heritage Society
Nevis Historical and Conservation Society
St. Kitts. Ministry of Agriculture, Lands, Housing and Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
Apr 1991, xvii, 277 p.: ill., charts, maps, statistical tables, En

The Caribbean island nation of St. Kitts-Nevis is profiled in nine sector-specific sections, each of which provides an overview summary of the sector, reviews key environmental problems and issues, and concludes with recommendations. Section one provides background information on the general environmental setting and briefly reviews St. Kitts-Nevis' historical, economic, and demographic features. Section two reviews the natural resource base, focusing on four resource sectors: forests and watersheds; freshwater resources; biodiversity and wildlife; and coastal and marine resources. Sections three and four profile the key economic sectors, agriculture and tourism. Section five covers park planning, protected areas management, and the preservation of historical resources. Pollution and environmental health are the focus of section six, and the related topics of land use, physical planning, and development control are examined in section seven. Section eight examines the institutional framework for environmental management and development in St. Kitts-Nevis, including an overview of key agencies and organizations. The final section provides a summary of critical environmental issues, conclusions, and recommendations. The profile

also contains an extensive bibliography of source materials dealing with natural resource development and environmental management in St. Kitts-Nevis and the Eastern Caribbean sub-region.

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Order No.: PN-ABI-029

Saint Lucia

St. Lucia: country environmental profile

Country Environmental Profiles — USAID

King, Michael I.; Simmons, David; et al.
Caribbean Conservation Association
Island Resources Foundation
National Research and Development Foundation (St. Lucia)
St. Lucia. Ministry of Planning, Personnel, Establishment and Training
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
1991, xxx, 332: ill., charts, maps, statistical tables, En

This profile of St. Lucia, the first of a series prepared for the island nations of the Eastern Caribbean, is organized into six sections. Chapter one describes in detail the country's natural and physical characteristics, and includes discussions of land capability and use, demographic information, and historical and economic background. Chapter two identifies resource elements with common property characteristics, (forestry, wildlife, freshwater, and coastal and marine resources), examines the role of conservation and preservation programs in St. Lucia (parks, reserves, sanctuaries, archives, and museums), and concludes with a discussion of natural hazards affecting the common property resource base. Chapter three concerns the rural/agricultural environment and its role in the country's social and economic framework. In counterpoint, chapter four concerns the urban/industrial environment, opening with a discussion of tourism (the leading growth industry), following with a look at mining, wholesale and retail business, utilities, transportation, infrastructure, manufacturing, construction, and financial institutions, and closing with a review of energy resources and requirements. Chapter five, which includes an overview of the historical development of environmental management in St. Lucia, details the institutional framework for environmental management in St. Lucia — surveying government, nongovernmental, and research and development organizations. Chapter six summarizes and synthesizes key environmental issues, conclusions, and recommendations. Includes 28-page bibliography.

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Order No.: PN-ABH-225

St. Vincent and the Grenadines: country environmental profile

Country Environmental Profiles — USAID

Howell, Calvin; Towle, Edward L.; et s.
Caribbean Conservation Association
St. Vincent National Trust
Island Resources Foundation
St. Vincent and the Grenadines. Ministry of Health and the Environment
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
1991, xxvii, 222 p.: ill., charts, maps, statistical tables, En

One of a series of environmental profiles of island nations in the Eastern Caribbean, this profile of St. Vincent and the Grenadines is organized into ten sections. Section 1 outlines the general environmental setting and briefly reviews historical, economic, and demographic features. Sections 2 – 5 review key resource areas, covering forests and wildlife, agriculture and watershed management, freshwater resources, and coastal and marine resources. Section 6 examines energy, transportation, and industry issues, while Section 7 focuses on tourism. Pollution and environmental health are the subjects of Section 8. Section 9 examines growth management issues, covering land use planning, development control, parks and other protected areas, and environmental and family planning education. Section 10 surveys the institutional framework for environmental management, including overviews of key agencies and organizations with resource management and development responsibilities. An executive summary summarizes the country's critical environmental problems — pesticide use, illegal activities in forest reserves and in water catchment and marine conservation areas, sand mining and coastal erosion, inadequate solid waste disposal, and hazardous materials spills and presents short-, medium-, and long-term recommendations to address them. Appended is a comprehensive bibliography on natural resource development and environmental management in St. Vincent and the Grenadines.

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Order No.: PN-ABI-788

Forest resources of St. Vincent, West Indies

Tropical Forest & Biological Diversity Assessments — USAID

Birdsey, Richard A.; Weaver, Peter L.; Nicholls, Calvin F.
U.S. Department of Agriculture. Office of International Cooperation and Development. Forest Service
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
Sep 1986, iv, 25 p.: ill., charts, map, statistical tables, En

A comprehensive overview of the forest resources of St. Vincent is provided in this report to help natural resource planners make informed decisions on forest land use and development. Forest vegetation covers 13,000 ha, or 38%, of St. Vincent's land surface. Over 50% of the forest area is successional, and there are substantial areas of palm, dwarf, and dry scrub forests. Nearly 5% of the land area is composed of mature, mostly undisturbed primary forest. *Inga vera* (Spanish ash), *Licania ternatensis* (Bois job), *Dacryodes excelsa* (Gommier), and *Cecropia peltata* (Trumpet tree) are common tree species in natural forests. *Hibiscus elatus* (Blue mahoe), *Pinus caribaea* (Pine), and *Swietenia macrophylla* (Mahogany) are tree species that have been planted in St. Vincent. *Pinus caribaea* has attained the best growth rates. The forest inventory is accompanied by brief overviews of St. Vincent's agriculture, plantations, water resources, forest legislation, and land ownership statutes. Numerous

tables are included; appendices included 41 references, a glossary, and lists of terms, tree species, and metric inventory standards. (Author abstract, modified)

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAW-181

Trinidad and Tobago

[Trinidad and Tobago] national report on environment and development: United Nations Conference on Environment and Development, Brazil, 1992

UNCED National Reports

Government of Trinidad and Tobago, Port of Spain, TT
[1992], [43] p.: statistical tables, En

Trinidad and Tobago has a relatively diversified natural resource endowment which, if properly managed, can provide a substantial base for sustainable development. Hydrocarbon resources promise to provide a continuing platform for viable industrial activity. With investment in efficient agricultural and agro-industrial activities, the country could supply much of its food needs and generate additional income and employment. Additionally, the fisheries sector has the capability to fulfill some of the country's food and employment needs. This report provides background information on Trinidad and Tobago, identifies challenges in sustainable development, and surveys the natural resource base — flora, fauna, wetlands, forests, marine and coastal resources, energy resources, and minerals. The report then identifies major environmental issues and describes responses in terms of institutions, legislation, and policies. At the national level, environmental issues pertain to land use, pollution, solid waste management, and environmental standards. Regional issues relate mostly to the Caribbean Sea and include transboundary transport of hazardous chemicals and wastes, pollution (including oil pollution), and the management of transboundary fish stocks. And at the global level, the major issues include climate change and sea level rise.

Available from:
UNDP Resident Representative
P.O. Box 812
Port-of-Spain
Trinidad and Tabago
Phone: (809) 623 7056
Fax: (809) 623 1658
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-271

Caribbean Region

Caribbean environmental programming strategy: final report

Environmental Strategies — Canada (CIDA)

Resource Systems Management International Inc., Toronto, CA
Canadian International Development Agency, Hull, PQ, CA
Sep 1988, 3 v.: ill., En

Environmental degradation is occurring at an alarming and uncontrollable rate in the Commonwealth Caribbean countries of Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, and Turks and Caicos. This three-volume report on the region's environment is comprised of an executive summary, a strategy, and country profiles. Major environmental problems are identified as deforestation, water supply depletion and contamination, pesticide-related contamination, improper construction practices, beach erosion, liquid and solid waste pollution, uncontrolled land use practices, and fisheries depletion. According to the report, efforts to alleviate these problems are undermined by structural deficiencies, including institutional weakness, absence of baseline data, and lack of technically trained personnel, environmental

awareness, appropriate and affordable technologies, and knowledge of the financial costs of environmental degradation. Since effective treatment of these crucial problems is beyond the means of these small nations, the report calls for an integrated regional approach. A proposed strategy encompasses four major programs, three of which would establish long-term environmental management capabilities and a fourth which responds to immediate needs.

Available from:
Resource Systems Management International Inc.
133 Wynford Drive
North York
Metropolitan Toronto
Canada
M3C 1K1
Phone: (1 416) 441 2378
Fax: (1 416) 441 4131
Telex: 06 9666 89

Eastern Caribbean Region

Environmental agenda for the 1990's: a synthesis of the Eastern Caribbean country environmental profile series

Country Environmental Profiles — USAID

Caribbean Conservation Association
Island Resources Foundation
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
Sep 1991, vii, 71 p.: ill., En

The natural resource base of the Caribbean has over time been subjected to overexploitation, misuse, and mismanagement as people have continuously taken more from the environment than they have given in return. This document summarizes the key issues and problems identified in recent A.I.D.-funded environmental profiles of six Eastern Caribbean countries — Antigua and Barbuda, Dominica, Grenada, St. Lucia, St. Kitts and Nevis, and St. Vincent and the Grenadines. The synthesis is organized much like the profiles it summarizes. An introductory chapter provides background information on the historical, economic, and social context of the Eastern Caribbean, succeeded by chapters devoted to forests and forestry, wildlife and biodiversity, freshwater resources and watershed management, coastal and marine environments, agriculture, tourism and industry, pollution, parks and protected areas, and institutional capabilities, each chapter concluding with a list of the principal issues facing the sector in question. A final section highlights recommendations common to the country profiles, thereby providing an updated framework for environmental management and policy in the six countries.

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Development Information Services Clearinghouse
Order No.: PN-ABJ-862

Biological diversity and tropical forest assessment for the Eastern Caribbean

Tropical Forest & Biological Diversity Assessments — USAID

Johnson, Nels; deGeorges, Andres; et al.
World Resources Institute. International Institute for Environment and Development — North America
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Development Office
Dec 1988, [128] p.: charts, maps, En

Tourism, agriculture, and fisheries dominate the economies of the seven island countries belonging to the Organisation of Eastern Caribbean States. To a large extent, these critical economic sectors depend on the ability of governments and development agencies to manage the islands' natural resources, which are under severe stress from growing population and consumption demands. The present study assesses the status of biodiversity and tropical forests in the Eastern Caribbean and lists critical resource management needs and proposals for A.I.D. intervention. The

study is in two parts. Part I assesses natural resource conditions in the region generally, describing the socieconomic pressures behind development patterns in the Caribbean, the ecological characteristics of small islands and the conservation implications thereof, the importance of conservation to economic development and health status in the region, and the international significance of conserving the Eastern Caribbean's bioresources (including an identification of economically important species and germplasm). It concludes by outlining regional conservation needs and capacities and recommending specific actions. Part Two presents profiles of biodiversity and forestry resources, as well as a discussion of management and conservation needs and potential in Antigua and Barbuda, St. Kitts/Nevis, Montserrat, Dominica, St. Lucia, St. Vincent and the Grenadines, and Grenada; specifically covered are tourism, parks and protected areas, pollution, institutional issues, and existing natural resource management activities.

Available from:
U.S Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-253

Argentina

Argentina and its forests — present situation, policies and projections: a summary

Tropical Forestry Action Programme — FAO and others

National Forest Institute, AR
1988, 62 p.: charts, maps, En

This report on Argentina's forests reflects the perspective of persons involved in the country's forest activities, including provincial forest authorities, private sector personnel, and personnel of the National Forest Institute (IFONA). Information on the current forestry situation is presented first. Native and plantation forests, protected areas, forest industries, dendroenergy, and the market for forest products are among the topics covered, along with infrastructure, human resources, and laws and institutions. The second section presents in some detail the objectives and strategies that have been proposed by IFONA, with specific attention to official incentives, forest promotion, industry promotion, and foreign investment and export promotion. The overall direction of these strategies is to increase the forestry sector's contribution to economic development, and to the building and housing industries in particular, by improving commercial channels and forest technologies. In the third and final section, forestry sector activities are projected through the year 2015. The underlying hypothesis is that Argentina will be able to satisfy both internal consumption and 1.5% of world demand for forest products by that year. The projections, which are presented in tabular format, cover: industrial demand for forest raw materials; the availability of forested areas by jurisdiction; and the farming characteristics of individual species by jurisdiction. This section also presents brief profiles of 26 possible projects for the forestry sector.

Available from:
National Forest Institute
Secretaria de Agricultura, Ganaderia y Pesca
Avda. Pueyrredon 2446-1o Piso
Buenos Aires, Argentina
Phone: (54 1) 803 7388
Telex: 21535 DGAAG AR

Informe nacional a la Conferencia sobre Medio Ambiente y Desarrollo de las Naciones Unidas

(National Report for the United Nations Conference on Environment and Development)

UNCED National Reports

Argentina. Secretaria General. Comision Nacional de Politica Ambiental, Buenos Aires, AR
Jul 1991, 582 p. + attachments, Es

An executive summary of a report produced as part of Argentina's contribution to the June 1992 U.N. Conference on Environment and Development (UNCED), this paper begins with an introduction to Argentina. Agriculture and livestock raising are major economic activities; deforestation, erosion of arable land, floods, and river sedimentation are Argentina's main environmental problems, problems complicated by the fact that the country is a major recipient of water flows and sediment from the massive river systems to the north, and is thus affected by activities in Brazil and Uruguay. Sections two and three address social and economic development and their impacts on the environment: problems stemming from urbanization; the impacts of agriculture, industry, and energy production; and the potential of mining, tourism, and the fishing industry are discussed. Section four explores in more depth the historical relationships between development policy, the economy, the environment, and the standard of living.

Next, section five discusses legislative and governmental mechanisms for natural resource management, stressing the need to strengthen institutions at the national and provincial levels. Section six endorses broad policy directions crucial to revitalizing Argentina's stagnant economy — economic deregulation, political reform, and increased participation in the international arena — stressing the importance, in this context, of natural resource management policies that will contribute to sustainable development. The last section, on Argentina's expectations for UNCED, is an expression of the country's commitment to international cooperation in all areas of development and environmental protection.

Available from:
UNDP Resident Representative
Casilla de Correo 2257
1000 Capital Federal
Buenos Aires
Argentina
Phone: (54 1) 3943669
Fax: (54 1) 111516

Sustainable development in Argentina

Other Environmental Studies

Marchetti, Beatriz; Gallopin, Gilberto; et al.
Universidad de Buenos Aires. Centro de Estudios Avanzados, AR
Fundacion Bariloche. Grupo de Analisis de Sistemas Ecologicos, AR
International Institute for Environment and Development, Buenos Aires, AR
Oct 1991, 2 v.: charts, maps, statistical tables, En

The 1990's present great challenges for Argentina, as recurring social and economic problems are compounded by increasing competition in the world markets for the nation's staple exports — especially grains and meat. Properly managed, the country's considerable natural resources should be ample to sustain economic growth without compromising the conservation of natural areas. This monograph presents an alternative model for development in Argentina, one which encompasses environmental, social, and economic considerations. The goal is to promote economic growth while preserving the natural resource base.

The first two sections provide background on climate, geography, life zones, renewable and non-renewable resources, and society-nature relationships. Section three describes Argentina's current development model, which is based on limited land ownership, undervaluation of natural resources, and an austere structural adjustment program. Section four addresses environmental problems and trends at the national, regional, and global levels. Section five, the core of the monograph, proposes models for land use, with targets for the next 50 years — dividing usage into natural, urban, plantation, grazing, agricultural, altered, and wasteland categories — and relating usage to economic growth. The final section concludes that sustainable development will require social policies that promote urban-rural balance in terms of population and economic activity, and, in rural areas, stress activities suited to each life zone; international cooperation is also essential. Argentina's problems are not due to a scarcity of natural or technical resources, but are mainly of a political nature; ultimately, sustainable development requires the eradication of poverty.

Available from:
International Institute for Environment and Development
Piso 6, Cuerpo A
Corrientes 2835
1193 Buenos Aires
Argentina
Phone: (54 1) 961 3050
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-206

Bolivia

Perfil ambiental de Bolivia

(Environmental profile of Bolivia)

Country Environmental Profiles — USAID

Brockmann, C.E., ed.
International Institute for Environment and Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Bolivia
Jul 1986, xix, 166 p.: ill., charts, maps, statistical tables, Es

The environmental impact of Bolivia's high regional population densities is a major theme of this country profile. Background information on the Bolivian environment is followed in Chapter II by an analysis of the country's population and its relationship with the ecosystem. Chapter III assesses the status of the nation's wildlife and the quality of wildlife management and research. Chapter IV covers the condition and management of national parks and other protected areas, while Chapter V provides an overview of environmental education efforts. In Chapter VI, the report highlights additional responses to the country's environmental problems, including legislation and

institutions. Chapter VII assesses the condition and agricultural importance of the country's major rangeland zones and summarizes efforts to improve rangeland management. Chapter VIII examines the extent of soil and river basin erosion in Bolivia and describes its social and economic impact. Actions to control erosion are also summarized. Chapter IX identifies the major causes of pollution and assesses its effect on public health. Legislative and institutional efforts to combat pollution are described. Chapters X and XI highlight the environmental issues concerning natural and plantation forests, with reference to the increasing demand for fuelwood. The final chapter evaluates the Bolivian government's institutional and legal capacity for improving natural resource management. Recommendations are included in each chapter. An 8-page bibliography is appended.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-812

Diagnóstico de la diversidad biológica de Bolivia

(Study of biological diversity in Bolivia)

Tropical Forest & Biological Diversity Assessments — USAID

Center for Conservation Data
National Dry Plant Specimen Museum of Bolivia
National Museum of Natural History
Interdisciplinary Center for Community Studies
Conservation International Foundation
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Bolivia
1988, 144 p. + 13 annexes, Es

This document surveys the biological resources of Bolivia as a basis for enhanced environmental protection and sustainable economic development. Subjects discussed in Part One include, inter alia: Bolivia's forest resources, plant species, and vertebrate species; the potential utilization of these resources; endangered species; and the management of protected environmental areas. Proposed actions to address threats to Bolivia's natural resources are discussed. Part Two reviews environmental institutions, legislation, and education; outlines Bolivia's science and technology policy; and discusses relevant development projects. Conclusions and recommendations are presented in Part Three.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-267

Plan de acción para el desarrollo forestal, 1990 – 1995

(Forestry development action plan, 1990 – 1995)

Tropical Forestry Action Programme — FAO and others

Sandoval, Guillermo Justiniano; Reyes, Jaime Munoz; Soria, Javier Lopez
Bolivia. Ministry of Agriculture and Peasant Affairs. Undersecretary of Renewable Natural Resources and Environment. Forestry Development Center, La Paz, BO
U.N. Development Programme, Geneva, CH
The Food and Agriculture Organization of the United Nations, Rome, IT
U.N. Environment Programme, Nairobi, KE
Apr 1989, v. p.: statistical tables, Es, En

Bolivia's forestry sector is characterized by great spatial imbalance. In the highlands, where population density and poverty rates are the highest, there is almost a complete lack of timber resources, while in the less populated tropical plains, these resources are abundant, but subject to large-scale exploitation. This report assesses the country's natural resource base and outlines an action plan for forestry development. Severe erosion in Bolivia (35%-41% of soils affected) is attributed mainly to the rapid loss of forest cover. Logging, agricultural, and grazing activities have almost completely denuded the highlands, while 70% of forests nationwide (including those in the country's 24 protected areas) are also subject to these threats. Rapid deforestation has also caused a severe fuelwood shortage in the highlands, an area traditionally dependent on wood as the domestic energy source. As a result, the highlanders have caused further damage by using animal and crop wastes (which should preferably be used as fertilizers) as alternative fuel sources, and pulling out shrub vegetation for the same purpose. These

problems are exacerbated by the nation's high population growth rate of 2.2%. The proposed action plan is composed of projects to improve land use practices, develop forest-based industries, increase the fuelwood supply, conserve tropical forestry ecosytems, and strengthen conservation institutions.

Available from:
TFAP Coordinating Unit
Forestry Department
The Food and Agriculture Organization of the United Nations

Informe nacional: Bolivia [Conferencia de las Naciones Unidas para el Medio Ambiente y el Desarrollo — CNUMAD/92]

(National report: Bolivia — United Nations Conference on Environment and Development — UNCED/92)

UNCED National Reports

[Bolivia.] Secretaría General del Medio Ambiente, BO
[Bolivia.] Liga de Defensa del Medio Ambiente, BO
[1992], [269] p.: charts, statistical tables, Es

This report on development and the environment in Bolivia touches on nearly every aspect of the nation's development experience. An introduction briefly narrates, from an environmental perspective, Bolivia's history from the pre-Colombian era to recent developments, and also describes the country's physical and ecological characteristics. The next section examines the development of various economic sectors from 1972 to 1990, and their contribution to the economy as a whole; included are discussions of the mining, agricultural, fisheries, industrial manufacturing, and energy sectors. The next two sections examine, respectively, social development (demographic change, health indicators, income levels, education, etc.), and the evolution of national economic policies from 1972 to 1990. Following this is an assessment of the current state of the environment, including discussions of: the impacts of agriculture, mining, and forestry on vegetative cover; the condition of soil resources and factors such as erosion, salinization, and loss of fertility; fisheries resources; biological diversity; the impacts of environmental degradation, urban concentration, etc., on human health; and solid wastes, sanitation, and potable water delivery. Next is an evaluation of development policies in the 1972 to 1990 period, which (though capitalist oriented) were characterized by a high degree of centralization. The last section offers recommendations for institutional and policy development to support environmentally sensitive and sustainable development.

Available from:
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Casilla 9072
La Paz
Bolivia
Phone: (591 2) 375081
Fax: (591 2) 2391368

Región de Chimanes: un diagnóstico de la biodiversidad y la problemática ambiental

(Chimanes Region: a study of biodiversity and environmental problems)

Other Environmental Studies

Centro de Datos para Conservación, La Paz, BO
1989, xiv, 179 p. + 7 annexes: ill., charts, maps, statistical tables, Es

The Department of Beni, Bolivia, possesses considerable forest, land, and biological resources. Unfortunately, the manner in which these resources — especially forests — have been exploited has produced little lasting developmental benefit for the region, while having increasingly destructive effects on the environment. This report evaluates biological diversity and environmental conditions in Beni, highlighting the region of Chimanes, which includes a national park, a biological research area, and a large forestry concession area. The report has four parts. An introduction presents general information on the study methodology, the study region, and the region's recent history in terms of development and conservation efforts. The second part analyzes the region's biodiversity, going from descriptions of major vegetative zones (e.g., forest classifications) to more specific examinations of plant and animal species and their distribution. The

third part surveys the effects of human activities such as urban growth, road construction, colonization, agriculture, livestock farming, forestry, and commercial exploitation of wild plants and animals. The fourth part is a general discussion of the themes treated and includes suggestions for improving environmental conservation in Beni, such as expansion of environmental information and study efforts, expansion and consolidation of critical protected areas, and the development of a strategic plan. Annexes contain, inter alia, species lists, an 18-page bibliography, and descriptions of proposed protected areas in Beni.

Available from:
Centro de Datos para la Conservacion
Avda. 6 de Agosto 2376/Casilla 11250
La Paz
Bolivia
Phone: (591 2) 35 2071
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-350

Brazil

Brazil: Atlantic coastal forests, conservation of biological diversity and forest ecosystems

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Godalming, UK
U.N. Environment Programme, Nairobi, KE
1988, [19] p.: maps, En

Brazil's Atlantic coastal forests have been reduced to less than 2% of their original extent, and are now internationally recognized as a priority for tropical moist forest conservation. This report describes the region's biodiversity, which is distinct from the much more extensive Amazonian forest to the northwest. In addition to a wealth of endemic species, the region's importance in watershed protection is also stressed. The protected areas system — which covers no more than 0.1% of the original forest expanse through national parks, biological reserves, and ecological stations — is described, and critical sites for primate and bird conservation are identified. Lists of endemic and threatened species of primates, rodents, marsupials, other mammals, and birds are provided. Primary threats to the coastal forests are identified as: illegal hunting and trapping, extraction of timber and other plant resources, demand for firewood, shifting cultivation, intensive agriculture (including conversion of forests to pastures for cattle raising), and timber plantations. Government and nongovernmental institutions involved in conserving Brazil's coastal forests are identified, followed by a list of specific projects implemented by the World Wildlife Fund. The report provides specific recommendations for integrating ongoing conservation efforts into a regional forest conservation plan supported by international funding agencies. The plan would involve collection of biological data, inventory of remaining forests, zonation of forest use, and restoration of degraded forests.

Available from:
World Conservation Monitoring Centre

Challenge of sustainable development: the Brazilian report for the United Nations Conference on Environment and Development

UNCED National Reports

Rezek, Francisco; de Azambuja, Marcos Castrioto; et al.
Interministerial Commission for the Preparation of the United Nations Conference on Environment and Development, [Brasília], BR
Sep 1991, [223] p.: statistical tables, En

In examining the relationship between development and the environment in Brazil, it is impossible to ignore the poverty factor. Though Brazil's economy has been one of the region's most successful, the gap between rich and poor, and the percentage of people in absolute poverty, continue to increase. The correlation between economic growth, poverty, and environmental degradation in Brazil suggests that ecological problems are deeply rooted in social, political, as well as economic factors. This report begins by exploring the moral, societal, technological, and political challenges of poverty and the inequalities

between developed and developing countries. Chapter I discusses the Brazilian development paradigm and its socio-environmental implications, covering the agricultural, energy, mining, manufacturing, transport, demographic, sanitation, and health sectors, and indigenous populations. Chapter II describes the evolution of environmental policies, regulations, and conservation efforts. Chapter III appraises Brazil's matchless ecosystems, which range from tropical rainforest, to savanna, to extensive coastal systems. Chapter IV discusses global themes: climate change; biodiversity; and ozone depletion. Chapter V discusses the requirements of sustainable development (poverty alleviation, democratization, innovative development strategies, technology, agricultural management, conservation, etc.). The conclusion presents Brazil's position concerning the 1992 U.N. Conference on the Environment and Development; an annex includes information on previous international environmental negotiations.

Available from:
UNDP Resident Representative
Caixa Postal 07-0285
70359 Brasília, DF
Brazil
Phone: (55 61) 223 3889
Fax: (55 61) 225 9339

Chile

Problemas ambientales de Chile

(Environmental problems of Chile)

State-of-the-Environment Reports

Hajek, Ernest R.; Gross, Patricio; Espinoza, Guillermo A.
Catholic University of Chile
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Chile
Aug 1990, 2 v.: maps, statistical tables, Es

Chile contains many diverse and fragile biotic communities, almost all of which have been subject to some degree of environmental degradation. This report assesses Chile's environmental status from a regional perspective, focusing on the specific environmental problems in each region of the nation. For evaluative purposes, Chile is divided into 13 major geographical regions, plus the Archipelago of Juan Fernandez, the Island of Pascua, and Chilean Antarctica. The environmental problems of each region are rated on a scale of 0.00 – 5.00 for importance and potential solution. The higher the number on the first scale, the greater the importance. Similarly, the higher the number on the second scale, the greater the potential for successful intervention. A multitude of environmental problems are covered, such as species extinction, agricultural abuses, deforestation, air and water pollution, excessive pesticide use, and marine estuary destruction. Following the statistical overviews of each region are brief commentaries by scientific and technical experts on the specific environmental problems. Many of the commentaries discuss the possible economic repercussions of environmental degradation, such as decreased tourism and declining fish harvests. The final section of the report is a collection of maps documenting the environmental status of Chile by region and by type of problem.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-393

Environment and natural resources strategy in Chile

Environmental Policy and Management Studies

Arensberg, Walter; Higgins, Mary Louise; et al.
World Resources Institute. Center for International Development and Environment
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Chile
8 Nov 1989, ii, [54] p., En

Chile has had the highest economic growth rate in Latin America during the 1980's, but this may not be sustainable in the long-run unless greater attention is paid to environmental consequences. This is especially true since the country's most

dynamic export sectors are natural resource-based. Already, expanded and intensified use of natural resources — in forestry and agriculture particularly — has been accompanied by costly environmental degradation (e.g., soil loss and loss of native forests) and environmental contamination (e.g., the use of chemicals in agriculture and chemical wastes in mining). This report begins by describing the institutional and legal framework for environment and natural resource management in Chile, as well as regional characteristics. The report then reviews major cross-cutting issues, including national policies, research, education, and public awareness. The next section examines sectoral issues, covering agriculture, forestry, protected areas and biological diversity, fisheries and coastal resources, mining and energy, other industries, and urbanization. The final section presents an environment and natural resource strategy for USAID/Chile. Appendices present a list of projects and FY90 activities.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABL-058

Colombia

Perfil ambiental de Colombia

(Environmental profile of Colombia)

Country Environmental Profiles — USAID

Pombo, Diana; Gonzalez, Edith; et al.
Foundation for the Second Botanical Expedition
Natura Foundation
Colombia. Ministry of Health
Colombia. Department of National Planning
Colombia. Ministry of Agriculture
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Colombia
U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
[1990], 348 p : ill., charts, maps, statistical tables, Es

Colombia has a rich diversity of natural and biotic resources. However, like many Latin American countries, it also suffers severe environmental problems. This study assesses Colombia's current environmental conditions and trends. Section I provides a general overview of Colombia's resources, focusing on climate, ecological diversity, and the development potential of water, soil, and forests, three of the country's most plentiful, but easily abused, resources. Section II covers geography, demography, and the key socioeconomic factors affecting the use of natural resources. Section III covers specific activities affecting the natural resource base. Among the most significant are agriculture, mining and manufacturing, power production, urbanization and population movements, and conservation efforts. Section IV focuses on the health consequences of environmental degradation, specifically disease and malnutrition. Section V presents possible remedies to environmental problems, such as new and/or strengthened legislation, the creation of environmental management agencies, more innovative development strategies, and increased popular participation in all aspects of decisionmaking. Specific recommendations and policy actions are presented in conclusion. Includes numerous maps and photographs and a 7-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-197

Colombian Choco: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1988, [15] p.: maps, En

The Choco region along Colombia's Pacific watershed contains about 5,600 sq km of forests and has one of the highest rainfalls in the world. Although biological data on the region are lacking, it is known to have exceptionally rich flora and fauna with a high degree of endemism. More than 100 endemic bird taxa are found in Choco — the highest number in the world. According to this report, the decentralization strategy of the

Colombian government has loosened control over these natural resources. Local agencies managing the area have allowed road construction to promote settlement and new incursions by timber companies. In some areas commercial paper pulp operations are incorporated into local development plans. Additional threats to biodiversity include agricultural development, mining, plantations, and large-scale illegal export of wildlife products (primarily capybara meat, reptile skins, and birds). As a result, only the central Choco forests remain intact and many plant and animal species are endangered. Proposed construction of an interoceanic canal could create further imbalance in the region. The report also assesses the conservation status of Choco's eight national parks and identifies sites requiring high priority protection.

Available from:
World Conservation Monitoring Centre

Plan de acción forestal para Colombia

(Forestry action plan for Colombia)

Tropical Forestry Action Programme — FAO and others

Colombia. National Department of Planning, Bogota, CO
Government of the Netherlands, Amsterdam, NL
The Food and Agriculture Organization of the United Nations, Rome, IT
Federal Republic of Germany, Bonn, DE
[1989], 2 v.: ill., charts, maps. statistical tables, Es

Containing representatives of approximately 10% of fauna and flora species found in the world, Colombia is recognized worldwide as an area of biological megadiversity. Deforestation of its remaining 53.1 million hectares of forest is proceeding at the alarming rate of 600,000 ha/yr, due to agricultural colonization (76.3%), fuelwood consumption (12.7%), and industrial timber needs (11%). In contrast, the total area reforested amounts to only 170,000 ha, and only about 6 million hectares of forest are protected. It is essential that the importance of forest resources to the country's economy and development be balanced against the need to preserve its biological riches. This forestry action plan aims to promote responsible and efficient use of forest resources, forest ecosystem conservation, and greater participation of the forestry industry sector in development and sustainment of forest resources, through programs in six areas: land use planning, forest-based industrial development, forest-based social development, protection and recovery of forest ecosystems, support to the forestry and environmental sector, and forestry research and technology transfer. Included in this document are profiles describing 82 proposed projects in terms of objectives, principal activities, expected results, and costs.

Available from:
Departamento Nacional de Planeación
Calle 26 no. 13 – 19 Piso 7
Bogotá
Colombia
Phone: (57) 242 4310/283 0826
Telex: DNP-BO 45634

Environmental policy for Colombia

Environmental Policy and Management Studies

Colombia. National Planning Department, Bogotá, CO
1 Aug 1991, [36] p.: statistical tables, En

Although Colombia comprises less than 1% of the earth's land mass, it is home to 10% of the planet's flora and fauna, making it among the most biologically rich nations in the world. Nonetheless, the nation suffers from a wide assortment of environmental problems. At least 1,000 species in the country are threatened with extinction. This report provides an overview of Colombia's resources and the threats they face, outlines the major issues in environmental management, and suggests recommendations. Section I describes Colombia's resources; the overall impact of 50 years of development on the environment; and specific types of environmental destruction, such as species extinction, deforestation, soil degradation, air and water pollution, and noise pollution. Section II focuses on environmental policy and covers the following: (1) institutions, such as the Ministry of the Environment, the National Environment Council, and the National Parks Division; (2) environmental management, including management of ecosystems and resources, environmental education, environmental restrictions and incentives, disaster prevention, and

international environmental policy; (3) sectoral management in agriculture, energy and mining, infrastructure, and urban areas; and (4) sources of financing. Section III contains detailed recommendations.

Available from:
Departemento Nacional de Planeación
Calle 26 No. 13-19
Bogotá
Colombia
Phone: (57) 282 4055
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-278

Ecuador

Ecuador: perfil de sus recursos costeros

(Ecuador: profile of coastal resources)

Country Environmental Profiles — USAID

Ochoa, Emillio; Macias, Washington; Marcos, Jorge
Ecuador. Ministry of Energy and Mines. Directorate General of the Middle Environment
University of Rhode Island. Coastal Resources Center
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Ecuador
Sep 1987, iii, 259 p.: ill., maps, statistical tables, Es

To provide the data needed for classifying Ecuador's coastal resources by priority categories for use and conservation, this report surveys the natural resources of Ecuador's four coastal provinces — Esmeraldas, Manabi, Guayas, and El Oro. A chapter is devoted to each province, covering in turn: (1) general information; (2) the coastal resource base (e.g., fish, mangroves, beaches, bays, estuaries, lagoons, protected areas, cultural and archaeological resources, and mineral resources); (3) existing utilization of these resources, and related activities (e.g., fishing, tourism, shipping); and (4) existing institutions and programs. For each province, there is also an overview which summarizes natural resource uses and problems, predicts development trends through the year 2000, and makes recommendations.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAZ-061

Assessment of biological diversity and tropical forests for Ecuador

Tropical Forest & Biological Diversity Assessments — USAID

Cabarle, Bruce J.; Crespi, Muriel; et al.
World Resources Institute. International Institute for Environment and Development — North America
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Ecuador
Jan 1989, vii, [113] p. + appendices: maps, statistical tables, En

The status of biodiversity and tropical forests in each of Ecuador's three major ecological regions — Western Ecuador, the Sierra, and the Amazon Basin — is assessed. After an initial chapter which describes the study's methodology and briefly overviews Ecuador's major conservation issues, Chapter II considers national laws, institutional policies, and individual activities that directly or indirectly affect natural resources, with a focus on the development and conservation activities of governmental and non-governmental agencies and international donors. Chapter III reviews the history and status of Ecuador's rich biodiversity in each ecological region, while Chapters IV and V discusses the management of Ecuador's protected environmental areas, along with other national-level, community, and nongovernmental efforts to manage/conserve biodiversity and tropical forests.

Chapter VI considers the contributions of biodiversity to the national and local economies. Chapter VII covers a spectrum of national-level economic, social, and legal issues determining land use patterns, as well as the major threats to biodiversity and tropical forests at the regional level. A concluding chapter identifies critical areas for conservation, appropriate actions for A.I.D., and key policy issues affecting the sustainability of

conservation efforts in Ecuador. A major conclusion is that Ecuador's tropical forests (e.g., the Awa Forest Reserve and Yasuni National Park) are among the world's highest priorities for conservation. A volume of appendices provides further information on, inter alia, conservation organizations, major economic projects, economic analysis of biodiversity, and Ecuador's forests and endemic species. (Author abstract, modified)

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-251

Ecuador: conservation of biological diversity [and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Jan 1988, [20] p.: maps, statistical tables, En

Ecuador is home to one of the world's most genetically diverse plant populations. There are some 20,000 different varieties of plants, as well as more than 2,500 animal species living in habitats stretching from the Andes Mountains to the Amazon. This report profiles Ecuador's ecosystems and examines the factors behind increasing deforestation, soil erosion, and desertification. Ecuadorean forests were relatively protected by their inaccessibility until the extension of roads to outlying regions in the early 1960's. Increases in human settlement, cultivated land, and firewood/charcoal gathering are major forces behind deforestation, which is occurring at the rate of 3,400 sq km per year. The country's coastal forests are being severely depleted by logging and land clearing, and in some areas, by shrimp farming operations, while the Amazon region is being exploited for oil palm extraction.

According to the report, administrative and political weakness inhibits the effective monitoring of protected areas. Logging concessions are granted by the government under a philosophy of "conservation through proper use," but timber felled is usually not replanted. Soil erosion has increased as population pressures have forced farmers to cultivate steeper mountain slopes, and the loss of valuable topsoil is exacerbating river siltation. Overgrazing, deforestation, and intensive cultivation have promoted desertification in the dry southern coastal districts. In fact, the amount of arid land in Ecuador is estimated to have increased by 31.5% in the past 25 years. A description of conservation activities and a list of recommendations complete the document. Threatened plants and animals are identified in an appendix.

Available from:
World Conservation Monitoring Centre

Diagnóstico: plan de acción forestal, 1991 – 1995

(Study: forestry action plan, 1991 – 1995)

Tropical Forestry Action Programme — FAO and others

Ecuador. Ministry of Agriculture and Livestock. Natural Resources and Forestry Secretariat, Quito, EC
[1990], 2 v. + attachment: maps, statistical tables, Es, En

In Ecuador, forestry is carried out with minimal management, technical support, or control by the State; fees for the use of forest resources are extremely low; and there is a large gap between annual deforestation (some 200,000 ha, primarily in Amazon forests) and annual reforestation (some 3,330 ha). The first volume of this two-volume forestry action plan for the years 1991 – 1995 is a diagnosis of the forestry sector. An introduction stresses the economic importance of Ecuador's forests and the dangers their loss poses. Section II overviews the country's physical characteristics, climate, infrastructure, economic sectors, and regional development. Section III covers the current status of forests and the forestry sector, concentrating on environmental problems, industrial uses, energy potential, and conservation efforts. Section IV makes projections for the period 1990 – 2005 in areas such as production and consumption of common forest products (e.g., lumber, paper, and pulp), employment generation, and reforestation. Finally, Section V presents the outlines of a strategy to guide rational development of the forestry sector. Volume two

contains the specifics of such a strategy. It begins by discussing the basic problems and limitations facing policymakers, and then develops a five-pronged strategy with programs in the areas of land use, forest-based industries, fuelwood and energy, conservation of ecosystems, and institutional development. Within this framework, the document then presents fifty-eight proposed projects.

Available from:
Ministry of Agriculture. National Resources and Forestry Secretariat
Avenue Amazonas Y Eloy Alfaro
Quito
Ecuador

Ecuador's Amazon Region: development issues and options

Environmental Policy and Management Studies

Hicks, James F.; Daly, Herman E.; et al.
World Bank, Washington, DC, US
1990, xii, 41 p. + attachments: maps, statistical tables, En

Ecuador's Amazon Region has several unique features, including extremely fragile natural resources, rich biological diversity, significant native populations, and large, but diminishing petroleum reserves. Population growth and migration out of the Sierra and Costa regions are creating extraordinary pressures on the Amazon Region, significantly reducing the region's potential to contribute to Ecuador's economic development. Already some 350,000 people live in the Amazon, and population growth in the region is estimated at about 5% per year. This report presents a broad analysis of the Amazon Region within the framework of Ecuador's national economic development. The first two chapters describe the region's general characteristics and assess its economic and population trends. The final section provides policy recommendations related to population and carrying capacity, petroleum and mining developments, natural resources policy, agriculture and forestry, transportation, native communities, biodiversity and protected areas, and municipal development. Suggested actions focus on providing alternatives to rapid agricultural settlement in the Amazon by expanding and increasing the productivity of existing agricultural areas and expanding the urban labor market in the Sierra and Costa regions. There are two annexes, one presenting a more detailed description of the region's native population and their organizations, and the second, a summary of national legislation especially relevant to the region's development. Includes bibliography.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-119

Guyana

National forestry action plan [Guyana], 1990 – 2000

Tropical Forestry Action Programme — FAO and others

Guyana. Natural Resources Agency, GY
Guyana Forestry Commission, GY
Canadian International Development Agency, Hull, PQ, CA
1989, xv, 77 p.: maps, statistical tables, En

The forestry sector has been a small but very dynamic part of the economic and social life of Guyana since the earliest days. About 10,000 people are employed directly by timber and wood-using industries. Logging operations are found in the interior region, while sawmilling operations are located in the coastal areas. The coastal plain also contains about 80,000 hectares of mangrove forests, which are subject to exploitation by bark and fuelwood gatherers. This has led to erosion of the shoreline and loss of habitat of marine and shore wildlife and fish. Except for extensive ranching in the coastal plain and the savannahs, no forest lands of significant extent elsewhere in Guyana have been converted to agriculture.

This National Forestry Action Plan describes the status of Guyana's forest sector, covering natural regions and forest ecosystems, forest administration and management, the timber industry, wood energy, non-timber forest products, conservation, and education and research. The

report presents government policies and strategies in the context of opportunities and constraints to development. The 37 projects which comprise the short-term action program are then discussed, with detailed profiles of the projects being presented in Appendix 1. Guyana's forestry action program will be guided by three emphases: (1) institution building and personnel development; (2) conservation and the management of resources on a sustained yield basis; and (3) full utilization of existing forest industry facilities and an increase in the value of production for foreign markets. The program will also include activities to, inter alia, benefit Guyana's indigenous Amerindian people, most of whom live in reserve areas; generate electricity from sawmill wastes; and reforest important watersheds and initiate firewood and charcoal production.

Available from:
Canadian International Development Agency
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-229

Development trends and environmental impacts in Guyana: country report (Guyana) for submission to the United Nations Conference on Environment and Development (UNCED) Secretariat

UNCED National Reports

Guyana Agency for Health Sciences, Environment and Food Policy, GY
Feb 1992, iii, 72 p.: statistical tables, En

Guyana is one of few countries that can boast of a relatively unspoilt environment. In fact, it is among only 13 countries that still have the majority of their tropical rainforest intact. Guyana's economy depends to a large extent on the sustainable utilization of the main natural resources: bauxite, gold, diamond, water, forestry, fisheries, and the soils of the coastal plain. This report discusses Guyana's economic trends, the impact of structural adjustment policies (including the elimination of external debt and other economic factors) on environment and development, and the role of natural resources in economic development. Chapter I briefly outlines the geography of Guyana, while Chapters II and III describe the impact of economic development on natural resources and social services. Chapter IV identifies key environmental issues and responses to major problems related to biodiversity, coastal zone protection, climate change, forests, pesticides and toxic chemicals, human settlements, wildlife resources, and air pollution. In Chapter V, responses to these issues are summarized in terms of national policies and projects and international cooperation. Chapter VI identifies environmental projects that require additional funding, and Chapter VII summarizes the country's expected results from the U.N. Conference on the Environment and Development.

Available from:
UNDP Resident Representative
P.O. Box 10960
Georgetown
Guyana
Phone: (592 2) 59333
Fax: (592 2) 62942
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-251

Paraguay

Environmental profile of Paraguay

Country Environmental Profiles — USAID

Mandelburger, Federico
International Institute for Environment and Development
Paraguay. Technical Planning Secretariat
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Paraguay
Dec 1985, vii, 162 p.: ill., charts, maps, statistical tables, En

The social, cultural, physical, and economic dimensions of Paraguay's environment are analyzed in this report to identify main environmental features and problems and to recommend specific actions. The environmental profile presents an overview of Paraguay's ethno-historic and anthropological background, present-day society, and the impact of pollution. Descriptions are presented of: the legal and

institutional aspects of environmental policy; the structure and performance of the economy, with focus on the primary and energy sectors; physical resources (climate, geological, mineral, soil, and water resources); and biological resources (vegetation, wild animal life, protected areas, and fish resources). The bicentennial of Paraguayan independence, 2011, is used as a point of reference for examining future trends in population, urbanization, industry, and energy. Recommendations are made for immediate and medium-term actions (including legislative revision, land management, and institution building) to promote establishment of a national environmental and preservation policy.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAU-143

Informe de país [Paraguay]: Conferencia de la Naciones Unidas sobre Medio Ambiente y Desarrollo, 1992

(Country report [Paraguay]: United Nations Conference on Environment and Development, 1992)

UNCED National Reports

Paraguay. Ministry of Agriculture and Livestock. Under-Secretary of Natural Resources and the Environment. Directorate of Environmental Regulation, Asuncion, PY
Oct 1991, 120 p., Es

Like many other Latin American countries, Paraguay's development paradigm is based upon intensive, unplanned exploitation of its natural resources. Such a model, while producing economic growth according to standard indicators, is causing irreversible damage to the environment. For example, in the past 2 years deforestation has doubled from 200,000 to 400,000 ha/yr. This report provides a framework for a more rational approach, emphasizing nine programmatic areas: (1) regulating the exploitation of natural forests; (2) encouraging the growth of secondary and tertiary industries (versus the export of raw materials, especially lumber); (3) reforesting degraded areas; (4) consolidating and enlarging protected wildlife areas; (5) developing legislation pertaining to environmental protection; (6) applying environmental impact criteria to public, and eventually private, development activities; (7) developing a national land use classification system; (8) introducing environmental programs into integrated rural development planning, especially to mitigate the effects of agricultural colonization; and (9) emphasizing environmental education.

The first three chapters describe Paraguay's natural resources (flora, fauna, climate, protected areas, soils, minerals, etc.) and socioeconomic aspects (e.g., demographic and health factors, infrastructure, agricultural and other economic activities, etc.). The following three chapters explore problems and possible solutions in the areas of resource utilization, education, agriculture, industry, tourism, legal and institutional development, etc. The last chapter outlines ten urgent issues for the 1992 U.N. Conference on Development and the Environment, emphasizing the importance of international cooperation and Paraguay's need for technical and financial support from the developed countries.

Available from:
UNDP Resident Representative
Casilla de Correo 1107
Asunción
Paraguay
Phone: (595 21) 449570
Fax: (595 21) 444325

Áreas prioritarias para la conservación en la región oriental del Paraguay

(Priority areas for conservation in the eastern region of Paraguay)

Other Environmental Studies

Acevedo, Celeste; Fox, Jennifer; et al.
República del Paraguay. Ministerio de Agricultura y Ganadería. Subsecretaría de Recursos Naturales y Medio Ambiente. Dirección de Parques Nacionales y Vida Silvestre, Asunción, PY
Centro de Datos para la Conservación, Asunción, PY
Aug 1990, 99 p.: ill., charts, maps, statistical tables, Es

The Eastern Region of Paraguay is the most densely populated region in the country, its agricultural and ranching sectors are expanding quickly, and only 0.61% of its land is protected. Indeed, the amount of forested area declined by 50% between 1945 and 1985. This study was undertaken to classify the resources of the region and formulate a plan for conserving its most important and/or threatened areas. The report begins with a general description of Paraguay and a brief history of conservation efforts there. Section 2 focuses on the methodology used to classify and analyze the Eastern Region's resources and ecosystems. Using thematic maps, satellite images, aerial photos, field studies, and consultations with experts, the region was divided into six main ecosystems, as defined by natural limits such as watershed divisions, soil types, and distribution of representative forest species. In turn, a total of 23 priority areas, selected on the basis of their natural state, present management, and long-term outlook, were identified within the six ecosystems; the 23 priority areas amount to 10% of the Eastern Region's area. Section 3 then specifically analyzes each of the six ecosystems, which are identified as: (1) Aquidabán, (2) Amambay, (3) Alto Paraná, (4) Selva Central, (5) Litoral Central, and (6) Neembucú; the priority areas in each are also covered in-depth. The section includes information on areas in the Eastern Region that are already protected, such as national parks, and wildlife and forest reserves. Conclusions are presented in Section 4. Annexes include several maps, a bibliography, and additional information on life zones and fauna.

Available from:
Ministerio de Agricultura y Ganadería — Centro de Datos para la Conservacion
25 de Mayo 640, 12B
Casilla de Correos 3303
Asuncion
Paraguay
Phone: (595 21) 98089
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-327

Peru

Preliminary environmental strategy for CIDA in Peru

Environmental Strategies — Canada (CIDA)

Marmorek, David
Environmental and Social Systems Analysts Ltd., Vancouver, BC, CA
17 Oct 1988, xviii, 90 p. + 7 appendices: charts, maps, En

Peru's volatile socioeconomic situation both increases the severity of environmental problems and impedes efforts to reduce them. This is particularly evident in the Sierra, where guerrilla activities and lack of government investment have driven peasants to overexploit available resources or migrate to other areas. According to this report, Peru's major environmental problems (in approximate order of importance) are: soil erosion, deforestation, desertification, water pollution, overfishing, soil salinization, urbanization of agricultural land, loss of ecological and biological diversity, loss of pasture production, and air pollution. Natural hazards, such as landslides, droughts, and floods are also discussed.

In examining the causes and extent of these problems, three major issues emerge: (1) misguided development policies (e.g., road construction, deforestation and land settlement in ecologically sensitive zones, and excessive investment in the marine fishing industry), (2) sociocultural factors (e.g., high demand for grazing land and firewood, lack of respect for and enforcement of environmental regulations, and

low environmental awareness), and (3) inappropriate or inadequate resource management (e.g., lack of investment in reforestation, excessive pesticide use, loss of the traditional Inca terracing technology). The report then assesses Peru's capability for environmental management with reference to legislation; institutions; research, education, and training; and public awareness. Final sections discuss current environmental initiatives and propose strategies for the Canada International Development Association.

Available from:
Environmental and Social Systems Analysts Ltd.
1765 W. 8th Avenue
3rd Floor
Vancouver, B.C.
V6J 5C6
Canada

Perfil ambiental del Peru

(Environmental profile of Peru)

Country Environmental Profiles — USAID

Vidal, Javier Pulgar; Cespedes, Jesus Echenique; et al.
Peru. National Evaluation Office of Natural Resources
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Peru
May 1986, ca 350 p. + attachment: ill., charts, maps, statistical tables, Es

While industrial and agricultural expansion have aided Peru's economic development, they now threaten to damage the country's fragile environment. Some 105 species of animals have been classified as endangered, in many cases due to loss of forest area to cropping or grazing, while sulfur dioxide emissions from industry have affected both plant growth and human health. This report profiles Peru's ecosystem, emphasizing both the natural and man-made interventions which have worsened environmental conditions. The profile is divided into four chapters, covering: (1) topography, geographic regions, and population; (2) environmental deterioration; (3) critical environmental areas; and (4) environmental legislation and organizations. Chapter One highlights the environmental impact of population growth, particularly in urban areas. Chapter Two analyzes the social and economic factors behind environmental deterioration; assesses the state of Peru's soil, forest, water, pasture, and wildlife resources; and examines geographic and climatic phenomena (e.g., El Nino) that affect the environment. Chapter Three highlights the identification and development of protected areas in places susceptible to serious environmental degradation — particularly those in Costa, Sierra, and Selva regions. The final chapter discusses existing and prospective environmental legislation, as well as private and governmental organizations concerned with environmental affairs. An annex of government and private environmental organizations and a 141-item bibliography are included.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAW-512

Peru: an assessment of biological diversity

Tropical Forest & Biological Diversity Assessments — USAID

Gow, David; Clark, Kate; et al.
Development Strategies for Fragile Lands
Development Alternatives, Inc.
Tropical Research and Development, Inc.
Earth Satellite Corp.
Social Consultants International
U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Peru
Jan 1988, xii, 72 p. + annex, En

In terms of biodiversity, Peru is among the three richest South American countries, along with Brazil and Colombia. After an introductory section, Chapter II of this report assesses Peru's capacity to preserve this wealth, describing the country's major conservation threats, its protected areas system, and the economic aspects of biodiversity (including nature tourism, the consumption and sale of wild plants and animals, and investments in germplasm banks and in natural forest management). Chapter III examines the impact of development activities on the

country's natural resources. Since development of the selva areas has been a governmental priority, these projects (highway construction, timber extraction, petroleum exploration, and planned and spontaneous colonization) are emphasized. Deforestation, which has often resulted from the selva projects, is attributed primarily to: structural factors (i.e., poverty, skewed land distribution, low agricultural productivity, and lack of viable economic alternatives), fluctuating government commitments, an emphasis on short-term agricultural gains, and lack of institutional sustainability and capability.

Chapters IV and V discuss endangered and economically important plant and animal species in Peru and address major constraints to preservation of biodiversity. Chapter VI reviews the institutional context for environmental management and details a proposed reorganization and decentralization of the Ministry of Agriculture. Recommendations, presented in Chapter VIII, focus on the establishment of a conservation policy and education programs, integration of conservation issues into development activities, research programs, and training and institution building. Includes a 6-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-597

Peru: conservation of biological diversity and forest ecosystems

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Godalming, UK
U.N. Environment Programme, Nairobi, KE
1988, 30 p.: maps, En

The Peruvian forests, which cover 60% of the country, are some of the richest in the world, containing up to one-third of South America's bird species and one-quarter of its mammal species, as well as an abundance of flora. This report documents the wealth of biodiversity found in Peru's forest ecosystems, which include coastal dry forest, mangroves, lowland wet forest, Polylepis and Buddleia forests, cloud forest, and rain forest. The country's environmental protection system is described, which consists of conservation areas, national forests, and hunting reserves covering 8.6% of the total land area. Although regard for conservation is high in Peru, population pressures are enormous. Moreover, the country's poor economic situation precludes sufficient national spending on conservation. These factors have contributed to a situation in which the country's biodiversity is seriously endangered by unmanaged human settlement and non-sustainable use of forest areas. Major threats include: (1) widespread hunting, both for subsistence and illegal international trade, and gathering of palm fruits and butterflies; (2) timber extraction; (3) shifting cultivation; and (4) conversion to intensive agriculture and plantations. The report then recommends conservation activities to be undertaken in the agriculture, forestry, and wildlife sectors. Includes list of endemic species.

Available from:
World Conservation Monitoring Centre

National forestry action plan, 1988 – 2000, coordinated by the Directorate General of Forests and Wildlife and the Canadian International Development Agency

Tropical Forestry Action Programme — FAO and others

Peru. Ministry of Agriculture, Lima, PE
Canadian International Development Agency, Hull, PQ, CA
1987, 309 p.: charts, statistical tables, En

In Peru, the forestry sector is rarely mentioned in government plans or budget allocations, and its contributions to social and economic development go mostly unrecognized. The urgent need to begin incorporating Peru's vast forest and wildlife potential into the country's planning, while reversing deforestation and the deterioration of natural ecosystems, is the framework within which Peru's National Forestry Action Plan 1988 – 2000 has been prepared. The plan includes 72 priority projects (costing over $254 million) planned for the 1988 – 93 period. The projects, which will be located variously in coastal, sierra, jungle, and

jungle fringe regions, fall under five program areas: rural development; the production/conservation of energy from biomass; forest industry management and development; conservation of forest ecosystems; wildlife management; and institution building, education, and research. This document, in addition to presenting the Plan itself, discusses the current status and problems of the forestry sector and presents a statistical account of the sector's contribution to development objectives, and specifically to the national economy. Appendices include profiles of projects that have been selected for international cooperation, describing their location, objectives, justification, activities, institutional actors, beneficiaries, and costs.

Available from:
Canadian International Development Agency

Suriname

Conservation action plan for Suriname

Other Environmental Studies

Mittermeier, Russell A.; Malone, Stanley A. J.; et al.
Conservation International Foundation, Washington, DC, US
Suriname. Ministry of Natural Resources. Suriname Forest Service, SR
World Wildlife Fund, Washington, DC, US
Foundation for Nature Preservation in Suriname, SR
University of Suriname, SR
Jun 1990, 45 p.: ill., maps, statistical tables, En

Suriname is one of the least densely populated tropical countries in the world. Moreover, about 95% of the population is concentrated in the capital city and coastal towns, leaving the interior virtually uninhabited and covered with undisturbed neotropical Amazonian forest. Indeed, the annual rate of forest destruction is than 0.1% in the interior. Although the diversity of Suriname's fauna and flora does not compare to larger countries like Brazil, the country nonetheless is rich in wildlife, including 674 species of birds, 200 species of mammals, 130 of reptiles, 99 of amphibians, and roughly 4,500 of plants. Independent since only 1975, Suriname has an outstanding nature conservation system that ranks among the best in South America; there are 13 nature reserves, 1 nature park, and 1 multiple use area. They range in size from 100 to 220,000 hectares and include tropical forests and important coastal formations, such as sea turtle nesting beaches and estuarine areas of international importance. After a general introduction, this report summarizes Suriname's proposed conservation projects for 1991 – 1995, covering the management of existing protected areas, the establishment of new protected areas, conservation research, environmental education and public awareness, technical training, and promotion of nature tourism. Budget requirements for these projects are also presented. Appendices contain lists of mammals, birds, reptiles, and amphibians; rare, threatened, and endemic plants; and groups concerned with conservation in Suriname. Includes bibliography.

Available from:
IUCN — The World Conservation Union
Publications Department
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Uruguay

National environmental study: Uruguay — executive summary

State-of-the-Environment Reports

Organization of American States, Washington, DC, US
[1992], 22 p., En

In Uruguay, population growth, the extent and spread of urban settlements, and the increasing diversity of development activities affect the entire range of natural resources, and conflicts between alternative uses of these resources have multiplied. This report identifies Uruguay's major environmental problems: soil degradation through erosion and chemical contamination by fertilizers and pesticides; poor sanitation and housing conditions in urban areas; increased demand for irrigation water, recurrent droughts, and increasing

water contamination in agricultural areas; severe air pollution, due to industry and obsolete city buses; destruction due to mining activities; indiscriminate development for the tourist industry; dependence on oil and inefficient energy use; and macroeconomic problems. Although Uruguay has substantial natural forests, pressures are mounting on these reserves from agriculture and livestock interests. This report also discusses Uruguay's environmental policies and institutions, and a final section outlines an environmental action plan. The plan's activities are grouped into nine programs, focusing on: management capabilities; biodiversity and genetic reserves; coastal zone management and reclamation; watersheds; environmental sanitation; sustainable resource use; energy; environmental education; and national resource accounts. Financial requirements and institutional arrangements are specified.

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Venezuela

Auditoría ambiental de Venezuela, 1991: reporte de la situación ecológica del país hasta el 31 de diciembre de 1991

(Environmental assessment of Venezuela, 1991: report on the ecological situation as of December 31, 1991)

State-of-the-Environment Reports

Romero Diaz, Aldemaro
Fundación Venezolana para la Conservación de la Diversidad Biologica, VE
[1991], 101 p. + attachments: charts, statistical tables, Es

This assessment of Venezuela's environment paints an alarming portrait. Some of the most disturbing statistics presented include: deforestation has already consumed 32% of the country's natural areas; 101 animal and 185 plant species are known to be in danger of extinction; outputs of pollutants and wastes per capita surpass that in most Latin countries and are in fact comparable to the United States (though not moderated by comparable treatment and disposal standards); and, most telling, only 7% of the population considers environmental protection a national priority. As such, informing and changing public opinion, as well as that of decision makers, is a top priority. The first section, an introduction, briefly traces the history of environmental impact, inquiry, and protection from prehistoric times to the present. Following sections provide data on and analyses of population growth; loss of biodiversity and deforestation; soils, erosion, and desertification; atmospheric pollution; water contamination; solid wastes; toxic and radioactive wastes; health and the environment; public opinion and awareness concerning the environment; and the problem of illegal prospectors, or garimpeiros in Venezuela. The final section strongly recommends legislation to foster a greater sense of responsibility and dedication, at the personal and societal levels, for the well-being of the environment. Attachments include a bibliography and lists of animal species and national parks and refuges.

Available from:
Fundación Venezolana para la Conservación de la Diversidad Biológica
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Auditoría ambiental de Venezuela: 1990

(Environmental assessment of Venezuela: 1990)

State-of-the-Environment Reports

Fundación Venezolana para la Conservación de la Diversidad Biológica, VE
31 Dec 1990, 63 p.: charts, Es

While containing vast jungles, Venezuela is the sixth most urbanized country in the world, with 90.5% of its population living in urban areas; metropolitan Caracas alone, while encompassing only 0.01% of the nation's territory, contains 24% of its population. A portrait of urban concentrations surrounded by seemingly endless jungle has fostered public complacency towards the environment and resource exploitation; while the cities sleep, some of the most ecologically diverse and valuable ecosystems in the world are being casually and systematically destroyed. This environmental assessment of Venezuela seeks to inform public opinion about the state of the environment, the contributions of urban activities to overall environmental degradation, the effects of resource development, and the pitfalls of continued environmental negligence.

The document has ten sections, beginning with an introduction describing Venezuela's principal environmental concerns (overpopulation, pollution, resource depletion, and global climatic change) and giving a short history of environmentalism in the country. impacts — particularly relevant to Venezuela, which has one of the highest growth rates in the world — and offers some solutions. Sections three, four, five, six, and seven cover, respectively: deforestation and habitat destruction; soil erosion and degradation; atmospheric pollution; pollution of inland and coastal waters, and solid wastes. Most of the solutions offered in these sections focus on attitudinal change. Section eight discusses the issue of *garimpeiros*, Brazilian prospectors who penetrate the Venezuelan frontier to mine gold in the sparsely populated border region, viewing this as both a political and an environmental problem. Section nine offers a summary, and exhorts readers to become environmentally aware, while Section ten gives a section-by-section breakdown of information sources and citations.

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Latin American Region

Ambiente y desarrollo en América Latina y el Caribe: problemas, oportunidades, y prioridades

(Environment and development in Latin America and the Caribbean: problems, opportunities, and priorities)

Other Environmental Studies

Gallopin, Gilberto C.; Winograd, Manuel; Gomez, Isabel A.
Fundación Bariloche. Grupo de Análisis de Sistemas Ecológicos, AR
1991, 105 p.: maps, statistical tables, Es

Throughout Latin America and the Caribbean, a region that has suffered calamitous environmental degradation, there is growing recognition of the inseparable link between environmental conservation and long-term economic development. There is also increasing awareness that one nation's environmental problems can easily become another's. This report, reflecting an emphasis on sustainable development, surveys major regional and global environmental problems and discusses the cross-national links environmental degradation has brought about. The report begins by discussing the connections between economic growth, environmental quality, and the goal of sustainable development. Section II focuses on the growing interdependence of the world, specifically on how environmental problems can cross national boundaries. Section III provides general information on the region's history and current conditions, while Section IV again focuses on the close connection between quality of life and environmental health. Section V covers individual areas of regional concern, such as land use, forest resources, water resources, energy, and biological diversity. Sections VI and VII, in turn, focus on global environmental concerns — nuclear war, ozone depletion, ocean pollution, acid rain, toxic waste, etc. — that no nation is immune from. Section VIII discusses the costs to Latin America and the Caribbean of ignoring the above problems. Section IX concludes the report with various alternatives to current development strategies.

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Order No.: WRI-331

Environment and development: a Latin American vision — report to UNCED

Other Environmental Studies

Gallopin, Gilberto; Gutman, Pablo; Winograd, Manuel
Ecological Systems Analysis Group, Bariloche, AR
Jun 1991, [98] p.: statistical tables, En

As a whole, Latin America is relatively well endowed in natural resources. With only 8.5% of the world's population, the region possesses 12.2% of cropland and the greatest reserve (23%) of potentially arable lands. Latin America also possesses about 23% of the world's forests and 46% of tropical forests. However, there are important differences within the region. For example, while Brazil has a high ratio of cropland per person (0.55 ha/person), Central America and the Andean countries have far lower ratios (0.23 and 0.26 ha/person, respectively). The first three chapters of this report focus on the state of the Latin American environment. They review the region's natural resource endowment, the main uses of natural resources, and current environmental problems. The chapters also explore natural resource demands and the environmental problems associated with different regional economic development scenarios for the next decades. The final three chapters are broader in scope, drawing examples from different regions of the world. Chapters 4 and 5 deal with the tradeoffs between environment, economic development, and population growth. Chapter 6 focuses on policy issues and options, with special emphasis on the issues of sustainability, income distribution, and global warming.

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Desarrollo y medio ambiente en América Latina y el Caribe: una visión evolutiva

(Development and the environment in Latin America and the Caribbean: a vision of change)

Other Environmental Studies

Spain. Ministerio de Obras Públicas y Urbanismo. Secretaría General de Medio Ambiente, Madrid, Es
Agencia Española de Cooperación Internacional
U.N. Environment Programme, Nairobi, KE
1990, 231 p.: ill., charts, maps, statistical tables, Es

This comprehensive monograph examines the history, characteristics, and situation of Latin American and Caribbean societies from an environmental perspective. An introduction portrays the region as being in the midst of a socioeconomic and environmental crisis. Deforestation, coastal degradation, soil erosion, loss of biodiversity, urbanization, chemical use, pollution, population growth, poverty, and global environmental problems (e.g., ozone depletion and carbon emissions) are at frightening levels, and increasing. Part 1 describes the region's natural characteristics, its geographical formations, ecological zones, and biological diversity. Part 2 provides historical and socioeconomic background from the precolonial to the pre-World War II period. Part 3 picks up chronologically where Part 2 leaves off, examining industrial, agricultural, and societal development in the postwar era. Finally, Part 4 examines in detail the environmental crisis and its causes in relation to various sectors of the society, beginning with an analysis of the region's economic problems and the effects of structural adjustment, and including discussions of natural resource use and pollution, urban/industrial growth, agroproduction, and the state of environmental conservation efforts.

Available from:
United Nations Environment Programme
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Nairobi
Kenya
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Telex: Uniterra, Nairobi

Afghanistan

Afghanistan: the transition from war to rehabilitation and development — the national report of the Government of the Republic of Afghanistan for the United Nations Conference on Environment and Development (UNCED), Brazil, 1992

UNCED National Reports

Afghanistan. Ministry of Planning, Kabul, AF
Feb 1992, ii, 131 p.: ill, maps, statistical tables, En

Afghanistan's 13-year-long war has had severe economic, physical, and social effects. The war devastated the country's physical and social infrastructure, halted most productive economic and natural resource-based activities, and created the world's largest refugee population. All of these outcomes have exacerbated the country's environmental problems. This report therefore begins by assessing the impact of war on the Afghan people, natural resource base, macroeconomy, and major economic sectors. The report then identifies key environmental and development issues, including the following. (1) Deforestation is worsening because fuel for heating is scarce and Afghans are forced to cut remaining forests in order to survive harsh winters. (2) Desertification and erosion continue unabated. (3) Water pollution increases as inadequate water and sanitation infrastructure fails to meet the needs of growing urban populations resulting from immigration from the countryside. (4) Millions of land mines have destroyed essential irrigation systems, causing loss of productive agricultural land as well as significant suffering to human and animal populations. (5) Use of banned agrochemicals to increase food supply raises ethical dilemmas. (6) Centuries-old archaeological and cultural sites and artifacts have been damaged or lost through warfare. The report concludes by examining Afghanistan's response to these problems and outlining plans for the future.

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Bahrain

Bahrain: national state of the environment report no. 3

State-of-the-Environment Reports

El-Hinnawi, Essam
U.N. Environment Programme, Nairobi, KE
Dec 1987, 47 p.: maps, statistical tables, En

The State of Bahrain comprises an archipelago of 33 mostly infertile low-lying islands situated between Saudi Arabia and the Qatar Peninsula. Although rich in oil, Bahrain is lacking in other natural resources, with no surface water and little wildlife. The country's environmental status is assessed in this report, which covers climate, socioeconomic indicators, water resources and quality, marine environment, agriculture and livestock, wildlife, energy, industry, and human settlements.

As of 1985, 82% of Bahrainis lived in urban centers and the national population density was 600 inhabitants per kilometer. Bahrain is one of the few countries in which 100% of the population is provided with safe drinking water and sanitary facilities. However, groundwater sources are increasingly overexploited and salinization has increased due to oil pumping and irrigation. Plans have been made to provide desalinated seawater for domestic and industrial needs in the future. Industrialization has damaged the marine environment, destroying what was once a large community of mangroves and adding a number of heavy metals and other chemicals to seawater, organisms, and sediments. Industrial emissions have also decreased air quality, especially around the oil refinery and aluminum smelter. Moreover,

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Bahrain's climate may favor photochemical reactions leading to the formation of secondary pollutants such as ozone. The incidence of environmental diseases, on the other hand is quite low. Malaria cases have decreased significantly, and no cases of cholera, plague, relapsing fever, or typhus have been reported since 1981. A final section of the report describes Bahrain's environmental institutions and legislation.

Available from:
State of Environment Unit. U.N. Environment Programme
P.O. Box 30552
Nairobi
Kenya

Bangladesh

Environment and development in Bangladesh: an overview and strategy for the future

Environmental Strategies — Canada (CIDA)

Dean, P.B.; Treygo, Wit
Canadian International Development Agency, Hull, PQ, CA
Oct 1989, xiv, 54 p. + 10 appendices: ill., charts, statistical tables, En

Several characteristics of Bangladesh's geography leave the country vulnerable to disasters. Half of the land area is less than 25 feet above sea level, and much of it is flood-prone; the country's rivers change course due to an active deltaic plain; the climate changes from a distinct dry season to heavy monsoon rainfall; and cyclones occur frequently due to the location and configuration of the Bay of Bengal.

This report describes the impact of these disasters and the general status of Bangladesh's natural resources, emphasizing the interrelationships within the country's ecosystem. Major ecological concerns are overviewed in chapters covering: (1) geographical setting; (2) population; (3) water; (4) land use and agriculture; (5) forests and wildlife; (6) fisheries; and (7) energy. The country's environmental problems are compounded by the lack of an adequate institutional framework for addressing them. Environmental legislation is inadequate, outdated, and unenforced. Relevant governmental agencies, e.g., the Departments of Forestry and Fisheries, have little capacity and require training, staffing, and equipment. Nor has industry been responsive to environmental issues, in either the parastatal or the private sector. Environmental research has been limited, no degrees are awarded at the state universities in environment-related subjects, and only standard courses are available in the natural sciences. On the plus side, however, there is a growing awareness within Bangladesh of the importance of environmental conservation. Largely ignored in the past, environmental concerns are also beginning to be integrated into donor programs and projects. The report concludes with specific recommendations for short- and long-term environmental strategies for CIDA.

Available from:
Canadian International Development Agency

Country strategy for strengthening environmental considerations in Danish development assistance to Bangladesh

Environmental Profiles — Denmark (DANIDA)

Denmark. Ministry of Foreign Affairs. Department of International Development Cooperation, Copenhagen, DK
1989, 96 p.: statistical tables, En

Sustainable development in Bangladesh is constrained by a high population density and a limited natural resource base. This report profiles the Bangladeshi environment and identifies major sectoral (e.g., industry, infrastructure) and cross-sectoral (e.g., population, land, and water) problems. Population growth is considered the most serious long-term problem for the environment. Increases in population and poverty precipitate many forms of environmental degradation, including deforestation and overexploitation of fisheries. Natural disasters such as floods (which have covered up to 30% of the country) and cyclones cause widespread destruction. Agricultural lands are becoming less fertile due to heavy use of agrochemicals, while increased efforts to irrigate crop areas are facilitating the depletion of groundwater.

Shortages of water in river systems during the dry season are suspected to be moving the saline belt northward. Commercial felling of timber and encroachments for agricultural and settlement purposes have substantially reduced forest area. Total Reserve Forest area has been reduced by 50% during the past 20 years, and there has been a continuous loss of valuable mangroves in the Sundarbans.

These problems are compounded by the fact that no formal institutional mechanism exists within the government to implement a broad environmental mandate. The report concludes with an outline of operational guidelines for DANIDA's involvement in Bangladeshi environmental activities. Annexes provide: (1) lists of Bangladeshi environmental and research organizations; (2) a draft of the national environmental policy; and (3) the main provisions of national laws pertaining to the environment.

Available from:
DANIDA Information Office

Final report — Bangladesh: environment and natural resource assessment

Tropical Forest & Biological Diversity Assessments — USAID

World Resources Institute. Center for International Development and Environment
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
Sep 1990, x, 65 p. + attachments: maps, statistical tables, En

Bangladesh, already the world's most densely populated country, is expected to hold 140 – 145 million people by the year 2000. High population density is a major factor contributing to extensive overuse of the country's forests, fisheries, and even soil and water resources. These problems are especially serious, given that most Bangladeshis are still directly economically dependent on natural resources. Already a majority of households are without sufficient land to produce their food needs, and fuelwood stocks have been depleted to the point where most domestic energy requirements must be met by crop residues and dung, with only a small fraction met by fuelwood.

This report provides an overview of economic development and environmental factors in Bangladesh, including specific problems in the areas of land use, agriculture and water resources management, forestry, fisheries, biodiversity conservation, rural energy use, urbanization, and toxic substances. Institutional capacities and the policy framework related to environment and natural resource management are then discussed, together with activities to promote sustainable development. The concluding section outlines a strategy for improved environmental management, and summarizes short- and medium-term priority actions. Includes a bibliography and case study of the Sundarban mangrove ecosystem.

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Bangladesh environment and natural resources assessment: conservation of biological diversity in Bangladesh — status, trends, and recommended responses

Tropical Forest & Biological Diversity Assessments — USAID

Alcorn, Janis; Johnson, Nels
World Resources Institute. Center for International Development and Environment
U.S. Agency for International Development. Bureau for Asia and Near East. Bangladesh
Dec 1989, ii, 45 p., En

At least 94% of Bangladesh's original natural habitat areas have been lost. What remains is found in the relatively sparsely populated Chittagong Hills, the Sundarbans mangrove forest zone, and a few small areas in Sylhet. This report presents an overview of conditions and trends affecting the conservation of the country's biological diversity. Due to the overlap of geographic ranges for Indian, Himalayan, and Southeast Asian biotas, Bangladesh has a large number of species — about 1,500 flowering plants, and 1,500 vertebrates — although dozens of them are threatened (and possibly newly extinct). Highlights include the world's only genetically viable tiger population, located in the Sundarbans, and unique varieties of wild and cultivated rice. Fish diversity remains high, but

proposed flood control activities and mangrove conversion may significantly reduce the diversity of open-catch fisheries. The report concludes that biodiversity conservation in Bangladesh faces severe constraints. The subsistence needs of millions of people for fuelwood, fish, and cash income, coupled with a traditional attitude that biological resources are free for exploitation, creates a political climate inimical to sustainable development. Protected areas have been designated, but they do not cover all habitat types, and no management plans have been implemented. The report identifies the major institutions involved in conservation, and provides recommendations to USAID and the donor community. Includes 3-page bibliography.

Available from:
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Development Information Services Clearinghouse
Order No.: PN-ABL-059

Bangladesh, national conservation strategy: draft prospectus

National Conservation Strategies — IUCN and others

Bangladesh Agricultural Research Council, Dhaka, BD
Bangladesh. National Conservation Strategy Secretariat, Dhaka, BD
Nov 1987, 97 p., En

Bangladesh, one of the poorest countries in the world, suffers from rapid population growth, unemployment, low productivity, malnutrition, and illiteracy. This report examines the relationship between these human problems and the nation's environment. An overview of Bangladesh's natural resource systems is followed by a discussion of its development priorities. The report then describes current trends in resource use related to land, water, forestry, wildlife, fishery, housing and physical infrastructure, and industry. Major problems are identified as: (1) annual flooding, which submerges between 18% – 36% of the country; (2) serious soil erosion in the eastern high hills and northeastern low hills; (3) soil salinity in the coastal areas; (4) marine pollution from the oil and other industries, which may irreparably damage mangroves, coastal and estuarine fisheries, and tourism; (5) loss of wildlife habitats, mainly due to population pressures; and (6) deforestation due to logging, human settlements, and shifting cultivation. The report identifies constraints to sustainable resource use in terms of policy and planning, institutions, legislation, resource management, information, public awareness, research and training, and poverty. The final section provides guidelines for preparing a national conservation strategy.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Bangladesh country report for United Nations Conference on Environment and Development (UNCED) (Brazil, 1 – 12 June 1992)

UNCED National Reports

Bangladesh. Ministry of Environment and Forest, Dhaka, BD
Oct 1991, 114 p., En

In Bangladesh, high population density and inadequate environmental planning have caused a high degree of environmental degradation, as illustrated by deforestation, destruction of wetlands and inland fisheries, soil depletion, and inland salinity intrusion. Floods and storms also inflict severe socioeconomic and environmental damage on the country. The major root of human-made problems is lack of understanding of ecological principles and lack of institutional capacity in integrated planning and environmental management. Part I of this report briefly describes major socioeconomic and environmental trends affecting development in Bangladesh. Part II discusses the areas where environmental considerations interact with the development process, focusing on the major factors impeding development and the protection of the environment. Issues discussed include: climate change, upstream water regulation and pollution of the Bay of Bengal, natural disasters, fertility, poverty, women and health linkages, lack of water, inadequate land use planning, resource development conflicts, loss of biodiversity, industrial pollution, and urbanization. Part III describes the response of the Bangladeshi Government, which focuses on three core areas: disaster management, population stabilization/ poverty alleviation, and environmental management for sustainable development. Finally,

Part IV highlights initiatives of both the Government and of donor agencies, and identifies opportunities for international assistance. (Author abstract, modified)

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People's Republic of Bangladesh
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Fax: (880 2) 813196
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Environmental profile of Bangladesh

State-of-the-Environment Reports

Huq, Saleemul; Rahman, Atiq
Bangladesh Centre for Advanced Studies, Dhaka, BG
International Institute for Environment and Development, London, UK
Mar 1987, 88 p.: charts, statistical tables, En

Bangladesh, a country criss-crossed by innumerable rivers, canals, and channels, is plagued by problems related to its overabundant water supply. This report discusses these and other environmental problems in the country, as well as underlying socioeconomic issues. Annual flooding during the monsoon season often causes destruction of crops and infrastructure and loss of animal and human life. During this period, surface water becomes a major health threat due to contamination from unsanitary excreta disposal systems. Industrial pollution in surface water is also a major concern, with concentrations of toxic chemicals 10 times higher than acceptable in the Buriganga river, Dhaka's main water source. Other pollution sources include agrochemicals, natural degradation (i.e., sedimentation), and inefficient burning of biomass. Another major environmental problem is slash and burn cultivation in the Chittagong Hill Tracts of southeastern Bangladesh, which has resulted in widespread erosion and heavy silt loads in rivers and lakes. This problem has been aggravated by increasing deforestation and consequent erosion of previously forested areas. Efforts to mitigate environmental degradation in Bangladesh are constrained by the nation's extremely low literacy rate (less than 20%) and the rural population's almost exclusive dependence on traditional energy. The final section of the report assesses these efforts along with the country's environmental infrastructure, institutions, education, and legislation.

Available from:
Bangladesh Centre for Advanced Studies
626 Road no. 20, Dhanmondi
Dhaka
Bangladesh

Bhutan

Bhutan: towards sustainable development in a unique environment — national report for the United Nations Conference on Environment and Development

UNCED National Reports

Royal Government of Bhutan, BT
[1991], ii, 51 p., En

Bhutan is in the unique position of having entered the industrial development process very late, with great caution, and with every intention of learning from the experiences of other countries. As a result, Bhutan is among the few countries in the world where environmental planning is strong, the principle of sustainability is established in government policies, population pressure is still moderate, external debt is manageable, and the natural resource base is largely intact. In spite of these advantages, the country faces a number of environmental concerns. Major problems are identified in this report as the following. (1) The population is growing rapidly. (2) Virtually all arable land is being utilized. (3) Agricultural production is falling since the growing population makes the traditional farming systems inappropriate. (4) Increased animal populations have led to the degradation of vegetation. (5) Many forests are intensively exploited for grazing, fodder and firewood, non-wood forest products, and building materials. (6) The road system causes severe erosion problems. (7) National institutions are weak and not always able to cope adequately

with the growing complexity of the development process. Responses to these concerns are summarized, as are Bhutan's expectations for support from the international community for environmental activities.

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Phone: (975) 2 2605
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Order No.: WRI-214

Sustainable development in the Kingdom of Bhutan: discussion paper for the national workshop on sustainable development and the environment, Paro, Bhutan, May 4 – 5, 1990

Other Environmental Studies

Flavin, Christopher
Royal Government of Bhutan, BT
May 1990, 51 p., En

The Kingdom of Bhutan has three important advantages in pursuing sustainable development: little investment in unsustainable infrastructure and industries, a low level of foreign debt, and traditional cultural values that emphasize respect for nature. However, while the country has so far preserved its unique natural environment and cultural heritage, new pressures and threats will emerge in the years ahead. For example, the potential market for Bhutan's timber supply is virtually infinite, presenting a strong inducement to harvest timber on an unsustainable basis. In addition, steady growth in both human and livestock numbers is placing increased pressure on forest and grazing land in many areas. The relative scarcity of arable land and the fragility of the steep, rugged Himalayan environment suggest the need for extreme care. This report assesses the status of Bhutan's forest, agriculture and livestock, energy and power, and human resources. It then provides recommendations for sustainable development. Emphasis is placed on human resource development, land use planning, forest and wildlife conservation, programs to limit cattle numbers, and improved urban water and sewage systems.

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Brunei Darussalam

Coastal environmental profile of Brunei Darussalam: resource assessment and management issues

Country Environmental Profiles — USAID

Thia-Eng, Chua; Ming, Chou Loke; et al.
Brunei Darussalam. Ministry of Development. Fisheries Department
International Center for Living Aquatic Resources Management
Association of Southeast Asian Nations
U.S. Agency for International Development. Bureau for Asia and Near East
U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1987, xviii, 193 p.: maps, statistical tables, En

The high development potential of Brunei Darussalam's coastal resources, along with the government's declared interest in economic diversification, call for an integrated, multisectoral development strategy which will prevent degradation or overexploitation of coastal ecosystems. This environmental profile is presented as a first step in the development of such a strategy. Considered in turn are: (1) the physical environment of Brunei Darussalam's coastal areas in terms of geography, drainage, soils, seedbed configuration, climate, the hydrological characteristics of coastal waters, the estuarine environment, and the features of Seresa Bay; (2) the coastal resources themselves (mangroves, coral reefs, algae, seagrasses, beaches, artificial habitats, and mineral resources); (3) the characteristics of the coastal area population in terms of demography, tradition and culture, employment, health, and education; (4) land use, development,

and tenure; (5) coastal area economic activities in capture fisheries, aquaculture, agriculture, forestry, tourism and recreation, and industry; (6) sources of pollution, baseline studies of its extent, and pollution criteria and institutional capabilities; (7) public and private organizations involved in coastal resource management; and (8) coastal resource management issues and the steps taken so far to develop a resource management plan. Includes 60 tables, 55 figures, and a list of references.

Available from:
U.S. Agency for International Development
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Order No.: PN-ABB-292

China

China conservation strategy

National Conservation Strategies — IUCN and others

U.N. Environment Programme, Nairobi, KE
China Environmental Science Press, Beijing, CN
1990, xi, 175 p., En

Despite China's vast territory and rich resources, the country ranks relatively low in per capita share of basic natural resources. The amount of land per capita is only 36% of the world average, while forest is 13% and water 25%. Moreover, due to the country's rapid economic development, the consumption of these resources has quickened drastically. China's huge population has also contributed to problems such as environmental pollution, ecological deterioration, destruction of resources, and extinction of animal and plant species. This report outlines China's strategy for improving natural resource conservation. The first section describes the aim and significance of the strategy and explains the relationship between conservation and economic development, as well as the basic concepts and theories of conservation. The second section describes the country's natural resource base in terms of land, forests, grasslands and deserts, biological species, groundwater resources, rivers, lakes, and reservoirs, marshlands and mudflats, seas and oceans, minerals, and the atmosphere. The third section deals with the ecology and resources in different regions of the country and problems of exploitation and utilization; it also discusses nature reserves. The final section discusses issues related to conservation in the areas of economics, law, propaganda and education, scientific research, and international cooperation.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

National report of the People's Republic of China on environment and development

UNCED National Reports

China. National Environment Protection Agency, CN
Aug 1991, 76 p. + attachments: charts, maps, statistical tables, En

During the past decade of reform, China has made numerous achievements in environmental protection. The country's GNP registered an average 9.6% increase annually, while the state of the environment remained basically stable. The amount of industrial wastewater and solid waste decreased, while waste treatment, recycling, and utilization have improved. In some key cities, dust in the atmosphere declined and suspended particulates remained the same or slightly decreased, even though coal consumption doubled or even tripled. Water quality in a number of urban areas has improved, as have housing conditions in both urban and rural areas. Riverine and marine water quality has remained basically good. Afforestation in the plains and along the coastal areas has seen rapid progress: during the past decade, more than 10 billion trees were planted throughout the country, and the area of manmade forests now stands at 38.3 million ha. Due to improvements in household energy sources for peasants, fuelwood consumption has decreased. This report describes China's environmental and socioeconomic development, and, while focusing on achievements, also identifies continuing and emerging ecological/environmental problems in the above areas; particular attention is given to problems of pollution and global warming. Principal policy responses to environmental

problems are then examined. A final section outlines China's position and expectations regarding the 1992 U.N. Conference on Environment and Development.

Available from:
Foreign Affairs Office
National Environment Protection Agency
No. 115 Xizhimenni, Xanxiaojie
Bejing, Post Code 100035
China
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-156

Environmental management in China

Environmental Policy and Management Studies

Geping, Qu
U.N. Environment Programme, Nairobi, KE
China Environmental Science Press, Beijing, CN
1991, x, 333 p., En

Most of China's industrial enterprises were established during the 1950's, 1960's, and 1970's, and as many as 70% utilize outmoded technologies which discharge large quantities of waste. This report presents extensive information on industrial pollution and other environmental problems in China. Part I, on environmental management theories, covers such topics as the synchronous development of environmental protection, the economy, and society; the relationship between economic construction and environmental protection; environmental standards; strategies for sustainable development; environmental protection in the initial stage of socialism; and the effect of climatic warming and countermeasures. Part II provides a general summary of the accomplishments of China's sixth five-year plan and its objective to strengthen environmental protection. In Part III, countermeasures to particular problems are described. Topics include: environmental protection concerns regarding villages, towns, and neighborhood-run enterprises; urban air pollution; managing the urban environment; environmental monitoring; modernization of cities; rural industries; water resources; the use of mould coal to reduce air pollution; use of the levy on pollutant discharge; and industrial pollution.

Available from:
China Environmental Science Press
8 Beigangzi Street
Chongwen District
Beijing
P.R. China

Environmental management and planning in the People's Republic of China

Environmental Policy and Management Studies

Liu, Shuqin
U.N. Environment Programme. Regional Office for Asia and the Pacific, Bangkok, TH
1988, x, 142 p.: charts, En

China's vast territory, with its great variety of natural conditions and imbalanced economic development, makes environmental planning extremely difficult. This report on the country's environmental management and planning efforts begins by identifying six major constraints: (1) a lack of professional personnel in the field of environmental planning; (2) poor organization and insufficient legal authority of environmental planning agencies; (3) a need for environmental planning regulations; (4) lack of cooperation among government agencies in urban planning, national land management, and national parks and reserves management; (5) a need for basic research; and (6) lack of public awareness. The report then traces the development of China's National Environmental Protection Agency and describes its organization, functions, and strategies. Environmental laws and policies are also summarized and their implementation and enforcement assessed. The final section of the report describes China's processes for environmental planning and project implementation on the basis of interviews with planners, administrators, and researchers. Appendices include China's Environmental Protection Law and four case studies of environmental planning, dealing with industrial pollution in Tianjin, nature conservation planning at the national level, desertification control by the

Lanzhou Desert Research Institute of the Academia Sinica, and urban environmental planning in the Shenzhen special economic zone. A brief bibliography is included.

Available from:
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
Publications Department
United Nations Building
Rajdamnern Avenue
10200 Bangkok
Thailand
Phone: +66 2 282 9161
Fax: +66 2 282 9602
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-103

Cyprus

Environmental action plan for Cyprus

State-of-the-Environment Reports

Environmental Profile of Cyprus. Steering Committee, CY
Cyprus. Environment Committee, CY
Nov 1987, 22 p.: ill., charts, En

Since the independence of Cyprus in 1960, rapid economic growth has transformed the country's basically rural and agrarian society into one which has become predominately urban and mobile. The success and speed of economic development, however, have imposed strains on the island's fragile ecosystem. The action plan contained in this report examines the economic, social, and educational responses needed to guarantee Cyprus's environmental well-being.

According to the report, uncoordinated land, housing, industrial, and roadway development threatens to overwhelm the capacity of the environment to accommodate further human activity. One of the major forces leading to environmental degradation is urbanization. In the southern coastal city of Limassol, for example, urban settlement expanded by 327% between 1965 and 1981. With Cyprus's lakes and rivers already fully utilized, the protection of its remaining water resources is an important focus of the report. The exploitation of groundwater will necessitate maximum care to insure that natural hydrological systems, such as the freshwater inflow to coastal aquifers, are not disrupted. Air and noise pollution present significant, yet less urgent, concerns. Tourism and wildlife management needs are also briefly addressed. Recommendations are to: (1) adopt a national environmental policy; (2) augment environmental education; (3) declare new natural reserve areas; (4) begin integrated environmental monitoring; (5) introduce a simple environmental information system; (6) implement a town council planning law; (7) initiate a systematic environmental impact assessment process; (8) strengthen the mechanism for environmental coordination; and (9) provide adequate financial support for environmental protection.

Available from:
Ministry of Agriculture and Natural Resources
Nicosia
Cyprus
Phone: (357 2) 40 25 86

Cyprus national report for the United Nations Conference on Environment and Development, Brazil, June 1992

UNCED National Reports

Government of Cyprus, Nicosia, CY
Jun 1991, 56 p. + addendum, En

In the island nation of Cyprus, development of the tourist industry has led to a loss of agricultural land and pollution of coastal areas. This report identifies development trends in Cyprus and analyzes their environmental impacts. It then assesses the country's natural resource endowment and cites key environmental issues. Major problems are identified as the following. (1) Air pollution and noise from motor vehicles is becoming a problem during rush hours, and local air pollution sometimes occurs around industrial or mining plants. (2) Rainfall is irregular and unequally distributed. (3) Coastal aquifers are subject to overpumping, resulting in sea intrusion; further, sewage and industrial effluent are beginning to affect inland aquifers. (4) Only the capital city, Nicosia, has a central sewage system

and treatment plant; elsewhere, sewage disposal pits have contaminated certain aquifers with nitrates. (5) Marine resources are threatened by pollution from pesticides (in the form of run-off from the land), together with microbial pollution, petroleum hydrocarbons, and dispersants for combating oil. (6) Marine habitat destruction occurs due to illegal trawling in shallow waters, dumping of dredged material by barges, and land-based outlets of industrial and mining waste. (7) Extensive use of agrochemicals degrades the soil. (8) Erosion of bare lands occurs as a result of heavy rainfall.

Responses to these problems are summarized in terms of policies and legislation, institutions, programs and projects, and international cooperation. The report includes recommendations. The role of women in sustainable development and environmental conservation is discussed in an addendum.

Available from:
UNDP Resident Representative
P.O. Box 5605
Nicosia
Cyprus
Phone: (357-2) 303194
Fax: (357-2) 366125

India

Country strategy for strengthening environmental considerations in Danish development assistance to India

Environmental Profiles — Denmark (DANIDA)

Denmark. Ministry of Foreign Affairs. Department of International Development Cooperation, Copenhagen, DK
1989, 72 p., En

India is in a state of severe ecological disequilibrium. The extent of land degradation due to deforestation, overgrazing, overcultivation, and faulty irrigation is alarming both in terms of the total area affected and the speed with which it is occurring. The country's biological diversity is threatened by population growth, pollution, and economic development efforts (including the Green Revolution). Human activities such as industrial and agricultural production, motor transport, domestic fuel burning, and waste disposal have brought about air and water pollution. The dangers of India's toxic waste problems (pesticides, fertilizers, and industrial contaminants), which were manifested in the Bhopal tragedy, are affecting the country's major urban industrial areas as well. India's meager mineral wealth coupled with increased production leave future reserves in jeopardy. And, exploitation of coal, one of the few resources that the country does have, has led to thermal and air pollution. To combat these problems, the Indian government has become environmentally conscious in recent years, creating institutions and passing legislation related to the environment.

This report recommends two specific plans of action. (1) A new approach to water management must be developed to improve village ecosystems, moving away from high technology dams and canals to a multidisciplinary understanding of hydrology, ecology, and political economy. (2) To regenerate trees and grasses on common lands (areas typically neglected because they do not belong to any one person), multipurpose trees which can hold the soil and water and yield fuel, fodder, and food, should be planted. A final section details DANIDA's environmental strategies in India.

Available from:
DANIDA Information Office

India: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
U.N. Environment Programme, Nairobi, KE
World Wildlife Fund. Washington, DC, US
Jul 1989, 58 p. + 12 appendices: maps, statistical tables, En

Major threats to biodiversity in India are related to the country's large human population, which will probably exceed one billion persons by A.D. 2000. This report first provides background information on India's physical geography, human population, and biogeography, followed by an assessment of the country's biodiversity. Floristics, natural vegetation, forest areas and classification, centers of plant diversity and endemism, wetlands, marine ecosystems, and endemic and threatened mammal, bird, and reptile species are described. The impact of population pressures on biodiversity is especially evident in the trends towards agricultural expansion, shortened cultivation cycles, and increased collection of fuelwood and minor forest products (e.g., medicinal plants). Additional threats to the terrestrial and freshwater ecosystems are posed by expanded cattle grazing, destructive logging practices, deforestation as a result of dam construction, and conversion of mangroves for commercial purposes (i.e., agriculture, fish farming, and residential and industrial uses). The biodiversity of marine ecosystems is threatened by destruction of coral reefs, siltation, and chemical and oil pollution. The report then evaluates India's capacity to control further environmental degradation, with reference to related government and nongovernmental institutions, legislation, and the protected areas system. Recommendations focus on improving natural resource protection through strengthened legislation and protected areas management.

Available from:
World Conservation Monitoring Centre

3rd state of India's environment, a citizens report: floods, flood plains and environmental myths

State-of-the-Environment Reports

Agarwal, Anil; Labh, Neeraj; Nambi, V. A.
Centre for Science and Environment, New Delhi, IN
1991, vii, 167 p.: ill., charts, statistical tables, En

This citizen's report focuses on the problem of flooding in India. Some of the most notable findings include the following: India is the second most flood-affected country in the world, after Bangladesh, accounting for more than a fifth of flood deaths worldwide from the 1960's to the 1980's; annual flood damage, in monetary terms, increased by nearly 40 times from the 1950's to the 1980's, while affected areas increased from an annual average of 6.4 million hectares to 9 million hectares in the same period, and flood relief expenditures more than doubled from 1981 to 1986; the five most flood-prone states are Uttar Pradesh, Bihar, West Bengal, Assam, and Orissa, while the states of Andhra Pradesh, Rajasthan, Haryana, and Gujarat are increasingly so; official data on floods are scant, and often inaccurate; floods have a disproportionate impact on the poor; and, lastly, flood control efforts have included construction of over 400 km of embankments each year since 1954, as well as 256 major dams (with 154 more under construction), yet these efforts have failed to control floods, and in many cases have exacerbated the problem.

The report contains sections which focus on the plains, on the Himalayan watershed area, on the effects of deforestation, and on the flood-prone regions of Assam, North Bihar, and Diara. The Himalayas are inherently flood inducing, and though deforestation in the Himalayan watershed may aggravate flooding, it is not as important a factor as widely believed. Rising flood problems in the Indo-Gangetic plains are due more to massive social and ecological changes in the plains themselves — e.g., misguided efforts to alter natural drainage patterns, and population pressures which force settlement of flood-prone areas — than to changes in the higher reaches of the Himalayan watershed. People in the plains must learn to adapt to natural flood rhythms, rather than the other way around. Appendices contain data on flood patterns by state, and surface erosion rates in the Himalayas. Includes references.

Available from:
Centre for Science and Environment
807 Vishal Bhawan
95 Nehru Place
New Delhi 110 019
India
Phone: 6433394, 6448418

Final report on environmental profile of India

State-of-the-Environment Reports

Kirloskar Consultants Limited, New Delhi, IN
Overseas Economic Cooperation Fund, JP
Mar 1991, v.p.: charts, maps, statistical tables, En

This environmental study of India provides a broad view of environmental problems in the nation as a whole, but also a more focused assessment of the impact of pollution in the country's four major industrial states: Gujarat, Tamila Nadu, Maharashtra, and Rajasthan. The assessment is based on desk research and field contacts with pollution control agencies. Section I provides detailed information on the extent of, and damages from, the following environmental problems: air pollution; water pollution; hazardous waste; other forms of pollution (e.g., noise, soil contamination); forest destruction; threats to rare and endangered species; and other problems, such as the destruction of mangroves and coral reefs. This section also discusses problems arising from development projects, especially relating to adverse effects on public health, ethnic minorities, and India's historical and cultural heritage, and to cases of involuntary resettlement. Other human and social environmental problems, such as slums, are examined as well. Section II covers environmental policy, first in a general manner and then with respect to specific issues and specific laws and regulations in the areas of air and water pollution, hazardous wastes, and natural resource conservation. Organizations involved in the environment — including central and local government and nongovernmental organizations — are discussed in Section III.

Available from:
Overseas Economic Cooperation Fund (OECF)
Takebashi Godo Building
4-1, Otemachi 1-Chome, Chiyoda-ku
Tokyo 100
Japan
Phone: (81 3) 215 1311
Fax: (81 3) 201 5982/201 8309
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-359

Environmental concerns and strategies

State-of-the-Environment Reports

Khoshoo, T.N.
1988, xv, 687 p.: charts, statistical tables, En

India confronts the interconnected problems of population growth and poverty, which, in turn, have led to severe environmental degradation, such as deforestation, overgrazing, and widespread pollution. This book, a collection of 54 scientific lectures by a prominent environmentalist, surveys India's principal environmental problems and related issues and outlines environmental priorities. Section I is introductory and provides descriptive information on topics such as major environmental concerns, sustainable development, and environmental management. Section II focuses on pollution and lists its major causes as well as remedial actions for cleaning it up. Sections III – V cover mining and metallurgy, renewable energy, and biotechnology, while Section VI is devoted to the mixed blessings of tourism. Forestry, including agroforestry and conservation, is examined in Section VII. Sections VIII and IX cover education and environmental law. Section X, the last and most extensive, focuses specifically on conservation priorities, including, inter alia, wildlife, forests, zoological collections, ocean resources, and biosphere reserves. The lectures were delivered to diverse audiences, including scientists, educators, government officials, and industrialists.

Available from:
Ashish Publishing House
8/81 Punjabi Bagh
New Delhi-110 026
India
Phone: 50 05 81

Indonesia

Marine and coastal sector development in Indonesia, v.1: a strategy for assistance

Environmental Strategies — Canada (CIDA)

Canadian International Development Agency, Hull, PQ, CA
May 1987, xix, 198 p.: ill., maps, En

Indonesia, a nation of islands and seas, is the world's largest archipelago with more than 13,700 islands and a coastline totaling some 81,000 km. This report examines the potential for increased utilization of Indonesia's marine and coastal resources. Oil, gas, and other marine mineral resources are abundant, and only partially explored. Fisheries resources could sustain up to a fourfold increase in utilization, while aquaculture could be expanded several times over. Coastal forestry, agriculture, and tourism also have potential for expansion. But according to the report, development activities often fail to balance the needs for environmental protection, conservation, and sustainable use. Until very recently, the view prevailed that marine and coastal environments would take care of themselves. With increasing economic and population growth, however, many estuaries, bays, and other coastal waters have passed the limits of their absorptive and rejuvenative capacities. Coral regeneration, for example, has been unable to compensate for destruction caused by reef mining.

The report recommends a variety of training, public education, research, technical assistance, and coordination activities to ensure sustainable development. In addition, eight proposed projects and programs are identified for participation by the Canadian International Development Agency, including: medium-term planning support; management of Jakarta Bay; pollution clean-up; technical training; remote sensing; hydrographics; fisheries support; and coastal community development. An action plan and a volume describing Canadian experience in coastal and marine development are included, along with a volume of subject-specific research papers.

Available from:
Canadian International Development Agency

Environmental profile, West Java

Environmental Profiles — Netherlands

Iongh, Hans H. de, ed.; Sarmidi, Yayah Sarmidiyah, ed.; Tochya, Itoch, ed.
Haskoning Royal Dutch Consulting Engineers and Architects, Nijmegen, NL
Euroconsult, Arnhem, NL
Netherlands. Ministry of Foreign Affairs. Department of Development Cooperation, NL
1988, 83 p.: ill., charts, maps, statistical tables, En

Recent information on the natural resources and major environmental constraints in West Java, Indonesia, along with a proposal for a pilot environmental management system for Cimandiri watershed, are provided in this report. The major resources considered, in addition to human resources, are soils, minerals, forests, and coastal fisheries. Information is also provided on geology, climate, topography, and environmental laws and regulations. Extensive use was made of data collected earlier (including socioeconomic and macroeconomic data), recent research reports, and results from Landsat. Major environmental constraints were defined as follows: (1) population density, composition, growth, and mobility; (2) constraints relating to geology and soils, such as the impact of quarrying, and landslides in geologically unstable areas; (3) loss of forest land; (4) pollution in lower watersheds (domestic, industrial, and agricultural pollution, and sediment load); (5) hydrological constraints (e.g., shortages of surface water and groundwater, salt intrusion, flash floods); and (6) overexploitation of coastal resources (mangroves, coral reefs, fisheries) and the impacts of pollution, siltation, mining, and flooding on these resources. The report gives special consideration to the village-ecosystem interactions characteristic of the West Java

countryside, including both closed and open nutrient and energy cycles and a continous interaction between man and environment. Includes numerous illustrations.

Available from:
HASKONING
Berg en Dalseweg 61-81
P.O.B. 151
6500 AD Nijmegen
The Netherlands
Phone: 080-228015
Telex: 48015 hask nl
Fax: 080-239346

Natural resources and environmental management in Indonesia: an overview

Country Environmental Profiles — USAID

Tarrant, James; Barbier, Ed; et al.
U.S. Agency for International Development. Bureau for Asia and Near East. Indonesia
Oct 1987, vi, 58 p. + 7 annexes: charts, statistical tables, En

In Indonesia, the government's economic policies, the objectives of private businesses, and the socioeconomic interests of local communities coincide in viewing natural resources as commodities for production and export to the detriment of the natural resource base. This comprehensive overview of Indonesian policies and their effects on long-term goals for natural resource management focuses on: (1) the continuing deforestation of tropical hardwoods at a rate of 0.6 to 1.0 million hectares annually; (2) the degradation of 36 of Indonesia's 125 watersheds; (3) the loss of biological diversity through non-conservation of the habitat of rare and endangered species; (4) the increasing reliance of agriculture on pesticides, resulting in food contamination and extensive crop losses to pesticide-resistant pests; (5) the decline of water quality and supply due to upstream agricultural, industrial, and urban management practices; and (6) the increase in liquid and solid toxic wastes from industrial and processing activities. Many of these problems result from highly centralized policy formulation within the government and are compounded by inadequate research and information and weak arrangements to foster local participation in resource management. Although the government and the donor community have made significant progress in addressing these issues over the last decade, there is an urgent need to develop resource inventories and methodologies and to upgrade the policy formation process. Includes extensive appendices. (Author abstract, modified)

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAZ-183

Indonesian tropical forestry action programme

Tropical Forestry Action Programme — FAO and others

Indonesia. Ministry of Forestry, Jakarta, ID
Aug 1991, 3 v.: statistical tables, En

For its size — 195 million hectares total land mass — Indonesia contains an extraordinary proportion of the world's flora and fauna species, extensive coastal areas, and a high ratio of forest cover (143 million ha), as well as a large and growing population (165 million); consequently, forestry concerns are a top priority for the government and the population. This document presents Indonesia's tropical forestry action plan (TFAP). Following a general description of the TFAP, the paper gives geographic, climatic, demographic, economic, and political background on Indonesia. The core of the document contains chapters on forests and land use, forest ecosystem conservation, sustainable forest resource utilization, institutional development, and a description of the TFAP process. Some of the major themes include forest-based industries, an important source of foreign exchange; the nation's large and growing system of parks and reserves; and the roles of individuals and NGO's in conservation and sustainable usage. Appendices describing relevant institutional arrangements, ongoing forestry projects and research, international donor participants, etc., make up a large part of the paper.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-163

Environmental profile of Indonesia, 1990

State-of-the-Environment Reports

Soerjani, Mohamad; Soetaryono, Retno; et al.
University of Indonesia. Centre for Research of Human Resources and the Environment, Jakarta, ID
Overseas Economic Cooperation Fund, JP
1991, ix, 164 p. + 4 appendices: ill., charts, statistical tables, En

Indonesia is rich in both renewable and non-renewable natural resources. The archipelago, an important transitional area between Asia and Australia, has a diversity of climates due to varying effects of prevailing winds, monsoons, and ocean currents. This has led to a high degree of endemism. Part I of this report describes the status of Indonesia's environment, covering air and water pollution, hazardous wastes/toxic substances, and other forms of pollution, including noise and pesticides. Major natural environmental problems are identified as forest destruction, threats to rare and endangered species, and mangrove destruction. Human and social factors related to environmental problems are also examined, including ethnic tensions, involuntary resettlement programs, public health care, the country's historical and cultural heritage, and poverty. Part II describes environmental policy, including (1) environmental considerations in the national development plan; (2) measures to control pollution, rehabilitate forests, protect rare and endangered species, and improve living conditions in poor areas; and (3) environmental laws and regulations, covering water quality and emissions standards, environmental assessment, pollution, conservation of organic natural resources, and human and social environment problems. Part III examines environment-related organizations at the central and local government level as well as nongovernmental organizations. Includes bibliography.

Available from:
Overseas Economic Cooperation Fund (OECF)
Takebashi Godo Building
4-1, Otemachi 1-Chome, Chiyoda-ku
Tokyo 100
Japan
Phone: (81 3) 215 1311
Fax: (81 3) 201 5982/201 8309
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Order No.: WRI-161

Biodiversity action plan for Indonesia

Other Environmental Studies

Indonesia. Ministry of Population and Environment, Jakarta, ID
World Bank, Washington, DC, US
Bogor Agricultural University. Faculty of Forestry, Bogor, ID
Aug 1991, [92] p. + 2 annexes: charts, maps, statistical tables, En

Spanning two unique biogeographic realms (Indomalaya and Australasia) and seven biogeographic regions, Indonesia possesses a wide range of natural habitats and rich plant and animal resources, including hundreds of species which are endemic to individual islands of the country. These habitats and species are now threatened by developments in logging, mining, shifting agriculture, and other land use changes. In fact, much loss of biodiversity is due to economic policies that encourage rapid exploitation, rather than sustainable use, of biological resources. This biodiversity action plan sets out a strategy under four main headings: in situ conservation in terrestrial parks and protected areas; in situ conservation outside the protected area network (production forests, wetlands, agricultural lands); coastal and marine conservation; and ex situ conservation. The plan provides a framework for biodiversity conservation within Indonesia's 25-year development plan, outlining immediate and attainable priorities for conservation action and providing suggestions for further studies on policy and funding mechanisms. The document includes chapters on: the status of Indonesia's biological resources; efforts to protect biodiversity; the plan's objectives and priorities; institutional reform and strengthening; implementation of the plan; and

further studies and actions. Extensive annexes contain data on Indonesia's biodiversity, protected areas, and ecological zones, and lists of current and proposed conservation and sustainable development projects.

Available from:
World Bank
Publications Department

Indonesia: sustainable development of forests, land, and water

Other Environmental Studies

World Bank, Washington, DC, US
1990, xl, 190 p.: charts, maps, statistical tables, En

Key to Indonesia's continued socioeconomic progress is judicious use of its considerable natural resources. The main objective of this report, part of the World Bank's Economic Report presented at the 31st meeting of the Inter-Governmental Group on Indonesia in June 1988, is to convince Indonesian economic planners to incorporate environmental considerations into the country's fifth 5-year plan (1989 – 1994). The report focuses on land and forest management issues in the outer islands — Sumatra, Kalimantan, Sulawesi, and Irian Jaya — because of their extensive forests and valuable agricultural lands, and on land and water resource management issues in Java because of its high population density. Policy and institutional aspects receive considerable attention; government policies have increased migration to the more sparsely populated outer islands, land settlement in less densely settled areas, and employment and agricultural production. However, the emphasis must now shift to classifying, distributing, and utilizing lands in the outer islands for higher returns — rather than simply opening up new lands — and to developing comprehensive urban land management and freshwater protection in Java, where land and water are at a premium. Particularly important is developing institutional capabilities to handle these functions. The report contains chapters on forest resource management, land resource management, Java uplands and watershed management, water quality issues on Java, and suggestions for institutional and policy changes. Six supporting annexes are included.

Available from:
World Bank
Publications Department

Situation and outlook of the forestry sector in Indonesia

Other Environmental Studies

Indonesia. Ministry of Forestry. Directorate General of Forest Utilization, [Jakarta], ID
The Food and Agriculture Organization of the United Nations
Sep 1990, 4 v.: ill., charts, maps, statistical tables, En

In the late 1960's Indonesia began methodically exploiting its forestry resources, and is now a major producer and exporter of processed forest products. However, the economic and development benefits of this exploitation have been accompanied by unforeseen and adverse environmental consequences. This report, which represents the most comprehensive review of Indonesia's forestry sector ever undertaken, identifies problems and constraints, provides objective analyses and proposals, and discusses development options and their implications for every component of the forestry sector. The report consists of four volumes. Volume I highlights the issues and findings, and discusses proposals and opportunities for improvement related to land use, management of natural and plantation forests, non-timber forest products, forest-based processing industries, markets for forest products, the supply/demand balance for forest products, social contributions of forestry, environmental conservation, forest policy and law, institutional strengthening, and planning and programming for forestry sector development. Thirty-two chapters in Volumes II through IV provide a more elaborate and in-depth analysis of these subjects. The report will be the basis for the National Forestry Action Plan of Indonesia, within the framework of the Tropical Forestry Action Plan.

Available from:
The Food and Agriculture Organization of the United Nations

Background paper on Indonesia's coastal resources sector

Other Environmental Studies

Berwick, Nora
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
Apr 1989, [62] p., En

Nearly 80% of Indonesia's territory is composed of marine and coastal waters. The country's coastline extends over 81,000 km and comprises 14% of the earth's shoreline. Its marine and coastal ecosystems contain diverse and productive resources, including extensive mangroves and swamps and tens of thousands of coral reefs which nurture the huge fisheries industry and protect adjacent coastal lowlands. Total marine and coastal activities represent about 22% of GDP and support about 48% of the population. This report examines the role of Indonesia's coastal sector in the country's economic diversification. It summarizes economic activities and issues in the following coastal subsectors: shipping and ports, oil and gas development, fisheries, aquaculture, coastal agriculture, coastal forestry, mining, industry, tourism, transportation and communications, and coastal communities. Final sections describe coastal activities by nongovernmental organizations, multilateral and bilateral donors, and the Indonesian government. The report concludes with an analysis of the economic potential of each coastal subsector. Three subsectors emerge as having the most potential benefits and the least negative impacts: coastal communities, transportation/ communications, and tourism. Recommendations are made for USAID assistance to these subsectors. Includes a 6-page bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABK-137

Ecology of Sulawesi

Other Environmental Studies

Whitten, Anthony J.; Mustafa, Muslimin; Henderson, Gregory S.
Indonesia. Ministry of State for Population and Environment, [Jakarta,] ID
Dalhousie University. School for Resource and Environmental Studies, Halifax, NS, CA
Canadian International Development Agency, Hull, PQ, CA
1987, xxi, 777 p.: ill., charts, maps, statistical tables, En

The islands and seas of Sulawesi are among the more poorly known regions of Indonesia, partly because the available information is scattered through a variety of journals, reports, and books. This book brings together environmental information from more than 1,600 sources as well as from field research conducted specifically for the book. The book begins with a summary of current knowledge and ideas on Sulawesi's physical, biological, and human origins and conditions; topics addressed include geology, geography, climate, demography, and natural ecosystems. The next nine chapters consider in detail the major ecosystems, their flora, fauna, and physical features, as well as their functions, exploitation, and management options. These chapters specifically cover: seashores; estuaries, seagrass meadows, and coral reefs; freshwater ecosystems; lowland forests (including specialized types such as monsoon and peatswamp forests); mountains; caves; agroecosystems; urban areas; and future scenarios for resource management. The final chapter, emphasizing the vital importance of preserving Sulawesi's biological diversity, examines the course of environmental management in Sulawesi and outlooks for the future. Includes 55 pages of references.

Available from:
Sinauer Associates
108 North Main Street
Sunderland, MA 01375
USA
Phone +1 413 665 3722
Fax: +1 413 665 7292

Ecology of Sumatra

Other Environmental Studies

Whitten, Anthony J.; Damanik, Sengli J.; et al.
Dalhousie University. Institute for Resource and Environmental Studies, Halifax, NS, CA
University of North Sumatra, Medan, ID
1984, xiv, 583 p.: ill., charts, maps, statistical tables, En

With 196 mammal species, 580 bird species, and over 10,000 plant species (including the world's largest flower and the world's tallest flower), Sumatra is biologically one of the richest islands in Indonesia. This great wealth is due to the island's large size, its diversity of habitat, and its past links with the Asian mainland. This book, based on nearly 1,200 references, supplemented by field work, provides a comprehensive survey of Sumatra's ecosystems. The first section provides background information on geology, soils, climate, vegetation, fauna, biogeography, and history. Section II focuses on natural ecosystems. Individual chapters cover mangrove forests; other coastal ecosystems, such as beaches and coral reefs; rivers and lakes; peatswamp forests; freshwater-swamp forests; lowland forests, including uncommon types; mountains; and caves. Section III covers human-made ecosystems and specifically the impact of human activity on natural ecosystems. There are also chapters on agricultural ecosystems and urban ecology. Includes photographs and an index.

Available from:
Sinauer Associates
108 North Main Street
Sunderland, MA 01375
USA
Phone +1 413 665 3722
Fax: +1 413 665 7292

Jordan

Hashemite Kingdom of Jordan national report: United Nations Conference on Environment and Development (UNCED), Brazil

UNCED National Reports

Jordan. Ministry of Municipal, Rural Affairs and Environment, [Amman], JO
1991, viii, 55 p.: statistical tables, En

In predominantly arid Jordan, most environmental problems are linked to the country's water supply. Overexploitation of wells has weakened reserves and has caused deterioration of water quality and salinization in Zarqa Basin and the eastern region. Wastewater pollution has created health hazards and affected agricultural production. Herbicides and pesticides have affected groundwater quality. Following a summary of the country's economic development trends, this report discusses Jordan's key environmental issues and describes responses to these problems in the form of government policy and legislation, national programs and projects, environmental education, and international cooperation. In addition to the water shortage, key concerns include: severe erosion from overgrazing, land misuse, and shrinking vegetational cover; property ownership problems; movement of sand dunes and expansion of sandy lands; inappropriate agricultural practices (e.g., plowing on slopes, grazing in highlands); industrial emissions from oil refineries, thermal power plants, factories, and mines; inefficient techniques of production (livestock breeding methods, early slaughtering); and loss of forest cover due to fires, drought, and illegal felling of trees. The report concludes with recommendations to address these problems.

Available from:
UNDP Resident Representative
P.O. Box 35286
Amman
Jordan
Phone: (871-6) 661404
Fax: (871-6) 676582

Jordan environmental profile: status and abatement

State-of-the-Environment Reports

Ahmad, Abdullah A.
U.S. Agency for International Development. Bureau for Asia and Near East. Jordan
1989, xi, 273 p.: ill., statistical tables, En

As Jordan's population continues to grow and industrial and agricultural developments move at a high rate, demand for water will exceed availability in the near future. This report examines Jordan's capacity to protect and develop its water supply and other natural resources. Following a description of the nation's climatology, the report assesses the status of surface and ground water, storage reservoirs, and wastewater treatment plants. The legal and institutional framework for water management is also described. The report then examines major problems and conservation measures associated with the following resources: land, minerals, marine/coastal ecosystems, inland fisheries, forests, and air. Additional chapters assess the status of the country's protected areas and discuss environmental issues related to cultural resources (i.e., archaeological sites and artifacts) and occupational safety and health. The report also cites indicators of environmental awareness within the Jordanian government and presents recommendations for further action. The full texts of six major environmental laws are presented in the appendices.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABE-847

Republic of Korea

National report of the Republic of Korea to UNCED 1992

UNCED National Reports

Republic of Korea. Ministry of Environment. International Affairs Office, KR
Dec 1991, 103 p.: statistical tables, En

After the founding of the Republic of Korea in 1948, erosion control and reforestation projects were expanded throughout the country. In 1973, the government initiated a series of 10-year forest development plans. The resulting success in a nationwide greening movement and reforestation has been unprecedented among developing countries in the 20th Century. However, the country still faces considerable environmental problems as the result of rapid industrialization and urbanization over the past 25 years. This report begins with general information on the Korean Republic, followed by a description of the country's rather limited natural resources, including forest, water, biological, agricultural, mineral, and marine resources. The report then identifies development trends related to land use, forestry, transportation, urbanization, and public health and welfare. Major environmental issues relating to industrial development, energy, urbanization, and water are discussed. The final three sections of the report describe responses to the country's environmental problems in terms of legislation and institutions, policies, public education and participation, and international cooperative activities. The report also explains Korea's position on the U.N. Conference and Environment on Development and presents proposals for future sustainable development.

Available from:
UNDP Resident Representative
Central Post Office Box 143
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Seoul
Republic of Korea
Phone: (82 2) 252-5999
Fax: (82 2) 233-1412
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-293

Environmental protection in Korea

Environmental Policy and Management Studies

Republic of Korea. Environment Administration, Seoul, KR
Jul 1988, 54 p.: ill., charts, statistical tables, En

During the first 20 years of Korea's rapid economic development, environmental considerations were virtually ignored. This report describes the country's progress in developing environmental policies and programs since the late-1970's. The first section outlines major environmental activities involving the establishment of an environmental impact assessment system, national ecosystem conservation programs, and economic incentives for environmental improvement; public education campaigns and training activities; and international cooperative activities. The next three sections review efforts to improve management of: (1) air quality (including chemical as well as noise, vibration, and odor pollution); (2) water quality in rivers, lakes, marshes, and marine areas, and in relation to soil conservation; and (3) solid wastes, both municipal and industrial. A final section of the report presents a long-term master plan for environmental preservation. The plan's major steps are to forecast future demographic, industrial, and economic conditions; predict the future quality of the environment using mathematical computer modeling techniques; establish environmental preservation goals; determine appropriate environmental protection measures; and prepare a financing plan.

Available from:
Environment Administration
17-16 Sincheon-dong
Songpa-gu
Seoul 134-240
Republic of Korea

Laos

Lao People's Democratic Republic: tropical forestry action plan (first phase)

Tropical Forestry Action Programme — FAO and others

Laos. Ministry of Agriculture and Forestry, Vientiane, LA
Aug 1990, 2 v.: statistical tables, En

Although Laos's forests are essential to the country's economic well-being, they have undergone rapid depletion from legal and illegal commercial logging, fuelwood consumption, and war damage. This forestry action plan contains four parts: (1) an introduction which provides basic data on the country's physical features, natural resources, historical development, economy, and the importance of forestry in attaining national development objectives and supporting economic growth; (2) a detailed section on the specific policy actions needed to reform the forestry sector, including sub-sections on government institutions, conservation activities, scientific forestry methods, and industrial and energy development; (3) a section outlining recommendations for implementation of the forestry plan, including the government's role and proposed donor support; and (4) appendices containing detailed technical reports on areas and issues such as forest resource assessment, management and harvesting, ecosystem conservation, institutional aspects, economic policy, forest industries, and socioeconomic considerations. Includes a 14-page bibliography and profiles of selected projects.

Available from:
TFAP Coordinating Unit
Forestry Department
The Food and Agriculture Organization of the United Nations

Lao People's Democratic Republic national report to UNCED 1992: United Nations Conference on Environment and Development

UNCED National Reports

Laos. Ministry of Science and Technology, [Vientiane,] LA
[1992], 20 p., En

The Lao People's Democratic Republic (PDR) has an abundance of natural resources, including minerals and forest products which have not yet been surveyed and exploited. Nearly half of the country is covered by forests. The Lao PDR also has a high potential for energy resources such as hydropower, coal, fuelwood and charcoal, natural gas, and (it is believed) oil. The country's population is small (4.2 million) and comprises several sparsely dispersed ethnic groups with different cultural backgrounds. This report describes socioeconomic development in the Lao PDR, assesses the resource base, and identifies major environmental and social issues, including deforestation, watershed management, agricultural development, shifting cultivation, soil erosion, biodiversity, public health, environmental planning, and legislation. The major environmental problems are shifting cultivation by slash-and-burn practices and unsustainable logging operations. The former causes forests fires, releasing huge amounts of carbon dioxide into the atmosphere, while both practices cause depletion of the forest cover and reduction of the groundwater level, inducing recurrent floods and droughts. The final sections of the report describe the policy framework for natural resources and the environment, summarize the report's conclusions, and introduce guidelines for the future.

Available from:
Resident Representative for Lao United Nations Development Programme
c/o UNDP
1 United Nations Plaza
New York
NY 10017
USA
Phone: (856 11) 3899
Fax: (856 11) 5001
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-252

Lebanon

National report on the environment and development in Lebanon

UNCED National Reports

Lebanon. Ministry of State for the Environment, Beirut, LB
1991, 137 p.: statistical tables, En

Over the past 20 years, Lebanon's environment has been ravaged by an almost continuous state of civil war. The war has numbered the following among its effects: destruction of numerous buildings and sometimes entire neighborhoods; displacement of a large number of people; abuses by citizens in natural resource use (particularly beach sand extraction and degradation of agricultural land), illegal construction, and the cutting down of state forests; and delays in the preparation and adoption of environmental protection plans. The war also exacerbated pollution problems. Solid waste management is primitive, and untreated waste waters are frequently dumped into rivers or the sea. Fertile lands now cover only 12% of Lebanon's surface, and they are quickly disappearing due to urbanization. Also among the negative consequences of the war is the fact that accumulated delays in collecting statistics makes it impossible for this report to give a fully representative picture of Lebanon's environmental and economic status. The report first examines environmental issues within the context of the country's social and economic evolution and activities. It then assesses responses to

development and environmental problems in terms of policies, institutions, legislation, action programs, and international cooperation. Final sections discuss Lebanon's expectations for the U.N. Conference on the Environment and Development.

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UNDP Resident Representative
P.O. Box 11-3216
Beirut
Lebanon
Phone: (961 1) East: 492 690; West: 822 145
Fax: (961 1) 822 143

Malaysia

Peninsular Malaysia: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Jan 1988, 20 p. + attachments: maps, En

Peninsular Malaysia is a land of impressive natural wealth and beauty. There are some 8,000 flowering plant, 2,600 tree, and 150,000 insect species on the Peninsula. This report focuses on threats to Peninsular Malaysia's natural diversity and its forest ecosystems, particularly those posed by hunting, poaching, logging, and the expansion of agricultural land. Many Malaysians possess firearms, and frequent incursions are made into forest reserves for poaching and log-stealing. Poaching has driven the Sumatran rhinoceros to near extinction (some 10% of pharmacies/clinics in Kuala Lumpur are still selling rhinoceros horn, down from 58% in 1981). The tiger population has dwindled from 3,500 in the early 1950's to about 250 in the mid 1980's, and the seladang (gaur or wild cattle) is also endangered. At present, forested land represents 47% of area in Peninsular Malaysia, 36.1% of which is classified as permanent forest estate, including protective forest (14.4%) and productive forest (21.7%). Land conversion is probably a greater threat than logging, as large tracts of forests are being converted for agricultural use to provide jobs and property to the landless and disadvantaged. Some 8,661 sq km of forests were cleared in this way between 1971 and 1980, with more planned. Deforestation in lowland areas is of particular concern since the greatest concentrations of species occur there. Other subjects discussed include: protected areas, environmental management, and conservation organizations. The document concludes with a list of recommended actions and a 46-item bibliography.

Available from:
World Conservation Monitoring Centre

Sabah and Sarawak: conservation of biological diversity

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Jan 1988, 21 p. + attachments: maps, En

Sabah and Sarawak, the two Malaysian states which occupy the northern part of Borneo, depend upon their closed forests for a large proportion of both their biological heritage and their income. Sarawak, for example, obtained 31% ($274 million) of its total revenue from timber export. About 44% (33,280 sq km) of land area in Sabah and 25% (31,716 sq km) in Sarawak is used for timber production. The variety of forest species, particularly in lowland areas, is extensive, as some 40 mango and 135 fig species are found on Borneo, as well as 155 endemic species of dipterocarp trees. In Sabah, plots of 1 hectares have been found to hold as many as 170 tree species. This diversity is being increasingly threatened, however, by human encroachment. Traditional practices of managing forest ecosystems have collapsed as human settlement has expanded. Hunting for sport, for food, to control agricultural pests (e.g., monkeys, orangutans), and to supply medicinal ingredients is pervasive. Timber extraction in 1980 reached approximately 1,000 sq km in Sabah and 1,200 sq km per year in Sarawak. In Sabah, future supplies are being threatened by hasty recutting. Stronger measures to conserve lowland, mangrove, and peat

swamp forests are mentioned as key needs. A list of recommended actions, descriptions of all protected areas in the two states, and a 26-item bibliography are included.

Available from:
World Conservation Monitoring Centre

Strategi pemuliharaan sumber semulajadi untuk Negeri Kelantan Darulnaim

Conservation strategy for Negeri Kelantan Darulnaim

National Conservation Strategies — IUCN and others

World Wide Fund for Nature Malaysia, Kuala Lumpur, MY
Malaysia. Government of Negeri Kelantan Darulnaim, MY
Feb 1991, 3 v.: ill., charts, maps, statistical tables, En, Ma

The State of Kelantan Darulnaim in Malaysia has a long history of farming on its coastal plain, but has entered a phase of rapid development and land use change since 1980. Until now, though, development has proceeded without a clearly defined, State-wide environmental and natural resource strategy. This report offers such a strategy, with conservation presented as the basis for successful and sustainable development. Following an environmental profile and a description of the policy and legislative framework for development, discussion is given in turn to the State's natural resources (freshwater, forest, coastal, soil, mineral, floral, and faunal) and the management of each of these. Included are specific strategies for management of individual habitat types and animal and bird species. Each section concludes with a list of action recommendations, and the final section discusses implementation strategies and modes, suggesting that an administrative unit and a multi-sectoral governmental committee be created to coordinate natural resource and environmental policies and activities. Includes 15 pages of references, 17 maps, and extensive appendices.

Available from:
World Wide Fund for Nature Malaysia
3rd Floor Wisma IJM Annexe
Jalan Yong Shook Lin
46990 Petaling Jaya Selangor
Malaysia
Phone: +60 3 757 9192
Fax: +60 3 756 5594
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Order No.: WRI-284

Strategi pemeliharaan sumber semulajadi Malaysia: cadangan-cadangan strategi pemuliharaan untuk Wilayah Persekutuan Kuala Lumpur

Conservation strategy Malaysia: proposals for a conservation strategy for the Federal Territory of Kuala Lumpur

National Conservation Strategies — IUCN and others

Kavanagh, Mikaail; Kumari, Kanta; et al.
World Wide Fund for Nature Malaysia. Conservation Strategy Malaysia, Kuala Lumpur, MY
Malaysia. Dewan Bandaraya, Kuala Lumpur, MY
Dec 1989, 2 v.: ill., maps, En, Ma

Malaysia's capital and largest urban agglomeration, the Federal Territory of Kuala Lumpur, has undergone rapid growth over the past 100 years, taxing its resource base and causing increased pollution. This report, the eighth in a series of state-by-state studies, surveys Kuala Lumpur's resources and presents a strategy for long-term environmental management. The report begins with a discussion of the basic principles underlying conservation, especially the cross-sectoral approach known as holistic management, which integrates environmental concerns into the development process. Chapter 2 looks at freshwater resources, including groundwater, hot springs, flood hazards and mitigation, and protection of rivers and riverine habitats. Chapter 3 focuses on forests, including their general characteristics, legal and management framework, urban forestry, and specific reserves, such as the Bukit Sungai Puteh Forest Reserve. Miscellaneous

environmental issues — earthworks, roads, ex-mining lands, and steep and high lands — are covered in Chapter 4. Chapter 5 covers parklands and species conservation and examines topics such as nature in the city, bird habitats, plant species, and monkeys and other urban wildlife. In addition to the conclusions contained in Chapter 6, there is a summary of main recommendations at the end of each chapter.

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Jalan Yong Shook Lin
46990 Petaling Jaya Selangor
Malaysia
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Fax: +60 3 756 5594
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Order No.: WRI-282

Strategi pemeliharaan sumber semulajadi Malaysia: cadangan-cadangan strategi pemeliharaan untuk Negeri Selangor Darul Ehsan

Conservation strategy Malaysia: proposals for a conservation strategy for Selangor Darul Ehsan

National Conservation Strategies — IUCN and others

World Wide Fund for Nature Malaysia. Conservation Strategy Malaysia, Kuala Lumpur, MY
Malaysia. Selangor State. Planning and Development Unit, Shah Alam, MY
Jul 1988, 2 v.: maps, statistical tables, En, Ma

As one of Malaysia's most rapidly developing states, Selangor Darul Ehsan must reconcile economic growth with protection of its natural resources and make conservation an integral component of the development process. This report surveys the state's natural resources and management polices and presents an outline for a comprehensive conservation strategy. The report begins with general information on natural resources and with a description of holistic conservation, which is defined as an approach that integrates conservation with all other aspects of development. Subsequently, Chapter 2 covers freshwater resources, including, inter alia, drainage patterns, impoundments, agricultural uses, groundwater, and habitat protection. The coastal and marine environment, including habitat types and protection, erosion, pollution, and marine fisheries, is the focus of Chapter 3. Chapter 4 looks at forest types and management, major conservation issues, and the legal and policy framework surrounding forest management. Chapter 5 examines species and habitat conservation, while Chapter 6 is devoted to farming and agriculture. Chapter 7 focuses on the urban and industrial environment, including urban and industrial growth, urban forestry, and recreation and tourism. Finally, Chapter 8 presents conclusions and recommendations and lists priority actions for each of the above areas. Includes references.

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World Wide Fund for Nature Malaysia
3rd Floor Wisma IJM Annexe
Jalan Yong Shook Lin
46990 Petaling Jaya Selangor
Malaysia
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Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-283

Malaysia: environmental quality report, 1990

State-of-the-Environment Reports

Malaysia. Ministry of Science, Technology and the Environment. Department of Environment, Kuala Lampur, MY
29 Sep 1991, xvii, 235 p.: ill., charts, statistical tables, En

This report reviews the activities of the Malaysian Department of Environment (DOE) for the year 1990. The DOE's responsibilities include environmental monitoring, enforcement of pollution controls and environmental impact assessment (EIA) requirements under the 1974 Environmental Quality Act, and participation in regional environmental activities. The report discusses (1) the policies, objectives, and strategies which guide the DOE; (2) the Environmental

Quality Council (EQC), a special advisory body; (3) DOE administration; (4) environmental monitoring activities for air and water quality and noise level; (5) pollution abatement activities; (6) environmental planning and development; (7) environmental education and information; (8) human resource development; and (9) the DOE's participation in international and regional environmental activities. Among the findings: total airborne particulate matter increased (though airborne lead levels diminished), the quality of river waters deteriorated slightly, and the quality of coastal waters stayed about the same.

Available from:
Malaysia. Ministry of Science, Technology and the Environment. Dept. of Environment
3 Jalan Raja Laut
50662 Kuala Lampur
Malaysia
Phone: 603-2938955

Malaysia: environmental quality report, 1989

State-of-the-Environment Reports

Malaysia. Ministry of Science, Technology and the Environment. Department of Environment, Kuala Lampur, MY
20 Sep 1990, xvi, 240 p.: ill., charts, statistical tables, En

Environmental management in Malaysia is well into its second decade. As mandated by the Environmental Quality Act of 1974, this annual report assesses the state of Malaysia's environment, as well as the effectiveness of the government's environmental protection and control efforts, for the year 1989. In 1989, ambient air quality deteriorated (in terms of suspended particulates and airborne lead), while river water quality experienced a slight improvement. Significantly, new regulations were implemented for the control and safe disposal of toxic and hazardous waste. The report includes sections on: (1) environmental policies and strategies; (2) the membership and activities of the Environmental Quality Council (an advisory body); (3) the organizational make-up of the Department of the Environment; (4) the results of assessments of air quality, river water quality, groundwater quality, noise pollution, coastal and marine water quality, and other special studies; (5) pollution abatement and control efforts; (6) environmental planning and development activities; (7) environmental education and information; (8) human resource development; and (10) international and regional aspects of environmental planning.

Available from:
Malaysia. Ministry of Science, Technology and the Environment. Dept. of Environment
3 Jalan Raja Laut
50662 Kuala Lampur
Malaysia
Phone: 603-2938955

Maldives

National report for the Maldives: United Nations Conference on Environment and Development

UNCED National Reports

1991, [37] p. + 4 annexes, En

Like many small archipelagic states, the Maldives faces exceptional environmental and development challenges due to its geographic isolation, narrowly based economy (heavily dependent on fishing and tourism), widely dispersed territories, and fragile island environment. The Maldives consists of 1,190 islands stretched in a chain 820 km in length. As fully a quarter of the population now inhabit the 1.8 sq. km capital island of Male, the need for development of the atolls is a key feature of government policies. Flooding is another major concern — 80% of the nation's land area is less than 1 meter above sea level. Exceptionally destructive flooding in 1987 exposed the need for integrated environmental and development planning, as well as the need for external assistance in such. This report describes development trends in the Maldives and their environmental impacts, and also discusses constraints to development. Next, the report details responses to environmental and development problems. Annexes include the National Environmental Action Plan and reports on the Small States Conference on Sea-Level Rise, which was held in Male in November 1989.

Available from:
UNDP Resident Representative
P.O. Box 2058
Male
Republic of Maldives
Phone: (960) 32 45 01
Fax: (960) 32 45 04

Myanmar (Burma)

Scope of 'biological diversity' in Burma, with special commentary on the role of women

Tropical Forest & Biological Diversity Assessments — USAID

Agarwal, Seema
U.S. Agency for International Development. Bureau for Asia and Near East. Burma
Dec 1987, iv, 75 p., En

Burma's (now Myanmar's) diverse ecosystems and wildlife population receive possibly the lowest level of protection in the Indo-Malaysian region. This report examines threats to the country's biological diversity, concentrating primarily on the forest and fishery sectors and on wildlife, with some attention to agriculture. The most important indicators of environmental degradation are identified as: (1) deforestation in hills caused by shifting cultivation; (2) deforestation in the dry zone due to population pressure, demand for firewood, and over-exploitation of forestry resources; (3) degradation of mangrove forests to expand rice cultivation; (4) reduction in tree species by substituting bamboo or teak for other forest types in tree plantation programs; and (5) soil erosion and sedimentation due to forest fires and absence of watershed management. Major causes of reduction in species diversity include: (1) habitat destruction; (2) uncontrolled hunting, poaching, and illegal trade; (3) misuse of pesticides and agricultural chemicals; and (4) lack of knowledge of conservation or species status. The report also identifies priority species for conservation, describes environmental projects, and assesses related institutions, individuals, and legislation. It states that Burma's environmental protection laws are not only inadequate, but poorly enforced due to lack of personnel and equipment, administrative inefficiency, local corruption, travel and communication difficulties, and public apathy. Potential USAID/Burma projects are proposed, with special consideration for involving women.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-249

Burma: conservation of biological diversity [and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
Jan 1989, 13 p.: maps, En

According to this report, the protected areas system in Myanmar (formerly Burma) is by far the poorest in Southeast Asia. Reserved forests are subject to exploitation of timber and other forest products, while wildlife sanctuaries are much too small and suffer serious damage through logging and agricultural encroachment. The report assesses the biological, environmental, and economic importance of Myanmar's disappearing natural resources and presents recommendations for strengthening the country's protected areas system. Myanmar's forestlands make up about 40% of the country and contain more than 7,000 flowering plant species, 1,000 birds, 300 mammals, and 360 reptiles. Until a decade ago, these forests were managed successfully under a traditional sustained yield system. Today, however, intensive mechanized logging — introduced by external aid projects — contributes to the destruction of an estimated 6,000 sq km of forestland per year. Additional causes of deforestation include shifting cultivation and agricultural encroachment. Indiscriminate, uncontrolled hunting further endangers the animals which inhabitat these forests. Threatened species include, inter alia, the Asian elephant, gaur, banteng, tiger, leopard, and wild dog. Recommendations focus on strengthening Myanmar's environmental protection legislation, which currently dates from the pre-World War II colonial era.

Available from:
World Conservation Monitoring Centre

Nepal

Building on success

National Conservation Strategies — IUCN and others

National Conservation Strategy for Nepal, Kathmandu, NP
International Union for Conservation of Nature and Natural Resources, Gland, CH
Sep 1987, xi, 309 p. + attachment, En

According to this report, conservation awareness dates back many centuries in Nepalese society. The national conservation strategy presented herein therefore attempts to reflect the social and cultural heritage as well as the current economic needs of the Nepalese people. Following background information on Nepal's history, institutions, and geography, the report analyzes the following areas as they relate to conservation: population (human settlements, cultural heritage, conservation awareness, and the role of women), water supply and sanitation, agriculture, irrigation, livestock and pasture management, soil conservation and watershed management, forestry, medicinal plants, biological diversity, protected areas, tourism, energy, industry, and nonrenewable resources. The report then outlines the proposed conservation action agenda, which consists of components to strengthen environmental institutions, education, policies, research, and planning, as well as a number of specific village-level activities. Improved forest management is emphasized by the plan, although the widely held belief that Nepal's forest area is rapidly decreasing is described by the report as a popular misconception. While this may be true of the Tarai and the Inner Tarai (which contain 30% of the nation's forests), the total loss of actual forest land is not yet considered significant. A detailed outline of the agenda's implementation plan is attached.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Master plan for the forestry sector, Nepal: main report

Tropical Forestry Action Programme — FAO and others

Nepal. Ministry of Forests and Soil Conservation, Kathmandu, NP
Asian Development Bank, Manila, PH
Finnish International Development Agency, FI
Apr 1988, 168 p. + appendix: statistical tables, En

Nepal's first National Forestry Plan, developed in 1976, addressed the nation's severe problems of forest loss and degradation, but did not cover all the forestry subsectors. This report presents a comprehensive long-term (25-year) master plan for forestry development in Nepal. After an introduction which describes the development of the plan and overviews the country's broad national characteristics, part two of the report looks at Nepal's forest resources and their potential to meet the needs for various forest products, based on current supply and demand trends. The third part analyzes nine subsectoral issues: wood and fodder production; forest-based industries; medicinal and aromatic plants; national parks management and wildlife conservation; soil conservation and watershed management; forestry research and development; forestry sector policies and their execution; forestry institutions; and human resources. In part four, the long-term forestry plan is put forward. This plan proposes actions in several specific areas, inter alia, community and private forestry, national and leasehold forestry, forest-based industry, conservation of ecosystems and genetic resources, forestry information systems and resource planning, monitoring and evaluation, and institutional and legal reform. Part four also covers financial resources, current spending, and estimated costs, and presents a financing plan. Part five assesses the expected economic and environmental impacts, both of the plan as a whole and its individual components.

Available from:
Nepal. Ministry of Forest and Soil Conservation
Babar Mahal
Kathmandu
Nepal
Phone: +977 2 20328, +977 2 24819

Natural resource management for sustainable development: a study of feasible policies, institutions and investment activities in Nepal with special emphasis on the hills

Environmental Policy and Management Studies

Environmental Resources Ltd., London, UK
MacDonald Agricultural Services Ltd.
Nov 1988, vii, 228 p.: charts, maps, statistical tables, En

Virtually all of the land in Nepal's hill areas is accessible to the population for cropping, grazing, and the collection of forest products. Chapter I of this report describes the state of the natural resources in the region. Major conclusions are that: (1) hill area forests, less than 2% of which are managed, show clear signs of overuse and degradation; (2) current exploitation of arable land is at the margin of sustainability, given available water and plant nutrient supplies; and (3) degradation is most severe in the grasslands due to overgrazing and poor management. Chapter II identifies direct and underlying causes of natural resource degradation, most of which stem from villagers' economic dependence on forest resources for agricultural production, cottage industries, and domestic energy. Outside the village, various regional factors such as urbanization, employment opportunities, and patterns of migration and tourism also affect demand on the resource base. Chapter III reviews the responses of villagers and government to environmental problems. According to the report, villagers have adapted to resource shortages by migrating, reducing consumption, and increasing production through intensified cultivation. Government programs have attempted to either improve management or reduce demand (e.g., through improved stoves). Chapter IV presents a quantitative analysis of the potential demand and supply for three key natural resource commodities — food, fuelwood, and fodder — over the next 25 years. Policy areas requiring further investigation are identified in the final chapter.

Available from:
Environmental Resources Ltd.
106 Gloucester Place
London W1H 3DB
United Kingdom
Phone: 01-486 1211
Telex: 296359 ERL G
Fax: 01-935 8355

Mountain environmental management in the Arun River Basin of Nepal

Environmental Policy and Management Studies

Dunsmore, John R.
International Centre for Integrated Mountain Development, Kathmandu, NP
Dec 1988, iv, 66 p.: ill., charts, maps, statistical tables, En

The Arun River rises in Tibet and flows south through the Great Himalaya ranges and into Nepal. This study attempts a comprehensive description of the Nepalese part of the Arun River basin; the study area has been divided into two zones — northern and southern. The lightly populated northern zone includes a substantial part of the high Himalaya, and is very fragile, with 73% of the land having slopes of over 40 degrees. The southern zone, by contrast, is heavily populated and predominantly consists of high and middle mountains; mixed farming is the principal economic activity. Part I of the study describes the two zones, their population, farming systems and other economic activities, land tenure (legal and perceived) and land use, access by foot trail and road, climate, hydrogeological regimes, vegetation types, and government, as well as the planned Arun-3 hydropower project (to be located in the northern zone). Part 2 puts forward suggestions for improving environmental management in the basin. Attention is given in turn to the need for: a geographic information system and resource data base; coordinated development planning; supporting user groups in resolving questions of land rights; recognition and encouragement of the role of women; conservation activities, including establishment of a national park; and setting up of a zonal-level management organization.

Available from:
International Centre for Integrated Mountain Development
4/80 Jawalakhel
G.P.O. Box 3226
Kathmandu
Nepal
Phone: 525313, 521575, 522819
Telex: 2439 ICIMOD NP
Fax: 977 1 524509

Atlas of Nepal in the modern world

Other Environmental Studies

Sill, Michael; Kirkby, John
International Institute for Environment and Development, Washington, DC, US
1991, 159 p.: ill., charts, maps, statistical tables, En

Nepal is an immensely diverse country, ranging from the great mountains in the north through the trans-Himalaya, a high barren plateau, through the deep valleys, to the Terai, which is an extension of the Ganges plain. Yet it is one of the poorest countries in the world. Nepal's hills are clear evidence of the relationship between poverty and environmental degradation. The hills are ecologically marginal because of their high sensitivity and low resilience and they are agriculturally marginal since farming is possible only with high inputs of labor. Moreover, the poorest areas ecologically are occupied by the poorest farmers, who are forced by population pressures to use progressively more sensitive land and to remove more trees, both for food and fodder. Removal of trees exposes steep slopes to erosion, while demand for arable land causes pasture to be more heavily grazed, causing more erosion and possibly contributing to flooding in India and Bangladesh.

This report provides an overall picture of the relationship between environment and development in Nepal. Natural resources and hazards are described, followed by an assessment of water resources. Various population characteristics are summarized, including population distribution, migration, fertility and mortality, marriage patterns, and languages. The tourism industry and the country's protected areas systems are examined, along with urban areas and industrial development. The next two sections focus on land management and food security issues, including farm size, land reform, and cash crop promotion. Final sections describe the country's energy crisis, the transportation system, and related aspects of education. Includes bibliography.

Available from:
Earthscan Publications, Ltd.
c/o Kogan Page
120 Pentonville Road
London N1 9JN
United Kingdom
Phone: +44 71 278 0433
Fax: +44 71 278 1142
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-121

Oman

Sultanate of Oman regional report to the United Nations Conference on Environment and Development

UNCED National Reports

Sultanate of Oman. Ministry of Regional Municipalities and Environment, [Muscat], OM
Jan 1992, ca. 50 p., En

Oman's geography and climate impose particular environmental pressures, especially on the water supply. With industrialization, the country is also experiencing problems with liquid and solid toxic wastes, which lead to water and air pollution. This report begins by describing basic geographical features and the historical background of Oman, followed by a summary of general development trends and development activities by sector (commodity production, services, social structures, and infrastructure). The report then assesses the country's natural resource base, looking at population distribution and land use, wildlife resources, rangelands and pastures, and coastal resources. Key environmental and natural resource issues are identified in relation to protection of the atmosphere, the freshwater supply, oceans and coastal areas, land resources, biological diversity, biotechnology, hazardous wastes and toxic chemicals, and public health. The next section

summarizes the response to environment/development issues in the form of policies, legislation, institutions, programs and projects, and international activities. The country's major goals and targets are also cited. These relate to: the interlinkage of development and environmental goals, accelerating economic growth, diversification of national income sources, reducing economic disparities, human resource development, health facilities, environmental health conditions, food security, and protection of the natural resource base.

Available from:
UNDP Resident Representative
P.O. Box 5287
Ruwi, Huscat
Sultanate of Oman
Phone: (968) 600 687
Fax: (968) 602 590

Pakistan

Program strategy for environmental management in Pakistan

Environmental Strategies — Canada (CIDA)

Greene, George; Wright, Douglas
Greene Associates, Ottawa, CA
Canadian International Development Agency, Hull, PQ, CA
Oct 1990, xiii, 92 p.: charts, statistical tables, En

Pakistan faces many environmental problems, including land degradation, loss of biodiversity, depletion of natural forests, destruction of coastal wetlands, limited freshwater supply, air and water pollution, and problems related to industrial and energy development. This report reviews the key environmental issues facing Pakistan, assesses the institutional capabilities in Pakistan to address these issues, and reviews donor activities in support of environmental management. The report then presents CIDA's environmental management strategy for Pakistan, which contains activities related to energy, agriculture, policy support, and community-level cross-sectoral initiatives. According to the report, population growth (now at 3.1% per annum) and population distribution aggravate all of Pakistan's environmental problems. The sparsely populated dryland areas are under severe pressure from large animal populations and indiscriminate grazing, the traditional systems of resource management having broken down. Human population densities in many mountain areas are exceeding the carrying capacity and policies to encourage outmigration and improved land management practices are warranted.

Available from:
Canadian International Development Agency
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-334

Environmental profile: Balochistan, Pakistan

Environmental Profiles — Netherlands

van Gils, Hein, ed.; Baig, M. Shabbir, ed.
International Institute for Aerospace Survey and Earth Sciences. Land Resource and Urban Sciences Department, NL
Soil Survey of Pakistan. Ecology Unit, Lahore, PK
Netherlands. Ministry of Foreign Affairs, The Hague, NL
Jan 1992, 56 p. + 11 appendices: ill., maps, statistical tables, En

In Pakistan's province of Balochistan, on the Arabian Sea, desertification is far advanced by all international standards and has been accelerating in the past two decades. Desertification is driven by the human and small stock population explosion as well as by groundwater pumping for orchards and vegetable gardens. In the next decade, this process is expected to result in the collapse of the water supply of Quetta City, home to one million people.

This report begins with an overview of Balochistan's natural environment and relevant social factors, e.g., population growth, urbanization, ethnic conflicts, land tenure, economy, irrigation activities, and public administration of the environment. The report then addresses the province's three major environmental issues: (1) urban and industrial pollution, including the impact of coal and copper mining; (2) rural desertification (water depletion, range and watershed degradation, and soil

degradation); and (3) biodiversity conservation (forests, wildlife, plants, and coastal fisheries). According to the report, the decline of biodiversity in Balochistan is a component of the desertification process; conservation has a low priority, as it is not important for the economy, even indirectly. Urban pollution by water and animal borne diseases, compounded in Quetta by traffic-generated pollution, are serious. Both the federal and provincial governments have ignored the environmental threat to Balochistan. The report concludes that population control is urgently needed, but cannot be achieved in the short- or mid-term. Comprehensive education, especially of women, is the most effective long-term strategy.

Available from:
Netherlands Ministry of Foreign Affairs

Environmental synopsis of Pakistan

Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

Stone, Paula; Dalal-Clayton, Barry; et al.
British Overseas Development Administration, UK
International Institute for Environment and Development, London, UK
Apr 1992, 28 p.: maps, statistical tables, En

Pakistan faces a number of serious environmental problems, such as soil erosion, pesticide misuse, deforestation, and urban pollution. The key constraints to their solution are population growth in relation to the limited availability of resources and unsustainable patterns of resource use. This report describes Pakistan's environmental institutions, legislation, and educational opportunities; inventories and assesses the natural resource base (ecological regions, water, forests, arable land, livestock, fisheries, protected areas and wildlife, and nonrenewable resources); describes pertinent industrial activities; and identifies major problems. The country's population is growing at one of the fastest rates in the world, and will double in just 20 – 25 years. Yet Pakistan is in a particularly poor position to cope with high population pressures, since its predominantly arid landscape constrains agricultural development. Food production is largely dependent on irrigation, and poor irrigation practices have resulted in widespread salinization of land and have altered the hydrological balance of the Indus basin. There are also few indigenous sources of energy; fossil fuel reserves are low, and biomass energy potential is poor. Moreover, Pakistan uses energy inefficiently, with industrial energy use (per unit of goods or services produced) even more intensive than that of the United States. Pakistani industries also have a poor record in treating harmful wastes — only 3% meet international standards. Municipal and residential wastes are also poorly managed and, as a consequence, water-borne diseases are the country's principal health burden. Includes 3-page bibliography.

Available from:
International Institute for Environment and Development
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-183

Environmental profile of Pakistan

Country Environmental Profiles — USAID

Pakistan. Ministry of Housing and Works. Environment and Urban Affairs Division
U.S. Agency for International Development. Bureau for Asia and Near East. Pakistan
Dec 1988, xiii, 233 p.: charts, maps, statistical tables, En

With only 5% of its land under forests, Pakistan is especially vulnerable to the effects of deforestation. This report describes the extent of Pakistan's deforestation problem as well as environmental issues related to the country's aquatic and atmospheric ecosystems, wildlife resources, human settlements and health, food and energy resources, and tourism. Background information on Pakistan's geography, biodiversity, and culture is also provided. Major problems are identified as: (1) deforestation leading to soil erosion, desertification, and flooding (more than 60% of the land is already or likely to be affected by desertification); (2) irrigation, which has created waterlogging (2 million ha) and soil salinization (4.2 million ha); and (3) increased water pollution (due to siltation, biological contamination, industrial effluents, and agricultural chemicals), which is a major threat to

human health and to the fishing industry, a primary source of foreign exchange. The report also describes the country's efforts to combat these problems through institutions, legislation, and public education campaigns. Several weaknesses in the government's response are raised, including a lack of integration between conservation and development, inadequate coordination among environmental institutions, the narrow focus of environmental legislation, and the absence of agencies to enforce these laws.

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U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-922

[Pakistan:] national conservation strategy

National Conservation Strategies — IUCN and others

International Union for Conservation of Nature and Natural Resources, Gland, CH
[1991], 2 v.: statistical tables, En

Pakistan, like much of the world, increasingly views environmental degradation as global in scope; the actions of one country can inadvertently affect the environmental health of another. Indeed, even environmental problems that appear to be purely national in dimension are often linked to worldwide trends, often in the context of the economic chasm between North and South. This report, Pakistan's National Conservation Strategy, surveys global ecological problems as well as problems afflicting the country itself. Chapter 1 covers both global problems, such as excessive use of fossil fuels, emission of noxious gasses, and loss of biodiversity, as well as problems that are largely limited to developing nations, such as desertification, deforestation, and the environmental consequences of international debt and adverse terms of trade. Chapter 2 examines the specific state of Pakistan's environment, focusing on land, water, pollution, energy, fisheries, mining, recreation and tourism, human settlements, desertification, trends in land use, livestock, natural capital, and population growth. Chapters 3 and 4 then present multisectoral strategies for addressing environmental degradation and attaining sustainable development, including, inter alia, soil conservation, environmental education, land reform, rangeland rehabilitation, energy conservation, community-based resource management (especially including women), and increased research and development.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-317

Biodiversity guide to Pakistan

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources, Gland, CH
1991, 32 p.: maps, statistical tables, En

Pakistan is largely arid and semi-arid, but the country's wide geographical and altitudinal range have contributed to a diversity of flora and fauna. Highlights include three ecosystems — juniper forest, the Chagai desert, and the Indus riverine zone — which contain unique biotic communities and endemic elements. Following background information on geography, climate, and population, this report provides a description of Pakistan's biodiversity in terms of ecological zones, critical ecosystems, flora, mammals, birds, reptiles, amphibians, fish, invertebrates, and agricultural biodiversity. The next section analyzes the country's protected area system, which, while extensive, should be enlarged to ensure that adequate examples of all ecosystems are represented. The report then identifies the major threats to biodiversity, which include deforestation, grazing, soil erosion and desertification, dams and irrigation, salinization and water logging, water pollution, hunting, fishing, and agricultural practices. A final section summarizes efforts to conserve Pakistan's biodiversity through legislation and policy, government departments, research and training, nongovernmental organizations, current projects, and international and regional cooperation. Includes references.

Available from:
World Conservation Monitoring Centre
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-175

National report submitted to the United Nations Conference on Environment and Development

UNCED National Reports

Pakistan. Environment and Urban Affairs Division, Islamabad, PK
Aug 1991, v.p.: charts, statistical tables, En

This report, Pakistan's contribution to the 1992 U.N. Conference on the Environment and Development (UNCED), identifies three factors which, together, lie at the root of environmental degradation, whether at the local, national, or global level: finite resources; accelerating rates of economic and demographic growth; and inadequate institutions and knowledge pertaining to economic and resource management. As such, solutions must address the regeneration and conservation of natural resources; the pursuit of sustainable rates of economic and demographic change; and the strengthening of institutions and technologies that harmonize development and environmental objectives. In particular, the northern, or already developed countries, have the responsibility of curtailing their wasteful and growing consumption, and of helping the southern, or poorer countries to eradicate the massive poverty and illiteracy which have contributed to environmental degradation.

The report is divided into six chapters. Chapter 1 provides information on economic and demographic features, while Chapter 2 describes Pakistan's natural resource base. Environmental problems are discussed in Chapter 3. Chapter 4 describes existing and envisaged responses — governmental as well as civil — to these problems, the most significant of which has been the formulation of a National Conservation Strategy (NCS), which was approved by a high-level steering committee in July 1991; the NCS will increase the share of GNP allocated to environmental-related efforts from 4% to 8%. International cooperation on environmental issues is the subject of Chapter 5, while Chapter 6 summarizes Pakistan's positions on major issues at UNCED. Includes a statistical appendix and a 6-page list of references.

Available from:
UNDP Resident Representative
P.O. Box 1051
Islamabad
Pakistan
Phone: (92 51) 822 618
Fax: (92 51) 823 783
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-209

Nature of Pakistan

State-of-the-Environment Reports

Carwardine, Mark
International Union for Conservation of Nature and Natural Resources, Gland, CH
World Wide Fund for Nature, Lahore, PK
Grindlays Bank p.l.c.
1986, 72 p.: ill., En

The Government of Pakistan neglected the country's natural resources until the 1960's, and current environmental legislation is far from satisfactory, with insufficient safeguards, enforcement, and personnel. This report discusses Pakistan's major environmental problems, including the following. (1) Half of the wildlife species known to have existed in Pakistan in early times are now endangered or extinct. Among these are the Dalmation pelican, white-tailed eagle, peregrine falcon, Asiatic wild ass, markhor, Indian python, mugger, cheer pheasant, great Indian bustard, Indus dolphin, snow leopard, wolf, gavial, and olive ridley and green turtles. (2) Pakistan's protected environmental areas (including 7 national parks, 72 wildlife sanctuaries, and 76 game reserves) are threatened by pollution from towns and villages, industrial discharge, and increased use of non-specific pesticides. (3) The Indus River, the country's primary water source, is significantly degraded, due to overfishing, large-scale and uncontrolled irrigation, and effluents from domestic sewage, industrial waste, and agricultural chemicals. (4) Most of the irrigated lands in the Indus basin are infertile due to waterlogging and salinization. Other topics in the

report include forest management, marine and shrimp fisheries, agriculture, the Kalabagh dam, tourism, and energy. The final sections provide recommendations to improve environmental protection within the context of economic development.

Available from:
IUCN — The World Conservation Union
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-124

Philippines

Sustainable natural resources assessment: Philippines

Tropical Forest & Biological Diversity Assessments — USAID

Clark, John R.; Fargher, John D.; et al.
Dames and Moore
Louis Berger International, Inc.
Institute for Development Anthropology, Inc.
U.S. Agency for International Development. Bureau for Asia and Near East. Philippines
Sep 1989, xii, [57]p. + 6 annexes: charts, maps, statistical tables , En

The Philippines' natural resource base has become so depleted and degraded that the country will undoubtedly suffer serious economic decline if corrective actions are not taken soon. Population size and growth rate and the lack of demonstrated capacity to protect terrestrial and aquatic ecosystems are the key constraints on natural resources management, particularly with respect to biodiversity. The sequence of rampant timber overcutting followed by slash-and-burn shifting and settled agriculture is transforming much of the uplands into degraded landscapes. Abusive consumption of the mangroves and coral reefs is further diminishing species diversity and ecological stability in the coastal zones. Compounding these negative impacts is an almost total transfiguration of the lowlands into monocrop agriculture, pasture, industry, and urban uses. This comprehensive study assesses the status of the Philippines' resources, focusing on four major subsectors — forestry, agriculture, coastal resources (fisheries, mangroves), and general biodiversity. Attention is also given to institutional issues, the roles of nongovernmental organizations and the private sector, macroeconomic and sectoral policies, and research and information needs. Recommendations address the following key areas: preserving/rehabilitating old growth forest, a coastal zone master plan; land tenure; upland agriculture support services; training; community organizing; policy analysis; and establishment of a center for biodivserity. Includes references.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.. PN-ABE-812

Philippines [conservation of biological diversity and forest ecosystems]

Biological Diversity Profiles — WCMC

World Conservation Monitoring Centre, Cambridge, UK
International Union for Conservation of Nature and Natural Resources. Tropical Forest Program, Gland, CH
1988, [21] p.: maps, En

Equatorial temperatures, high annual rainfall, and mountainous topography make the Philippines a suitable home to a variety of plant and animal species. Some 8,000 flowering plant varieties are found in the Philippines, as well as a sizable number of bird and lizard species. This report profiles the natural resources of the Philippine archipelago and highlights the continued destruction of forested areas. The report identifies six major types of forest: (1) mixed dipterocarp; (2) tropical montane; (3) mossy (subalpine); (4) pine; (5) molave; (6) and mangrove. None of the 60 national protected areas (covering 1.3% of the country's land area) in the Philippines would meet international standards set by the International Union for Conservation of Nature and Natural Resources. In 1975, it was reported that 72,000 people were permanently settled on park lands, while 54,000 hectares of this land were under cultivation and 4,000 sq hectares were being logged illegally by timber companies.

According to the report, poor resource management and an emphasis on short-term economic gain have hindered environmental protection. Hydroelectric and mining development have resulted in substantial destruction of rain catchment areas. In the Agno River Basin alone, mine prop logging has caused severe erosion in 30% of the watershed. Forest protection ordinances have been weakened by poor enforcement, and illegal timber smuggling continues to be a problem. In 1981, it was estimated that over 1 million cu m of timber was smuggled to Japan. Other topics discussed in the report include, inter alia: (1) threatened plant sites; (2) shifting agriculture and ornamental plant harvesting; (3) logging operations in tribal areas; and (4) government conservation activities. A list of recommended actions ends the document. A 20-item bibliography is included.

Available from:
World Conservation Monitoring Centre

Report on Philippine environment and development: issues and strategies

UNCED National Reports

Philippines. Bureau for Environment Management. Department of Environment and Natural Resources, PH
[1991], v.p.: charts, maps, statistical tables, En

With 111 cultural and linguistic groups, 7,107 islands, and rapid population growth, the Philippines faces considerable development challenges. Pressing concerns include heavy national debt, pervasive poverty, lack of access to environmentally sound technology, and frequent natural disasters, such as the eruption of Mt. Pinatubo in June 1991, which forced a quarter of a million people to abandon their homes. At the same time, the country must resolve serious environmental problems, in particular, deforestation, loss of wildlife, poor sanitation, industrial pollution, and urban congestion.

This report, prepared for the June 1992 U.N. Conference on Environment and Development, documents development-environment dynamics in the Philippines since 1972 and describes the country's efforts to reconcile environmental and development goals, as embodied in the Philippine Strategy for Sustainable Development (PSSD), which was formally approved in November 1989. The PSSD's ten basic principles are: integration of environmental considerations into decisionmaking; proper pricing of natural resources; property rights reform; conservation of biodiversity; rehabilitation of degraded ecosystems; management of industrial residuals; control of population growth and development of human resources; rural development; environmental education; and strengthening citizens' participation. The report contains sections on development trends and their environmental impacts; major resource and economic sectors, including forestry, minerals, agriculture, coastal resources, protected areas, freshwater, energy, industry, urban areas, and special concerns (disasters, indigenous communities, and women in development); key environmental concerns; and responses to environment-development issues, including the PSSD and recommendations for a Philippines Action Plan on Sustainable Development.

Available from:
UNDP Resident Representative
P.O. Box 1864
Manila 2801
Philippines
Phone: (63 2) 8177260
Fax: (63 2) 816 4061
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-220

Sustainable urban and industrial environmental management review: a review of the present status with recommendations for future directions

Environmental Policy and Management Studies

Capistrano, Ana Doris; Dickinson, Joshua C.; et al.
Tropical Research and Development, Inc.
Dames and Moore
U.S. Agency for International Development. Bureau for Europe and Near East. Philippines
21 May 1991, xii, 107 p. + 6 annexes: charts, statistical tables, En

In the Philippines, there is little cohesive government structure capable of attacking the country's environmental problems or preventing new development from adding to them. This report focuses on the Philippines' administrative and political framework for dealing with urban and industrial environmental problems. The report covers: (1) major environmental subsectors — surface and subsurface water resources, domestic water supply and sewerage, the coastal zone, solid waste (domestic and industrial), and gaseous waste; (2) relationships between the environment and the economy; (3) government and private sector roles; (4) research, information, and TA needs; and (5) a role for USAID. The report finds that environmental degradation is visible in most urban centers of the country. While it has been easy to point to industry as the major cause of environmental problems, in fact domestic sources contribute the majority of byproducts and residuals to water, air, and ground. The public sector is bogged down by a maze of agencies, statutes, and layers of government, and there is no mechanism in place to coordinate government environmental actions. On the bright side, however, there is convincing evidence that many major firms, both private and government-controlled, are willing to fully cooperate with government agencies in bringing industrial pollution under control. Numerous recommendations are made.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABJ-564

Philippines: environment and natural resource management study

Environmental Policy and Management Studies

World Bank, Washington, DC, US
1989, xxii, 170 p.: charts, maps, statistical tables, En

In the Philippines, the government manages over half of the land area. However, despite numerous protective laws and regulations and a large enforcement bureaucracy, public management has been less than optimal, as evidenced by an unsustainable rate of deforestation and the recent stagnation or decline in extractive fisheries. Indeed, the population has come to view public lands and coastal waters as open access resources. This study addresses the Philippines' major natural resource management issues. These include: forest disappearance or degradation; erosion and changes in hydrological regimes; the conversion of mangrove swamps to fishponds; degradation of coral reefs; and depletion of nearshore fisheries through overfishing and destructive techniques. The initial sections of the report deal with the status of the natural resource base and the process leading to its degradation. Subsequent sections evaluate the public and private institutions involved in resource management, and apply a largely economic perspective in reviewing the social costs of degradation, critiquing alternative interventions, and examining the impacts of the economic policy environment. The final section outlines a comprehensive strategy for improving natural resource management, combining institutional and policy reforms with programs of extension and public investment. Annexes include a study of land use mapping; data on soil erosion and watershed degradation; and general statistical information on the environment.

Available from:
World Bank
Publications Department

Philippine strategy for sustainable development

Other Environmental Studies

Philippines. Department of Environment and Natural Resources, PH
Oct 1989, 46 p. + 2 appendices: charts, statistical tables, En

Most Filipinos still depend on natural resource systems for subsistence. In fact, two-thirds of the Philippines' population lives in rural areas, their livelihoods increasingly threatened by soil erosion, deforestation, pollution, and declining fish catch. The limits of the country's natural carrying capacity are clearly being exceeded and rapid population growth will only create further stress. In response to these problems, the Government of the Philippines has developed a strategy for sustainable development which aims to achieve and maintain economic growth without depleting natural resources or degrading environmental quality. This report summarizes the strategy, which includes the following components: integration of environmental considerations in decisionmaking, proper resource pricing, property rights reform, conservation of biodiversity, rehabilitation of degraded ecosystems, pollution control, population growth control and human resources development, inducing growth in rural areas, environmental education, and strengthening public participation. Specific strategies for the following sectors are also described: population and human resources, forests, protected areas and biodiversity, urban ecosystems, freshwater ecosystems, coastal resources, land and mineral resources, agricultural development, industrialization, and energy. A final section of the report summarizes the strategy's implementation scheme and presents a timetable of activities.

Available from:
Dept. of Environment and Natural Resources
Quezon Avenue, Diliman
Quezon City 1100
Philippines
Phone: (63 2) 976 626

Qatar

State of the environment: national reports — [no.] 1 Qatar

State-of-the-Environment Reports

U.N. Environment Programme, Nairobi, KE
1987, 46 p.: charts, maps, statistical tables, En

There is growing concern among policymakers and the public in Qatar about the need for environmental protection. This profile describes the country's physical environment and population, followed by status reports on the following sectors: water and marine resources, wastewater treatment and use, agriculture, energy and industry, and institutions and legislation.

Water scarcity is identified as the main problem facing Qatar. In the absence of permanent surface water, agriculture is almost entirely dependent on irrigation from pumped groundwater. It is estimated that Qatar's aquifers will be depleted in 20 or 30 years if the present rate of groundwater withdrawals continues. Further, with increasing urban and rural development, groundwater contamination is a distinct probability; significant nitrate content has already been detected. The report describes the extent of marine water pollution in harbors, ports, and coastal areas due to discharges from the oil and other industries. Qatar's soils are then classified, indicating an extremely limited cultivable area, some of which has been degraded by inappropriate agricultural and irrigation practices. The report then examines the environmental impact of Qatar's extensive energy sector. Oil production, which comprises more than 90% of Qatar's wealth, results in oil spills and effluents from petroleum refining. Estimates of harmful emissions from oil, as well as petrochemical, ammonia, urea, and steel production are presented. Priorities of the country's Environmental Protection Committee are then discussed, along with associated governmental bodies and legislation. Includes references.

Available from:
U.N. Environment Programme
P.O. Box 30552
Nairobi
Kenya
Phone: 333930
Telex: Uniterra, Nairobi

Singapore

Coastal environmental profile of Singapore

Country Environmental Profiles — USAID

Sien, Chia Lin; Kahn, Habibullah; Ming, Chou Loke
International Center for Living Aquatic Resources Management
Association of Southeast Asian Nations
U.S. Agency for International Development. Bureau for Asia and Near East
U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1988, xv, 91 p.: maps, statistical tables, En

The coastal waters of Southeast Asia have some of the world's richest ecosystems, characterized by extensive coral reefs and mangrove forests, warm climate, high rainfall, and a wide variety of marine life. Unfortunately, increasing population pressures and associated economic activities have seriously degraded these ecosystems over the last two decades. This environmental profile represents a first step in the formulation of an area management plan for the densely populated coastal zone of the island nation of Singapore, a key trading link within the Southeast Asian region and between the region and the rest of the world. Based on a multidisciplinary approach and substantially revised from a prototype version produced as background material for A.I.D.'s Coastal Resources Management Project in Southeast Asia, the profile presents descriptive information on: (1) Singapore's population and development background; (2) the natural characteristics (e.g., climate, landforms, flora and fauna) of the coastal land and offshore islands; (3) the seabeds and waters surrounding Singapore; (4) Singapore's economic and noneconomic resources; (5) the use and development of coastal resources in terms of port and shipping services, manufacturing industries, power generation, fisheries and aquaculture, retail businesses, residential uses, recreation and tourism, and use of the offshore islands: (6) the nature and extent of coastal pollution and attempts to control it; and (7) the planning and institutional frameworks for coastal area management. Includes references.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABB-962

Master plan for the conservation of nature in Singapore

National Conservation Strategies — IUCN and others

Avadhani, P.N.; Chin, Wee Yeow; et al.
Malayan Nature Society, MY
International Union for Conservation of Nature and Natural Resources, Gland, CH
Oct 1990, iii, 152 p.: ill., maps, En

Singapore has been remarkably successful in reconciling development and the environment. Though one of the most densely populated countries in the world, it has one of the cleanest and greenest environments. However, truly natural areas are limited; there remain only 600 hectares of mangrove forest — representing less than 1% of the original area — and 100 hectares of primary forest. Remaining natural habitats need to be preserved for their recreational, aesthetic, economic, scientific, and intrinsic value; their potential for attracting eco-tourism is particularly important.

This plan for the conservation of nature in Singapore identifies potential uses for, the value of, and methods of preserving the country's flora and fauna. The sites covered represent the last areas containing enough natural vegetation to support tropical biodiversity, and include existing and proposed reserves, sanctuaries, parks, and gardens. Following an introduction, the status of plant, animal, marine, and freshwater species in Singapore is detailed. The next two sections describe existing reserves — divided into terrestrial, freshwater, intertidal and littoral, and offshore island categories — and 28 other sites recommended for greater conservation attention.

Major threats to these areas include poaching, military exercises, and public misuse. The last section contains conclusions and recommendations, which include: better protection of existing reserves from human disturbance; extension of protected areas to include adjoining wastelands, parks, or gardens; creation of entirely new protected areas; and development of greenways to connect the island's parks and reserves. An appendix contains information about the Singapore Branch of the Malayan Nature Society.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-208

Singapore's national report for the 1992 UN Conference on Environment and Development Preparatory Committee

UNCED National Reports

Singapore. Inter-Ministry Committee for the UNCED Preparatory Committee, Singapore, SG
1991, 71 p., En

According to this report, Singapore has a model of clean development to offer the developing world. The country wants to establish itself as a regional environmental technology and expertise center for the Asia-Pacific region and to act as a bridge between the industrialized and developing worlds by collaborating with companies from the North in implementing environmental programs in the South. The report describes development trends in Singapore, as well as environmental impacts and responses in the following areas: air pollution, sanitation, solid waste management, hazardous waste, noise pollution, environmental public health, water supply, marine pollution, environmental education, tree planting policies, and nature conservation. Additional chapters summarize environmental policy goals, the role of nongovernmental organizations, and regional cooperation. Major environmental problems in Singapore are identified as the following: (1) very limited resources, especially land (urbanization is intense, and the built-up area accounts for half of all land area); (2) an insufficient supply of indigenous clean water resources, which necessitates water imports and conservation measures; (3) the busiest seaport in the world, including a large number of oil tankers; and (4) insufficient protection of nature reserves and biodiversity, which has allowed illegal trapping and trafficking of wildlife and endangered species. The report includes recommendations and a list of priorities for environment and development.

Available from:
UNDP Resident Representative
P.O. Box 12544
50782 Kuala Lumpur
Malaysia
Phone: (60-3) 255 91 22
Fax: (60-3) 255 28 70

Pollution Control Department: annual report '90

State-of-the-Environment Reports

Singapore. Ministry of the Environment. Pollution Control Department Singapore, SG
1990, 38 p.: ill., charts, statistical tables, En

Singapore's Pollution Control Department seeks to mitigate pollution problems arising from the country's rapid economic development. This report on the Department's activities during 1990 begins with an overview of Singapore's air quality (covering particulate matter, sulphur dioxide, oxides of nitrogen, total acidity, low-level ozone, carbon monoxide, and lead) and water quality (covering rivers, streams, and coastal waters). The report then outlines the Department's pollution control programs. The section on air pollution control describes activities to control blasting, fuel burning emissions, vehicular emissions, industrial odors, and spray painting; to enforce standards at factories; and to monitor air quality. The section on water pollution control covers efforts to prevent illegal discharges into sewers, treat trade effluents, respond to oil and chemical spill on land, minimize pollution in the Singapore River and Kallang Basin catchments, monitor backyard industries, phase out pig farms, and develop the public sewerage system. Hazardous waste control programs are then outlined, including hazardous substances control, problems with chemical leaks,

and toxic waste control. Relevant legislation is outlined. The final two sections summarize the Department's efforts in environmental planning and information sharing.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-152

Annual report '89: Ministry of the Environment, Singapore

State-of-the-Environment Reports

Singapore. Ministry of the Environment, SG
1989, 43 p.: ill., charts, maps, statistical tables, En

Singapore's Ministry of the Environment is responsible for planning, developing, and operating sewerage, drainage, and solid waste disposal facilities; controlling air and water pollution and hazardous substances; and providing environmental public health services and training and health education. This annual report begins by identifying highlights of the Ministry's efforts in 1989, followed by more detailed descriptions of work done by the finance and administration, environmental engineering, and environmental public health divisions. Achievements include the following: extension of the public sewerage system to serve 96.8% of the population; construction of new drains and canals costing $112.6 million; construction contracts awarded for a third incineration plant at Senoko; introduction of more stringent emission standards for all diesel vehicles; revision of the refuse disposal fee structure; enactment of new regulations on waste collection; extension of smoking prohibitions; and control of an outbreak of dengue fever/dengue hemorrhagic fever. Appendices contain financial and legal data.

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Canada International Development Agency
200 Promenade du Portage
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K1A 0G4 Canada
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U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-299

Sri Lanka

Environmental synopsis of Sri Lanka

Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

Stone, Paula; Dalal-Clayton, Barry; et al.
International Institute for Environment and Development, London, UK
U.K. Overseas Development Administration, London, UK
Apr 1992, 26 p.: maps, En

In Sri Lanka, persistent civil conflict, combined with poverty, malnutrition, and unemployment, have had serious effects on the environment. The escalation of violence in the 1980's has caused the destruction of many homes, particularly in the north and east. As a result, large numbers of people are living as refugees, adding to the problems of environmental degradation. This report summarizes Sri Lanka's environmental institutions, legislation, and training opportunities and assesses the natural resource base. The report identifies the main environmental problems in Sri Lanka as (1) excessive deforestation, (2) coral mining, and (3) poor sanitation and polluted water supplies. (1) The country has a long history of deforestation. Between 1956 and 1985, natural high forests decreased from 44% to 27% of land area. Deforestation in the wet and intermediate zones has devastated the biota of these areas. Most of the deforested area has been converted into low productivity scrublands and grasslands. (2) Although coral mining, which aggravates erosion, is now illegal, it continues largely unabated as a result of poor law enforcement. It is estimated that

2,300 tons of coral and 5,400 tons of coral debris are collected annually along a 60-km stretch of the southwest coast. (3) In Colombo, the canal system has degenerated to a virtual open sewer. It receives outflows from the city's sewers in addition to slum and industrial discharges. Only 19.7% of urban housing units have access to toilet facilities. All of these problems are exacerbated by weak enforcement of environmental legislation. Includes 31 references.

Available from:
International Institute for Environment and Development
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-174

Natural resources of Sri Lanka: conditions and trends

Tropical Forest & Biological Diversity Assessments — USAID

Sri Lanka. Natural Resources, Energy and Science Authority
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Sri Lanka
1991, xi, 280 p.: ill., charts, maps, statistical tables, En

Sri Lanka's rich and diverse environment is showing unmistakable and serious signs of stress — loss of natural forest cover, contamination of waters, degradation of rural lands, and rising levels of air, water, and solid waste pollution. A projected population of 25 million by 2040 promises to aggravate these negative trends. This report profiles Sri Lanka's natural resources and the implications of their use for sustainable development. The introduction covers Sri Lanka's broad physical, geographic, and economic characteristics, while Chapter II describes its ancient heritage — a history of irrigated agriculture and forest use that strongly affects Sri Lankans' present political, social, and environmental perspectives. Three subsequent chapters describe the dynamic factors of population, economics, and energy use that most strongly affect natural resources. Subsequent chapters focus on conditions and trends affecting Sri Lanka's natural resources (energy, land, water, mineral, forest, biodiversity, coastal and marine, and inland aquatic resources) and the environmental pollutants that threaten productive and sustainable resource use. Each chapter addresses institutional responses and experiences. The concluding chapter describes the environmental stresses likely to affect Sri Lanka in the future and the opportunities for achieving sustainable development. (Author abstract, modified)

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABI-237

Sri Lanka, biological diversity and tropical forests: status and recommended conservation needs

Tropical Forest & Biological Diversity Assessments — USAID

Jansen, Malcolm A.B.; Loken, Eric R.
U.S. Agency for International Development. Bureau for Asia and Near East. Sri Lanka
May 1988, [92] p. + 2 annexes: maps, statistical tables, En

The status and management of Sri Lanka's wide array of forest and other biological resources are assessed. After an initial review of the pertinent historical, physical, legislative, and institutional issues, the study presents a summary description of Sri Lanka's biological (forest, crop/livestock, wildlife, coastal and marine, and wetland) resources. Subsequent sections describe: (1) the status and management of protected areas and endangered species; (2) the extent of conservation outside of protected areas, covering the management of natural ecosystems, the impacts of development projects, and ex situ conservation (e.g., botanic and zoological gardens); and (3) the conservation of species and germplasm of economically important agricultural, horticultural, and plantation crops. Key conservation-related issues are identified, as are the major actions needed to promote future conservation and sustainable management of the country's biological resources. Priority recommendations are to: (1) modernize and systematize existing legislation; (2) coordinate resource planning and management institutions; (3) upgrade resource management and conservation staff capabilities;

(4) improve the information base on the country's biological resources; and (5) promote environmental awareness. Priority interventions for conserving forest, wildlife, coastal/marine, wetland, and crop/livestock resources are also identified.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-254

National environmental action plan: 1992 – 1996

National Environmental Action Plans — World Bank and others

LK. Ministry of Environment and Parliamentary Affairs, [Colombo,] LK
Oct 1991, xiv, 100 p., En

Sri Lanka's rich endowment of natural resources is quickly being depleted due to rapid population growth and poorly conceived development plans. The decline of the natural resource base, in turn, makes future development much more difficult. Additionally, development plans and environmental programs have usually failed to complement each other, and have often worked at cross-purposes. Following a sector by sector format, this document presents a five-year (1992 – 96) National Environmental Action Plan for Sri Lanka. The document provides an overview of the country's major environmental problems and suggests mechanisms for achieving sustainable development. Individual sections cover land resources; water resources; mineral resources; coastal resources; forestry; biodiversity and wildlife; urban pollution; industrial pollution; and energy. There are also sections on environmental education, culture, and Sri Lankan institutional capacity. Each section lists the major problems affecting the specific sector and suggests remedial actions, providing an indication of the required time frame and the level of investment needed. Overall, the Plan envisages an investment requirement of around four billion rupees (or one hundred million dollars), a figure which, while ambitious, is less than 5% of Sri Lanka's total development budget. The Plan will be financed from both internal and external funds, and its implementation will involve a multitude of agencies.

Available from:
World Bank
Publications Department
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-207

Sri Lanka: national conservation strategy

National Conservation Strategies — IUCN and others

International Union for Conservation of Nature and Natural Resources
U.S. Agency for International Development. Bureau for Asia and Near East. Sri Lanka
Dec 1988, xvii, 160 p., En

In Sri Lanka, sharp increases in population and rising demands for higher living standards have destroyed the balance maintained by traditional land use practices. The country's dense forest cover has dwindled to 27% of land area. Soils have been significantly degraded through monocultures, intensive agriculture, injudicious and widespread use of agrochemicals, and unplanned clearing of new and even marginal lands. Property developers have filled in mangrove swamps and estuaries for building sites, while lobster breeding grounds have been nearly swept clean to supply a lucrative export market. Following a summary of Sri Lanka's environmental status, this report describes the country's efforts in sustainable management of forests, wildlife, genetic resources, and coastal zone resource systems. The report then identifies human activities involving the environment, covering eight areas — land use, human settlements, housing, agricultural systems, fisheries, energy, industries, and cultural resources. Major conservation constraints related to population pressure, policy and planning, legislation, institutional infrastructure, personnel, and public awareness of and support for environmental conservation are also discussed. Final sections outline Sri Lanka's national conservation strategy and implementation plan.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-513

Forestry master plan for Sri Lanka: main report

Tropical Forestry Action Programme — FAO and others

Keil, C.E.M.; Vaisanen, Unto
Jaakko Poyry International Oy, FI
Finnish International Development Agency, FI
World Bank, Washington, DC, US
Sri Lanka. Ministry of Lands and Land Development, Colombo, LK
15 Sep 1986, iv, [156] p. + appendix: charts, statistical tables, En

In Sri Lanka, the yield of forest and non-forest wood resources and the demand for wood seem to be fairly balanced at the moment, but shortages of both fuelwood and industrial logs are expected during the 1990's. Most natural forests are already heavily overcut, and recent reforestation efforts have experienced many failures. The only rational course, according to this master plan for Sri Lanka's forestry sector, is to totally protect certain forest areas, while establishing new plantations that will lead to self-sufficiency in fuelwood and industrial wood, and protect soil and water resources, flora, and fauna. The plan examines the status of Sri Lanka's forestry sector and makes recommendations under the following headings: policy and institutions (structure of ownership, pricing, development projects); forest resources and management; non-forest wood resources; demand for wood and wood products; plantations (present practices, planting program for 1986 – 2000); forest fire protection and prevention of illegal cuttings; forests and environment; forestry extension; wood harvesting; wood utilization; industry (sawmilling, plywood, resin extraction, etc.); organizations and personnel development; and forestry and wood utilization research. A final section discusses the plan's funding requirements, expected rate of return, and cost-effectiveness.

Available from:
World Bank
Publications Department

Sri Lanka national report to the United Nations Conference on Environment and Development

UNCED National Reports

Sri Lanka. Ministry of Environment and Parliamentary Affairs, Colombo, LK
U.N. Development Programme, Geneva, CH
Sep 1991, 170 p. + attachments: ill., charts, statistical tables, En

In Sri Lanka, development activities almost invariably face a serious limitation of resources, both financial and technological. As a result, these activities are often carried out inefficiently, using far more natural resources than necessary, and degrading the environment. This report traces Sri Lanka's development trends and their impacts on the following: croplands, water resources, minerals, forests, biodiversity, coastal resources, energy, industrialization, urbanization, tourism, women, and social development. The report then describes responses to environment-development issues through policies, institutions, legislation, programs and projects, international cooperation, and global and transnational efforts. Sri Lanka's major environmental problems are identified as: excessive deforestation for the purpose of shifting cultivation; timber exploitation from natural forests that is far in excess of incremental growth rates; excessive fuelwood removal from the wet, high-elevation, montane forests; extensive agricultural expansion on erosive land without proper land management; cultivation extending into forests and into river and reservoir catchments; excessive coral mining in the reefs and coastal deposits; and overfishing in lagoons and estuaries. Recommendations focus on enhancing the country's institutional and scientific capacity and strengthening environmental education and legislation. A final section of the report summarizes Sri Lanka's expectations for the Earth Summit in June 1992.

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UNDP Resident Representative
P.O. Box 1505
Colombo
Sri Lanka
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Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-241

Environmental study of Sri Lanka: status assessment and programme for environmental co-operation — main report

State-of-the-Environment Reports

Norwegian Agency for International Development, Oslo, NO
1989, vi, 208 p. + 8 appendices: maps, statistical tables, En

Sri Lanka's heavy emphasis on natural resource exploitation makes it imperative that a much more serious and determined effort is made to achieve ecologically sound development. This environmental assessment provides a review of the nation's natural resources and a plan for environmental cooperation between Sri Lanka and the Norwegian Agency for International Development (NORAD). Sections I and II outline the major physical and geographic characteristics of Sri Lanka, followed by information about the culture and living conditions of its people. Section III focuses on national-level environmental policies and problems. Areas identified as needing priority attention include land use, deforestation, soil erosion, waste disposal, agro-chemicals, water pollution, and wildlife. Sections IV and V cover public and private institutions and environmental law, as well as the country's National Conservation Strategy, its National Science and Technology Policy, and its capabilities in natural resource planning and land use planning. Section VI summarizes environmental studies carried out in the Moneragala and Hambantota districts, where NORAD has carried out Integrated Rural Development Programmes since 1979 and 1984, respectively. (These studies are included as Volumes II and III of this document.) The concluding sections present models for environmental management and recommendations for strengthening Sri Lanka's Central Environmental Authority. Appendices include a bibliography and a list of environmental NGO's.

Available from:
Norwegian Agency for International Development
Postboks 8114-Dep.
7 Juni Plass 1
Oslo 1
Norway
Phone: (47 2) 20 4170

Environmental laws and institutions of Sri Lanka

Environmental Policy and Management Studies

Baldwin, Malcolm Forbes
U.S. Agency for International Development. Bureau for Asia and Near East. Sri Lanka
9 Dec 1988, iii, 59 p. + 2 appendices, En

Sri Lanka has a comprehensive legal and institutional infrastructure to protect the environment. Laws to control air, water, and land pollution have been established by Parliament, while land use planning has been applied to government land sale and settlement programs. A central environmental authority is responsible for overseeing environmental impact assessments — required of all government development projects — and for the planning of national environmental and natural resource policies. Numerous nongovernmental organizations exist which engage in environmental education and lobbying. Yet, according to this report, there is a widening gap between Sri Lanka's environmental goals and achievements. Water pollution, soil erosion, deforestation, and wildlife poaching threaten many areas of the country. Inadequate management skills, ill-defined project planning, poor law enforcement, confusing procedures, inadequate training, and poor facilities have hindered the effectiveness of institutions combating environmental problems. In addition, poor interagency cooperation, inefficient use of existing data, and lack of policy leadership have frustrated private and public environmental efforts. Improved funding, leadership, environmental education, and nongovernmental organization cooperation are among the recommendations made

to help strengthen environmental laws and institutions. Specific suggestions for A.I.D. assistance are also provided, along with a 37-item bibliography.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABC-909

Syrian Arab Republic

Draft environmental profile on Syria

Country Environmental Profiles — USAID

U.S. Library of Congress. Science and Technology Division
U.S. Department of State. National Committee for Man and the Biosphere
1981, 89P., En

Despite a steadily rising standard of living, Syria, according to this report, faces increasingly ominous problems in regard to its water, soil, and forest resources. Water pollution is Syria's most important water-related problem. A lack of sanitary sewerage disposal systems and the increased dumping of industrial wastes have caused significant ecosystem damage to the Euphrates, Oronte, and Barrada river basins. Unfortunately, little progress has been made in eliminating water pollution since 1972 when the U.N. Conference on the Human Environment named it one of Syria's worst environmental problems.

Syria's semi-arid climate forces it to use 94% of its water for irrigation. This has led to overpumping followed by drought conditions in some areas and saltwater intrusion in the coastal plains. Syria's climate also threatens its soil resources. Only 31% of the land is cultivable, and although Syria has reclaimed some of the vast eastern desert, salinity and waterlogging are an ever-present scourge in the battle against desertification. Underscoring the desertification threat is Syria's loss of surface vegetation through deforestation. Today, forests cover only 2.4% of Syria's surface area. Strenuous efforts have been made to preserve these forests by restricting animal grazing on saplings, checking erosion, reforesting the land (60,000 hectares as of 1978), and intensively growing poplars. Poplars, because of their fast growth compared to average Syrian forest vegetation, have increased the availability of wood products without seriously impinging on the forest conservation program.

Air pollution from car, factory, and refinery exhausts is also a problem in Syria's major cities (Damascus, Homs, and Aleppo), but is not yet as serious as the threat of pollution to water and soil. Syrian wildlife resources appear to be scanty. Although the wolf, the Anatolian leopard, the Syrian wild ass, and the Saudi Arabian dorcas gazelle are listed as endangered species, little information on these or any other species could be found. Basic social and economic data are provided, as are information on Syrian environmental legislation, a list of Syrian environmental and natural resource organizations, and a 44-item bibliography (1967 – 80).

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAJ-625

Taiwan

Taiwan nature conservation strategy

National Conservation Strategies — IUCN and others

Taiwan. Ministry of Interior. Construction and Planning Administration. National Park Department, [Taipei], TW
Aug 1985, 38 p., En

Taiwan has a rich and complex array of mountain ranges, valley formations, and rivers and streams, which support a wide range of wildlife habitats. However, the country is experiencing serious environmental problems due to rapid industrial and urban development and high population growth. This report describes the concept of nature conservation in the Taiwanese context, assesses the status of Taiwan's natural resources, and outlines the country's nature conservation strategy, which addresses both long-term needs and immediate problems. The report also discusses how the strategy will be implemented and

evaluated. Major threats to the environment are identified as the following: (1) public health hazards and environmental pollution, including air pollution, improper waste treatment and disposal, agricultural pesticides and fertilizers, and noise pollution; (2) overdevelopment of marginal lands, including mountain slopes and coastal areas; (3) conversion of prime farmland to urban and industrial uses; (4) illegal and excessive logging; (5) lack of proper watershed management; (6) illegal hunting and trapping of wildlife and illegal fishing techniques, such as electrocution, poisoning, and dynamiting; and (7) damages caused by the introduction of exotic species, for example, the Fu-shou snail, which causes considerable crop destruction.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-292

Taiwan 2000: balancing economic growth and environmental protection

Other Environmental Studies

Institute of Ethnology. Academia Sinica. Steering Committee, Taipei, TW
1989, xiii, 748 p.: charts, maps, statistical tables, En

Taiwan is currently suffering the consequences of a 30-year commitment to economic growth at any cost. The country has left its environment virtually unprotected, the resulting problems of which include accumulations of solid and hazardous wastes, air and water pollution, loss of prime agricultural land, overdrawing of groundwater reserves, and reduced stands of old growth and naturally regenerated forests. This comprehensive report, which is the product of the cross-cutting Taiwan 2000 Study, reviews Taiwan's environmental status and assesses the country's prospects for economic growth in light of its environmental conditions.

After an executive report in Part I, Part II presents in-depth background reports on natural resources, environmental pollution, economic aspects, sociological aspects, and lessons from western experiences. Part III contains critiques of several Taiwan 2000 prototype simulation models and presents planning models for electric power and for control of air pollution from vehicular traffic. are not reorganized to reduce environmental stress, the targeted annual growth rates of GNP at 6.5% and population at 1.1% will more than double the pressure on the environment by the year 2000. Problems may appear in the form of disasters (e.g., poisonings, explosions, nuclear or chemical accidents) or in the form of gradual increases in mortality and morbidity and a decline in the beauty of the natural landscape. To date, the government has not made a serious commitment to repair past damage to the environment and reduce future stress. However, there are encouraging signs of a move toward a more pro-environmental stand.

Available from:
Institute of Ethnology. Academia Sinica
Nankang, Taipei
Taiwan

Thailand

Thailand natural resources profile: Is the resource base for Thailand's development sustainable?

Country Environmental Profiles — USAID

Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Near East. Thailand
Jan 1987, xxv, 310 p.: ill., charts, maps, statistical tables, En

Although Thailand is experiencing rapid economic growth, the policies that have stimulated this growth have done so at the expense of the natural resource base. This document offers an exhaustive review of Thailand's natural resources and their management. Separate sections discuss in detail land, water, and forest resources; the conservation of nature (e.g., national parks and wildlife sanctuaries); mineral, fishery, and mangrove resources; air and noise quality management; water quality management; solid and toxic waste

management; and accident prevention and occupational safety and health. The study concludes that Thailand's development strategies need overhauling in a number of areas because they are leading to an unsustainable pace of natural resource consumption and destruction. Thailand's resource management and economic policies are examined and recommendations are made for the creation of Natural Resource Master Plans for critical areas such as land use; water resource development; forest, fisheries, and mineral resource management; and wildlife conservation. Includes comprehensive reference and statistical information, 154 tables, 81 figures, and illustrations.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-AAY-764

Thailand national report to the United Nations Conference on Environment and Development (UNCED)

UNCED National Reports

Government of Thailand, Bangkok, TH
1992, 151 p.: charts, statistical tables, En

In Thailand, economic growth and industrial development have been achieved at the expense of the country's natural resource base. At the national level, migration to the cities and growth in industrial activities, along with accompanying increases in energy consumption and transportation, have resulted in air and water pollution in Bangkok and other major cities. In rural areas, expansion of agricultural production has taken place through the clearing of vast areas of virgin forest, one of the country's most precious and vulnerable natural resources.

This has led to a self-perpetuating cycle of poverty and environmental degradation which brings no benefits to rural communities or the forest. This report begins with a discussion of Thailand's philosophy on sustainable development. Subsequent chapters describe the country's preparations for the U.N. Conference on the Environment and Development (UNCED), outlines the national environmental strategy, and describes actions that are being taken in four key areas: urban air quality and water quality; management of hazardous waste; and conservation of biodiversity. The next chapter articulates Thailand's response to global climate change, particularly its policies on energy use, forestry, and the use of ozone-depleting substances. A profile of the nongovernmental sector and its activities in environment is then presented, followed by a chapter on two key institutional resources the Chulabhorn Research Institute, and the Environmental Research and Training Center. A final chapter summarizes Thailand's positions on issues to be considered at UNCED. An annex profiles the country's geographic, demographic, and economic characteristics, the impacts of industrial development and energy consumption, forest resources, and biological diversity. Includes a 5-page bibliography.

Available from:
UNDP Resident Representative
G.P.O. Box 618
Bangkok 10501
Thailand
Phone: (66 2) 280 0550
Fax: (66 2) 280 0556
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-216

The following 11 documents are divided into three themes. Each theme has a synthesis paper and one or more research reports. The last document is a summary report.

Natural resources for a sustainable future: spreading the benefits — Synthesis Paper #1

Environmental Policy and Management Studies

Phantumvanit, Dhira; Panayotou, Theodore
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xx, 95p.: charts, statistical tables, En

Thailand, while experiencing remarkable success in development over the past 20 years, faces four critical problems which threaten the country's future advance: (1) the continuing depletion and degradation of its natural resources; (2) the persistence of poverty among 33% of the rural population and a growing rural-urban gap; (3) resource conflicts stemming from the growing demand for land, water, and forests by nonagricultural sectors and by a growing urban population; and (4) deteriorating environmental quality due to unregulated industrial and urban growth.

This report, a synthesis of three background studies, examines the sustainable use of natural resources in Thailand and ways to spread the associated benefits to all segments of the population. The analyses and policy recommendations focus on the country's resource conflicts and challenges, the demand for agricultural land and the resultant encroachment on forests, the vicious circle of poverty and deforestation, and need to manage the demand for and expand the supply of water resources. The background papers on which this synthesis is based are also available.

Available from:
Thailand Development Research Institute Foundation
Rajapark Building
163 Asoke, Sukhumvit Road
Bangkok 10110
Thailand
Phone: (66 2) 258 9012 7
Fax: (66 2) 258 9046
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-538

Land and forest: projecting demand and managing encroachment — Research Report #1

Environmental Policy and Management Studies

Panayotou, Theodore; Parasuk, Chartchai
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xii, 85p.: charts, statistical tables, En

This report assesses future demand for land and forest resources and ways to manage encroachment; it includes a historical analysis of land use patterns, agricultural land demand modeling, forecasting, and policy simulations, and a discussion on the interrelationship between land and forests.

Available from:
Thailand Development Research Institute Foundation
Rajapark Building
163 Asoke, Sukhumvit Road
Bangkok 10110
Thailand
Phone: (66 2) 258 9012 7
Fax: (66 2) 258 9046
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-539

Deforestation and poverty: can commercial and social forestry break the vicious circle? — Research Report #2

Environmental Policy and Management Studies

Tongpan, Sopin; Panayotou, Theodore; et al.
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xxii, 176p.: statistical tables, En

This report details the interrelationship between deforestation and poverty; issues addressed include the living conditions and incomes of farmers in forest reserves, and the potential benefits of commercial plantation forestry and of social forestry.

Available from:
Thailand Development Research Institute Foundation
Rajapark Building
163 Asoke, Sukhumvit Road
Bangkok 10110
Thailand
Phone: (66 2) 258 9012 7
Fax: (66 2) 258 9046
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-545

Water shortages: managing demand to expand supply — Research Report #3

Environmental Policy and Management Studies

Sethaputra, Sacha; Panayotou, Theodore; Wangwacharakul, Vute
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, vii, 97p.: charts, statistical tables, En

This report looks at water resources and covers such topics as water management in Bangkok and Pattaya, industrial demand for water, and water management principles and applications.

Available from:
Thailand Development Research Institute Foundation
Rajapark Building
163 Asoke, Sukhumvit Road
Bangkok 10110
Thailand
Phone: (66 2) 258 9012 7
Fax: (66 2) 258 9046
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-544

Mining, environment and sustainable land use: meeting the challenge — Synthesis Paper #2

Environmental Policy and Management Studies

Panayotou, Theodore; Leepowpanth, Quanchai; Intarapravich, Duangjai
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, v.p., En, Th

Despite its continuing importance to the economy, Thailand's mining industry has recently experienced a diminution in its traditionally prominent role. This report profiles the major changes that have caused the mining industry to decline, with particular attention to environmental factors. Land-use conflicts represent a key source of the industry's difficulties — 98% of pending mine applications are located in national forest reserves, even though deforestation, related natural disasters, and increasing environmental awareness have culminated in a nationwide ban on logging and the closure of forest reserves (40% of the country's area) to all extractive activities. In addition, mining generates both air and water pollution which may damage forests and affect human health. Under pressure from strong advocates, such as the Royal Forestry Department, environmental groups, the media, and the general public, the Department of Mineral Resources has resisted an expansion of mining concessions. The report concludes that the Thai mining industry has reached a critical juncture and has two alternatives. It can restructure itself into a small but efficient and environmentally sound industry, or it can continue its usual business practices at the expense of its long-term future.

Available from:
Thailand Development Research Institute Foundation
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Mineral resource development: making the best of a limited resource — Research Report #4

Environmental Policy and Management Studies

Intarapravich, Duangjai; Leepowpanth, Quanchai; et al.
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xviii, 190p.: charts, statistical tables, En

This report presents a broad overview of the Thai mining industry, including sections on its regulatory framework and current status, mining technology and mineral substitution, environmental impacts and land-use conflicts, and mineral consumption.

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Industrialization and environmental quality: paying the price — Synthesis Paper #3

Environmental Policy and Management

Phantumvanit, Dhira; Panayotou, Theodore
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xxii, 48p.: charts, statistical tables, En

Industrialization has produced major benefits for Thai society but, in doing so, has harmed the environment and threatened human health. This report, a synthesis of three studies, examines the environmental price of industrialization and the associated growth in urbanization and energy consumption. It also proposes policy measures and mechanisms to minimize the price and to pay it immediately, so that pollutants and unpaid social costs do not accumulate over the long term. Its analyses and recommendations are divided into three sections, focusing on: (1) dealing with industrial waste (including hazardous and biodegradable wastes and air pollution); (2) choosing the right energy mix (with information on transportation, the power sector, and greenhouse gas emissions); and (3) regulating land use and financing urban infrastructure (including environmental impact fees and transferable development rights). Also available are the three studies on which this synthesis is based.

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Order No.: PN-ABH-540

Greening of Thai industry: producing more and polluting less — Research Report #5

Environmental Policy and Management Studies

Kritiporn, Phanu; Panayotou, Theodore; Charnprateep, Krerkpong
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xxxi, 207p.: charts, statistical tables, En

This report examines the "greening" of Thai industry and ways to increase production at a lower cost to the environment; also covered are the geographical distribution of industry, industrial pollution and its control, and environmental policy.

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Also available from:
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Development Information Services Clearinghouse
Order No.: PN-ABH-542

Urbanization and environment: managing the conflict — Research Report #6

Environmental Policy and Management Studies

Mekvichai, Banasopit; Foster, David; et al.
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xviii, 124p.: charts, maps, statistical tables, En

This report looks at ways to manage the tension between urbanization and the environment, and includes discussions on the expansion of the Bangkok metropolitan region, the increase of small industries in this area, and the conversion of agricultural land to urban uses.

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Also available from:
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Order No.: PN-ABH-543

Energy and environment: choosing the right mix — Research Report #7

Environmental Policy and Management Studies

Chongpeerapien, Tienchai; Sungsuwan, Somthawin; et al.
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xiv, 289p.: charts, statistical tables, En

This report focuses on ways to balance energy needs and environmental protection; it includes discussion of air pollution, acid rain, and greenhouse gas emissions.

Available from:
Thailand Development Research Institute Foundation
Rajapark Building
163 Asoke, Sukhumvit Road
Bangkok 10110
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Phone: (66 2) 258 9012 7
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Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABH-541

Integrated information for natural resources management — Supplementary Report

Environmental Policy and Management Studies

Hastings, Paul; Boonraksa, Chatchawan
Harvard University. Harvard Institute for International Development
Thailand Development Research Institute
U.S. Agency for International Development. Bureau for Asia and Private Enterprise. Thailand
1990, xii, 144 p. + appendix: charts, maps, statistical tables, En

Modern information technologies have quickly become a crucial component of natural resource management. Due to the multi-dimensional nature of environmental issues, recognition and evaluation of changes in the earth's ecology or resource base are often impossible without timely and accurate information and data. This report describes the role of information technologies, particularly a spatial geographic information system (GIS), in the management of Thailand's natural resources. An overview of "spatial" (i.e., cartographic) information and its uses is followed by an extensive section on the development of the GIS concept and its wide-ranging practical applications. In its simplest form, a GIS is a collection of computer-based procedures used to store, manipulate, and analyze spatial geographic data. The five essential components of a GIS include computer hardware, software, digital geographic data, operating procedures, and skilled personnel. The report stresses the considerable effort needed to implement a GIS, and covers in detail the six major implementing steps. Several examples are provided of GIS applications in the Thailand Development Research Institute. Although the private sector is interested, the purchase of a GIS has thus far been limited to the Royal Thai Government. Currently, there are almost 25 organizations using a GIS in Thailand, compared to none three years ago. The report concludes that institutional and structural barriers pose the main obstacles to expanding the use of a GIS and other related technologies in Thailand.

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Tibet

Towards sustainable mountain development: a Tibetan perspective on Tibet

State-of-the-Environment Reports

Central Tibetan Administration, Dharamsala, IN
Sep 1991, 38 p. + attachments: maps, statistical tables, En

Tibet possesses great stretches of wilderness which face little or no human intervention. Scattered across the country's plateaus and forests, these pristine areas are estimated at over 1 million sq km. Factors of geography and climate make many of them unique habitats for biodiversity. It is estimated that Tibet possesses 5,760 species of higher plants, 118 of mammals, 473 of birds, 4 reptiles, 44 of amphibians, and 61 of fish. This report assesses Tibet's natural endowment in terms of forests, croplands, grasslands, minerals, and biological diversity. The report then traces patterns of economic growth and summarizes demographic indicators. A major theme of the report is the impact of Chinese occupation on Tibet's development. Since 1950, more than a million Tibetans have been killed by hunger, executions, and war and, in contrast to China's recent economic progress, Tibet remains one of the least developed countries in the world. Overall gross output is less than 1% of that for Jiangsu, the richest Chinese province. Although the Chinese government has allocated significant subsidies for Tibetans, the report suggests that the primary objective of these subsidies is to construct the

infrastructure for extracting natural resources needed by Chinese enterprises. The report concludes with recommendations for improved environmental policies and programs in Tibet.

Available from:
Central Tibetan Administration of His Holiness the Dalai Lama, Department of Information and International Relations, Environment Desk, National Report Project
Gangchen Kyishong
Dharamsala
H.P. 176 215
India

Turkey

Turkey: national report to UNCED (United Nations Conference on Environment and Development) 1992

UNCED National Reports

Turkey. Ministry of Environment, Ankara, TR
Aug 1991, 194 p., En

Turkey, in line with many other developing nations, has not only embraced the concept of sustainable development, but believes that global cooperation is equally important in producing economic growth while safeguarding the environment. At the same time, Turkey is hesitant to cede too much decisionmaking power to an international authority and feels that developed nations must bear the principal burden in ensuring the planet's health. This report to the U.N. Conference on Environment and Development outlines the country's approaches to and expectations for international environmental cooperation. Topics addressed include, inter alia, industrial development, urbanization, climate change, waste management, natural resource endowment and degradation, preservation of cultural and historical sites, housing, ozone depletion, protection of regional seas, biological diversity, and technology transfer. A final section, on strategies for combatting environmental problems, discusses environmental policies, management, and legislation; environment education; public participation; women and the environment; and the role of nongovernmental organizations.

Available from:
UNDP Resident Representative
P.K. 407
06043 Ulus
Ankara
Turkey
Phone: (90-4) 1265485-9
Fax: (90-4) 1261372
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-275

Environmental profile of Turkey

State-of-the-Environment Reports

Environmental Problems Foundation of Turkey, Ankara, TK
Nov 1989, 328 p.: charts, maps, statistical tables, En

In Turkey, rapid urbanization and industrialization have contributed to significant environmental problems since the 1950's. This detailed environmental profile of the country is divided into eight sections covering air, water, soil, flora and fauna, energy, solid wastes, pesticides, and noise pollution; regional and local-level data are provided wherever possible, and information is also presented on concerned agencies and organizations, research, and legislation. The chapter on air describes the level and causes of pollution by region. Information on water pollution covers specific rivers, lakes, and marine and coastal areas, while soil problems are classified within regions by general problems, erosion, and urbanization and industry. The chapter on flora and fauna covers forests, pastures, wetlands, endemic plants and animals, and national parks and reserves. Turkey's energy situation and resources are then assessed, including coal, oil, electricity, wood, dung, plant wastes, geothermal energy, biogas, solar energy, and wind energy. The next chapter classifies solid wastes by source, volume, and contents and identifies specific solid waste problems by region. The pesticides section describes their effects on

humans, water, soil, beneficial insects, foodstuffs, farm animals, and birds. The final chapter assesses the extent of noise pollution caused by industry, construction, aircraft, railroads, and highways.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-099

Vietnam

Vietnam: national conservation strategy

National Conservation Strategies — IUCN and others

World Wildlife Fund — India. Environmental Services Group, New Delhi, IN
Jun 1985, 71 p.: ill., charts, maps, En

The military tactic of environmental destruction (ecocide) was used by U.S. forces in Vietnam on the largest scale in the history of warfare. The country still bears severe scars from the bulldozing, bombing, and chemical defoliation of its rural areas. Forests have never recovered, fisheries remain depleted in variety and productivity, wildlife has not regenerated, cropland productivity is below former values, and high incidence of toxin-related diseases and various kinds of cancer are noted in the human population. In the post-war decade, the nation's population doubled to over 60 million, compounding the strain on these damaged natural resources.

If current trends in environmental degradation continue unchecked, it is predicted that the country's natural forests will be denuded soon after the year 2000. Deforestation will lead to loss of water penetration in watershed regions, which in turn will result in a high incidence of floods and drought, reduced agricultural production, localized water shortages, heavy siltation, more frequent typhoons, and a fuel shortage. The national conservation strategy outlined herein aims to prevent this alarming scenario. Primary goals include a zero population growth rate, massive reforestation, and establishment of a national environmental coordination board to formulate and enforce new environmental legislation and regulations. Specific recommendations are made for actions to conserve forests, midlands, croplands, freshwater, estuarines and coasts, deep sea resources, and genetic diversity; other recommendations address hunting regulations, control of trade, sustainable resource utilization, and management of resources of international concern.

Available from:
IUCN — The World Conservation Union
Conservation Strategies Service

Vietnam: tropical forestry action programme — forestry sector review

Tropical Forestry Action Programme — FAO and others

Vietnam. Ministry of Forestry, Hanoi, VN
Dec 1991, 3 v.: ill., maps, statistical tables, En

This tropical forestry action plan (TFAP) for Vietnam comes at a time when the country's economy is undergoing a profound transformation. Long-term leases of forest land to families, encouragement of cooperatives and non-state units, and termination of subsidies to state enterprises represent drastic departures from past policies. As illustrated by recent legislation (the new Land Law and Forest Law), Vietnam's leaders recognize the importance of the forestry sector to the nation's well-being. This TFAP provides a detailed examination of the forestry sector and factors in its utilization. It covers land use, forest conservation and protection, consumption and production of forest products (with special attention to fuelwood), and institutions and personnel. The following key issues are identified: declines in forest coverage and biodiversity; deteriorating living conditions for rural people; lack of institutional efficiency; lack of operational efficiency in the forest industry; watershed degradation; and inadequate wood supply. The TFAP identifies four action programs, which are in fact already ongoing for several years: institutional strengthening; forest ecosystem conservation; forest industries development; and land use and community forestry. Profiles of 26 planned projects in these four areas are provided as

well. Annexes include a 9-page bibliography, the new Land and Forest Laws, and further information on non-wood forest products, forest management activities, and protected areas.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-226

United Nations Conference on Environment and Development (UNCED) national report: Vietnam

UNCED National Reports

Government of Vietnam
[1990], [80] p.: statistical tables, En

Vietnam's natural resources have been severely affected by a 30-year war and overexploitation. During the period 1965 – 1975, hundreds of cities and townships were reduced to ruins and tens of thousands of hectares of rice fields and gardens, and millions of hectares of tropical and submerged forests were annihilated by explosives, napalm, and toxic chemicals. This report describes Vietnam's natural resource base, summarizes major problems, evaluates environmental activities in recent years, and describes the main content of the national plan on environment and sustainable development. The most urgent environmental problems are identified as the following: (1) deforestation, which has cut the total forest area in half during the past 50 years and stripped some regions bare; (2) continued rapid soil degradation, decreased cultivation area per capita, and wasteful land use practices; (3) depletion of marine and especially marine bio-resources in the shallow waters and coastal areas, mainly from oil pollution; (4) irrational utilization of mineral, water, bio-resources, and ecosystems; (5) water, air, and soil pollution in many places, sometimes to a critical extent; (6) war consequences, especially from toxic chemicals; and (7) rapid population growth and the unequal and irrational distribution of production forces among regions.

Available from:
UNDP Resident Representative for Vietnam
c/o UNDP
GPO Box 618
Bangkok
Thailand
Phone: (84 42) 56188
Fax: (84 42) 59267 (via PTT)

Vietnam: national plan for environment and sustainable development, 1991 – 2000 — framework for action

Other Environmental Studies

Vietnam. State Committee for Sciences, VN
U.N. Development Programme, Geneva, CH
Swedish International Development Authority, Stockholm, SE
U.N. Environment Programme, Nairobi, KE
International Union for Conservation of Nature and Natural Resources, Gland, CH
Dec 1990, 132 p., En

Due to years of war and increasing population pressures, Vietnam's natural resources are in a degraded state. Continuation of current trends will lead to the total elimination of the country's forests by the early part of the next century. This, in turn, will intensify a variety of problems related to watershed degradation, including soil erosion, siltation, seasonal water shortages, flooding, and other natural disasters. It will also destroy the woodfuel supply and contribute further, along with overhunting, to the already rapid decline in wildlife. Additional problems include overfishing in inshore marine areas as well as the contamination of some freshwater fisheries by agrochemicals and the by-products of chemicals sprayed during the Vietnam War.

Although government planners have a high level of awareness of environmental problems, improvement has been constrained by the nation's lack of: environmental and natural resources planning, integration between conservation and development, an environmental ministry or coordinating body, environmental legislation, public awareness of environmental issues, experienced personnel, and investment, in addition to population growth and a breakdown of cultural taboos that in previous generations inhibited resource use. This paper summarizes major

environmental issues; describes the institutional, legislative, and policy framework; and describes planned action programs (focusing on urban development, population control, watershed management, pollution and waste management, coastal zone planning, biodiversity, wetlands, and protected areas) and program support activities (education, training, extension, and international cooperation).

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-225

Yemen

Environmental profile: Dhamar Governorate, Yemen Arab Republic

Environmental Profiles — Netherlands

Beck, Robert, ed.; Thalen, Dik, C P.; et al.
DHV Consultants, Amersfoort, NL
Yemen. Environmental Protection Council, Sana'a, YE
Yemen. Ministry of Housing and Municipalities. Department of Environmental Health, Sana'a, YE
Netherlands. Ministry of Foreign Affairs. Directorate General for International Cooperation, The Hague, NL
May 1990, 48 p.: ill., charts, maps, statistical tables, En

Yemen's Dhamar Governorate contains two very different landscapes, with the eastern part covered by plains and the western part extremely mountainous. Wadis flowing through the western zone have created a spectacular, albeit inaccessible landscape which in some areas can only be traveled by donkey. By the year 2000, the Governorate will contain some 1.1 million people (vs. 700,000 in 1986). Qat and coffee are produced on the highest mountains under rainfed conditions, while in the plains well irrigation has increased rapidly, resulting in declining water tables; control over the use of groundwater is urgently needed. Hill-slope terracing has been practiced in Dhamar since antiquity. However, terrace maintenance is labor-intensive, and, due to the increasing mobility of the rural labor force, terrace maintenance and losses of valuable agricultural land are at stake. This report assesses land and water use in Dhamar Governorate with respect to agriculture, livestock production, and use of rangelands and wood. Dhamar's natural resources are profiled in terms of their sustainability, use or misuse, degradation, and desertification. Attention is given to resource management practices and to incentives and disincentives for different groups of resource users. The report then identifies major problems of nature conservation, environmental health, and urban development. The report concludes with recommendations for sustainable use and management of the natural resources.

Available from:
Netherlands Ministry of Foreign Affairs
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-118

Environmental profile: Al Bayda Governorate, Yemen Arab Republic

Environmental Profiles — Netherlands

Beck, Robert, ed.; Thalen, Dik C.P.; et al.
DHV Consultants, Amersfoort, NL
Yemen. Environmental Protection Council, Sana'a, YE
Yemen. Ministry of Housing and Municipalities. Department of Environmental Health, Sana'a, YE
Netherlands. Ministry of Foreign Affairs. Directorate General for International Cooperation, The Hague, NL
Feb 1990, 48 p.: ill., charts, maps, statistical tables, En

Yemen's Al Bayda Governorate is a land-locked highland plateau region that is much less densely populated than the country as a whole. The area's mountains are dissected by wadis, mostly dry streambeds through which large floods are sometimes drained. Before reaching the Eastern Sand Desert, these wadis have created large fertile plains (where the oldest Yemeni civilizations were located). Today, the region's water resources are increasingly strained. Recent development of well irrigation has been generally carried out privately, with no control by the national or local governments. As a result, groundwater tables are quickly dropping. In addition, well irrigation has

led to an enormous increase in cultivated area, regional shortages of firewood and forage, and a breakdown of the traditional social organization which more strictly controlled these resources. Wildlife existed in the Governorate much longer than it did elsewhere in Yemen, and Al Bayda has a high potential for game reserves, but the population as yet does not support conservation measures.

This report, based on satellite imagery and interviews with inhabitants and officials, assesses the state of Al Bayda's natural resources in terms of sustainability, use or misuse, degradation, and desertification. Topics include agriculture, livestock production, land and water rights, flora and fauna, urban areas, and environmental health. Attention is also given to resource management practices and to incentives and disincentives for various groups of resource users. The report concludes with a series of recommendations for sustainable natural resource use and management.

Available from:
Netherlands Ministry of Foreign Affairs
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Order No.: WRI-117

Environmental profile: Tihama, Yemen Arab Republic

Environmental Profiles — Netherlands

Beck, Robert, ed
DHV Consultants, Amersfoort, NL
Yemen. Environment Protection Council, Sana'a, YE
Yemen. Ministry of Housing and Municipalities. Department of Environmental Health, Sana's, YE
Netherlands. Ministry of Foreign Affairs. Directorate General for International Cooperation, The Hague, NL
Jan 1990, 48 p.: ill., charts, maps, statistical tables, En

Yemen's Tihama region is a coastal plain bordered on the west by the Red Sea and on the east by the foothills of the Mountain Belt. From these mountains, large wadis drain excess water into the Tihama, thus creating an enormous ground water reservoir and the possibility for extensive wadi and ground water irrigated agriculture. Since medieval times, the Tihama has been developed for agriculture on a large scale and for centuries there has been intensive use of forest resources and wildlife. This report profiles the Tihama's environmental status and describes motives, patterns, and trends in natural resource management. Land use practices are examined with respect to agriculture, livestock production, rangelands, and forests, and the status of the region's natural resources is assessed with the help of satellite imagery and field verification. Attention is given to the incentives and disincentives for different groups of resource users. The problems of nature conservation, environmental health, and urban development are then discussed in view of the scale and pace of the Tihama's development. The profile concludes with a series of recommendations for promoting sustainable use and management of the natural resources. Includes references.

Available from:
Netherlands Ministry of Foreign Affairs
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-110

Biological diversity assessment of the Republic of Yemen

Tropical Forest & Biological Diversity Assessments — USAID

Varisco, Daniel Martin; Ross, James Perran; Milroy, Anthony
International Council for Bird Preservation
U.S. Agency for International Development. Bureau for Europe and Near East. Yemen
Dec 1990, ix, 140 p.: charts, maps, statistical tables, En

Since Yemen is located at the conjunction of African, Asian, and Palearctic ecological zones, the diversity of plants and animals there is greater than in any other part of the Arabian peninsula. The purpose of this report is to describe the state of Yemen's natural flora and fauna, identify unique and endangered species and habitats, and develop a strategy for conservation of the country's biological resources within its overall development policy. Because the report was prepared before the reunification of South and

North Yemen, it covers only what was the Yemen Arab Republic (North Yemen), although much of the information and some major recommendations may be equally appropriate to the whole country. The main conclusion is that biological diversity in Yemen is being drastically reduced due to unchecked cutting of trees and forests for firewood, major declines in water tables, and massive erosion of the highland terrace ecosystems. Infrastructure development, especially rural roads and coastal construction, is also degrading the environment. The following specific topics are covered in the report: biological resources; environmental policy, institutions, and legislation; environmental education and awareness; the impact of development on biological resources; conservation priorities for biodiversity; and recommendations. Annexes include a 10-page bibliography, descriptions of flora and fauna, and information on Islamic principles of conservation, medicinal plants, terrace stabilization, Sana'a University's Faculty of Science, protected areas, and legislation.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABL-151

Asia and Pacific Region

State of the environment in Asia and the Pacific — 1990

State-of-the-Environment Reports

U.N. Economic and Social Commission for Asia and the Pacific, Bangkok, TH
Jan 1992, xiv, 352 p.: ill., charts, maps, statistical tables, En

Spanning a vast range of ecosystems, the region bounded by Iran, Mongolia, the Cook Islands, and New Zealand — known collectively as Asia and the Pacific — contains 23% of the world's total land area, yet is home to 55% (2.9 billion) of its people. Population growth (averaging 1.8% annually), urbanization, and economic development are taking inevitable tolls on the environment. This three-part report on the state of the environment in the Asian and Pacific region reviews environmental dynamics and the status of national and regional responses to environmental change. Some findings include: (1) desertification is an expanding problem, especially in western South Asia; (2) regional deforestation is estimated at up to 5 million hectares annually; (3) the region contains over two-thirds of the world's coral reefs and over one-third of its mangrove areas; (4) though still based predominantly on agriculture and natural resource exploitation, the region's economy is growing at an annual rate of 6.8% (versus the global average of 3%), fueled by increases in diversified, value-added products; and (5) nonetheless, the region's total exports, imports, and GDP, at 17%, 21%, and 24%, of the world total, respectively, do not begin to correspond to its population level.

Part 1 of the report describes current environmental conditions, covering land, inland water, and marine resources, as well as urban and rural human settlements. Part 2 characterizes human perceptions of environmental conditions and describes national and regional responses to environmental problems in four areas: institutions and legislation; education, communication, and environmental awareness; environmental technology; and environmental planning. The final part focuses on the context within which environmental policy decisions must be made. This includes: trends and projections in the areas of demography, economics, resource utilization and degradation, and pollution; the regional implications of climate change and ozone depletion; and policy challenges, such as institutional strengthening, planning, and national-, regional-, and global-level policy coordination.

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United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
Publications Department
United Nations Building
Rajdamnern Avenue
10200 Bangkok
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Fax: +66 2 282 9602
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-276

Economic policies for sustainable development

Other Environmental Studies

Hansen, Stein; Ludwig, Harvey F.; Votaw, Gregory B.
Asian Development Bank, Manila, PH
Oct 1990, xix, 253 p.: charts, statistical tables, En

This report synthesizes the findings of case studies of economic-environmental interrelationships in seven member countries of the Asian Development Bank — Indonesia, Korea, Malaysia, Nepal, Pakistan, the Philippines, and Sri Lanka. Part I discusses overarching concepts, such as the characteristics and constraints of economic development, and various definitions of sustainable development. Part II summarizes the recent economic performance of the study countries, citing key economic, social, demographic, and environmental indicators, while Part III focuses on recommended actions, including proposals for investment projects, sector programs, and training and technical assistance. The fourth and longest part consists of extracts from the case studies. The Indonesia report focuses on development in the Brantas River Basin; the Korean analysis highlights changing patterns of energy use, emphasizing conservation and air quality; Malaysia gives special attention to the needs of urban areas (e.g., waste management); Nepal covers all aspects of recent economic development, stressing population policy and the management of micro-ecological zones; Pakistan also stresses population issues, and the need for more productive utilization of the labor force; the Philippines report reviews recent economic performance and structural adjustment policies; and Sri Lanka's report includes a scenario for increasing industrial employment. Appendices contain additional statistical and background information.

Available from:
Asian Development Bank
Office of the Environment
P.O. Box 789
1099 Manila
Philippines
Phone: +63 2 834 4444 and +63 2 711 3851
Fax: +63 2 741 7961
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-322

Black Sea Region

State of the marine environment in the Black Sea region

Other Environmental Studies

Balkas, T.; Dechev, G.; et al.
U.N. Environment Programme. Oceans and Coastal Areas Programme Activity Centre, Nairobi, KE
The Food and Agriculture Organization of the United Nations, Rome, IT
U.N. Educational, Scientific and Cultural Organization. Intergovernmental Oceanographic Commission
1990, iii, 41 p.: maps, statistical tables, En

The Black Sea has been exploited and degraded in many ways, such as unregulated and unplanned withdrawal of freshwater for irrigation purposes, hydro and thermal power generation, the use of coastal areas for permanent human settlements, and the discharge of untreated industrial and agricultural wastes into estuaries. This assessment of the status of the Black Sea begins by describing the level and distribution of marine contaminants in water, sediment, and biota. The report then examines human activities affecting the sea, including the disposal of urban and industrial wastewaters, marine transport of oil and other hazardous substances, development of coastal areas, manipulation of hydrological cycles, and the exploitation of living and non-living resources. A final section analyzes the biological effects of these activities in terms of eutrophication, long-term biological impacts, public health effects, and radioactive fallout. The potential for recovery and rehabilitation of damaged habitats and species is

also estimated. The report states that manipulation of the hydrological cycles of northern rivers, and the accompanying increase in pollution, have caused the disappearance of many economically important species of fish from the Black Sea. Furthermore, increasing nutrient input through rivers and the altered stratification of the coastal water masses have led to prolonged periods of eutrophication, and hypoxia has become a frequent phenomenon in certain areas. A 5-page list of references is included.

Available from:
Oceans and Coastal Areas Programme Activity Centre. U.N. Environment Programme
P.O. Box 30552
Nairobi
Kenya

Cook Islands

Basic data for: Cook Islands

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 68 p , En

Threats to biodiversity on the Cook Islands are identified in this report as they relate to population growth, economic development, land-use practices, alien (non-indigenous) species, accidental disasters, pollution, and commercial exploitation. Although the archipelago's population is declining slightly due to emigration to New Zealand, population pressure is still causing severe soil destruction, deforestation, and overgrazing, especially on atolls, the lowlands of high islands, and the capital island of Rarotonga. About 60% of the nation's flora were introduced after European discovery, and standardization of garden and agricultural crops is probably resulting in the loss of several endemic cultivars. Isolated populations of rare species are subject to extirpation through tropical cyclones and frequent droughts and floods. Localized environmental degradation throughout the region has resulted from indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish. The report also provides background information on the Cook Islands' basic geography (including a list of available maps and surveys), political system, biodiversity protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-078

Fiji

Fiji: an overview of its protected areas system

Biological Diversity Profiles — WCMC

Paine, James R.
World Conservation Monitoring Centre, Cambridge, UK
Jul 1989, iii, 35 p., En

Fiji comprises over 300 islands, but is dominated by the rugged, volcanic islands of Viti Levu and Vanau Levu. Mountainous interiors have largely restricted human populations to coastal plains, where there has been a long history of settlement and development. Consequently, native vegetation, such as beach forest, has been largely destroyed, while a history of burning has produced areas of grassland in drier zones on the two main islands. Nevertheless, the larger islands still support substantial forests, and there are many endemic plants and animals. However, these are increasingly threatened by unsound logging and other forestry practices, and there are risks of extinctions. This report describes Fiji's geographical features, describes its natural resource base, and identifies trends in resource use. The report then assesses the country's protected areas system, covering policy and legislation; administration; international conventions and programs; and the existing network of nature reserves, wildlife sanctuaries, national parks, forest parks, and other amenity areas. Recommendations are presented for improving the protected areas system, which now covers only 0.36% of the total land area. This is considered inadequate, since several ecosystems are not represented and existing protected areas frequently have insufficient legislative, financial, or administrative support. Among other problems there is a need to resolve conflicts with traditional owners who hold the great bulk of land. Includes references and species lists.

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World Conservation Monitoring Centre
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United Nations Conference on Environment and Development: Republic of Fiji national report

UNCED National Reports

Chape, Stuart; Watling, Dick
Republic of Fiji, [Suva,] FJ
[1992], 135 p., En

In Fiji, many environmental problems are linked to the development of the island's tourist industry. These problems include a loss of traditional ecological values, environmental damage from resort construction, disruption of coastal processes, increased water demand from freshwater lenses, and improper waste disposal. This report summarizes Fiji's development trends and analyzes their environmental impacts; assesses the natural resource base; identifies major natural resource use and environmental issues; and describes public and private sector responses to these issues. Major problems include the following: lack of sufficient resources and staff for environmental activities; low community environmental awareness; urbanization, with subsequent waste disposal problems and pressure on peri-urban marginal agricultural land; the potential effects of global warming; soil erosion caused by increased planting on steep slopes and logging; land conversion to non-agricultural uses; lack of long-term land tenure; significant use of pesticides with little surveillance; poor sewage disposal from septic tanks; problems with solid waste disposal and littering in urban areas; lack of recycling; moderate deforestation due to large commercial agriculture/rural development projects; potential hazards from gold, sand, and coral mining; production of toxic chemicals and other wastes by the sugar industry, and spread of settlements, urbanization, and related infrastructure.

Available from:
UNDP Resident Representative
Private Mail Bag
Suva
Fiji
Phone: (679) 301529
Fax: (679) 301718

Kiribati

Applied atoll research for development: proceedings of the Kiribati applied atoll research for development consultation, Tarawa, 27 February to 2 March 1989

Other Environmental Studies

Thaman, R.R., ed.
Foundation for the Peoples of the South Pacific, Inc.
Kiribati. Ministry for Natural Resource Development
U.S. Agency for International Development. Bureau for Asia and Near East. South Pacific Regional Development Office
1989, xxxvi, 253 p., En

The natural resources of the atoll nation of Kiribati are both extremely limited, in the case of terrestrial, lagoonal, and near-shore resources, and extremely vast and difficult to utilize, in the case of its marine resources. Kiribati's pressing resource management problems were addressed at a 1988 conference of international experts. The major objective of the meeting was to plan an Atoll Development Research Centre which would coordinate applied research programs in Kiribati and other atoll nations.

In this conference report, background information on Kiribati's natural resources and socioeconomic characteristics is followed by summaries of individual and working group papers on the topics of: (1) non-living resources; (2) agricultural, urban, and terrestrial resources; (3) living marine resources; and (4) conservation and environmental management. Priority research topics for non-living resources were identified as mineral resources (particularly sand, gravel, and cement-making resources for construction purposes); water quality and management; and renewable energy resources (i.e., solar energy, fuelwood, etc.). Terrestrial resources research should focus on the promotion of important indigenous and exotic plants, agricultural systems analysis and improvement, and agricultural and resource-use strategies for densely populated areas. Marine resources research should focus on overfishing, aquaculture, protein sources, and water pollution. Efforts should also be devoted to establishing

conservation strategies and environmental impact assessment legislation. Potential involvement in these areas by participating institutions is briefly noted.

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U.S. Agency for International Development
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Order No.: PN-ABC-494

Niue

Basic data for: Niue

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 51 p., En

Although Niue's population is declining due to emigration to New Zealand, environmental degradation on the island has created steady pressure to clear new land. This report examines the effects of land use practices and other human activities on Niue's biological diversity. Major threats are identified as: (1) severe soil destruction and overgrazing of land, which, when abandoned, develops into a fern-scrub disclimax community with very poor recovery potential; (2) the introduction of nonindigenous species, which comprise 72% of the nation's vascular plant species; (3) standardization of garden and agricultural crops, which is probably resulting in the loss of several endemic cultivars; and (4) indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish, causing localized environmental degradation throughout the region. In addition to human activities, natural disasters such as tropical cyclones and frequent droughts and floods have threatened isolated populations of rare species. The report also provides background information on Niue's basic geography (including a list of available maps and surveys), political system, biodiversity protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

Available from:
U.S. Agency for International Development
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Order No.: PN-ABD-079

Niue country report for the United Nations Conference on Environment and Development (UNCED), Brazil, 1 – 12 June 1992

UNCED National Reports

Government of Niue
30 Jul 1991, 80 p. + 10 annexes: charts, statistical tables, En

The South Pacific island of Niue has no realistic prospect of economic self-sufficiency, according to this report. High transport costs make imports expensive and inhibit exports and industrial development. Moreover, migration to New Zealand has resulted in population decline and persistent shortages of skilled personnel. This report examines these and other trends in Niue, analyzes their impact on the natural environment, and describes pertinent environmental legislation, international conventions and agreements, and foreign aid requirements. Major environmental problems are identified as the following. (1) Inadequate waste and sewage disposal and heavy herbicide use (each household uses an estimated 5 – 10 liters of paraquat per month), which are contaminating the freshwater lens with coliform bacteria and chemicals (the cost of cleaning up already contaminated bore holes is prohibitive). (2) Forest resources are declining, primarily due to agricultural land clearing, cyclone Ofa, and logging. (3) High background radiation has been detected, as well as several instances of unusually high radioactivity in soil, water samples, and crops; the possibility of uranium mining is also of concern. (4) Wildlife, though still plentiful, is declining (especially numbers and species of birds), perhaps due to pesticides and introduced species. There is also concern about illegal fishing, especially the use of drift nets. Siltation and wharf construction have damaged reefs. Recommendations for environmental management are presented in conclusion.

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Apia
Samoa
Phone: (685) 23670-2
Fax: (685) 23555

Papua New Guinea

Papua New Guinea — the forestry sector: a tropical forestry action plan review

Tropical Forestry Action Programme — FAO and others

World Bank, Washington, DC, US
1 Feb 1990, xiii, 198 p. + attachment: statistical tables, En

The Tropical Forestry Action Plan (TFAP) is an international coordinating mechanism for halting the destruction of tropical forests and promoting their sustainable use. This report provides an assessment of the status of Papua New Guinea's forest sector and a proposed action program for consideration by government and TFAP member agencies. The report concentrates on six problem areas: (1) lack of adequate information on the growth, yield, and extent of forest resources; (2) lack of an effective decisionmaking framework to link the central and provincial governments and landholders; (3) poor control over logging and marketing activities and an inadequate resource policy base; (4) inability of forest processing industries to compete in the world market; (5) land use and tenure issues that constrain conservation; and (6) insufficient institutional structure and management capacity to design and implement forest policy. The report states that Papua New Guinea's deforestation problems are in some cases less severe than in more heavily populated countries. However, the economic consequences may be more significant than for other countries, given the high ratio of forest cover per capita, and the extent to which Papua New Guinea may have to depend on the resource for sustainable economic activity in the future. The report includes 13 project proposals and a 14-page bibliography.

Available from:
World Bank
Publications Department

United Nations Conference on Environment and Development: Papua New Guinea national report

UNCED National Reports

Unisearch PNG Pty. Ltd., PG
University of Papua New Guinea, PG
Government of Papua New Guinea, PG
[1992], i, 178 p.: charts, maps, statistical tables, En

In Papua New Guinea, the forces of industrialization and urbanization have not yet made a significant impact. The country is still rich in resources, with immense hydropower potential, vast forests, extensive fisheries, great mineral wealth with rich deposits of copper and gold, and significant reserves of oil in the Gulf of Papua and the Southern Highlands. This report presents analyses of Papua New Guinea's development trends and environmental impacts related to demography, economic growth, minerals and petroleum, forestry, agriculture, fisheries and marine resources, wildlife hunting and trade, energy, transport infrastructure, and other issues. The report then provides an account of current legislation and government policy, while the final section identifies priority issues, internal constraints to the sustainable use of resources, and the need for international action. Mining and petroleum ventures in Papua New Guinea have led to land use conflicts and pollution of rivers and the sea by mine wastes. In one case a gold mine was closed due to public protest over the discharge of tailings which destroyed all aquatic life in the lower Jaba Valley. The national government is mindful of these problems, and has taken initiatives to increase benefits to landowners and control resource development. Includes 8-page bibliography.

Available from:
UNDP Resident Representative
P.O. Box 1041
Port Moresby
Papua New Guinea
Phone: (673) 214960
Fax: (673) 211 224
Also available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: WRI-269

Tokelau

Tokelau country report for the United Nations Conference on Environment and Development

UNCED National Reports

Humphries, Stella; Collins, David; James, David
Tokelau. Department of Agriculture and Fisheries. Office of Tokelau Affairs, TK
1991, 57 p., En

Due to the threat of global warming, the South Pacific island of Tokelau may cease to exist. With peak elevation at only 5 meters above sea level, the island's atolls are threatened by freshwater salinization, increased storms, coastal erosion, decline in fishing potential, ecological disturbance to reefs, droughts, and sea over-wash. In addition, the influence of western and cash values has undermined traditional practices which helped to maintain the fragile environment in the past. This report describes the island's development trends and environmental issues, as well as efforts in sustainable development. The following are listed as constraints to sustainable development: (1) a complicated administrative system; (2) insufficient information about natural resources, including lagoons and reefs, fisheries, the environmental impact of projects, climate change impact, appropriate energy sources, and waste disposal; (3) technical problems related to global warming, including accurate local prediction, developing environmentally sound protective measures against sea level rise, finding options for food production in increasingly saline conditions, and understanding groundwater dynamics and salinization; (4) insufficient budget allocation for environmental planning and projects; and (5) lack of environmental knowledge among local authorities and community leaders. Other problems include: lack of facilities for toxic waste disposal; removal of beach sand and coral (living and dead) for seawalls and buildings; and health risks from modern diets, reduced exercise, alcohol, and smoking.

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Private Mail Bag
Apia
Samoa
Phone: (685) 236 70/2
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Tonga

Basic data for: Tonga

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 60 p., En

Virtually all primary forest on the flat islands of Tonga has been converted for agriculture, partly as a result of the nation's land tenure system, by which each 16-year-old native male is alloted a plot of land. This report examines the effects of land use practices and other human activities on Tonga's biological diversity. Major threats are identified as: (1) severe soil destruction, fires, and overgrazing, which contribute to the spread of anthropogenic grasslands; (2) sand and coral mining for construction; (3) standardization of garden and agricultural crops, which is probably resulting in the loss of several endemic cultivars; (4) indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish; and (5) logging on the volcanic islands. In addition to human activities, natural disasters such as tropical cyclones and frequent droughts and floods have threatened isolated populations of rare species. Earthquakes, landslides, and vulcanism are also common on some islands. The report also provides background information on Tonga's basic

geography (including a list of available maps and surveys), political system, biodiversity protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

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Order No.: PN-ABD-080

Environmental management plan for the Kingdom of Tonga

State-of-the-Environment Reports

U.N. Economic and Social Commission for Asia and the Pacific, Bangkok, TH
Tonga. Ministry of Lands, Survey and Natural Resources, TO
Jul 1990, xviii, 197 p.: ill., charts, maps, statistical tables, En

Tonga, a South Pacific archipelago, has an abundance of endemic species, coral reefs, fisheries, and mangroves. The traditional Tongan way of life was closely attuned to nature and the environment. But with more modern lifestyles, attitudes, and technologies, plus improved inter-island communications and increased contacts with the outside world, has come more environmental vulnerability. Good catches of fish are more and more miles out to sea, many beaches in populated areas are scarred by sand quarrying, and the once abundant giant clams are now a vanishing species. Coral reefs are often poisoned and destroyed in the relentless quest for fish. Tonga's natural ecosystem is also threatened by development activities, particularly the promotion of tourism. This report assesses the state of the environment in Tonga, identifies environmental participants and their resource needs, and recommends a plan of action to deal with existing and projected environmental problems. Topics include: demographic and economic trends related to the land and marine resource base and human resources; geomorphology, mineral resources, and coastal areas; fisheries resources; agricultural resources; forests; energy resources; water; environmental health and sanitation; industrial pollution; tourism; wildlife conservation and management; and environmental institutions and legislation. A final section presents a follow-up strategy for the environmental management plan. Includes an 11-page list of references.

Available from:
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
Publications Department
United Nations Building
Rajdamnern Avenue
10200 Bangkok
Thailand
Phone: +66 2 282 9161
Fax: +66 2 282 9602
Also available from:
U.S. Agency for International Development
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Order No.: WRI-164

Tuvalu

Basic data for: Tuvalu

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 45 p., En

Extremely high population growth in Tuvalu has led to the conversion of virtually all arable land on the nation's eight inhabited islands. This report examines the effects of land use practices and other human activities on Tuvalu's biological diversity. Major threats are identified as: (1) overgrazing; (2) standardization of garden and agricultural crops; and (3) indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish. In addition to human activities, natural disasters such as tropical cyclones and frequent droughts and floods have threatened isolated populations of rare species. The report also provides background information on Tuvalu's basic geography (including a list of available maps and surveys), political system, biodiversity

protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

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U.S. Agency for International Development
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Order No.: PN-ABD-081

Vanuatu

Basic data for: Vanuatu

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 68 p., En

Population growth in Vanuatu is very high, and agricultural pressures, including swidden agriculture, on the dry lowlands are extreme. This report examines the effects of land use practices and other human activities on Vanuatu's biological diversity. Major threats are identified as: (1) severe soil destruction, deforestation, overgrazing, and mining; (2) standardization of garden and agricultural crops, which is probably resulting in the loss of several endemic cultivars; (3) major timber harvesting concessions; and (4) indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish, which has caused localized environmental degradation throughout the region. In addition to human activities, natural disasters such as tropical cyclones and frequent droughts and floods have threatened isolated populations of rare species. Earthquakes, landslides, and vulcanism are also common on some islands. The report also provides background information on Vanuatu's basic geography (including a list of available maps and surveys), political system, biodiversity protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-082

Vanuatu national report for UNCED: a report prepared for the United Nations Conference on Environment and Development (UNCED) to be held in Brazil, June 1992

UNCED National Reports

Ministry of Home Affairs. Department of Physical Planning and Environment. Environment Section, Vila, VU
Jul 1991, 70 p., En

According to this report, Vanuatu may have the opportunity to take preventative rather than remedial action in ensuring that the development process does not cause serious environmental degradation. Population density is low (12 people per square km) but rising. Village water supplies are fairly pure, although increasing growth in Vanuatu's two urban areas — Port Vila and Luganville — is causing fecal contamination of ground water. Tourism and health could be adversely affected, and shellfish supplies contaminated. The report cites development trends in Vanuatu and analyzes their environmental consequences. It then summarizes public and private sector responses to environmental issues and provides recommendations to ensure sustainable resource use. Major constraints are identified as the following: a decline in land availability; a breakdown of traditional regulations for resource use (especially regarding trochus shells, coconut crabs, mangroves, forests, and fallow periods) due to monetization of the economy and increased population; an insufficient protected areas system and ineffective legislation; a lack of information on biological resources; shortages of staff and recurrent funding for environmental activities; the short-term approach of aid projects; long-term leases of customary land; trends away from subsistence towards commercial exploitation, which encourages use of marginal land; uncontrolled development for tourism; and weakness in enforcement and monitoring.

Available from:
UNDP Resident Representative
Private Mail Bag
Suva
Fiji
Phone: (679) 31 25 00
Fax: (679) 30 17 18
Also available from:
Environment Section
Department of Physical Planning and Environment
Ministry of Home Affairs
Republic of Vanuatu

Western Samoa

Basic data for: Western Samoa

Tropical Forest & Biological Diversity Assessments — USAID

Pearsall, Sam
Nature Conservancy
U.S. Agency for International Development. Bureau for Science and Technology. Office of Program
Dec 1988, 75 p. + attachment, En

Western Samoan land tenure is rapidly transforming into a de facto system by which ownership is established by converting land to agriculture. As a result, lowlands and the steep slopes of the interior mountains are being converted and virtually all arable land is in cultivation or plantation. This report examines the effects of land use practices and other human activities on Western Samoa's biological diversity. Major threats are identified as: (1) timber harvesting; (2) standardization of garden and agricultural crops, which is probably resulting in the loss of several endemic cultivars; and (3) indiscriminant use of pesticides and disposal of pollutants and illegal poisoning of fish, which has caused localized environmental degradation throughout the region. In addition to human activities, natural disasters such as tropical cyclones and moderate floods have threatened isolated populations of rare species. The report also provides background information on Western Samoa's basic geography (including a list of available maps and surveys), political system, biodiversity protection laws, land tenure system, managed area systems, and governmental and nongovernmental conservation agencies. Major taxa and ecosystems are also listed.

Available from:
U.S. Agency for International Development
Development Information Services Clearinghouse
Order No.: PN-ABD-083

National report for United Nations Conference on Environment and Development, Western Samoa

UNCED National Reports

Collins, David; Humphries, Stella; James, David
U.N. Development Programme. South Pacific Regional Environment Programme
Government of Western Samoa. Department of Lands and Environment. Division of Environment and Conservation, WS
Aug 1991, xv, 64 p.: charts, statistical tables, En

In Western Samoa, major development projects are proceeding without regard for environmental impact, and serious environmental degradation is occurring with little planning for rehabilitation. This report describes the country's development trends and governmental and nongovernmental responses to environmental issues. Major environmental problems are identified as the following. Water supplies in many areas are insufficient to meet local domestic demand. Soil degradation is adversely affecting forestry and agriculture. Energy supply shortfalls are placing pressure on forests and increasing demand for imported fuels. Fishery resources are threatened by overfishing and loss of nursery areas through siltation from agriculture and forestry, destructive fishing techniques, and eutrophication. Reefs and lagoons are under threat from dynamiting, fish poisons, sedimentation, waste dumping in mangroves, industrial and domestic effluent, and the crown of thorns starfish. The National Parks and Reserves system suffers from weak enforcement and insufficient funding, resulting in a dramatic increase in deforestation. Population growth is low but is seen as increasing demands on resources and adding to waste disposal problems. Global warming puts Samoa at increased risk from

flooding and natural hazards. Additional concerns include nuclear testing on Mururoa atoll and transboundary movement of hazardous waste. The report concludes with recommendations.

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UNDP Resident Representative
Private Mail Bag
Apia
Samoa
Phone: (685) 23670-2
Fax: (685) 23555
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IV. Program Descriptions

Virtually all governments in developing countries have undertaken the preparation of environment and natural resource studies, often in cooperation with local universities, nongovernmental organizations (NGOs), and other private sector organizations. In many cases, financial and technical support are provided by donor organizations, both multilateral and bilateral, because they want to promote the development of better information for planning and because they require this information to assess needs and priorities.

This section describes briefly the major programs that fund the preparation of national environmental studies. These descriptions include the purposes and objectives, the approaches and methods used, the topics discussed, the status of current assessment efforts, and addresses to contact for additional information.

Not all donors have their own assessment or strategy program. Many sponsor the preparation of country assessments, profiles, studies, and strategies as joint projects with other donors and NGOs. Canada, Norway, Sweden, and the United Kingdom, for example, have provided support to The World Conservation Union (IUCN) to undertake the development of national conservation strategies, and many donors, besides the World Bank, assist countries in the preparation of national environmental action plans.

1. Environmental Strategies — Canada (CIDA)

The Canadian International Development Agency (CIDA) underwrites a number of different assessments and strategy efforts in developing countries. These include environmental strategies, which are based on the needs and goals of the country and the requirements of CIDA in providing assistance. CIDA's strategies are internal documents designed to indicate the best ways for Canada to incorporate environmental concerns in its bilateral programs.

An environmental strategy can consist of five stages: (1) inventory and assessment of natural resources, (2) the background or overview of the environmental situation in a country, (3) a strategy or plan for addressing environmental problems, (4) programming initiatives, and (5) implementation procedures. The goal of these studies is to determine how to address environmental problems in the country in the context of supporting economic development.

Six strategies have been completed and released to the public. They cover Cameroon, the Caribbean Region, Peru, Bangladesh, Indonesia, and Pakistan. Ten more strategies have been finished, but not released. They include West Africa, the Southern Africa Development Coordination Conference (SADCC), Central America, Jamaica,

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South America, India, Malaysia, Philippines, Thailand, and Vietnam. Another nine strategies are in preparation (on Egypt, Côte d'Ivoire, Lesotho, Zambia, Ecuador, Indochina, East Asia, South Asia, and Asia).

Additional environmental assessments financed by CIDA are national conservation strategies, the Tropical Forestry Action Programme, and other environmental profiles.

For more information, contact the Special Advisor, Environment, Professional Services Branch, CIDA, 200 Promenade du Portage, Hull, Quebec, Canada K1A 0G4; Phone: (1 819) 997 3318; Fax: (1 819) 997 4177.

2. Environmental Profiles — Denmark (DANIDA)

Denmark's Department of International Development Cooperation (DANIDA) has supported the development of environmental profiles in a number of countries. The aim of these profiles is to strengthen environmental considerations in the development assistance that Denmark furnishes.

The profiles include an analysis and description of the most important environmental issues and an overview of the monitoring, research, and administrative capacity of the country to address environmental problems. Studies on Kenya, Sudan, Tanzania, Bangladesh, and India were published in 1989.

DANIDA also has prepared a series of strategies that examine environmental issues in specific sectors. These are:

- Environmental Issues in Water Resources Management
- Environmental Issues in Dryland Agriculture
- Environmental Issues in Fisheries Development
- Environmental Issues in Agriculture in Humid Areas
- Environmental Issues in Industrial and Urban Development
- Environmental Issues in Human Health.

For more information, contact the DANIDA Information Office, 2, Asiatisk Plads, DK-1448 Copenhagen K, Denmark; Phone: (45 33) 92 09 45; Fax: (45 31) 54 05 33; Telex: 31292 ETR DK.

3. Environmental Profiles — Netherlands Ministry of Foreign Affairs

The Netherlands is supporting a number of environmental profiles for certain regions in countries that receive Dutch development assistance. The environmental profile is a framework for assessing the need for projects and for revealing the possible negative effects that projects may have on the environment.

Each profile has five parts: (1) a description of the physical environment; (2) a description of the major threats to the environment and long-term land use; (3) a description of current policies that affect the environment, including institutional arrangements; (4) a description of the activities that are

being performed already to conserve the environment and to improve the effectiveness of environmental management; and (5) policy recommendations designed to prevent environmental degradation.

The preparation of profiles involves local research organizations and includes workshops and seminars that can lead to policy recommendations and proposals for assistance. Ten profiles have been completed. They describe Botswana, Mali-Sud, Senegal, Sudan (Kassala), Zambia (Western Province), Indonesia (West Java), Pakistan (Baluchistan), and Yemen (Al Bayda, Tihama, and Dhamar). The three profiles on Yemen are being translated into Arabic. Four more profiles are in preparation. They will report on Burkina Faso (in print as this Directory is published), Egypt (Fayoum and Helwan), and Pakistan, Northwest Frontier Province (NWFP).

For more information on environmental profiles, contact the Ministry of Foreign Affairs, Directorate General for International Cooperation, Technical Advisory Unit, Bezuidenhoudseweg 67, Postbus 20061, 2500 EB Den Haag, The Netherlands; Phone: (31 70) 348 64 42; Fax: (31 70) 348 43 03; Telex 31326.

4. Environmental Synopses — United Kingdom (ODA), European Economic Community, and Australia (AIDAB)

The United Kingdom's Overseas Development Agency (ODA), the European Economic Community (EC), and the Australian International Development Assistance Bureau (AIDAB) are supporting the preparation of a number of environmental synopses of developing countries. The synopses have been produced as desk studies, drawing on published sources of information. Each has undergone an in-country review by a team of specialists drawn from governmental or academic institutions, or the NGO community. The aim is to provide summaries (of 25 – 30 pages) of relevant published information on the state of the country's environment, to highlight the major environmental issues, and to identify information gaps.

The new environmental synopses, for which there is a common format and content, are intended as intermediate publications that bridge the gap between shorter environmental briefing documents and much longer detailed environmental studies.

The synopses address a comprehensive list of environmental topics:

- key environmental issues that are having, or might have, a major impact on the country
- the institutional context — such as environmental institutions and organizations, environmental policies and legislation, and training institutes and their training capacities — in which environmental issues are handled
- the state of the environment, which includes an inventory of the natural resources and a discussion of the issues in industry, energy, demography, and urbanization
- an analysis of the pollution and degradation processes affecting the

environment; this section considers water, land, and air pollution; water shortages; soil erosion and degradation; deforestation; biodiversity; the marine environment and coastal zones; the urban environment; energy issues; and industry.

The environmental synopses also contain a selected bibliography of source material and relevant maps.

Five synopses have been completed by IIED (on Ghana, Uganda, Zimbabwe, Pakistan, and Sri Lanka), a synopsis of Indonesia is being prepared. The other 41 synopses are being assembled by IUCN; it is expected that they will be published by December 1992.

For more information on the environmental synopses, contact IIED, 3 Endsleigh Street, London WC1H ODD, United Kingdom; Phone: (44 71) 388 2117; Fax: (44 71) 388 2826; Telex: 261681 EASCAN G, or IUCN, Rue Mauverney 28, CH-1196 Gland, Switzerland; Phone: (41 22) 999 00 01; Fax: (41 22) 999 00 02; Telex: 419 624 IUCN CH.

5. Country Environmental Profiles — United States Agency for International Development (USAID)

The goal of the country environmental profiles is to assess a country's natural resource potential in relation to its economic growth and development. The environmental profile program helps to establish an information base for planning andpolicy development.

A typical environmental profile (1) documents the condition of a country's environment and the human activities and other socioeconomic factors that influence natural resource use and management; (2) describes the existing legal and institutional framework for managing natural resources and the environment; (3) identifies and analyzes government policies, development strategies, program priorities, and investment needs related to natural resource use and environmental management; (4) identifies areas of congruity and conflict between economic development and the sustained use of natural resources; and (5) establishes an analytical framework for resolving conflicts in the existing use and planned allocation of natural resources. Most profiles conclude with recommendations for changes in environmental and development policies and actions to be undertaken to promote sustainable development.

A profile begins with a dialogue between host-country leaders and development agency personnel that sets the scope and specific objectives of the assessment. Next, data are collected and analyzed, then reviewed and discussed. Finally, recommendations for policies and development programs that respond to economic needs and environmental issues are formulated. National experts and institutions are essential partners in data collection and analysis. Key decisionmakers from a variety of sectors come together to share perspectives on development planning, to broaden their knowledge of environmental issues affecting the sustainability of development programs, and to reach

consensus on an "action agenda" to deal with the priority issues.

USAID supports the preparation of country environmental profiles in cooperation with USAID country missions and local, national, and regional organizations.

Profiles have been produced for approximately 70 developing countries, although only 28 are listed in this Directory. Because most of the profiles were done in the early 1980s, they are not not included here. However, they can be found in the 1993 Directory Database.

For more information, contact the Office of Environment and Natural Resources, Bureau for Research and Development, U.S. Agency for International Development, Department of State, Washington, DC 20523, USA.

6. Tropical Forest and Biological Diversity Assessments — United States Agency for International Development (USAID)

As a result of amendments to the U.S. Government's Foreign Assistance Act, USAID missions are required to prepare background assessments of tropical forest and biological diversity conservation needs for each country that receives financial assistance from the United States. These studies are used to update a mission's Country Program Strategy Plan (CPSP), upon which the U.S. bilateral assistance program is based. In some cases, natural resource management studies (NRMSs) were used to fulfill this purpose.

These assessments contain information on: (1) laws and institutions affecting biological resources, including agencies of the host government, NGOs, and international institutions; (2) the status and protection of endangered species; (3) conservation efforts outside protected areas, including managed natural ecosystems, impacts of development projects, and conservation facilities, such as seed banks, zoos, and botanical gardens; (4) conservation of economically important species; (5) major issues in tropical forest and biological diversity conservation; and (6) recommendations and proposed activities. Most of the assessments completed so far propose conservation programs that address a limited number of major geographically focused problems; support multidonor, private voluntary organization (PVO), local NGO, or Peace Corps involvement; and develop a strong link between effective conservation and economic development.

Thirty-five assessments are included in the Directory. Four more assessments are being prepared.

Further information may be obtained from the U.S. Agency for International Development, Department of State, Washington, DC 20523, USA, or the Biodiversity Support Program, World Wildlife Fund U.S., 1250 24th Street, N.W., Suite 500, Washington, DC 20037, USA; Phone: (1 202) 293 4800; Fax: (1 202) 293 9211.

7. National Plans to Combat Desertification — Comité Permanent Inter-États de Lutte Contre la Sécheresse dans le Sahel (CILSS)

The CILSS (the French acronym for the Permanent Interstate Committee for Drought Control in the Sahel) was formed in 1973 to coordinate relief and recovery efforts following the droughts of the preceding years. Its charter also suggested that it could help to coordinate future drought-control efforts. The nine present members are Burkina Faso, Cape Verde, Chad, The Gambia, Guinea-Bissau, Mali, Mauritania, Niger, and Senegal. Allied with the CILSS is the Club du Sahel, which includes the CILSS states and more than 25 major multilateral and bilateral donors.

In 1984, the long-term strategy for CILSS and the Club was revised. Its main elements now include efforts to:

- encourage private initiative and limit the extent of government intervention in development
- emphasize the need for policy reform and the establishment of sound economic foundations as preconditions for development
- link the food security objective to the overall development of the agricultural sector
- recognize that environmental stability is based on appropriate integrated planning in agriculture, forestry, and livestock management.

With donor support, two specialized institutions were set up within CILSS. These are AGRHYMET (Sahelian Regional Center for Agrometeorology and Applied Hydrology) in Niamey, Niger and the Sahel Institute in Bamako, Mali.

The documents cited in this Directory are the national antidesertification plans for the six largest CILSS countries. They are all written in French. The preparation of these plans was supported in large part by the Federal Republic of Germany.

Additional information may be obtained by contacting the Secrétariat Executif, CILSS, B.P. 7049, Ouagadougou, Burkina Faso; Phone: (226) 30 67 58; Fax: (226) 30 72 47; Telex: 52 63 COMITER Ouaga.

8. National Environmental Action Plans — World Bank and Others

As part of its expanded environmental program, the World Bank has introduced two important new programs: Environmental Issues Papers (EIP) and National Environmental Action Plans (NEAPs).

The EIPs, which have been prepared for all borrowing countries, are intended to heighten awareness of environmental issues, delineate responsibility for addressing them in country operations, and achieve a consistent approach to their solution. These papers are to be used as internal discussion documents for project, sector, and macroeconomic work. Although they are clearly starting points and vary with the specific situation of a country, they have been used to identify a wide range of environmental problems and common

underlying themes, such as perverse economic incentives, insecure property rights, and the lack of institutional capacity to tackle major problems.

Conceptually, the EIPs are the first step in developing a coherent environmental strategy for a country. They are often followed by a progressively more detailed study (the NEAP) and culminate in the implementation of environmental projects and policies.

The NEAPs conducted so far have been prepared by governments, and many have received technical and/or financial assistance from the World Bank, various international organizations, NGOs, and other donors. A NEAP can cover a wide spectrum of activities and provide a framework for integrating environmental considerations into a nation's overall economic and social development programs. The NEAPs also make recommendations for specific actions, outlining the environmental policies, investment strategies, legislation, and institutional arrangements required.

NEAPs have been completed for Ghana, Lesotho, Madagascar, Mauritius, Rwanda, Seychelles, and Sri Lanka. Approximately 40 more NEAPs are in progress.

Further information on NEAPs may be obtained from the Environment Department, World Bank, Room S5029, 1818 H Street, N.W., Washington, DC 20433, USA; Phone: (1 202) 473 3202; Fax: (1 202) 477 0565.

9. National Conservation Strategies — The World Conservation Union (IUCN) and Others

National conservation strategies (NCSs) were proposed by the World Conservation Strategy in 1980 as a means for countries to take a comprehensive, cross-sectoral approach to conservation and resource management. By identifying the country's most urgent environmental needs, these strategies assist decisionmakers in determining priorities, allocating limited resources, and building the institutional capacity to handle complex environmental issues.

The purposes of NCSs are to focus attention on conservation priorities, to stimulate appropriate action, to raise public consciousness, and to overcome apathy or resistance to taking the actions needed. National and subnational strategies are intended to provide a means of concentrating and coordinating the efforts of government agencies, together with those of nongovernmental conservation organizations.

Although the planning and execution of national conservation strategies are primarily the responsibility of governments, nongovernmental organizations are involved to ensure that all of the resources available to conservation are deployed coherently.

A national conservation strategy can help a country to pursue sustainable development. It involves considering the current and future needs and aspirations of the people, the institutional capacities

of the country, the prevailing technical conditions, and the status of its natural resources. It also takes into account existing national development plans and associated aid programs. Perhaps most important, however, the NCS can be thought of as a process that builds consensus on the optimal, long-term use of a nation's natural resources.

In general, an NCS seeks to answer four basic questions: (1) What is the stock of resources available to the country on which its development must rely? (2) What is the condition of these resources and what trends can be identified? (3) What pressures on the resources cause them to be used unsustainably? and (4) What actions would eliminate the obstacles that have been identified and bring resource use onto a sustainable footing?

On the basis of review, analysis, and assignment of priorities, an NCS seeks to define the best possible allocation of human and financial resources to achieve the goals of sustainable development — development with conservation. An NCS brings together clear statements of the activities required to achieve conservation, estimates of the resources needed to implement those activities, and implementation schedules. It also should include a proposal for monitoring the implementation of the strategy and for updating it regularly. The purpose of the NCS process is not merely to prepare a strategy document, but also to ensure the resources and commitment to implement the strategy.

Although the concept of national conservation strategies was started by the IUCN, the organization is not involved in all NCSs. The following countries have undertaken NCSs without IUCN involvement: Nigeria, Zimbabwe, South Africa, St. Lucia, Costa Rica, Nicaragua, Bhutan, China, India, Malaysia, Myanmar, Philippines, Singapore, Sri Lanka, Taiwan, and Vanuatu.

NCSs or NCS-related activities are under way in more than 65 countries. In several other countries — Zambia, Guatemala, Panama, and Malaysia — studies are being undertaken in specific regions of the country. In Malaysia, for example, conservation strategies have been or are being prepared in 11 states, 3 of which are included in this Directory.

For additional information, contact IUCN — The World Conservation Union, Rue Mauverney 28, CH-1196 Gland, Switzerland; Phone: (41 22) 999 00 01; Fax: (41 22) 999 00 02; Telex: 419624 IUCN CH.

10. Conservation of Forest Ecosystem Studies — The World Conservation Union (IUCN)

The conservation of forest ecosystem studies are products of a joint IUCN/EC project called the Conservation and Rational Use of Forest Ecosystems in Central Africa. The aims of the project, managed by IUCN's Forest Conservation Programme (FCP), are to: (1) expand the system of protected areas, (2) set up a network of pilot projects demonstrating different approaches to forest management, (3) coordinate forest conservation and research throughout the region, (4) reinforce forestry and wildlife

departments, and (5) improve education programs in each country.

The studies examine the conservation, ecology, jurisdictional status, and exploitation of tropical forests. They include lists of the sites that are important to conserve and recommend a series of actions that will guarantee conservation while assuring the long-term exploitation of forest resources.

Seven studies are included in the Directory: on Cameroon, Congo, Gabon, Equatorial Guinea, São Tomé and Príncipe, Zaire, and the Central African Region. Two further studies (on Madagascar — available but not included here — and l'Ile de la Réunion — out of print) have been completed under different funding arrangements.

The IUCN FCP focuses on the conservation of species and ecological processes and promotes forest uses that are compatible with the conservation of biological diversity. Data on plant and animal species and on forest sites that should be conserved are gathered by the World Conservation Monitoring Centre.

The FCP deals with global and local policy issues as well as field projects, tackling the problems of managing forests, whether they be in tropical or temperate regions. Field projects put the philosophy of IUCN's World Conservation Strategy into action by reconciling conservation requirements with local needs. Special emphasis is given to promoting the compatible uses of buffer zones around national parks and reserves.

For more information, contact the IUCN Forest Conservation Programme, Rue Mauverney 28, CH-1196 Gland, Switzerland; Phone: (41 22) 999 00 01; Fax: (41 22) 999 00 02; Telex 419624 IUCN CH.

11. Biological Diversity Profiles — World Conservation Monitoring Centre (WCMC)

The Habitats Data Unit of the World Conservation Monitoring Centre (WCMC) has prepared biodiversity profiles for a number of countries throughout the developing world.

The profiles, although short and concise, are comprehensive in their coverage of biological conservation activities in the country. They serve as easily accessible reference summaries and include recommendations for the future conservation of species and their habitats.

The biological diversity profiles provide basic background on species diversity, major ecosystems and habitat types, protected area systems, and legislative and administrative support; they identify the status of sites of critical importance for biological diversity and ecosystem conservation; and they provide a concise report on the values, threats, and conservation needs of these sites for decisionmakers and development agencies.

To date, 25 biodiversity profiles have been completed, all of which are included in the Directory.

For further information, contact the Habitats Data Unit, World Conservation Monitoring Centre, 219c Huntingdon Road, Cambridge CB3 ODL, United Kingdom; Phone: (44 223) 27 7314; Fax: (44 223) 27 7136; Telex: 817036SCMUG

12. Tropical Forestry Action Programme (TFAP) — Food and Agriculture Organization (FAO) of the United Nations and Others

The Tropical Forestry Action Programme (TFAP) is a global strategy developed by the Food and Agriculture Organization (FAO) of the United Nations, the United Nations Development Programme (UNDP), the World Bank, and the World Resources Institute (WRI), with the cooperation of some 40 donor countries, international organizations, and NGOs. The TFAPs goal is to promote national and international partnerships to manage, protect, and restore forest resources and lands in developing countries. A national TFAP exercise is expected to result in informed decisions and action programs with explicit national targets on: (1) policies and practices to halt deforestation, (2) the contribution of forest resources and lands to sustainable economic development through afforestation and forest management, (3) the conservation of forest resources and lands, and (4) the integration of forest-related issues in the needs and priorities of other sectors. The exercises are initiated and carried out by countries. The country's capacity to carry out the operation is crucial; therefore, country capacity projects are initiated as early as possible in order to strengthen national self-reliance. The undertaking starts with a planning phase (consisting of a comprehensive multisectoral review of forest-related issues) that leads to the formulation of a long-term forest policy and strategy as well as a midterm national forestry action plan. An implementation phase follows, in which policy measures, programs, and projects are implemented. Round tables involving governmental bodies, NGOs, donor countries and agencies, international organizations, and multilateral financial institutions are held at different stages of planning and implementation.

The Directory identifies the forestry sector reviews that are in preparation or have been completed and the final TFAP document (national forestry action plan). In many cases, both are combined in the same final document. Approximately 81 developing countries are planning or implementing a TFAP.

More information on the status of the TFAP is available from the TFAP Coordinating Unit, Forestry Department, Food and Agriculture Organization (FAO) of the United Nations, Via delle Terme di Caracalla, 00100 Rome, Italy; Phone: (39 6) 5797 4779; Fax: (39 6) 5797 5137; Telex: 610181 FAO I.

The master plans for forestry development (MPFDs) are linked to the TFAP effort, but are carried out with the support of the Asian Development Bank (ADB) for its member countries (Nepal, Bhutan, Philippines, China, Laos, Thailand, Sri Lanka, and Pakistan). The MPFDs are schemes for long-term development of the forestry sector,

including a five-year plan and annual programs and projects for implementation. The goals are to increase institutional capacity in these countries, coordinate donor assistance, and increase funding for forestry. Most MPFDs require a national assessment of forest resources and forest policies. The Finnish International Development Agency (FINNIDA) has financed a number of country assessments and studies.

MPFDs have been prepared for Myanmar, Nepal, Philippines, and Sri Lanka, and are in preparation for Bangladesh, Bhutan, Pakistan, and Thailand.

More information on the status of MPFDs is available from the Asian Development Bank, P.O. Box 789, Manila, Philippines 2800. For information on how to receive documents, contact The Secretary, Office of the Secretary, Asian Development Bank, Kimimasa Tarumizu, 2330 Roxas Boulevard, P.O. Box 789, 1300 METRO, Manila, Philippines; Phone: (63 2) 711 3851; Fax: (63 2) 741 7960; Telex: 23103 ADB PHI.

13. State-of-the-Environment Reports

Several countries have begun developing state-of-the-environment reports (SOEs). Most of them are being prepared by governments and NGOs; in a few cases, the report is a joint product of government and the private sector.

The principal purposes of an SOE report are: (1) to present information to the public on the conditions and trends of the environment; (2) to identify and analyze causes, linkages, and constraints; and (3) to indicate emerging issues and problems. In some countries (e.g., Venezuela, India, Malaysia, and Singapore), SOE reports have been updated periodically. The Mexican NGO, Fundación Mexicana para la Educación Ambiental (formerly known as Fundación Universo Veintiuno A.C.), prepared a series of nine environmental assessments, each covering a different topic (water resources, atmospheric contamination, industrial waste, wildlife and habitat, etc.), six of which are included in this Directory.

The United Nations Environment Programme (UNEP) supports the development of state-of-the-environment reports in several countries. The objective is to help developing countries improve their knowledge of their environment and thus be able to formulate more environmentally sound national strategies. UNEP provides consultants on a short-term basis and helps to prepare and publish the final report.

The Organization of American States (OAS) and the Japanese Overseas Economic Cooperation Fund (OECF) are developing new country environmental studies programs that, to date, have been incorporated in SOE reports.

The OAS recently financed an environmental assessment and action plan for Uruguay, the first in a new series of studies. The OAS would like to

fund more of these studies, but the initiative must be taken by the country itself. So far, only Suriname has submitted a proposal for funding.

The Japanese Overseas Economic Cooperation Fund (OECF) now sponsors the preparation of environmental profiles for Asian countries. The purpose of these profiles is to compile environment-related information about the borrower's country in order to be able to appraise proposed development projects efficiently and appropriately. The environmental issues covered in the profiles include pollution, the natural environment, and the human and social environment. So far, two profiles have been completed and are included in this Directory (on India and Indonesia). Five more profiles are in preparation (on China, Malaysia, Pakistan, Philippines, and Thailand). All of these profiles will be available in English and Japanese.

For more information on OECF environmental profiles, contact The Overseas Economic Cooperation Fund, Technical Appraisal Department, Takebashi Godo Building, 4-1 Ohtemachi 1-Chome, Chiyoda-ku, Tokyo 100, Japan.

Further information on reports supported by the UNEP project can be obtained from the United Nations Environment Programme, P.O. Box 30552, Nairobi, Kenya; Phone: (254 2) 230 800; Fax: (254 2) 520 711.

14. UNCED National Reports — United Nations Conference on Environment and Development

United Nations member countries were asked by the UNCED Secretariat to prepare reports on their environment and development situation as part of the national preparations for the United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, in June 1992.

To assist countries, the secretariat produced a series of guidelines that proposed that each report address the following topics: development trends and environmental impacts and responses to environment and development issues such as principles and goals, policies, legislation, institutions, programs and projects, and international cooperation. Guidelines also were written on procedures for preparing the reports, and countries were requested to anticipate the results of the conference. Many countries consulted local, regional, and international NGOs, women's groups, and industry in the preparation of their national reports.

The reports identify how national economic and other activities can stay within the constraints imposed by the need to conserve natural resources. Some consider issues of equity, justice, and fairness. These studies are intended to help ensure that development policies will bequeath to the next generation a natural resource inheritance either the same as, or better than the present one.

It is hoped that these reports will form the foundation for drawing up future

national sustainable development strategies (NSDSs) that promote public participation in decisionmaking. The UNCED Secretariat, together with the United Nations Development Programme (UNDP), is planning a "follow-up unit" to help support this endeavor.

The secretariat is in the process of preparing 5 to 7-page content reviews or summaries of each national report. These summaries will be published in three volumes entitled "Nations of the Earth Reports."

Included in the 1993 Directory are 66 national reports that were made available for abstracting. A list of the developing countries and regions for which UNCED national reports exist, but were not included in this Directory because copies were not available for abstracting at the time of publication, follows. (Please note that more countries may have completed their reports in the meantime.)

Africa: Algeria, Angola, Botswana, Cameroon, Congo, Equatorial Guinea, Guinea, Guinea-Bissau, Seychelles, Sierra Leone, Sudan, Zaire, and Zimbabwe
Central America: El Salvador and Guatemala
Caribbean: Eastern Caribbean Region (includes Antigua and Barbuda, British Virgin Islands, Dominica, Grenada, Montserrat, St. Christopher and Nevis, St. Lucia, and St. Vincent and the Grenadines)
South America: Chile, Colombia, and Uruguay
Asia: Bahrain, Indonesia, Democratic People's Republic of Korea, Mongolia, Nepal, Qatar, Saudi Arabia, Syria, Yemen, and the Asia and Pacific Region
Oceania: Marshall Islands, Solomon Islands, and Tonga.

For more information on the UNCED National Reports, contact Lars Hyttinen, UNCED Secretariat, 160 Route de Florissant, P.O. Box 80, CH 1231 Conches, Switzerland; Phone: (41 22) 789 1676; Fax: (41 22) 789 3536.

Generally, copies of the national reports can be obtained from the United Nations Development Programme (UNDP) Resident Representative of each country. For more information, contact the United Nations Development Programme (UNDP), Public Affairs, 1 United Nations Plaza, New York, NY 10017, USA; Phone: (1 212) 906 5328; Fax: (1 212) 906 5364.

15. Environmental Policy and Management Studies

This program category represents a new and rapidly growing field as countries are beginning to understand the necessity of developing cross-sectoral environmental policies and economic and sectoral policies that support reductions in wastes and the sustained use of resources.

The sponsors, subjects, and coverage of the studies vary greatly. Some are preliminary reports of a country's environmental policies, legislation, and institutions. Others are comprehensive studies of specific environmental policies and management techniques.

For example, the Thailand Development and Research Institute and the Harvard Institute for International Development, with funding from USAID, researched the implications of development on the environment in Thailand. The results cover three themes in 11 reports: natural resources for the future (sustainability, land, forestry, poverty, water resources); mineral resources development and its environmental implications (mining, sustainable land use, mineral development); and the industrialization of Thailand and the impact on its environment (industrialization, pollution, urbanization, energy).

Included in the Directory are 27 environmental policy and management reports covering 14 countries. More of these studies are being prepared by NGOs, governmental agencies, research institutions, and donor organizations.

Additional information on these studies may be obtained by contacting the institutions directly.

16. Other Environmental Studies

A number of "other" environment and natural resource studies have been prepared, some with donor support. They cover environment and development studies, natural resource sector studies (forestry, biological diversity, agriculture, coastal resources, urban pollution, etc.), and ecological assessments and resource inventories.

Two of the USAID country profiles prepared by the Office of Foreign Disaster Assistance (OFDA) are in this category. The OFDA profiles were a separate category in the 1990 Directory, but because most of these profiles were published in the early 1980s, they are not included in the 1993 Directory. The two profiles, for Mozambique and Angola, are included because very little has been written about the environmental situation in these countries.

Also cited here are three independent NGO reports prepared for UNCED in collaboration with IIED on Zimbabwe, Argentina, and Nigeria.

Forty "other" reports are listed in the Directory. Some countries have been assessed more than others. For example, there are six studies on Indonesia under this category covering forestry, biological diversity, coastal resources, and the ecology of two main islands. Additional information on these studies may be obtained by contacting the institutions directly.

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VI. Selected Global Environment and Development Studies

To acquire national-level information that is comparable across borders, it is sometimes easier to go directly to a regional or global source than to search individual country reports. The 1993 Directory lists several global environment and development reports such as the World Resources Report, the World Development Report, the Global Biodiversity Strategy, and State of the World. Most of these reports contain up-to-date analyses of environment and development issues. They also contain sets of indicators and data tables that can be used directly or help the user to locate more detailed information. Some, such as the World Resources Report and the World Development Report, provide statistical tables and time series on a diskette.

Dates in brackets { } at the end of entries represent the time span during which the report has been a part of an annual or biennial series.

To order any of these reports, contact the sponsoring organization or the publisher directly.

Selected Global Environment and Development Studies

Lester R. Brown et al, *State of the World 1992* (W. W. Norton, New York, 1992). {Series 1984 – 1992}

Food and Agriculture Organization (FAO) of the United Nations, *State of Food and Agriculture* (FAO, Rome, 1990). {Series 1977 – 1990}

IUCN — The World Conservation Union, United Nations Environment Programme, and World Wide Fund for Nature, *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, Gland, Switzerland, 1991).

United Nations, Department of International Economic and Social Affairs (DIESA), *Prospects of World Urbanization 1990* (UN, New York, 1991). {Series 1984 – 1991}

United Nations Children's Fund (UNICEF), *The State of the World's Children 1992* (Oxford University Press, New York, 1992). {Series 1984 – 1992}

United Nations Development Programme (UNDP), *Human Development Report 1992* (Oxford University Press, New York, 1992). {Series 1990 – 1992}

United Nations Educational, Scientific, and Cultural Organization (UNESCO), *Sustainable Development and Environmental Management of Small Islands* (UNESCO, Paris, 1990).

United Nations Environment Programme (UNEP), *Environmental Data Report* (Basil Blackwell, Oxford, 1991). {Biennial series 1987 – 1991}

United Nations Environment Programme (UNEP), *The State of the Environment 1991* (UNEP, Nairobi, 1991). {Series 1979 – 1991}

United Nations Environment Programme (UNEP), *Saving Our Planet, Challenges and Hopes* (UNEP, Nairobi, 1992).

World Bank, *World Development Report 1992: Development and the Environment* (Oxford University Press, New York, 1992). {Series 1978 – 1992}

World Commission on Environment and Development, *Our Common Future* (Oxford University Press, Oxford, 1987).

World Conservation Monitoring Centre (WCMC), *Global Biodiversity 1992: The Status of the Earth's Living Resources* (WCMC, Cambridge, UK, 1992).

World Health Organization (WHO), *World Health Statistics Annual* (WHO, Geneva, 1990). {Series 1966 – 1990}

World Resources Institute (WRI), IUCN — The World Conservation Union, United Nations Environment Programme (UNEP), *Global Biodiversity Strategy* (WRI, IUCN, UNEP, Washington, DC, 1992).

World Resources Institute, *World Resources 1992 – 93* (Oxford University Press, New York, 1992). {Series 1986 – 1992/93}