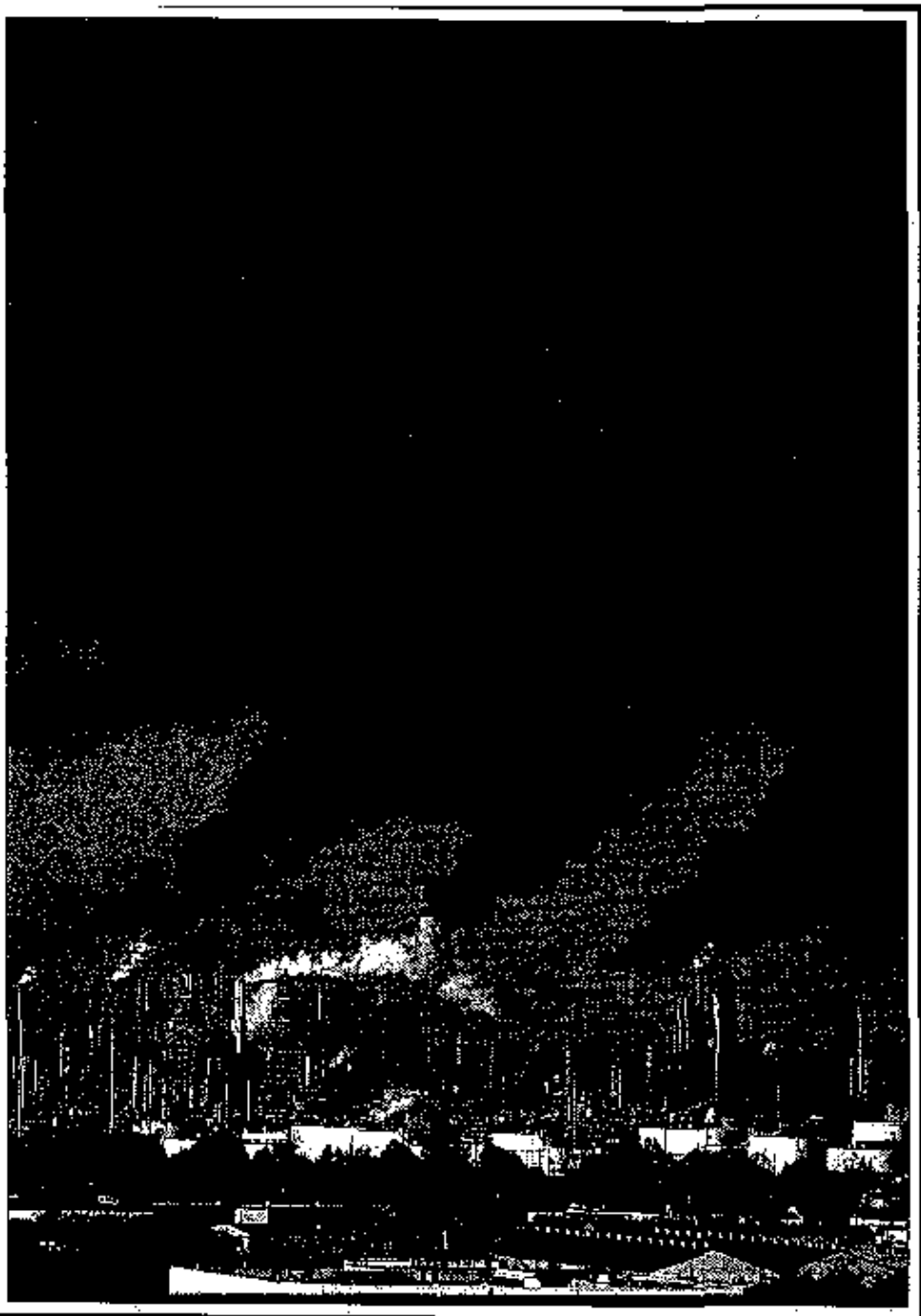

A Directory of Impact Assessment Guidelines

Dilys Roe
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International Insiitute for
Environment and Development

An Output of the INTERAISE Project

IIED
INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT

World Resources Institute

IUCN
World Conservation Union

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June 1995

Compiled by

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International Institute for Environment and Development
London

This directory is a product of the International Environmental and Natural Resources Assessment Information Service (INTERAISE) Project, a collaborative project undertaken by the International Institute for Environment and Development (IIED), the World Resources Institute (WRI) and the World Conservation Union (IUCN) on behalf of the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD).

A Contribution to the International Study of the Effectiveness of Environmental Assessment

Help us to update and improve the next edition

This is the first edition of the Directory of Impact Assessment Guidelines. It is published as a review copy for practical testing amongst EA practitioners and interested users around the world.

Over the next year, we intend to develop the directory with a view to publishing a revised edition in 1996. So, we would very much like to know from you:

- how well it suits your needs
- how user-friendly the document is - how it might be better structured.
- what other materials it could usefully contain

A draft of this first edition was reviewed by a number of "experts" who have offered valuable comments, many of which have been included. We list below further suggestions which we have received for improving the document, but which we have chosen not to include in this edition.

- Organise the directory in the form of a single listing, arranged alphabetically by author/agency and use indexes;
- Provide abstracts of all citations in the directory listings;
- Condense the listing to only those documents considered to be 'key' documents;
- Expand the introductory section to provide a more comprehensive review of impact assessment;
- Reduce the length of the introductory section to cover only the role and application of guidelines;
- Make the directory available in electronic form via e-mail/internet.

We would very much welcome comments on these suggestions and other ideas.

A tear-out form is available at the end of the directory which may be used to notify us of any documents that have been omitted. We would be grateful for details of any additional/new material which may be included in a second edition of this directory. Please note that documents can only be cited if **full details** are provided, as indicated on the form.

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Part I
Introduction

Photo: Mark Edwards/Still Pictures

Preface

Impact Assessment

In this directory, impact assessment is used as an umbrella term for a range of techniques including:

- environmental impact assessment (EIA);
- cumulative effects assessment;
- (environmental) health impact assessment ((E)HIA);
- risk assessment;
- social impact assessment (SIA);
- strategic environmental assessment (SEA); and
- technology assessment.

As interest in impact assessment has grown, so too has the volume of guidelines designed to assist decision- and policy-makers, and practitioners. For example, almost all bilateral aid agencies, multilateral development banks and many UN agencies and OECD country government departments have prepared internal guidelines for environmental assessment (EA) of projects. Many developing countries have also developed EA guidelines, often based on, or drawing from other guidelines. Other countries have yet to produce their own guidelines or are currently in the process of doing so.

The Purpose of this Directory

This directory is the result of an extensive literature search of impact assessment guideline documents produced by national governments, international development agencies, the private sector, research and education institutes and non-governmental organisations (NGOs). The overwhelming majority of these documents have been produced in forms that are not necessarily available to those involved in impact assessment. This presents two problems. Firstly, and most importantly, decision-makers, planners and practitioners in need of guidance may either be unaware of the existence of such literature, or cannot gain access to it. This may pose a barrier to effective impact assessment, particularly for developing countries. Secondly, poor awareness of existing literature sources amongst 'development professionals' has led to the duplication of work, resulting in the wastage of scarce human and financial resources that could have been used more productively elsewhere. Shortages of such resources have constrained the development of impact assessment practices in many countries, but particularly those in developing countries.

This directory aims to bridge this information gap and, in so doing, to improve awareness of, and access to, existing impact assessment guidelines. It is directed at planners, decision-makers, practitioners and institutions with a mandate or professional interest in promoting, advising or managing impact assessment. An updated version of the directory will be published in 1996/1997 and consideration is being given to making versions accessible on electronic mail conferences and on a computer diskette. Alternative ways of distributing guideline documentation, such as through CD-ROM technology, are also being investigated.

The directory is an output of the International Environmental and Natural Resource Assessment Information Service (INTERAISE) - a project providing access to regional and national environmental information. The project is a joint initiative of the International Institute for Environment and Development (IIED), the World Resources Institute (WRI), and the World Conservation Union (IUCN), and is supported by the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD). The DAC has been promoting the importance of using such information to broaden the context within which impact assessments are conducted.

The literature search aimed to identify guideline documents from both developed and developing countries, as well as from aid agencies and other organisations. However, for developed countries, the focus has been mainly on government and agency documents at the national level. We have not been able to target the numerous guidelines produced at State, Province, County and Metropolitan levels in many countries (eg. the USA, UK).

Statutory guidelines embodied within, or linked to, national environmental legislation are not included in this directory. They have proved extremely difficult to access, are often integrated with, or inseparable from general environmental legislation, and can be extremely context-specific. However, UNEP is producing a sourcebook of information on EIA, due to be published in late 1995, which will include a section on EIA legislation for developed and developing countries.

This is a first edition of the directory and does not claim to be fully comprehensive - it is likely that many documents exist that have not come to our attention. Table 1 summarises the information contained within the directory. It is hoped that the collation of this information from such a broad range of sources will improve awareness of the extent of existing impact assessment literature, and will encourage readers to submit details of other guidelines so that they may be included in the next edition.

The Role of Guidelines

The term guideline appears to have many different meanings. This directory adopts a broad definition to encompass all documents compiled specifically to provide guidance on the implementation of different aspects of impact assessment processes. In a legal sense, they are usually non-binding. Despite the profusion of guidelines available, recent work has shown that few are implemented (for example, see OECD/DAC, 1994a). One reason for this is

insufficient levels of human and financial resources; a more fundamental one is the nature of the guidance - many guidelines are too general, or too mechanistic, to be of relevance to real tasks and problems.

Three functionally different categories of guidelines are recognised in this directory:

a) National guidelines

National guidelines provide information on implementing national impact assessment (usually EIA) frameworks. In effect, they provide information on the basic questions of "... who does what, to whom, how and when?" (Bisset, 1995). Such guidelines complement and supplement the "bare" legal requirements and provide guidance on the initiation of development activities, their design and appraisal, authorisation and subsequent implementation and management. They are designed to ensure that all participants in an impact assessment system understand their roles, and that laws or regulations are interpreted correctly and consistently.

b) Donor guidelines

These provide guidance for recipient countries to meet environmental standards in project planning and implementation. They also establish "best practice" procedures for agency staff to follow in project planning, implementation and appraisal. Most United Nations, multilateral and bilateral agencies have compiled guidelines for their development activities, and a recent study has argued for greater coherence in the practical implementation of guidelines between bilateral donor agencies (OEDC/DAC, 1994a-c).

c) Sectoral guidelines

A considerable proportion of the documents described in this directory provide guidance on the assessment of different categories of projects, such as irrigation, power generation and mining. Many of these guidelines are produced by donor agencies, and so there is some degree of overlap (in terms of functional role) with the donor guidelines mentioned above.

Selection of Abstracts

Abstracts are provided for about 150 documents. The selection of particular documents for abstracting is not intended to imply any judgement on the quality of those not selected. The following criteria were used:

- a hard copy of the document had to be available - no document has been reviewed using secondary information;
- the document provides comprehensive guidance on technical approaches and/or official procedures or requirements for impact assessment in individual countries or for individual institutions (donors, international organisations, etc.);
- the document provides detailed guidance on procedures and/or requirements for particular impact assessment techniques (e.g. health impact assessment, social impact assessment), for individual sectors or ecological zones;
- many documents, although called guidelines, contain brief and very general information about impact assessment (sometimes merely repeating material from other sources) or represent little more than a description of impact assessment legislation. Such documents were excluded from consideration;
- certain documents have been abstracted because they appear to represent the only information about impact assessment procedures or about the status of impact assessment in a particular country, or for a particular sector or ecological zone (i.e. they are abstracted in the absence of anything better being available);
- for some techniques or approaches which are still in their infancy (e.g. strategic environmental assessment) and for which few or no guidelines exist, we have abstracted documents which, in our judgement, best explain emerging practice or consensus on procedures.

It is hoped that the publication of this directory will encourage government departments in those countries which are not covered, and agencies who have produced documents that are not included, to provide any relevant literature for inclusion in an updated, expanded version of the directory.

How to Use This Directory

• Check the structure

Take some time to study the table of contents. The directory has been divided in a number of ways - by sector, by ecological zone, by discipline, by country and by agency type - in order to be of maximum use to the widest possible audience. Because of this, a number of documents inevitably are cited several times. For example, a document produced by the World Bank on water resources in Thailand would occur in the country section under Thailand, in the sectoral section under water resources, and in the agency section under multilateral development banks.

• Use the matrices for a quick overview

If you are looking for guidelines for a particular sector or ecological zone, the tables on pages 6-7 provide an overview of which countries and agencies have produced such guidance. The contents table will then indicate where to find the citations for each sector and sub-sector. The section on **Multisectoral Guidelines** may also contain further citations which are not included under specific sectors or ecological zones. For example, ***Environmental Assessment Guidelines*** **(African Development Bank 1992)** includes guidelines on a number of sectors including agriculture, industry and transport. This is listed in the multisectoral guidelines section, but is not included separately under each of the relevant sector lists.

• Why some countries are not included

If you are looking for guidelines for a particular country, you will notice that many countries appear to have been omitted. This directory is purely a reflection of documents that were supplied or brought to our attention as a result of an extensive survey. The environment ministries and EA agencies (where known to exist) of every country were contacted by post, but some did not respond while others do not appear to have produced guidelines. The matrices in the next section indicate which countries have material available.

• Getting copies of documents

A note after each citation indicates where the document may be obtained. If consecutive citations are listed from the same agency, the note indicating availability is included **after the last citation** to avoid repetition.

• Tables of country and agency guidelines

Table 1 (page 6) details, by sector and ecological zone, the material available in the directory on a country-by-country basis. Each entry shows the date of publication of documents. Countries are arranged alphabetically, by region, as in the main body of the directory. Countries that are **not** included in the table are those that do not have any guidelines, or for whom no information is available to date.

Table 2 (page 7) indicates the guidelines that have been produced by the main donor and international agencies - multilateral development banks, bilateral donors, United Nations agencies and inter-governmental organisations. Within each category, individual organisations are arranged alphabetically.

Tables of Country and Agency Guidelines

Table 1: National Guidelines by Sector

	General EIA	Health	Social	Agriculture	Aquaculture/Fisheries	Coastal Zone	Energy/Power	Forestry	Human Settlements	Industry	Mining	Risks/Hazards	Tourism	Transport	Waste	Water	Wetlands	Other
AFRICA																		
Africa Regional	✓															✓		✓
Botswana	✓																	✓
Ghana	✓										✓					✓		
Mozambique	✓																	✓
Namibia	✓																	✓
Nigeria	✓	✓									✓							
South Africa											✓							✓
Tanzania	✓																	✓
Zimbabwe																		✓
ASIA/PACIFIC/MID. EAST																		
Asia and Pacific Regional	✓	✓	✓	✓		✓	✓			✓			✓	✓		✓	✓	
Bangladesh																✓		
Bhutan	✓																	
China	✓									✓								
Hong Kong	✓																	
India	✓					✓	✓		✓	✓	✓			✓	✓	✓		✓
Indonesia	✓							✓									✓	
Israel	✓																	
Japan	✓																	
Korea	✓																	
Kuwait	✓																	
Malaysia	✓																	
Nepal	✓																	
Oman	✓																	
Pakistan	✓					✓												
Philippines	✓																	
Singapore	✓																	
Sri Lanka	✓					✓	✓											
Thailand	✓					✓										✓		
AUSTRALASIA																		
Australia	✓									✓								
New Zealand	✓																	
CARIBBEAN																		
Caribbean Regional	✓				✓								✓					
Bermuda	✓																	
St Lucia	✓																	
Trinidad and Tobago	✓																	
Turks and Caicos Islands	✓																	
EUROPE																		
Europe Regional	✓																	
Belgium	✓																	
Cyprus	✓																	✓
Denmark	✓									✓								
Finland	✓								✓		✓			✓	✓			
France	✓																	
Germany	✓																	✓
Netherlands	✓																	
Norway	✓								✓					✓				
Portugal	✓													✓				
Spain	✓													✓				
Sweden	✓										✓							✓
United Kingdom	✓																	
Eastern Europe Regional	✓											✓						
Estonia	✓																	
Russian Federation																		
LATIN AMERICA																		
Latin America Regional	✓						✓		✓		✓	✓		✓				
Bolivia									✓	✓	✓			✓				
Brazil	✓																	
Chile	✓																	
Colombia													✓	✓				
Costa Rica																		
Ecuador	✓																	
Honduras	✓																	
Mexico																		
NORTH AMERICA																		
Canada	✓																✓	✓
United States	✓		✓						✓								✓	

Table 2: Agency Guidelines by Sector

	General EIA	Health	Social	Agriculture	Aquaculture/Fisheries	Coastal Zone	Energy/Power	Forestry	Human Settlements	Industry	Mining	Risks/Hazards	Tourism	Transport	Waste	Water	Wetlands	Other
MULTILATERAL DEVELOPMENT BANKS																		
ADB	✓					✓			✓									
AsDB	✓	✓	✓	✓		✓	✓		✓		✓		✓					✓
CDB	✓																	
EBRD	✓																	
IADB	✓																	
World Bank	✓	✓	✓			✓	✓		✓	✓		✓			✓	✓		
BILATERAL DONORS																		
AIDAB	✓								✓	✓								
BMZ	✓			✓			✓		✓	✓								
CIDA	✓																	
DANIDA	✓																	
DGIS	✓												✓					
FINNIDA	✓																	
JICA	✓			✓	✓		✓	✓		✓	✓							
NORAD	✓			✓	✓		✓	✓		✓	✓			✓	✓	✓		
SIDA	✓																	
UK ODA	✓		✓															
USAID	✓			✓	✓			✓										
UNITED NATIONS AGENCIES																		
UNDP	✓							✓				✓						
UNEP	✓			✓	✓	✓			✓	✓	✓	✓	✓			✓		
UNESCO																✓		
UNIDO										✓								
UN-ESCAP				✓						✓				✓		✓		
FAO			✓	✓	✓			✓										
IFAD	✓			✓														
WHO	✓	✓		✓				✓	✓	✓		✓			✓	✓		
INTER-GOVERNMENTAL ORGANISATIONS																		
EUROPEAN COMMUNITY	✓																	
IUCN	✓					✓	✓	✓			✓							✓
OAS	✓											✓						
OECD	✓	✓	✓									✓						
OECS	✓																	
SPREP	✓					✓												

List of acronyms used in the tables

ADB African Development Bank

AIDAB Australian International Development Assistance Bureau

AsDB Asian Development Bank

BMZ Bundesministerium fur Wirtschaftliche Zusammenarbeit

CDB Caribbean Development Bank

CIDA Canadian International Development Agency

DANIDA Danish International Development Agency

DGIS Directorate General for International Cooperation - The Netherlands

EBRD European Bank for Reconstruction and Development

FAO Food and Agriculture Organisation of the United Nations

FINNIDA Finnish International Development Agency

IADB Inter-American Development Bank

IFAD International Fund for Agricultural Development

IUCN The World Conservation Union (International Union for Conservation of Nature and Natural Resources)

JICA Japanese International Cooperation Agency

NORAD Norwegian Agency for Development Cooperation

OAS Organisation of American States

OECD Organisation for Economic Cooperation and Development

OECS Organisation of Eastern Caribbean States

SIDA Swedish International Development Authority

SPREP South Pacific Regional Environment Programme

UK ODA United Kingdom Overseas Development Administration

UNDP United Nations Development Programme

UNEP United Nations Environment Programme

UNESCO United Nations Educational, Scientific and Cultural Organisation

UNIDO United Nations Industrial Development Organisation

UN-ESCAP United Nations Economic and Social Commission for Asia and the Pacific

USAID United States Agency for International Development

WHO World Health Organisation

A Background to Impact Assessment

Key Trends in Impact Assessment

Impact assessment has evolved considerably since its introduction as environmental impact assessment (EIA) in the USA in 1969 (see Box 1). Yet by the end of the 1970s, it was clear that more attention was required on the effectiveness, efficacy and relevance of impact assessment. This attention resulted, in the 1980s, in the emergence of several new 'offshoot' techniques such as social and cumulative impact assessment and risk analysis. Whilst these developments focused on the science and technical aspects of EIA, it was also clear that other factors, such as resource availability and political will, were constraining EIA effectiveness. For example, Smith (1993) notes that:

"Improving the science of environmental analysis *per se* does nothing to reform the political processes of resource management that govern how the information is utilised. An alternative response is warranted: one that necessitates redefining the role of impact assessment."

Smith's proposed redefinition of the role of impact assessment was based on the premises that it should integrate the 'science of environmental analysis with the politics of resource management', and pay greater attention to the institutional arrangements for decision-making central to the role played by impact assessment in resource management.

There was also a realisation that, to be effective, environmental assessment needed to be more proactive and address the plans, programmes and policies which defined individual projects. Strategic environmental assessment has developed from this realisation. However, one of the problems of strategic environmental assessment is that it raises fundamental questions of governance regarding the formulation and implementation of policy and, perhaps for this reason, its adoption (even amongst developed countries) has been patchy and slow.

Clearly then, new challenges still face impact assessment, and particularly in countries where governance, ineffective institutional frameworks and shortages of financial and human resources, may render conventional approaches to impact assessment inappropriate.

Box 1: The Evolution of Environmental Assessment (*after Sadler, 1994*).

Date and Phase	Trends and Innovations
1. Prior to 1970 Pre-EA	Project review based on engineering and economic studies, e.g. cost-benefit analysis; limited consideration of environmental consequences.
2. 1970-1975 Methodological development	EA introduced in some developed countries; initially focused on identifying, predicting and mitigating bio-physical effects; opportunity for public involvement in major reviews.
3. 1975 - 1980 Social dimensions included	Multi-dimensional EA, incorporating social impact assessment (SIA) and risk analysis; public consultation integral part of development planning and assessment; increased emphasis on issues of justification and alternatives in project review.
4. 1980 - 1985 Process and procedural redirection	Efforts to integrate project EA with policy planning and follow-up phases; research and development focusing on effects of monitoring, on EA audit and process evaluation, and on mediation and dispute resolution approaches; adoption of EA by international aid and lending agencies and by some developing countries.
5. 1985 - 1990 Sustainability paradigm	Scientific and institutional frameworks for EA begin to be rethought in response to sustainability ideas and imperatives; search begins for ways to address regional and global environmental changes and cumulative impacts; growing international cooperation on EA research and training.
6. 1990 - present	Strategic environmental assessment (SEA) of policies, programmes and plans introduced in some developed countries; international convention on transboundary EA; UNCED places new demands on EA for expanded concepts, methods and procedures to promote sustainability (e.g. through sustainable development strategies).

Impact Assessment in Perspective

What is impact assessment ?

Impact assessment is a process to improve decision-making and to ensure that the project/programme options under consideration are environmentally and socially sound and sustainable. It is concerned with identifying, predicting and evaluating the foreseeable impacts, both beneficial and adverse, of public and private (development) activities, alternatives and mitigating measures, and aims to eliminate or minimise negative impacts and optimise positive impacts. Impact assessment includes a broad suite of different techniques, including environmental impact assessment (EIA), social impact assessment (SIA), risk assessment and strategic environmental assessment (SEA). Some of the more prominent of these techniques are described below.

Impact assessment relates to a process rather than a particular activity. At the project level, it should be seen as an integral part of the project cycle. It provides information on the environmental, social and economic effects of proposed activities and is a mechanism by which information can be presented clearly and systematically to decision-makers. To achieve these objectives, impact assessment needs to be process-oriented, multi-disciplinary and interactive and should result in a better understanding of the linkages between ecological, social, economic and political systems. Increasingly, impact assessment is being viewed as a key mechanism for involving the public in the planning process through participation (see below).

Why is impact assessment important ?

Impact assessment is an important management tool for improving the long-term viability of many projects and its use can help to avoid mistakes that can be expensive and damaging in environmental, social, and/or economic terms. Usually, the cost of undertaking an impact assessment process accounts for only a small proportion of total project costs, whilst the savings to the project from an impact assessment can often be considerably more. This is because impact assessment can provide a mechanism for learning from past experience to help avoid costly mistakes and accidents and can improve the way in which resources are managed before, during and after the implementation of a project.

Who is involved in the impact assessment process ?

Impact assessments are generally the responsibility of the project proponent and are often prepared with the help of external consultants or institutions. In some cases, an independent commission is responsible for ensuring quality control throughout the implementation of the impact assessment, for setting appropriate terms of reference and/or for the external review of the impact statement (IS). In most cases, an impact assessment will require a multidisciplinary team, particularly where scoping exercises indicate the existence of multiple or complex issues. Each impact assessment team is usually coordinated by a team manager.

The agency responsible for receiving the impact assessment, and taking any subsequent action, will usually indicate how the study is to be carried out and how the results should be used in the decision-making process. The institutional structures and agencies responsible for the management and implementation of impact assessment vary amongst countries, reflecting different political, economic and social priorities. Mostly they include local government agencies, NGOs, research institutions and affected groups, feeding into a specialist environmental unit within the implementing agency.

Involving local people in impact assessment

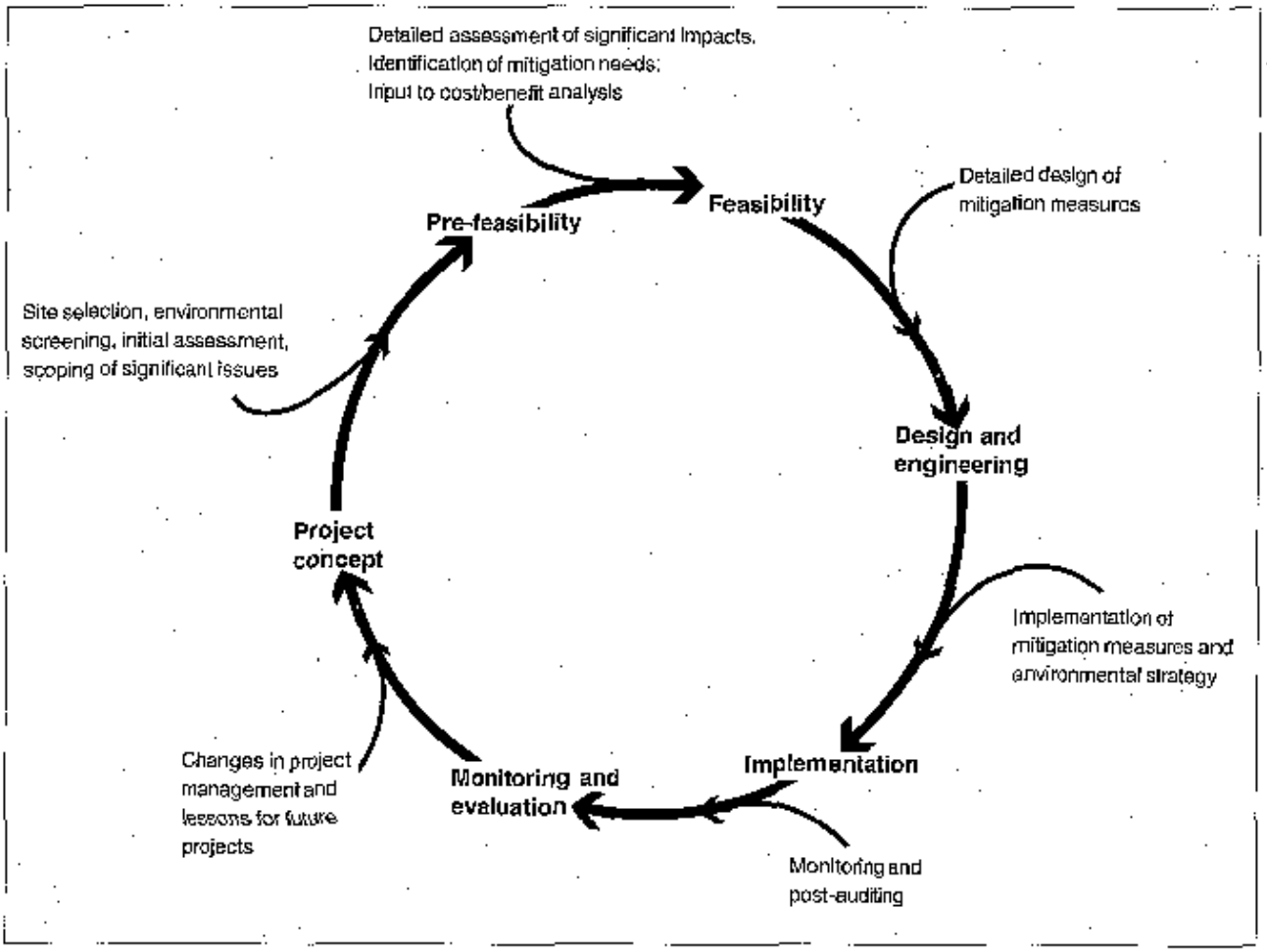
Experience has shown that development projects imposed on local communities often fail to address the types of issues perceived as priorities by those communities and hence fail to engender a perception of local ownership. This leads to a lack of public support (and even conflict) which may often lead to project under-performance or total failure.

The inclusion of greater attention to social, cultural and health aspects in project design implies a far greater need to involve local people and their representatives at all stages of the project cycle. This is easier said than done, although many project planners are now adopting more participatory approaches to project planning. Impact assessment provides an important, and increasingly accepted mechanism for facilitating such public involvement within the project cycle.

When should the impact assessment be undertaken ?

The impact assessment needs to be managed so that it provides information to decision-makers at every stage of the project planning cycle (see Figure 1). It should be initiated as early as possible and should also include a provision to cover the monitoring of project implementation and operation, and eventually an audit of the project. In some cases, it will also be important to include project decommissioning within the impact assessment.

Figure 1: EIA and the Project Cycle (after UNEP, 1988).



The Environmental Impact Assessment Process

A number of 'new' impact assessment techniques are currently in use or are being developed. Some of the more prominent of these techniques are described below.

This section describes the main elements of a 'typical' EIA process, although this can vary according to the context and type of a proposed project. Figure 2 outlines the generic stages of the EIA process. Specimen terms of reference for an EIA are outlined in Box 2. Many of the steps described are also common to other forms of impact assessment. For a comprehensive guide to the EIA process, see Canter (1994).

Not every development project requires each element of the EIA process. For a major project, an EIA may take considerable time, manpower and resources. The first three stages of the impact assessment process, *screening, preliminary assessment* and *scoping* are therefore extremely important in order to determine the extent and focus of the impact assessment required.

Screening

The purpose of screening is to decide whether or not a project requires assessment, and the level of assessment that may be necessary. Past experience shows that certain types of project are not likely to have serious adverse environmental consequences. By contrast, other types of projects have the potential to cause significant impacts and routinely require a comprehensive EIA. The extent of EIA required will depend on the scale and complexity of the project and the nature of the local environment.

Guidance to assist with the screening process may take several forms: **screening criteria** such as size, cost, or location of the project; **lists** of projects which do or do not usually require an EIA; and **checklists** of project and environment types that require further investigation. The types of projects which generally require an EIA include: :

- projects which involve a significant change in renewable resource use;
- projects which involve a substantial change in farming or fisheries practice;

- water resource projects, including dams, irrigation, watershed development;
- infrastructure projects;
- industrial projects;
- extractive industries; and
- waste management and disposal.

Preliminary assessment

If the screening process suggests that further assessment is required, or if there is uncertainty about the nature of potential environmental impacts, the next stage is for the developer to undertake a preliminary assessment. This may employ rapid assessment techniques but should be detailed enough to:

- identify key impacts on the local environment;
- describe the magnitude and significance of the impacts; and
- evaluate the importance of the impacts for decision makers.

Often a preliminary assessment will require the proponent to undertake a number of components of the impact assessment process (see below) at a superficial level. If the screening process or the preliminary assessment indicates that an impact assessment is required, the first task of the study team should be to **scope** the impact assessment.

Scoping

Scoping is a crucial part of the impact assessment process and involves the identification and 'narrowing-down' of potential environmental impacts to ensure that the assessment focuses on the key issues for decision-making. It also offers a crucial opportunity to involve local people in determining the scope and focus of the impact assessment. In most circumstances, scoping is undertaken by the assessment team, but inherent problems have been noted with this approach since the study team might be influenced by preference, knowledge and biases. Some guidelines have attempted to address this through introducing a more structured and objective approach to the scoping process, but it is clear that problems can still remain. For example, the scoping process can provide an opportunity for vested interests to influence the extent and focus of subsequent stages of the impact assessment procedure. In some countries, such as the Netherlands, it is mandatory to involve an independent EIA commission in the process.

Scoping entails discussions and consultation with interested parties, including project proponents, decision-makers, local communities, regulatory authorities and outside experts. These discussions usually aim to gather background information on the project and to ensure that the different issues and concerns raised by the various groups are considered. Public participation also helps to eliminate those issues generally agreed as being of little or no significance. A process of meaningful participation at an early stage of project planning can help to avoid misunderstandings and costly mistakes.

The scoping exercise normally indicates detailed information needs and can also be used to review alternative options for project design and siting. Baseline studies can be undertaken to determine the characteristics of the environment and to provide guidelines against which the severity of predicted impacts may be assessed.

The environmental impact assessment study

Scoping is used to determine the terms and boundaries of the EIA study. Each study should ensure that it attempts to answer such questions as :

- what impacts will occur as a result of the project ?
- what will be the extent, magnitude and duration of the impacts ?
- what will be the significance of these impacts within local, national and international contexts ?
- what can be done to mitigate, reduce or avoid altogether the adverse impacts, or optimise positive impacts ?

The following steps are undertaken as components of most impact assessment procedures:

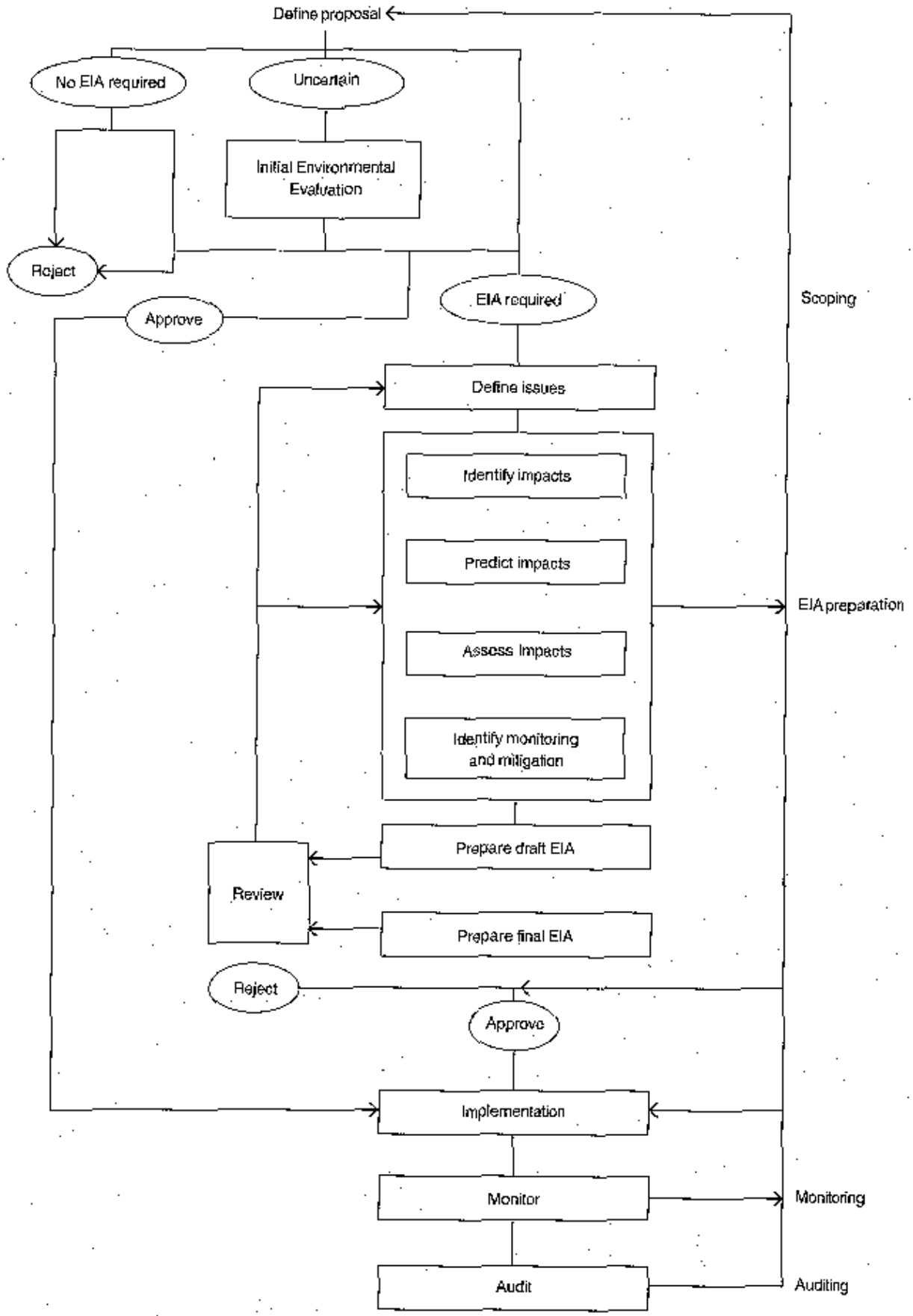
Identification

Screening, preliminary assessment and scoping all go some way to addressing the first question - what impacts will occur as a result of the project ? Once these steps are completed, the key impacts should have been identified, and the study focused on the most important issues. The EIA can then proceed to identify those impacts that should be investigated in detail. A variety of methods may be used including checklists, questionnaires, matrices, overlays, networks, models and simulations. One of the most simple methods is to compile a list of key impacts that were identified in the impact assessments of other similar projects and compare them to the proposed project.

Examination of alternatives

The consideration of alternatives is as essential an element to the EIA process as it is to good economic and policy analysis. Consideration should include not only alternative sites for the project, where practicable, but also alternative designs and operating processes, and the environmental implications of each. Even if the alternatives are rejected at this stage, they may be reconsidered should unexpected adverse impacts be identified under the original proposal.

Figure 2: Stages in the EIA Process (after Wathern, 1988)



Box 2: Framework Terms of Reference for Environmental Impact Assessment (adapted from OECD/DAC, 1994a).

	General headings	Topics to be addressed	Basic requirements
A	**Introduction**	Background	Introduce the project and the most critical environmental issues involved.
B	**Context**	The problem Proposed solution Objectives of the assessment	Summarise the basic development issue or problem being addressed by the proposed activity. Summarise how the proposed activity is expected to resolve the problem or issue, with the emphasis on sustainability. Specify the objectives of the assessment and the relationship of the results to project design and implementation.
C	**Institutional setting**	Legal/policy base	Summarise the legal and policy bases for environmental assessment.
D	**Alternatives**	Alternatives to the project Alternatives within the project	(a) Assess the potential for achieving the developmental objective by interventions at the policy level. (b) Assess the potential for achieving the developmental objective by implementing other projects. Evaluate alternatives for key aspects of the project, eg., scale, siting, waste management and pollution control options.
E	**Institutional and public involvement**	Institutional cooperation Public involvement	Show how agencies participated in the assessment and how the project fits with development priorities of recipient country. Show how interested/affected groups participated in the assessment.
F	**Required information**	Description of project Description of environment Information quality	Describe the project (design, location, size), inputs (raw materials, energy), outputs (products, by-products emissions). Identify study boundaries and give baseline date on relevant physical, ecological, social, economic and cultural conditions. Assess information quality, identify data gaps, and summarise limitations on the assessment from such deficiencies.
G	**Analysis of impacts**	Positive impacts Negative impacts	Predict how lives of affected people will be improved and any enhancement of natural systems resulting from project. (a) Predict any significant reduction in quality of air, water and soil or loss of biodiversity. (b) Evaluate the risk of a significant deterioration in the quality of the lives of the affected people. (c) Evaluate plans for involuntary relocation and describe measures taken to minimise the number of relocatees. (d) Evaluate the cumulative impacts from the project and compare with incremental losses from previous projects. (e) Evaluate the potential for transboundary impacts and effects on the global commons. (f) Define the meaning of the term "significant" and assess the significance of the expected impacts.
H	**Mitigation and monitoring**	Environmental management plan Environmental monitoring plan	Provide comprehensive and detailed plan covering mitigation of impacts, relocation/compensation schemes and training. Detail the environmental and social variables to be monitored, location/timing of sampling, and use of results.
I	**Conclusions and recommendations**	Project decisions Technical matters Non-technical summary	Indicate the extent to which the proposed project conforms with the principles of sustainable development. Summarise design and operational changes that are critical to improving the environmental acceptability of the project. Summarise, in non-technical terms, key findings and recommendations of the assessment, including economic benefits.
J	**Annexes**	Organisation Report format	Provide information on the assessment team, the overall approach, component studies, schedule and budget. Follow a pre-defined format in preparing the environmental assessment report (usually provided by responsible authority).

Prediction

Predicting the extent and magnitude of the impacts is perhaps the most difficult part of the study. Prediction attempts to determine the cause and effect of the impacts, although often these are not well-understood. Prediction relies on data and analysis from a variety of sources - physical, biological and sociological. The quality and availability of data often imposes an important constraint on the accuracy and reliability of predictions. In many cases, good quality data is simply not available. In such cases, other more qualitative techniques will need to be used. In some situations, it may not be possible to establish cause-and-effect relationships; and in others, unanticipated factors may also affect the context of the project or the state of the local environment during or after implementation. Prediction, therefore, has to recognise (and not conceal) the uncertainties inherent in the prediction process. In some cases, it is valuable to undertake a sensitivity analysis by testing predictions against different future scenarios, including those identified by risk assessment (see below).

Evaluation of significance

This phase of the EIA process should attempt to determine the significance of impacts, a task that is often subjective and value-laden. For example, an impact at a national level might be regarded as insignificant, but could be highly significant at a local level. The context of the evaluation must therefore be considered at each stage. Various quantitative approaches to assessing the significance of impacts have been developed to assist in quantifying and rating relative impacts (see Canter & Hill, 1981). However, they tend to rely on the availability of good scientific data. More tangible considerations might include:

- existing legislation, regulations or accepted standards;
- protected status of particular areas or ecosystems, landscapes, and species;
- government policy objectives; and
- acceptability to potentially affected people and the general public.

There are numerous examples of guidelines and standards throughout this directory which may provide a useful basis for countries where standards have not yet been developed. In the absence of the use of standards, the EIA study team will need to define criteria based on professional expertise and experience.

Mitigation

If the evaluation process concludes that the impacts are significant, the next stage of the EIA study is to propose measures to prevent, reduce or rectify the impact(s). Such measures should be identified or negotiated as early as possible in the project cycle process, so that mitigation activities can be built into project design. If none of these measures are appropriate, then a fourth option is to provide compensation. These measures are ideally drawn together into a coherent "environmental management plan" which itself should be costed into the economic analysis of a particular project. Mitigation measures can include the following:

- selection of alternative sites, processes, designs, raw materials, etc.;
- installation of pollution control or waste treatment technologies;
- use of landscaping, architectural restrictions; and
- provision of monetary compensation, restoration, and off-site community programmes.

Alternative measures can be compared and costed, and a package proposed combining a number of these. The implications of the different alternatives should be made clear to assist decision-makers in their choice of options.

Documentation

The conclusions and recommendations of the EIA process need to be communicated effectively to local people (particularly those that may be affected by a project), interest groups and decision-makers. Conventionally, this is achieved through the compilation of an environmental impact statement (EIS), although it is becoming increasingly recognised that it might be more appropriate to supplement the EIS with alternative communication methods, such as local language video, presentations, local radio programmes, meetings and workshops. Each of these have particular importance in areas where literacy, social or cultural barriers prevent local people accessing the EIS. The EIS should be a key element of the decision-making process and the summary of the EIS should therefore focus on issues most relevant to decision-making. The presentation of the statement is of utmost importance and should be shaped for the target audience. For example, summaries should be prepared in local languages where these differ from that used in the main statement. It is vital to remember that the EIS does not constitute the end of the impact assessment process. Implementation of mitigation activities must still continue as should activities such as monitoring, evaluation and auditing.

Review

The purpose of an EIA review process is to assess the adequacy of the assessment for decision-making and to consider its implications for project implementation. A formal review procedure for EIA can contribute considerably to

the success of the process. In some countries, such as the Netherlands, an independent commission provides a review of each impact assessment. The Organisation for Economic Co-operation and Development (OECD) includes guidance for internal and external review in its 'good practice guidelines' (OECD, 1992), and defines the purpose of the (external) review process as "...to obtain an impartial judgement of the particular, and often conflicting, interests of various parties involved and to avoid unnecessary costs and delays". Guidelines to assist in the review of the quality of EIA, and to provide a framework for coherence and consistency of review quality, have now been prepared for a number of countries (eg. see Lee and Colley, 1990).

Monitoring

The purpose of monitoring is to assess the effect of the project on the natural and cultural environment. To be effective, monitoring needs to collect data and information that is usable, particularly in post-project auditing. Inclusion of a framework for monitoring can significantly improve the effectiveness of EIA since it can provide a mechanism for ensuring whether mitigation measures have been carried-out and whether predictions were accurate.

Post-project audit

The inclusion of guidelines in most national EIA frameworks for post-project (or post-development) audit is comparatively rare and yet, potentially, it is an extremely useful component of the EIA process. Auditing an EIA provides an opportunity and mechanism to learn from experience, and to refine project design and implementation procedures. Auditing also provides regulatory agencies with a framework for checking compliance with, and the performance of, an environmental management plan. In most instances, the auditing process will depend heavily on the existence of relevant and good quality monitoring data.

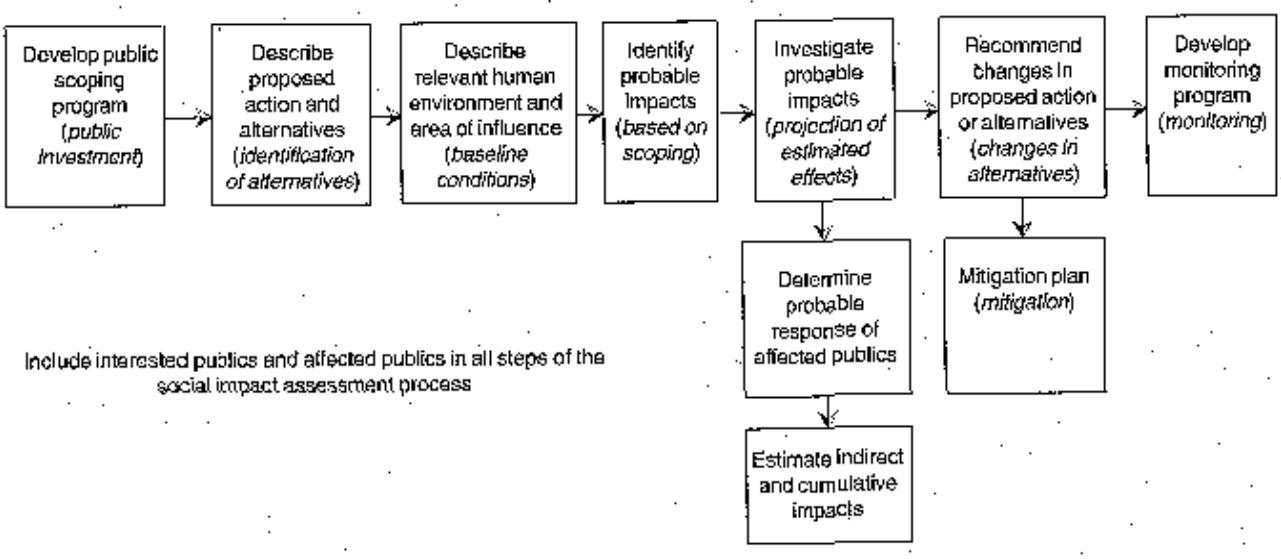
Social Impact Assessment

Social impact assessment (SIA) is an integral component of the Environmental Impact Statement (EIS) required under the US National Environmental Policy Act of 1969. It is intended to identify and quantify the impacts on human populations resulting from changes to the natural environment. The term 'social impact assessment' was first introduced in 1973 to refer to changes in the indigenous Inuit culture due to the construction of the Trans-Alaska pipeline. The technique has now developed as a discipline in its own right and is applied in many countries.

Social impacts may be taken to mean the effects of an action on human populations that alter the ways in which people live, work, meet their basic needs, play and interact with each other. As a minimum, social impact assessment should take into account the following:

- **demographic impacts**, including labour force and population shift, employment, multiplier effects, displacement and relocation effects, and changes in population make-up;
- **socio-economic impacts**, including income and income multiplier effects, employment rates and patterns, prices of local goods and services, and taxation effects;
- **institutional impacts**, including demands on government and social service NGOs in areas such as housing, schools, criminal justice, health and welfare, and recreation;

Figure 3: Steps in the Social Impact Assessment Process (after Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994).



Box 3: Principles for Social Impact Assessment

- **Involve the diverse public:** Identify and involve all potentially affected groups and individuals.
- **Analyse impact equity:** Clearly identify who will win and who will lose, and emphasise vulnerability of under-represented groups.
- **Focus the assessment:** Deal with issues and public concerns that really count, not those that are just easy to measure.
- **Identify methods and assumptions and define significance:** Describe how the SIA is conducted, what assumptions are used and how significance is determined.
- **Provide feedback on social impacts to project planners:** Identify problems that could be solved with changes to the proposed action or alternatives.
- **Use SIA practitioners:** Trained social scientists employing social science methods will provide the best results.
- **Establish monitoring and mitigation programmes:** Manage uncertainty by monitoring and mitigating adverse impacts.
- **Identify data sources:** Use published scientific literature, secondary data and primary data from the affected area.
- **Plan for gaps in the data:** Evaluate the missing information and develop a strategy for proceeding.

After Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994

- **cultural impacts**, including those on traditional patterns of life and work, family structure and authority, religion and tribal factors, archaeological features, social networks and community cohesion; and
- **gender impacts**, including the implications of development projects on womens' role in society, income generating opportunities, access to resources and employment opportunities.

As with impacts on the physical environment, a number of considerations need to be taken into account when assessing impacts on the social environment. These considerations include factors of scale, duration and severity of impacts. Social impact assessment should also pay particular attention to vulnerable sections of the population being studied - the elderly, the poor, and minority groups - and to areas which may have particular value to certain groups, in terms of cultural or religious beliefs.

The social impact assessment process is based on the steps in the EIA process outlined in Figure 3.

While the assessment of bio-physical and economic impacts has become, for the most part, a required input in the planning process of many countries, social impacts still remain largely ignored. This is due mainly to the difficulty in identifying and measuring the social impacts that occur with each project. Social impact assessment is a complex process, not least because individuals in different societies perceive and react to change in different ways. Similarly, environmental change affects different societies in different ways according, amongst other factors, to their culture and geographic location. The political setting will also affect the definition of social impacts. Nevertheless, a number of common principles have been developed, and these are listed in Box 3.

Environmental Health Impact Assessment

Human health is influenced not only by the physical environment, but also by social and economic factors. In some countries, certain health impacts are dealt with in conventional (environmental) impact assessment procedures, such as noise and air pollution from highways. Environmental health impact assessment (EHIA) provides for a more comprehensive and rigorous approach and is used to identify, predict and appraise those environmental factors which might affect human health. Factors can include geology, vegetation, demography, economics, pollutants as well as the availability of health services.

The World Health Organisation (WHO) has undertaken a great deal of fundamental research on EHIA, holding regular seminars, publishing documentation and developing a methodology (see Box 4). Its policy has been to strengthen health and safety considerations in impact assessment, and encourage member states to undertake such assessments for each major development project.

A variety of reasons of undertaking EHIA are proposed by WHO. They include:

- prevention is better than cure, as with other forms of assessment;
- it is specified in many forms of impact assessment legislation;
- environmental degradation is linked to health impacts;
- environmental, social and health outcomes can be improved;
- the methodology can be incorporated in EIA;
- systematic inclusion of health improves the legitimacy of the decisions made and the process by which they are taken;

Box 4: Steps in the EHIA Process (after Giroult, 1988).

Steps to be taken	Tools to be used
Step 1 Assessment of primary impacts on environmental parameters.	Regular impact assessment process.
Step 2 Assessment of secondary or tertiary impacts on environmental parameters resulting from the primary ones.	Regular impact assessment process.
Step 3 Screening of impacted environmental parameters of recognised health significance (EH factors).	Epidemiological knowledge.
Step 4 Assessment of the magnitude of exposed population for each group of EH factors.	Census, land use planning.
Step 5 Assessment of the magnitude of risk groups included in each group of exposed population.	Census.
Step 6 Computation of health impacts in terms of morbidity and mortality.	Results from risk assessment studies.
Step 7 Definition of acceptable risk (or of significant health impacts).	Assessment of trade-off between human and economic requirements.
Step 8 Identification of efficient mitigation measures to reduce significant health impacts.	Abatement of EH factors' magnitude, reduction of exposure, reduction of exposed populations, protection of risk groups.
Step 9 Final decision. **Yes** if public health authorities are satisfied with proposed mitigation measure to control significant health impact. **No** if significant health impact was assessed and if doubt remains on the efficiency of proposed mitigation measures.	

- human health issues often prompt a public response and/or involvement; and
- there is no argument against it!

However, there are some difficulties in undertaking EHIA:

- baseline data - the lack of such data on human health in local communities;
- timescale - while environmental effects can take a long time to show up, health effects can take even longer;
- synergistic effects - the interaction of different chemicals, etc., can make it difficult to isolate the one, or group, responsible for ill health;
- variety of human responses and exposures;
- lack of knowledge of dose-response relationships;
- issues of confidentiality; and
- planners and decision-makers may feel that health is not their responsibility.

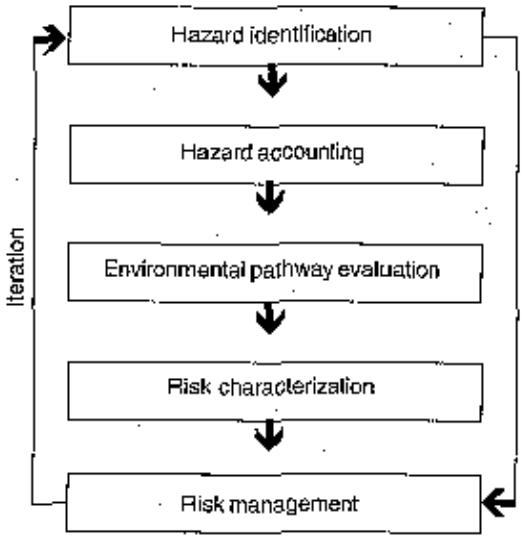
Risk Assessment

Environmental risk assessment addresses risks to human and ecosystem health and welfare of projects and development initiatives. The emphasis of the technique is on risks to human health from industrial production, use and disposal of hazardous chemicals. Risk assessment has been widely adopted by the chemical industry following major disasters such as at Bhopal, India. Risk assessment builds upon conventional EIA in that risks are perceived as impacts where the likelihood of occurrence and potential magnitude of consequences are uncertain. EIA would normally include a risk assessment if risk is considered to be important.

Risk assessment addresses the questions :

- **What can go wrong?** - e.g. what are the possible impacts on human health and welfare due to a chemical transmission in the environment?
- **How severe will any adverse consequences be?** - e.g. how many people and which geographical area might be affected, and what financial costs might be incurred?
- **How likely is the occurrence of adverse consequences?** - e.g. what is the historical and empirical evidence to judge the likelihood of failure in process technology. Human error may also be an important consideration.

Figure 4: Outline Risk Assessment Framework (cited in AsDB 1991)



- **What measures will need to be taken in the event of procedures going wrong?** Considerations might include emergency planning, clean-up and recovery planning, *etc.*

- **What can be done, and at what cost, to reduce unacceptable risk and damage?** One means of integrating risk assessment into existing decision-making processes is to ensure that the risk of failure is carried by the proponent/developer. Some countries make provision for a rehabilitation fund to be established to cover worst case scenarios.

Emerging Directions

Outlined below are two 'evolving' techniques with important implications for decision-making.

Strategic Environmental Assessment (SEA)

SEA can be best described as a process for identifying and addressing environmental consequences (and associated social and economic effects) of existing, new or revised policies, plans and programmes (PPPs). It can also be applied to enable cumulative impacts between projects, policies and programmes to be taken into consideration. SEA can be applied both at the level of broad policy initiatives, and to more concrete programmes and plans that have physical and spatial reference.

The **principles** of EIA apply to SEA undertaken at all levels. Most EIA **procedures** can be applied at plan and programme levels, and possibly certain elements of EIA procedures at the policy level. Whilst there is much current debate on the subject, there is limited practical experience, particularly at the policy level. A brief review of the status, nature, rationale and scope of SEA is provided by Dalal-Clayton and Sadler (1995).

Status of SEA

In principle, the pioneering 1969 US National Environmental Protection Act contained provision for the environmental assessment of policies, programmes and plans (PPPs). However, for many years, the day-to-day focus has remained mainly on projects. Attention has turned more recently to SEA with the preparation of environmental assessments of programmes and plans in many States. Several other developed countries have also established SEA systems - some mandatory, some informal. In the USA and the Netherlands, SEA systems are formally related to higher levels of decision-making. Elsewhere, SEA takes the form of (environmental) impact assessment principles being incorporated in urban and rural planning processes (e.g. Nordic countries, France, Germany and the UK). In Australia and New Zealand, SEA introduction is part of reforms of environmental legislation and administration.

During 1991/92, a Draft Proposal for an EC Directive on SEA was prepared by the European Commission. It included an obligation on Member States to ensure that certain listed types of PPPs (such as transport and energy policies) should undergo EIA. However, SEA has yet to be instituted in developing countries although some multilateral development banks carry out regional and sector-level environmental assessments. For example, the World Bank has included sectoral EA components for country-level projects in a variety of different sectors: transport, agriculture, water/sanitation/urban, energy/power, and industry.

Approaches to SEA

Current SEA processes vary considerably. They may be formal or informal, comprehensive or more limited in scope, and closely-linked with or unrelated to either policy or planning instruments. In some cases it has been introduced as a relatively separate, distinct process - typically as an extension of EIA (e.g. in Canada). In others it has been incorporated into more integrated forms of environmental policy appraisal (e.g. in the UK) and regional and land use planning (e.g. in Sweden).

SEA and sustainability

SEA is not a complete answer to addressing sustainability issues, but is a step in the right direction. Specifically, it can and should help to:

- *strengthen impact assessment* through the incorporation of environmental goals and principles into the policies, plans and programmes that shape individual projects;

- *anticipate cumulative issues* by focusing on the consequences of sectoral or regional-level developments (i.e. a portfolio of projects and activities);
- *instil sustainability principles and responsibilities* into economic decision-making by drawing attention to existing environmental benefits and potential environmental degradation - these characteristics can either support or constrain development; and
- *provide a mechanism for public engagement* in discussions relevant to sustainability at a strategic level.

Institutional barriers to the introduction of SEA

Like EIA, SEA faces a number of important political and institutional barriers such as insufficient political will, bureaucratic resistance, compartmentalised (e.g. sectoral) organisational structures, and the lack of clear environmental goals and objectives in existing policy. Political will is the principal, perhaps the only, precondition to the introduction of SEA. Because responsibility for setting policies lies with ministers, the SEA process may appear intrusive and threatening. Even with political approval, bureaucracies can dictate the scope, extent and tempo of SEA.

Cumulative Effects Assessment (CEA)

There is an increasing realisation of the importance of recognising cumulative effects and being prepared to assess their significance and manage them in 'real world' situations. To date, impact assessment has usually focused upon large development proposals and on a project-by-project basis. Thus, a large number of smaller activities proceed without assessment and the cumulative affects of small, incremental changes can be extremely difficult to deal with. Cumulative effects assessment (CEA) is a fairly recent extension of impact assessment which investigates the combined effects of multiple activities, rather than the effects of specific development activities. Since the field is relatively new, there are few cases where CEAs for major projects have been completed. In general, there is more agreement on the concept of CEA than there is on practical methodologies and techniques. At a fundamental level, most elements of the process are similar to 'conventional' impact assessment. The most important difference is the inclusion of larger spatial scales in the analysis. These may translate into regional patterns of change. Examples of cumulative effects include long-range transport of environmental pollutants, groundwater depletion and pollution and linkages between fisheries declines and wetland losses.

Some countries have incorporated an explicit requirement to address cumulative environmental effects in their environmental assessment legislation, e.g. the United States and Canada. CEA provides for a more comprehensive and holistic evaluation framework than conventional EIA.

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Part II
The Guidelines

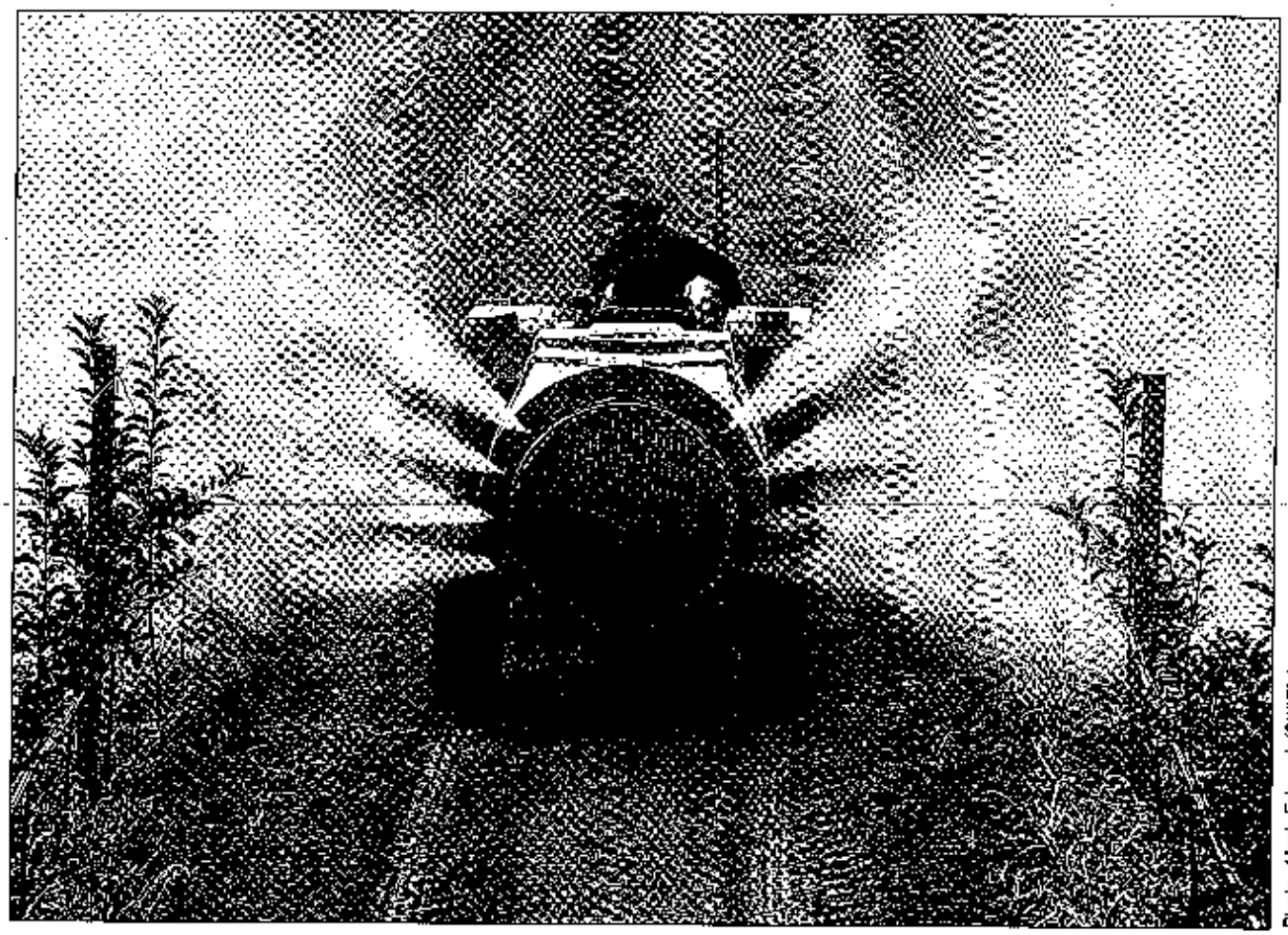

Photo: Mark Edwards/Still Pictures

General and Multisectoral Guidelines

ADB (1992). **Environmental Assessment Guidelines.** *African Development Bank and African Development Fund, Abidjan.*

These guidelines aim to assist the implementation of the African Development Bank's Environmental Policy Paper (1990). They are intended primarily for the internal use of African Development Bank staff and officials of Regional Member Countries, and as an aid for the screening of all ADB projects. The document combines EIA methods with administrative procedures with the aim of integrating EIA into project planning and decision-making.

The first section is introductory, providing explanations of various terms and steps in the project cycle. The second section consists of sectoral guidelines and includes a checklist for initial environmental assessment and project categorisation. The main sectors covered include: agriculture and rural development, industry and infrastructure, public utilities, and transportation. The last section outlines procedural environmental assessment guidelines for the various stages of the project cycle, for use within the Bank Group. Annexes provide suggested terms of reference, a format for EIA studies and a suggested outline of an EIA report.

Contact: African Development Bank, BP 1387, Abidjan 01, Cote d'Ivoire.

Ahmad, Y. J. & Sammy, G. K. (1987). **Guidelines to Environmental Impact Assessment in Developing Countries.** *UNEP Regional Seas Reports and Studies (No.85). United Nations Environment Programme, Nairobi. (44 pp.)*

The authors explain the history of EIA in developed countries and its adoption in the Third World. Introductory chapters explain the importance of EIA to developing countries. Subsequent chapters outline steps in EIA, from information gathering and analysis through to project monitoring. Common problems facing EIA and cost-benefit analysis are illustrated and examples are provided of ways in which they can be solved.

The document also discusses the importance of fostering relationships between the various institutions that need to work together, to improve the use of EIA as a decision-making tool in developing countries. The book concludes with a perspective on the future of EIA in developing countries. These guidelines were originally published by Hodder and Stoughton in 1985. They have been reprinted by UNEP as part of its Regional Seas Programme.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

Birley, M. H. & Peralta, G. L. (1992). **Guidelines for the Health Impact Assessment of Development Projects.** *Environment Paper No. 11. Asian Development Bank, Manila. (45pp. + appendices)*

This is one of a series of documents produced by the Asian Development Bank describing tools for use in the field. It is aimed at a non technical audience and provides a methodological framework. The document guides readers to more detailed information in reading lists. This approach makes for a clear and succinct guide.

The main text contains five chapters describing health and its rationale for inclusion, types of health hazard; their identification, Initial Health Examination (IHE), and Health Impact Assessment (HIA). IHE aims to screen projects for health hazards as part of an Initial Environmental Examination (IEE). If projects pose a potential health risk, a full HIA will be required. This involves three main tasks - the identification of the hazard, interpreting the health risk, and risk management. Stress is placed on the need for good collaboration between organisations and experts and on the need for community involvement. Appendices outline the background to HIA and cover cross-boundary issues (e.g. malaria, nutrition,

mobility, resettlement and construction) as well as sectoral impacts such as agriculture, energy, industry, mining, transport and communication, urban renewal, water supply and sanitation, and tourism.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Carpenter, R. A. & Maragos, J. E. (1989). **How to Assess Environmental Impacts on Tropical Islands and Coastal Areas.** *South Pacific Regional Environment Programme Training Manual. Environment and Policy Institute, East-West Center, Honolulu. (xiii, 345pp.)*

The theme of this manual is the prediction of future environmental conditions as a result of economic development and technological change. The manual is a scientific training guide which recommends various techniques of EIA, whilst stressing the need to develop an individual approach towards each project.

The manual explains how to design an EIA, and suggests key references to assist the practitioner undertake a full assessment. The framework of the document is intended to act as a basis for drawing up terms of reference for EIA consultants, and also as a useful standard for EIA reviews. It is also a helpful desk reference work, providing definitions of common terms, examples of impacts and mitigative measures. Specific sectors covered by the manual include: agriculture, forestry, fisheries, tourism, energy, mining, waste management, construction, ports and harbours.

Contact: Environment and Policy Institute, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is prepared specifically for use by NGOs and the projects they support, but is also relevant to project planning in general. The series provides project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes accessible guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Introduction** (23 *pp.*): defines basic terminology and outlines general considerations for evaluating the significance of impacts, data collection, screening and the integration of environmental considerations into development project planning. A framework for screening projects is also described.

- **Coastal ecosystems** (25 *pp.*): covers estuaries, mangroves and coral reefs, together with a generic discussion of environmental impacts of development projects on coastal ecosystems.

- **Pest control - Pesticides and Integrated Pest Management** (31 *pp.*): outlines the general effects of pesticides on ecosystems and human health, and provides a list of basic precautions for pesticide application. There is also a limited amount of technical information on selected pesticides and a checklist to guide practitioners. A summary description of Integrated Pest Management (IPM) is included.

- **Domestic Water Supply and Sanitation** (27 *pp.*): briefly covers environmental, social and health impacts of water supply and sanitation projects, with an emphasis on the latter. Also included is a brief discussion of water conservation (covering quality and quantity) and community participation in project planning and implementation.

- **Irrigation** (25 *pp.*): provides an outline of the environmental and health impacts of irrigation projects and a checklist for practitioners.

- **Small Dams/Reservoirs** (25 *pp.*): outlines environmental and health impacts of small dams and reservoirs, and discusses community participation and water conservation. A checklist for practitioners is also provided.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7.

CEC (1993). **Sectoral Environmental Assessment Sourcebook** *(Environment Manual). Commission of the European Communities, Directorate-General for Development, Brussels. (415 pp.)*

This sourcebook is designed to support the environmental appraisal system established for the Lome IV Convention, laid out in an accompanying *User's Guide*. The Sourcebook is an edited compilation of existing environmental guidelines produced by the donor community. It has been designed to assist government authorities in Asian, Caribbean and Pacific (ACP) countries to prepare terms of reference (TOR) for an EIA, incorporate EIA into the TOR for a project or programme feasibility study, appraise the results of an EIA, and place monetary values on environmental impacts.

Part I is a guide to the economic valuation of environmental costs and benefits. Part II comprises sixteen sections, setting out guidelines for each sector within the Commission's development programme. The sectors covered are rural and urban water supply and sanitation; solid waste management; urban infrastructure development; transport infrastructure; ports and harbours; energy; agriculture: irrigation; forestry; fisheries and aquaculture; livestock; mining; industry; tourism: resettlement; pesticides and fertilisers. For each sector there is a checklist, intended to assist in the preparation of the TOR for an EIA, background notes to provide non-technical explanations of the key environmental issues in each sector, and references to existing environmental guidelines. The sector checklists and background notes are each divided into four sections - sources of impacts, receptors of impacts, significance of environmental impacts and mitigating measures. The final part of the document is a bibliography of cross-sectoral and miscellaneous environmental assessment guidelines.

Contact: Directorate General for Development, Commission of the European Communities, Rue de la Loi 200, B-1049 Brussels, Belgium.

Environmental Resources Management (1993). **Environmental Impact Assessment: A Practical Handbook.** *Commonwealth Secretariat, London. (v, 171 pp.)*

This document examines EIA experience at project level and focuses on the application of EIA to specific types of development projects. It covers a range of subject areas including EIA procedures and methods, the institutional framework for EIA and key principles in managing an EIA. Generic terms of reference are provided as well as checklists for eleven sectors: rural and urban water supply and sanitation; urban infrastructure; transport; ports and harbours; energy; agriculture; forestry; fisheries and aquaculture; mining; industry; and tourism.

Contact: Commonwealth Secretariat, Marlborough House, Pall Mall, London SW1Y 5HX, UK.

FINNIDA (1989). **Guidelines for Environmental Impact Assessment in Development Assistance.** *Finnish International Development Agency, Helsinki. (Looseleaf)*

The guidelines are presented in two parts - general EIA guidelines and sectoral guidelines. The general guidelines set out the EIA procedure to be followed in FINNIDA-funded projects.

A number of methodologies are introduced including checklists, matrices and models. The sectoral guidelines focus on the types of projects most important in FINNIDA's development assistance programme. The sectors covered are forestry and agriculture; human settlements and basic services development; transport; mining; electrification; and fisheries and aquaculture. Within each sector, the main types of environmental problems and the potential negative impacts are considered, and mitigation measures suggested.

The guidelines are intended for use in FINNIDA's development assistance programme by project planners, administrators and implementing agencies, both in the recipient country and in Finland. It is also hoped that the guidelines will be used by NGOs, commercial companies and multilateral agencies.

Available from Finnish International Development Agency, Katajanokanlaituri 3, 00160 Helsinki, Finland.

JICA (1992). **Environmental Guidelines for Infrastructure Projects.** *Japanese International Cooperation Agency, Tokyo. (533 pp.)*

This document includes guidelines for the following sectors: ports and harbours; airports; roads; railways; river and erosion control; solid waste management; sewerage; groundwater development; water supply; regional development; tourism development; transport development; and urban transportation development.

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku. Tokyo 163-04, Japan

NORAD (1988). **Check Lists for Initial Screening of Projects.** *Environmental Impact Assessment (EIA) of Development Aid Projects. Norwegian Agency for Development Cooperation, Oslo. (29 pp.)*

This is the first of a series of booklets compiled to assist project planners and desk officers to integrate environmental considerations into various types of aid projects at an early stage in the planning process. This volume describes the role and scope of EIA in development planning, together with a brief outline of the main components of the EIA process. Check lists for initial screening of projects are included. These cover: agriculture; animal husbandry; forestry; fisheries; aquaculture; hydro-electric power; water supply; irrigation; transport; industry; mining; waste treatment and disposal; development of densely populated or urban areas; and use of chemical pesticides. Separate volumes in the series have now been prepared for eleven of these project categories (agriculture; animal husbandry; forestry; fisheries; aquaculture; hydropower development; water supply, wastewater, irrigation; transport; industry and energy; mining and extraction of sand and gravel; and waste management). Two more are due to be published later in 1995 covering development of densely populated areas; and use of chemical pesticides.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo 1, Norway.

ODA (1992). **Manual of Environmental Appraisal (Second Edition).** *UK Overseas Development Administration, London. (iv, 146pp.)*

The manual provides practical guidance to ODA staff to address environmental issues early in the project cycle. It comprises 9 sections. Sections 1 - 4 address broad environmental considerations and procedures relevant to ODA aid policy. Section 5 discusses ecosystems, with an emphasis on those which are particularly sensitive to change. Section 6 reviews potential environmental impacts for different project sectors: natural resources (agriculture, pesticides and fertilizers, forestry, fisheries, livestock, and irrigation); infrastructure, utili-

ties and public works (dams and hydropower, road and rail, ports, harbours and coastal structures, airports, and thermal power); human settlements and urban development (including housing, water supply, sewerage, sanitation and waste disposal); industry and mining; and tourism. Section 8 includes outlines of selected practical methods for environmental appraisal and the final section gives details on managing EIAs, including commissioning, setting terms of reference, and monitoring and evaluation.

Contact: Overseas Development Administration, 94 Victoria St, London SW1E 5JL, UK.

OECD (1992). **Good Practices for Environmental Impact Assessment of Development Projects.** *OECD Development Assistance Committee Guidelines on Environment and Aid No. 1. Organisation for Economic Cooperation and Development, Paris. (17pp.)*

The guidelines are designed for policy-makers and practitioners in donor agencies and developing countries. The first part of the document describes the basic purpose of EIA, and the second part sets out a number of 'good practices' for the various steps in the EIA process.

Contact: Organisation for Economic Cooperation and Development, Development Cooperation Directorate, 2 Rue André-Pascal, Paris 75016, France.

Pemetta, J. C. & Elder, D. L. (1993). **Cross-sectoral, Integrated Coastal Area Planning (CICAP): Guidelines and Principles for Coastal Area Development.** *A Marine Conservation and Development Report. -The World Conservation Union (IUCN)/World Wide Fund for Nature, Gland, Switzerland. (vii, 63pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

UNEP (1988). **Environmental Impact Assessment: Basic Procedures for Developing Countries.** *United Nations Environment Programme, Nairobi. (16pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

World Bank (1991). **Environmental Assessment Sourcebook,** Vols I-III. *World Bank, Washington D.C.*

This sourcebook collects World Bank policies and procedures, guidelines, precedents and practices regarding the environment into a three volume set of documents (referenced separately below). It is a reference manual which contains the information needed to manage the process of EA according to the requirements of the Bank's Operational Directive on EA (OD 4.00 Annex A, October 1989). It is specifically designed to assist EA practitioners, project designers and Bank task managers, but will be of interest and value to environmentalists in general and to all those concerned with EA or involved in establishing EA guidelines. The sourcebook aims to assist task managers in their advisory responsibilities, through discussion of fundamental environmental considerations (with emphasis on those with high potential impact), summaries of relevant Bank policies, and analyses of other topics that affect project implementation (e.g. financial intermediary lending, community involvement, economic evaluation).

The contents have been organised to be individually accessible. The focus is on those operations with major potential for negative environmental impact, such as new infrastructure, dams and highways. Projects with less negative potential, such as maintenance and rehabilitation, are not examined in detail. The updates issued to date are referenced separately below. The most up-to-date version is available electronically to those able to access the Bank's "All-in-One" electronic mail.

World Bank (1991). **Environmental Assessment Sourcebook, Vol I: Policies, Procedures and Cross-Sectoral Issues.** *World Bank Technical Paper No. 139. World Bank, Washington D.C. (xv, 227pp.)*

Chapter 1 is recommended reading for those responsible for a Bank-supported project with potentially significant environmental impacts. It summarises Bank EA requirements and outlines the Bank's environmental review process - from project screening, at the time of identification, to post-completion evaluation. A number of 'boxes' illustrate different applications of EA in development activities. OD 4.00, Annex A is provided as an appendix with other Bank operational policy and procedural documents relevant to EA. Annex 1-3 offers a standard format for Terms of Reference for an EA.

Chapters 2 and 3 consider, respectively, ecological and socio-cultural issues which are likely to arise in EA. In contrast, Chapters 4, 5 and 6 deal with 'methods': economic evaluation; institutional strengthening; and sector and financial intermediary lending. Chapter 7 discusses the implications of OD 4.00, Annex A, with respect to community involvement and the role of NGOs.

World Bank (1991). **Environmental Assessment Sourcebook, Vol II: Sectoral Guidelines.** *World Bank Technical Paper No. 140. World Bank, Washington D.C. (282 pp.)*

Chapters 8 and 9 in this volume, and Chapter 10 in Volume 3, outline general sectoral considerations and other relevant topics. The topics are indicated in the contents and are cross-referenced throughout the sourcebook. The balance of each chapter covers specific types of projects chosen primarily because they have potentially significant environmental impacts. Project types are described briefly, potential impacts summarised and special issues noted. Possible alternatives to projects are outlined, and management and training needs discussed along with monitoring requirements. Each review provides a table of potential impacts and mitigatory measures. Sample terms of reference for the various project types are given.

Chapter 8 is concerned with agriculture and rural development with sections covering: management of agricultural production; integrated pest management and use of agrochemicals; agroindustry; dams and reservoirs; fisheries; flood protection; natural forest management; plantation development/reforestation; watershed development; irrigation and drainage; livestock and rangeland management; and rural roads.

Chapter 9 covers population, health and nutrition, transportation, urban development, water supply and sewerage. The following sections are included: public health and safety; environmental considerations for development projects in urban areas; roads and highways; inland navigation; port and harbour facilities; large-scale housing projects; solid waste collection and disposal systems; tourism development; water supply; and wastewater collection, treatment, reuse, and disposal systems.

*World Bank (1991).*Environmental Assessment Sourcebook Vol III: Guidelines for Environmental Assessment of Energy and Industry Projects. *World Bank Technical Paper No. 154. World Bank, Washington D.C. (xiii, 237 pp.)*

This volume comprises Chapter 10 of the World Bank's EA Sourcebook. It discusses energy and industry and includes 20 sections: industry hazard management; hazardous material management; plant siting and industrial estate development; electric power transmission systems; oil and gas pipelines; oil and gas development - offshore and onshore; hydroelectric projects; thermoelectric projects; financing nuclear power (options for the Bank); cement; chemical and petrochemical industry; fertilizers; food-processing; small- and medium-scale industries; iron and steel manufacturing; nonferrous metals; petroleum refining; pulp, paper and timber processing; and mining and mineral processing.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Sectoral Guidelines

Agriculture
Aquaculture/Fisheries
Climate
Energy/Power
Forestry
Human Settlements
Industry
Mining and Other Extractive Industries
Risks/Hazards
Tourism
Transport
Waste
Water Resources

Photo: Heidi Bradner/Panos Pictures

Sectoral Guidelines

■ AGRICULTURE

General

Altieri, M. (1979). **Environmentally Sound Small-Scale Agricultural Projects. Guidelines for Planning.** *CODEL Inc., New York. (163 pp.)*

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

AsDB (1991). **Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects.** *Asian Development Bank, Manila. (iv, 115 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover industrial and power development, and infrastructure projects.

The purpose of the guidelines is to enable Bank project staff to prepare an initial environmental assessment. The sectors considered are irrigation, fisheries/aquaculture, watershed development, coastal zone development, forestry and land clearance. For each sector, the required procedure for conducting the initial assessment is detailed with a checklist of environmental parameters to be considered, examples of mitigation measures and an outline for a full EIA. As in the other manuals, the final annex contains guidelines for all types of projects including resettlement, encroachment and noise abatement.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Berwick, S., Soewardi, B., & Pertanian, D. (1987). **Guidelines for Applying the Environmental Impact Assessment Process to Resource Development in Indonesia.** *Department of Agriculture, Jakarta. (192 pp. + annexes)*

This document is intended for use by all offices within the Department of Agriculture (DOA) and other agencies, contractors and consultants participating in the EIA process of the DOA, as well as by project proponents outside the DOA including the private sector and donor agencies. It describes the regulatory structure within which the guidelines are set and provides methods for planning, management and analysis related to the EIA process. Although the guidelines have been prepared for projects encountered by the DOA, the approach depends upon an interdisciplinary project evaluation early in the EIA process. Such an approach may well transcend sectoral ministries.

Contact: Bureau of Planning, Department of Agriculture, Jl Harsona RM No. 3 Ragunan, Jakarta Selatan, Indonesia.

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band II - Agrarwirtschaft, Bergbau/Energie, Industrie/Gewerbe (Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume II - Agrarian Economy, Mining/Energy, Industry/Trade).** *Vieweg/Bundesministerium fur Wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn, Braunschweig. (734 pp.)*

Contact: Bundesministerium fur Wirtschaftliche Zusammenarbeit, Friedrich -Ebert-Allee 114-116, D-5300 Bonn, Germany.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is prepared specifically for use by NGOs and the projects they support, but is also relevant to project planning in general. The booklets provide project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes accessible guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Pest control - Pesticides and Integrated Pest Management** (31 *pp.*): outlines the general effects of pesticides on ecosystems and human health, and provides a list of basic precautions for pesticide application. There is also a limited amount of technical information on selected pesticides and a checklist to guide practitioners. A summary description of Integrated Pest Management (IPM) is included.

- **Irrigation** (25 *pp.*): provides an outline of the environmental and health impacts of irrigation projects and a checklist for practitioners.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Agricultural Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok. (viii, 51 pp.)*

These guidelines aim to assist government agencies concerned with environmental protection in developing countries (specifically the Asia-Pacific region) in the planning and execution of EIAs for agricultural development projects, in particular land clearance projects. A brief overview is given of the EIA process, as well as its application to agricultural development projects. Summaries of current EIA methodologies are provided and methodologies applicable to land clearing projects are recommended. Annexes provide project case studies and sample terms of reference. This document is one of a series of four. Other volumes cover industrial development, water resources and transport.

Contact: Economic and Social Commission for Asia and the Pacific, United Nations Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Government of Pakistan (1986). **Environmental Impact Assessment Guidelines.** *Ministry of Housing and Works, Islamabad. (117 pp.)*

These guidelines are divided into three sections: agriculture/rural development sector; infrastructure sector; and industry and mining sector. For each, background information is provided in terms of the environmental considerations specific to that sector. The major types of impact for each type of project are identified as well as information required for project planning.

Contact: Ministry of Housing and Works, Block B, Pakistan Secretariat, Islamabad, Pakistan.

JICA (1992). **Environmental Guidelines on JICA Development Study for Agricultural and Rural Development Projects.** *Japanese International Coopertion Agency, Tokyo. (220 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan.

MIRENEM (undated). **Guía Básica Para la Elaboración de Estudios de Impacto Ambiental Para Actividades Agrícolas (Basic Guide for the Conduct of Environmental Impact Assessment Studies for Agricultural Activities).** *Comisión Interinstitucional de Evaluación y Control de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

Contact: Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San Jose, Costa Rica.

NORAD (1995). **Initial Environmental Assessment: Agriculture.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 1. Norwegian Agency for Development Cooperation, Oslo. (32 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of agricultural projects, with specific reference to tropical agriculture, and briefly reviews the environmental impacts associated with such projects. These include impacts on air, climate, soil, water, ecosystems, natural and cultural landscapes. Attention is paid to the transmission of pests and diseases, impacts of the use of seeds and biotechnology, and changes in land use and their impacts on traditional lifestyles. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Depot, 0030 Oslo, Norway.

Irrigation

Bolton, P., Imvebore, A. M. A. & Fraval, P. (1990). **A Rapid Assessment Procedure for Identifying Environmental and Health Hazards in Irrigation Schemes: Initial Evaluation in Northern Nigeria.** *Hydraulics Research Wallingford, Oxford. (81 pp.)*

This is an interim progress report outlining on-going trials of a procedure for rapidly assessing small-scale irrigation projects (<1,000 ha) in northern Nigeria. The document emphasises environmental and health hazards, accepting that cumulative, subtle problems may not be recognised until it is too late. The guidelines propose a method for assessing an area within two weeks, at low cost, using non-experts and low technology.

Appendix 1 gives details of the projects examined while Appendix 2 contains the questionnaire in three parts: one to be completed by the project manager or equivalent, the second comprising questions for the village head or equivalent, and the third aimed at medical staff. Appendix 3 gives guidance on interpretation of the information, while Appendix 4 contains examples of technical sheets on Schistosomiasis and Guinea worm. Finally, Appendix 5 reviews the literature on rapid appraisal techniques.

Dougherty, T. C. & Hall, A. W. (1994). **A Guide to the Environmental Impact Assessment of Irrigation and Drainage Projects** in **Developing Countries.** *Hydraulics Research Wallingford, Wallingford, Oxford. (67 pp.)*

Contact: HR Wallingford Ltd., Howberry Park, Wallingford, Oxford OX10 8BA, UK.

IFAD (1987). **Monitoring and Evaluation of Irrigation Projects.** *International Fund for Agricultural Development, Rome.*

Contact: International Fund for Agricultural Development, Via del Serafico 107, I-00142 Rome, Italy.

Mara, D. & Caimcross, S. (1989). **Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture.** *World Health Organization, Geneva. (182 pp.)*

This booklet is aimed at planners and decision-makers in government departments and consulting engineers involved in human waste management. It concentrates on the steps necessary to ensure that human wastes can be used to their maximum advantage without endangering the health of people working and living in the area. Pollution is not included. Chapters 2 and 3 review the history and benefits of waste reuse. Chapter 4 outlines public health considerations. Sociocultural factors are considered in Chapter 5 and environmental protection in Chapter 6. Methods of control to ensure public health protection are detailed in Chapter 7 while the corresponding institutional, legal and financial aspects are provided in Chapter 8. A bibliography of up-to-date, topical interest is provided together with a glossary.

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Mock, J. F. & Bolton, P. (1993). **The ICID Environmental Check-List To Identify Environmental Effects of Irrigation, Drainage and Flood Control Projects.** *Prepared for the International Commission on Irrigation and Drainage by the Hydraulics Research Wallingford, Oxford. (70 pp.)*

The Working Group, established by the International Commission on Irrigation and Drainage (ICID), has produced this environmental check-list to help identify environmental impacts. Impacts are grouped under eight sectors: hydrology, pollution, soils, sediments, ecology, socio-economic, health and ecological imbalances.

The checklist provides a framework with which to identify the environmental effects of new or existing projects and is intended for use by engineers and planners who are not specialists in the environmental sciences. Practical guidance is given in the use of the procedure in various localities and for various types of projects, and suggestions are given as to how it might be adapted to specific situations. The main components of the procedure are given in a form which can be photocopied for field use.

Contact: HR Wallingford Ltd., Howberry Park, Wallingford, Oxford OX10 8BA, UK.

NORAD (1994). **Initial Environmental Assessment: Water Supply, Wastewater, Irrigation.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 7. Norwegian Agency for Development Cooperation, Oslo. (33 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of projects concerned with water supply, wastewater management and irrigation, and briefly reviews the impacts of such projects on the physical and social environment. These include over-exploitation of water resources, pollution and health problems. The specific impacts of dam construction and irrigation are also examined. Cultural and other potential impacts on local communities are briefly reviewed. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Depot, 0030 Oslo, Norway.

Oomen, J. M. V., de Wolf, J. & Jobin, W. R. (1990). **Health and Irrigation. Incorporation of Disease Control Measures in Irrigation, a Multi-faceted Task in Design, Construction and Operation.** *ILRI Publication 45, Vol 1. International Institute for Land Reclamation and Improvement, Wageningen. (304 pp.)*

This book originated in a research thesis which highlighted the repeated mistakes made in irrigation. It is very detailed and chapters discuss: health and irrigation; diseases; vectors of those diseases; data collection; engineering control measures in large reservoirs, in irrigation systems and on farm water schemes: biological and chemical control; disease control in the domestic environment; and the economics of health in irrigation schemes. Technical notes outline the epidemiology of mosquito-borne diseases and schistosomiasis, and provide a review of the cost of control measures.

Contact: International Institute for Land Reclamation, Lawickse Allee 11, POB 45, 6700 AA Wageningen, Netherlands.

Shuval, H. I. et al. (1986). **Wastewater Irrigation in Developing Countries: Health Effects and Technical Solutions.** *UNDP Project Management Report No 6. World Bank Technical Paper No. 51, World Bank, Washington D.C. (xxxi, 324 pp.)*

This report provides information on wastewater re-use in irrigation together with the technological and public health impacts. It does not deal with the use of sludge or night soil in agriculture, nor with wastewater recycling in aquaculture. The report reviews existing literature, examines the costs and benefits of practices which would reduce health effects, and identifies and evaluates policy options. It establishes that the highest risk of the transmission of pathogens, infection and sickness arises from helminths, bacteria and viruses.

Contact: World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Tiffen, M. (1991). **Guidelines for the Incorporation of Health Safeguards into Irrigation Projects Through Intersectoral Cooperation.** *PEEM Guidelines Series No. 1. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva.*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Tillman, R. (1981). **Environmental Guidelines for Irrigation.** *US Man and the Biosphere Programme/United States Agency for International Development, Washington D.C. (74 pp.)*

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

WHO (1989). **Health Guidelines for Use of Wastewater in Agriculture and Aquaculture.** *Technical Report Series, No. 778. World Health Organisation, Geneva.*

WHO Commission on Health and Environment (1992). **Report of the Panel on Food and Agriculture.** *World Health Organization, Geneva. (191 pp.)*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Pesticides

AsDB (1987). **Handbook on the Use of Pesticides in the Asia-Pacific Region.** *Asian Development Bank, Manila. (294 pp.)*

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

FAO (1989). **Revised Guidelines on Environmental Criteria for the Registration of Pesticides.** *Food and Agriculture Organisation, Rome. (15 pp.)*

Contact: Food and Agriculture Organisation, Via Terme di Caracalla, I-00100 Rome, Italy.

Central Pollution Control Board (1993). **Guidelines for Environmental Audit.** *Central Pollution Control Board, Delhi. (vi, 80 pp.)*

Environmental Audit is an exercise of self-assessment to minimise the generation of wastes and pollution potential. A procedure is set out for conducting an environmental audit, with case studies from the organochlorine and organophosphorus industry. Technologies are described for detoxification of waste, treatment options for wastewater from the pesticides industry, limits for water use and wastewater generation, and emission standards for specific pollutants. A questionnaire for environmental audit and terms of reference for an environmental statement are included as annexes.

Contact: Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi - 110032, India.

UNEP (1982). **Environmental Guidelines for Pesticide Use on Industrial Crops.** *UNEP Environmental Management Guidelines, No. 1. United Nations Environment Programme, Nairobi. (x, 9 pp.)*

The rate of increase in production and consumption of pesticides is greatest amongst developing countries, in spite of a widening recognition of the disadvantages of excessive reliance on chemicals. These guidelines have been prepared to draw attention to the environmental problems that have been encountered in the use of pesticides with particular emphasis to those used on "industrial crops" (those produced for trade rather than for local consumption).

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

WHO/UNEP (1990). **Public Health Impact of Pesticides used in Agriculture.** *World Health Organization, Geneva. (128 pp.)*

This publication reviews current knowledge on the effects of pesticides on health together with the levels of exposure of various groups. It is intended for use by national health officials responsible for pest management, and by researchers working on the epidemiology of pesticide poisoning. Individual chapters cover the production and use of pesticides, their toxic effects, short- and long-term health effects, sources and indicators, populations at risk, and public health impact and prevention. The report concludes with proposals and recommendations.

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Others

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental de Proyectos Avicolas, Para Mas de 5000 Animales (Guide for the Conduct of Environmental Impact Assessment Studies for Aviculture Projects of more than 5000 Animals).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (8 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica.

NORAD (1994). **Initial Environmental Assessment: Animal Husbandry.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 2. Norwegian Agency for Development Cooperation, Oslo. (30 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of animal husbandry projects and the potential environmental impacts of such projects. These include overgrazing and soil erosion, pollution of air, soil and water, disease and infection, and loss of genetic material. Specific impacts associated with livestock-based industries, such as tanneries and animal transportation are also reviewed. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

UNEP (1986). **Environmental Guidelines for Agricultural Mechanization.** *UNEP Environmental Management Guidelines, No. 10. United Nations Environment Programme, Nairobi. (x, 17 pp.)*

The adoption of mechanised techniques has had a dramatic effect on the environment. These guidelines are intended for the use of administrators and planners who are required to evaluate the costs and benefits of increased mechanisation in terms of real and potential environmental costs.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

■ AQUACULTURE / FISHERIES

Barg, U. C. (1992). **Guidelines for the Promotion of Environmental Management of Coastal Aquaculture Development.** *FAO Fisheries Technical Paper No. 328. Food and Agriculture Organisation, Rome. (122 pp.)*

This document is aimed at aquaculture development specialists, coastal resource use planners and government officials involved in the planning and management of coastal aquaculture development within the wider context of resource use in coastal areas. Guidelines are given for improved environmental management of coastal aquaculture based on an overview of published experience. The potential adverse environmental effects of coastal aquaculture practices are outlined, and the main socio-economic and bio-physical factors are considered. Methodologies for the assessment and monitoring of environmental hazards and impacts of coastal aquaculture are presented. Finally, selected environmental management options are described for application both at policy-level and farm-level.

Contact: Food and Agriculture Organisation, Via Terme di Caracalla, I-00100 Rome, Italy.

FAO (1984). **Cage and Pen Fish Farming: Carrying Capacity Models and Environmental Impact.** *FAO Fisheries Technical Paper No. 255. Food and Agriculture Organisation, Rome. (131 pp.)*

Contact: Food and Agriculture Organisation, Via Terme di Caracalla, I-00100 Rome, Italy.

Geoghegan, T. (1983). **Guidelines for Integrated Marine Resource Management in the Eastern Caribbean.** *Caribbean Conservation Association Caribbean Environment Technical Paper No. 2. Caribbean Conservation Association, St Michael, Barbados.*

Contact: Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

JICA (1993). **Environmental Guideline for Fisheries.** *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan

Mara, D. & Cairncross, S. (1989). **Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture.** *World Health Organization, Geneva. (182 pp.)*

This booklet is aimed at planners and decision-makers in government departments and consulting engineers involved in human waste management. It concentrates on the steps necessary to ensure that human wastes can be used to their maximum advantage without endangering the health of people working and living in the area. Pollution is not included. Chapters 2 and 3 review the history and benefits of waste reuse. Chapter 4 outlines public health considerations. Sociocultural factors are considered in Chapter 5 and environmental protection in Chapter 6. Methods of control to ensure public health protection are detailed in Chapter 7 while the corresponding institutional, legal and financial aspects are provided in Chapter 8. A bibliography of up-to-date, topical interest is provided together with a glossary.

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos de Acuicultura en Refuglos de Vida Silvestre y Humedales (Guide for the Conduct of Environmental Impact Assessment Studies for Aquaculture Projects in Wildlife Reserves and Wetlands).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

Contact: Comision Gubernamental de Control y Evaluacion de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10,104, 1000 San Jose, Costa Rica

NORAD (1991). **Initial Environmental Assessment: Fisheries.** *Environmental Impact Assessment of Development Aid Projects No. 4. Norwegian Agency for Development Cooperation, Oslo. (21 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). It aims to assist project planners and desk officers to integrate environmental considerations into fisheries projects at an early stage in the planning process. The booklet provides a general description of marine and freshwater fisheries systems, and briefly reviews the possible direct and indirect impacts of fisheries development projects on these systems. The latter include overexploitation of fish stocks, removal of non-target (bycatch) species, the impact of introduced species, pollution, waste disposal and various social impacts. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1992). **Initial Environmental Assessment: Aquaculture.** *Environmental Impact Assessment of Development Aid Projects No. 5. Norwegian Agency for Development Cooperation, Oslo. (23 pp.)*

The booklet outlines the characteristics of aquaculture projects, and briefly reviews their impacts on social systems, aquatic environments and existing production systems. These potential impacts include those associated with the introduction of new species, pollution and waste disposal, human health, traditional production systems, and increased demand for water and energy. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

Phelps, R. P. (1981). **Environmental Considerations in Aquaculture.** *International Center for Aquaculture, Auburn, Alabama. (87 pp.)*

This manual provides planners with a background to environmental issues associated with donor-funded aquaculture development. It is intended principally for use by United States Agency for International Development (AID) program staff. The document describes basic procedures and methods associated with aquaculture development, and reviews environmental aspects of aquaculture. The latter include impacts on soils, hydrology, land use patterns, water quality, natural resources, air quality, and economic, social and cultural effects. A checklist of environmental effects is included and special considerations for brackish water aquaculture are discussed.

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

UNEP (1990). **Environmental Guidelines for Fish Farming.** *UNEP Environmental Management Guidelines No. 19. United Nations Environment Programme, Nairobi. (52 pp.)*

These guidelines are intended to build awareness of the relationship between fish farming and the environment, and the factors that determine that relationship. The booklet discusses how the culture system used, the scale and intensity of operations, the species cultivated, the choice of site, and the management system adopted, all affect the incidence and severity of environmental impacts. It is stressed that most environmental impacts can be avoided by careful site selection and planning. Management measures aimed at mitigating impacts which may be overlooked, or which may be difficult to predict, are described.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

WHO (1989). **Health Guidelines for Use of Wastewater in Agriculture and Aquaculture.** *Technical Report Series No. 778 . World Health Organisation, Geneva.*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

■ CLIMATE

Carter, T. R., Parry, M. L., Nishioka, S., Harasawa, H. (1992). **Preliminary Guidelines for Assessing Impacts of Climate Change.** *Environmental Change Unit, Oxford, UK, and Center for Global Environmental Research, Tsukuba, Japan. (28 pp.)*

Climate impact assessment has two mutually-dependent objectives: first, to construct a firm scientific basis for evaluating the interactions of climate, environment and society; and second, to provide the best possible information to policy-makers, decision-makers and managers at all levels of government and industry to enable them to develop responses to future environmental and socio-economic consequences.

This report is the outcome of the work of an expert group established by the Intergovernmental Panel on Climate Change (IPCC). It is a preliminary report which IPCC intends to develop and improve. It does not seek to prescribe a single preferred method for the assessment of the impacts of climate change, but provides an analytical outline that comprises seven steps, with a range of methods identified at each step which can yield comparable results.

The report outlines a basic framework for the study of climate-environment-society interactions, with a particular emphasis on assessing the impacts of possible future changes in climate due to the enhanced greenhouse effect.

Contact: Environmental Change Unit, 1a Mansfield Road, Oxford OX1 3TB, UK.

CEPA (1994). **Climate Change in the Environmental Impact Assessment Process. Guide for Environmental Assessment Officers.** *Draft. Environment Assessment Branch, Commonwealth Environment Protection Agency, Canberra. (43 pp.)*

Contact: Commonwealth Environment Protection Agency, PO Box E305, Queen Victoria Terrace, Canberra, ACT 2600.

■ ENERGY / POWER

General

AsDB (1990). **Environmental Guidelines for Selected Industrial and Power Development Projects.** *Asian Development Bank, Manila. (xiii, 154 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes in the series cover agricultural and natural resource development projects, and infrastructure projects. The purpose of the guidelines is to assist Bank project staff to prepare initial environmental assessments (IEE) of proposed projects. The annexes of the manual set out guidelines, checklists and report formats for the IEE for specific types of project. These include: dams, reservoirs and hydropower; thermal power development; industries; fertilizer; mining; cement manufacturing plants; power transmission lines; oil and gas distribution lines. The final annex provides guidelines relevant to all types of projects, covering issues such as resettlement, pollution control and monitoring.

AsDB (1991). **Environmental Considerations in Energy Development.** *Asian Development Bank, Manila.*

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band II - Agrarwirtschaft, Bergbau/Energie, Industrie/Gewerbe (Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume II - Agrarian Economy, Mining/Energy, Industry/Trade).** *Vieweg /Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn, Braunschweig. (734 pp.)*

Contact: Bundesministerium fur Wirtschaftliche Zusammenarbeit, Friedrich -Ebert-Allee 114-116, D-5300 Bonn, Germany.

Government of Brazil (1990). **The Brazilian Power Sector's Environmental Master Plan. Summary.** *Ministry of Infrastructure/National Secretariat of Energy/Centrais Eléctricas Brasilieriras S.A. - ELECTROBRÁS, Rio de Janeiro. (72 pp.)*

Contact: Ministry of Infrastructure/National Secretariat of Energy/Centrais Eléctricas Brasilieriras S.A. - ELECTROBRÁS. Rio de Janeiro.

Interconexion Eléctrica SA (1991). **Metodología para la Evaluación Ambiental del Plan de Expansión del Sector Eléctrico Colombiano (Methodology for the Environmental Assessment of the Expansion Plan for the Colombian Electricity Sector).** *Environment Office, Ministry of Mines and Energy, Medellin, Colombia. (28 pp.)*

The document outlines a technique termed 'multi-objective analysis' which is used to predict the impact of electricity generation projects. The technique employs the use of biophysi-

cal and socioeconomic objectives, qualitative and quantitative indicators and their variables. The method itself and the associated weighting factors have been approved by the electricity sector companies in Colombia, and has also been tested using information from operating power plants. It is an original approach for environmental and socioeconomic assessment in Latin America.

Contact: Interconexion Eléctrica SA, Calle 12 sur No 18-168, PO Box 8915/8762, Medellin, Colombia.

IUCN (1991). **EIA Guidelines for the Pakistan Energy Sector.** *Environmental and Urban Affairs Division, Government of Pakistan, The World Conservation Union (IUCN), Gland, Switzerland. (42 pp.)*

These guidelines provide comprehensive information on EIA for the energy sector in Pakistan. They are intended for use in connection with a World Bank loan to Pakistan for energy sector projects, but also have general application.

The document is in two parts. Part 1 provides background information including an introduction to EIA, the legal requirement for EIA in Pakistan, a perspective on the Pakistan energy sector and the sensitivity of Pakistan's environment to disturbance by development projects. Part 2 includes a generalised procedure for the EIA of all energy sector projects except nuclear power proposals, gives guidance on the environmental issues associated with each specific type of energy sector development, and provides checklists of factors which need to be taken into account in their assessment.

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH-1196, Gland, Switzerland.

JICA (1993). **Environmental Guideline for Power Plant.** *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan.

Meier, P. & Munasinghe, M. (1994). **Incorporating Environmental Concerns into Power Sector Decision-making. A Case Study of Sri Lanka.** *World Bank Environment Paper No. 6 . World Bank, Washington D.C. (167 pp.)*

This case study shows how environmental concerns can be incorporated into the planning stage of power sector development. The techniques and procedures described are designed to complement existing approaches to environmental assessment that are now a routine part of project development.

The methodology presented uses techniques of multi-attribute analysis - a process which appraises alternatives with differing objectives and varied costs and benefits, often assessed in differing units of measurement. The problem of comparing different types of impacts is particularly acute in Sri Lanka, where the main power generation options - hydro and baseload thermal - have impacts that are totally different in character. The mitigation of power sector impacts also needs to be seen in the broader context of optimal resource allocation. In addition, power sector planning in Sri Lanka is undergoing fundamental policy changes.

In this study, the methodology is applied to the assesment of a wide range of policy alternatives, including renewable energy options (such as wind power) and clean coal technologies. Conclusions are presented in discussions of procedural issues (how current planning procedures should be modified to better incorporate environmental consideration), policy issues (such as criteria for setting environmental standards), and technology choice issues. The study also recommends further areas of research to complement the work.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

NORAD (1994). **Initial Environmental Assessment: Industry and Energy.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 9. Norwegian Agency for Development Cooperation, Oslo. (36 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of industry and energy projects and briefly reviews their impacts on the natural and man-made environment. These include impacts associated with the extraction of natural resources, impacts associated with processing and those impacts caused by products. The physical and chemical working environment is briefly described and the problems of major accidents and accidental discharges are highlighted. The impacts on the landscape and visual environment are also examined. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

WHO Commission on Health and Environment (1992). **Report of the Panel on Energy.** *World Health Organization, Geneva. (155 pp.)*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

World Bank (1991). **Environmental Assessment Sourcebook. Vol III : Guidelines for Environmental Assessment of Energy and Industry Projects.** *World Bank Technical Paper No. 154. World Bank, Washington D.C. (xiii, 237 pp.)*

This volume comprises Chapter 10 of the World Bank's EA Sourcebook. It discusses energy and industry and includes 20 sections: industry hazard management; hazardous material management; plant siting and industrial estate development; electric power transmission systems; oil and gas pipelines; oil and gas development - offshore and onshore; hydroelectric projects; thermoelectric projects; financing nuclear power (options for the Bank); cement; chemical and petrochemical industry; fertilizers; food processing; small- and medium-scale industries; iron and steel manufacturing; nonferrous metals; petroleum refining; pulp, paper and timber processing; and mining and mineral processing.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Hydropower

Dixon, J. A., Talbot, L. M. & Le Moigne, G. J. M. (1989). **Dams and the Environment: Considerations in World Bank Projects.** *World Bank Technical Paper No. 110. World Bank, Washington D.C. (65 pp.)*

This paper explores the relationship between dams and the environment - both the effect of dams on the environment and the effect of the environment on dams, and the economic analysis of these effects. The paper reviews the environmental factors associated with large storage dams. Consideration is given to environmental effects that occur upstream, on-site and downstream. Examples provide lessons from completed projects and highlight the environmental issues associated with several proposed dams. The paper concludes with the World Bank's response to this issue.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental para Represas Hidroeléctricas (Environmental Impact Guidelines for Hydroelectric Dams).** *Secretaría General del Medio Ambiente, La Paz.*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz, Bolivia.

Goodland, R. (1989). **The World Bank's New Policy on the Environmental Aspects of Dam and Reservoir Projects.** *World Bank Reprint Series No. 458. World Bank, Washington D.C. (607-633 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Government of France (1989). **L'Étude d'Impact sur** l'Environnement **des Installations Hydrauliques de Production d'Électricité (Environmental Impact Assesment for Hydroelectric Plants).** *Ministère de l'Environnement, Paris. (83 pp.)*

Contact: Ministry of the Environment, 20, Avenue de Segur, 75302 Paris 7 SP, France.

Interconexion Eléctrica SA (1991). **Manual de Etapas: Definición de Actividades Ambientales en las Etapas de un Proyectos Hidroeléctrico (Stages Manual: Definition of the Environmental Activities in the Stages of a Hydroelectric Project).** *Environment Office, Ministry of Mines and Energy, Medellin, Colombia. (29 pp.)*

Contact: Interconexion Eléctrica SA, Calle 12 sur No 18-168, PO Box 8915/8762, Medellin, Colombia.

JICA (1990). ***Environmental Guidelines for Dam Construction Projects.*** *Japanese International Cooperation Agency, Tokyo. (72 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan.

Le Moigne, G., Barghouti, S. & Plusquellec, H. (1990). **Dam Safety and the Environment.** *World Bank Technical Paper No. 115. World Bank, Washington D.C. (xix, 173 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

NORAD (1990). **Initial Environmental Assessment: Hydropower Development.** *Environmental Impact Assessment of Development Aid Projects No. 6. Norwegian Agency for Development Cooperation, Oslo. (21 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). It aims to assist project planners and desk officers to integrate environmental considerations into hydropower development projects at an early stage in the planning process. The booklet outlines the characteristics of hydropower projects and briefly reviews the potential impacts of hydropower projects on the environment. These include potential impacts on climate, surface water flow, groundwater, nutrient dynamics and biodiversity. Social impacts are also considered, such as potential impacts on traditional land and water use systems and involuntary displacement. In addition, there is a brief discussion of health impacts and associated activities that may accompany hydropower development projects. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo 1, Norway.

Programa de Impactos Ambientais de Barragens (1993). **MAIA - Manual de Avaliacao de Impactos Ambientais (Environmental Impact Assessment Manual).** *Governo do Estados do Parana, Curitiba, Brazil. (Looseleaf)*

This is a very comprehensive handbook for EIA of dams and hydropower projects. It was compiled under the framework of the Dams Environmental Impact Programme (PIAB) and developed by the Environment and Hydrological Resources Administration (SURHEMA) jointly with GTZ (German Agency for Technical Cooperation).

Although the manual is aimed specifically at projects in the hydropower sector, it has enough information to be useful for assessing projects in other sectors. It includes an introductory analysis of Brazilian environmental issues, sustainable development opportunities and future perspectives. Provincial and federal environmental policies and legislation are also considered. EIA practice in selected Latin American countries (Argentina, Brazil, Colombia, Mexico, Peru and Venezuela) is analysed. The manual also considers the Parana State EIA procedures and approval mechanisms for activities which modify the environment. Techniques for the development of hydropower project studies and reports are detailed.

Contact: Programa de Impactos Ambientais de Barragens, Rua Engenheiros Rebouças 1206, 80215-100 Curitiba, Parana, Brazil.

World Bank (1989). **Operational Directive 4.00 Annex B: Environmental Policy for Dam and Reservoir Projects.** *World Bank: Washington D.C. (25 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Thermoelectric Power

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental. Proyectos Energeticos, Termoeléctricos, Subestaciones y Redes (Environmental Impact Guidelines. Thermoelectric Energy Projects, Substations and Networks).** *Secretaría General del Medio Ambiente, La Paz. (35-59 pp.)*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz, Bolivia.

Government of India (1987). **Environmental Guidelines for Thermal Power Plants.** *Ministry of Environment and Forests, New Delhi. (10 pp.)*

A brief set of guidelines setting out siting criteria, and detailing the format and content required for an environmental impact statement for thermal power plant projects. Important issues in the management of such plants are discussed: solid wastes, human settlements, air and water pollution, occupational safety and health, house-keeping, emergency planning, environmental management, and environmental appraisal procedures.

Contact: Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Transmission

Hydro-Quebec (undated). **Processes; Techniques and Tools; Specialized Methods. Environmental Assessment Method for Transmission Lines and Substations.** *Hydro-Quebec, Montreal.*

Le Groupe Viauinc. (1993). **Landscape Study Method for Transmission Line and Substation Projects - Condensed version.** *Prepared for Hydro-Quebec, Montreal. (26 pp. + appendices)*

Contact: Hydro-Quebec. 1010 Sainte Catherine Street East, Montreal, Quebec, Canada H2L 2G3.

■ FORESTRY

AFPA (1993). **Environmental, Health and Safety Principles.** *American Forest and Paper Association, Washington D.C. (12 pp.)*

AFPA (1993). **Forest Management Principles.** *American Forest and Paper Association, Washington D.C. (8 pp.)*

Contact: American Forest and Paper Association, 1111 19th Street NW, Washington D.C. 20036, USA.

CEC (undated). **Études d'Impact sur l'Environnement Adaptées aux Ecosystemes Forestiers Tropicaux (EIA adapted for Tropical Forest Ecosystems)** *Vols I & II. Commission of the European Communities, Directorate-General XI, Brussels.*

Contact: SECA, Agropolis 34397, Montpellier Cedex 5, France.

CIDA (1989). **La Procédure Interne d'Examen des Risques d'Impact sur l'Environnement (Internal Procedure for Examining the Risks of Impact on the Environment).** *Canadian Agency for International Development, Directorate General for Natural Resources, Forestry Sector, Hull, Quebec. (51 pp.)*

Contact: Canadian Agency for International Development, 200 Promenade du Portage, Hull, Quebec K1A OG4, Canada.

Davidson, J. (1986). **Ecological Guidelines for Nature Conservation in an Area of Tropical Moist Forest Affected by Transmigration.** *International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (54 pp.)*

Contact: The World Conservation Union (IUCN), Forest Conservation Programmme, Rue Mauverney 28, CH 1196 Gland, Switzerland.

FSC (1995). **Principles of Forest Management.** *Forest Stewardship Council, Oaxaca, Mexico. (4 pp.)*

Contact: Forest Stewardship Council, Avenida Hidalgo 502, 68000 Oaxaca, Mexico.

ITTO (1990). **Guidelines for the Sustainable Management of Natural Forests.** *ITTO Technical Series No. 5. International Tropical Timber Organization, Yokohama, Japan. (18 pp.)*

ITTO (1992). **Criteria for the Measurement of Sustainable Tropical Forest Management.** *International Tropical Timber Organisation, Yokohama. (6 pp.)*

ITTO (1993). **Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests.** *ITTO Policy Development Series No.4. International Tropical Timber Organisation, Yokohama, Japan. (38 pp.)*

Contact: International Tropical Timber Organization, Sangyo-Boeki Centre Building, 2 Yamashita-cho, Naka-ku, Yokohama 231, Japan.

IUCN (1974). **Proceedings of an International Meeting on the Use of Ecological Guidelines for Development in the American Humid Tropics,** *held at Caracas, Venezuela, 20-22 February 1974. IUCN Publications New Series No. 31. The World Conservation Union (IUCN), Gland, Switzerland.*

IUCN (1974). **Proceedings of a Regional Meeting on the Use of Ecological Guidelines for Development in the Tropical Forest Areas of South East Asia,** *held at Bandung, Indonesia, 29 May to 1 June 1974. IUCN Publications New Series No. 32. The World Conservation Union (IUCN), Gland, Switzerland.*

IUCN (1993). **Manual on Environmental Assessment for Sustainable Forest Development.** *A report prepared for the U.N. Food and Agriculture Organization. The World Conservation Union (IUCN), Gland, Switzerland. (65 pp.)*

This manual was prepared as part of the Environmental Management in Forestry Development Project - a project of the Forestry Department, Ministry of Lands, Irrigation and Mahaweli Development, Sri Lanka. It sets out guidelines for EIA applicable to natural forests and forest plantations in Sri Lanka. Part I describes the legal and administrative framework for EIA in Sri Lanka and introduces the process of environmental assessment. Part II examines the ways in which this might affect work within the forest sector. It introduces procedures to be adopted in the Forest Department to deal with the formal requirements of EIA, and to ensure that environmental considerations are taken into account at all levels - in the formulation of policy, in planning and in field operations.

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

JICA (1993). **Environmental Guideline for Forestry Development.** *Japanese International Cooperation Agency, Tokyo. (172 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan.

MIRENEM (undated). **Borrador de Guía de Estudio de Impacto Ambiental Para Explotación de Cauces de Dominio Público (Draft Guide for Environmental Impact Studies of Public Watersheds).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (8 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.

MOPT (1991). **Guías Metodológicas para la Elaboración de Estudios de Impacto Ambiental. 3:Repoblaciones Forestales (Methodological Guidelines for Environmental Impact Assessment 3: Forestry).** *Ministerio de Obras Públicas y Transportes, Madrid.*

Contact: Ministerio de Obras Públicas y Transportes, Paseo de la Casterlana 67, 28071 Madrid, Spain.

NORAD (1994). **Initial Environmental Assessment: Forestry.** *Environmental Impact Assessment (EIA) of Development Aid Project No. 3. Norwegian Agency for Development Cooperation, Oslo. (28 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet out-

lines the characteristics of forestry projects and briefly reviews the potential impacts of such projects on the environment. These include impacts on water resources, climatic changes and erosion. Impacts on local communities are also reviewed, including health problems, and disruptions to traditional ways of life and utilisation of natural resources. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

Poore, D. & Sayer, J. (1991). **The Management of Tropical Moist Forest Lands: Ecological Guidelines.** *Second Edition. The World Conservation Union (IUCN), Gland, Switzerland. (78 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH-1196 Gland, Switzerland.

Shell (1990). **Environmental Guidelines for Forestry Projects.** *Shell International Petroleum Company Ltd., Non Traditional Business (Forestry Division), London.*

Shell/WWF (1993). **Tree Plantation Review: Guidelines.** *Shell International Petroleum Ltd., London, and World Wide Fund for Nature, Godalming, England. (32 pp.)*

Contact: Shell International Petroleum Ltd., Shell Centre, London SE1 7NA, UK.

UNEP (1986). **Environmental Guidelines for Afforestation Projects.** *UNEP Environmental Management Guidelines No. 9. United Nations Environment Programme, Nairobi.*

UNEP (1986). **Environmental Guidelines for Agroforestry.** *UNEP Environmental Management Guidelines Series No. 11. United Nations Environment Programme, Nairobi.*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

Winrock International (1987). **Ecological Development in the Humid Tropics: Guidelines for Planners.** *United States Agency for International Development, Washington D.C. (357 pp.)*

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

Zimmerman, R. C. (1992). **Environmental Impact of Forestry: Guidelines for its Assessment in Developing Countries** *(Conservation Guide). Food and Agriculture Organisation, Rome. (85 pp.)*

Contact: Food and Agriculture Organisation, Via Terme di Caracalla, I-00100 Rome, Italy.

■ HUMAN SETTLEMENTS

Urban Areas

Bradley, D., Stephens, C., Harpham, T. and Cairncross, S. (1992). **A Review of Environmental Health Impacts in Developing Country Cities.** *Urban Management Program Discussion Paper No. 6. World Bank, Washington D.C. (58 pp.)*

This paper has a number of aims: to produce a classification of environmental variables relevant to urban health in developing countries; to propose an analytical framework for

relating environmental variables to health; to review intra-urban differentials in mortality, morbidity and causes of death in developing countries with particular reference to vulnerable groups; to review the literature that attempts to link, causally, urban environmental conditions to health in developing counties; and to propose future related research.

The paper establishes that few good studies on intra-urban differentials in morbidity and mortality, and on linkages to environmental conditions, have been undertaken. It proposes the analysis of Demographic and Health Surveys (DHS) in three or four countries and the compilation of environmental health profiles for two cities, Accra in Ghana and Sao Paulo in Brazil. The analysis suggests that environmental components could be grouped according to whether they provide a resource, act as a hazard (from a health point of view), or form an ambience to which people have to adapt. A clearly laid out and thorough literature review is provided.

Cointreau, S. J. (1982). **Environmental Management of Urban Solid Wastes in Developing Countries: A Project Guide for Urban Development.** *Urban Development Technical Paper No. 5. World Bank, Washington D.C. (214 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Government of France (1980). **Études d'Impact des Stations d'Epuration Urbaines: Odeurs et Bruits (Impact Studies for Urban Sanitation Stations: Smells and Noise).** *Ministère de l'Environnement, Paris. (70 pp.)*

Government of France (1980). **Étude d'Impact des Stations d'Epuration Urbaines. 1 - Methodologie (Impact Study for Urban Sanitation Stations. 1 - Methodology).** *Ministère de l'Environnement, Paris. (61 pp.)*

Government of France (1980). **Guide pour l'Élaboration des Études d'Impact sur l'Environnement de Lotissements (Guidelines for the Conduct of an Environmental Impact Assessment of Housing Sites).** *Ministère de l'Environnement, Neuilly, France. (56 pp.)*

Government of France (1988). **Pour des Études d'Impact en Centre Urbain (Impact Studies for Urban Centres).** *Ministère de l'Equipement, du Logement, de l'Aménagement du Territoire et des Transports, et Ministère de l'Environnement, Paris. (71 pp.)*

Contact: Ministry of the Environment, 20, Avenue de Segur, 75302 Paris 7 SP, France.

Government of India (1989). **Guidelines for Environmental Impact Assessment of New Towns.** *Ministry of Environment and Forests, New Delhi. (83 pp.)*

The first part of this document presents a status report on environmental situations that have arisen in selected new towns in India during the 1970s and 1980s. Based on this review, a typology of new town types is used in Chapter IV (environmental appraisal) to guide the EIA methodology to be used and the environmental issues to be considered: project (construction) colonies; market or service, mining, and port towns; State Capital or District Administrative Centres; satellites to metropolitan cities; those established in connection to cantonments; and new towns established for miscellaneous purposes (e.g. university, technical institutions). Chapter V sets out broad procedures for EIA of new towns. They include the directions that need to be issued by the central and state governments. A proforma for environmental appraisal is given in an annex.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Kenning Massa, A. (1992). **Planning and Production of Environmentally Sound Housing. Environmental Impact Assessment for Housing Development Projects.** *Office of Housing and Urban Programs Working Paper. United States Agency for International Development, Washington D.C. (71 pp.)*

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

Leitmann (1993). **Rapid Urban Environmental Assessment: Towards Environmental Management in Cities of the Developing World.** Impact Assessment, *11 (3), 225-260.*

MIRENEM (undated). **Guía Básica para la Elaboración de Estudios de Impacto Ambiental de Proyectos Urbanisticos *(Basic Guide for the Conduct of Environmental Impact Assessment Studies for Urban Projects).*** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (3 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales. Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.

Rees, C. (1990). **A Guide to Development in Urban and Coastal Areas.** *Asian Wetland Bureau, Kuala Lumpur, Malaysia. (79 pp.)*

This guide promotes the integration of environmental considerations in projects in urban and coastal environments as a basic procedure of good planning. It first describes, in non-technical and graphic format, the function and structure of major natural systems in relation to planning for sound development. In the guidelines that follow, sketches are used to represent improper methods of development that often result in environmental problems, and to illustrate recommended, sound development practice. The guide is available in English, Thai and Indonesian language versions and is currently being translated into Cambodian and Vietnamese.

Contact: Asian Wetland Bureau, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

US Department of Housing and Urban Development (1981). **Areawide Environmental Impact Assessment: A Guidebook.** *US Department of Housing and Urban Development, Washington D.C. (270 pp.)*

Contact: United States Department of Housing and Urban Development, 451 Seventh Street NW, Washington D.C. 20410, USA.

WHO Commission on Health and Environment (1992). **Report of the Panel on Urbanization.** *World Health Organization, Geneva. (160 pp.)*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is specifically for use by NGOs and the projects they support, but it is

also relevant to project planning in general. The series provides project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Domestic Water Supply and Sanitation** (*27 pp.*): briefly covers environmental, social and health impacts of water supply and sanitation projects, with an emphasis on the latter. Also included is a brief discussion of water conservation (covering quality and quantity) and community participation in project planning and implementation.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7, Canada.

Domestic Water Supply and Sanitation

Grover, B. (1983). **Water Supply and Sanitation Project Preparation Handbook. Volume 1: Guidelines.** *World Bank Technical Paper No. 12. World Bank, Washington D.C. (171 pp.)*

Listorti, J. A. (1990). **Environmental Health Components for Water Supply, Sanitation and Urban Projects.** *World Bank Technical Paper No. 121. World Bank, Washington D.C. (xii, 142 pp.)*

The Technical Papers series are published to "communicate the results of the Bank's work to the development community with the least possible delay". The stated objectives of this report are to act as a pragmatic guide for improving health to help identify where more extensive efforts are required, to alert appropriate health authorities, and to emphasise what health components can contribute. It is intended to indicate to project officers and borrowers how projects can achieve better outcomes at minimal cost, and also to encourage client governments to include environmental health components in their thinking.

Four chapters give background information, outline the rationale for an integrated approach to health, indicate a methodology, and provide detailed information on 26 widespread diseases. The report also contains 5 appendices. A lot of potentially useful information is jeopardised by poor presentation, a lack of clarity and convoluted language.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

NORAD (1994). **Initial Environmental Assessment: Water Supply, Wastewater, Irrigation.** *Environmental Impact Assessment (EIA) of Development Aid Projects No.7. Norwegian Agency for Development Cooperation, Oslo. (33 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of projects concerned with water supply, wastewater management and irrigation, and briefly reviews the impacts of such projects on the physical and social environment. Theses include over-exploitation of water resources, pollution and health problems. The specific impacts of dam construction and irrigation are also examined. Cultural and other potential impacts on local communities are briefly reviewed. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo [Dep.] 0030 Oslo, Norway.

UNEP (1988). **Environmental Guidelines for Domestic Water Management.** *UNEP Environmental Management Guidelines No. 14. United Nations Environment Programme, Nairobi. (29 pp.)*

In many countries, the provision of piped water has proceeded without sufficient consideration being given to the adequate treatment and disposal of the resulting wastewater. Environmentally sound management of wastewater requires an understanding of the available range of treatment, disposal and re-use options. These guidelines are intended to generate awareness of the opportunities and constraints associated with these options, with particular emphasis on the maximising of the re-use potential of wastewater resources.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

■ INDUSTRY

AIDAB (1993). **Environmental Assessment Guidelines for Development Assistance Projects: Industry.** *PDR Branch Report No. 31. Australian International Development Assistance Bureau, Canberra. (44 pp.)*

Contact: Australian International Development Assistance Bureau, PO Box 887, Canberra, ACT 2601, Australia.

AsDB (1990). **Environmental Guidelines for Selected Industrial and Power Development Projects**. *Asian Development Bank, Manila. (xiii, 154 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes in the series cover agricultural and natural resource development projects, and infrastructure projects.

The guidelines are designed for use by Bank project staff to enable them to incorporate environmental protection into the project preparation process. Their purpose is to assist Bank project staff to prepare an initial environmental assessment (IEE) for the proposed project. The annexes of the manual set out guidelines, checklists and report formats for the IEE of specific types of projects. These include: dams, reservoirs and hydropower; thermal power development; industries; fertilizer; mining; cement manufacturing plants; power transmission lines; oil and gas distribution lines. The final annex provides guidelines relevant to all types of projects, covering issues such as resettlement, pollution control and monitoring.

Contact: Asian Development Bank, PO Box 789. 1099 Manila , Philippines.

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band II - Agrarwirtschaft, Bergbau/Energie, Industrie/Gewerbe** ***(Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume II - Agrarian Economy, Mining/Energy, Industry/Trade).*** *Vieweg/Bundesministerium fur Wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn, Braunschweig. (734 pp.)*

Contact: Bundesministerium fur Wirtschaftliche Zusammenarbeit, Friedrich-Ebert-Allee 114-116, D-5300 Bonn, Germany.

CIDA (undated). **Guide for Proponents Preparing a Submission to CIDA-INC: Integration of Environmental Considerations.** *Draft. Canadian Agency for International Development, Hull, Quebec. (31 pp.)*

Contact: Canadian International Development Agency, 200 Promenade du Portage, Hull K1A 0G4, Quebec, Canada.

CIRIA (1993). **Environmental Assessment - A Guide to the Identification, Evaluation and Mitigation of Environmental Issues in Construction Schemes.** *Construction Industry Research and Information Association, London (iii, 270pp.).*

This document is targetted at construction and environmental groups. It aims to raise awareness of the interaction between development schemes and their related activities, and the environment. It is stressed that, while most building and construction activities will lead to long-term benefits to communities and society as a whole, the location of these developments, and the way they are planned, designed, constructed and operated, can have environmental implications. Information is provided on the engineering and operational activities associated with a range of different development schemes, together with their likely environmental effects. Guidance is given on available techniques to identify the nature and extent of these effects, and on measures which are likely to avoid or minimise their impact with reference to case studies. Where appropriate, the document also describes opportunities for environmental enhancement.

The document is applicable to developments of all scales, irrespective of whether formal environmental assessment is required. It is aimed at a broad readership including government agencies, planning authorities, developers and environmental interest groups.

Contact: Construction Industry Research and Information Association, 6 Storeys Gate, London SW1P 3AU, UK.

EPA (1992). **Criteria for the Assessment of Risk from Industry.** *EPA Bulletin No. 627. Environmental Protection Authority, Perth. (55 pp.)*

Contact: Environmental Protection Authority, 141 St Georges Terrace, Perth, WA 6000, Australia.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Industrial Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 61 pp.)*

These guidelines aim to assist government agencies concerned with environmental protection in developing countries in the planning and execution of EIAs for industrial development projects. They summarise general assessment methodologies, identify data collection and evaluation methodologies for assessing the quality and quantity of key parameters, and present the typical impacts and pathways relevant to industrial development projects based on literature references and case studies. Annexes provide sample terms of reference for industrial development EIA studies, and case studies of industrial development projects.

This document is one in a series of four - the other volumes cover agriculture, transport and water resources.

Contact: Economic and Social Commission for Asia and the Pacific, United Nations Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Gobierno de Bolivia (1993). **Análisis Ambiental para Proyectos de la Industria Alimenticia *(Environmental Analysis for Food Industry Projects).*** *Secretaría General del Medio Ambiente, La Paz. (61-79 pp.)*

Gobierno de Bolivia (1993). **Análisis Ambiental para Proyectos de la Industria de la Curtiembre *(Environmental Analysis for Tanning Industry Projects)***. *Secretaría General del Medio Ambiente, La Paz. (153-172 pp.)*

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental de Proyectos de la Industria Metálica *(Environmental Impact Assessment Guidelines for the Metal Industry)***. *Secretaría General del Medio Ambiente, La Paz. (123-151 pp.)*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz, Bolivia.

Government of China (1986). **Management Guidelines on Environmental Protection of Construction Projects**. *Environmental Protection Commission Under the State Council, Beijing. (32 pp.)*

Government of China (1990). **Management Procedures for Environmental Protection of Construction Projects**. *National Environmental Protection Agency of China, Beijing. (5 pp.)*

Contact: National Environmental Protection Agency, 115 Xizhimennei, Beijing, China.

Government of India (1985). **Environmental Guidelines for the Siting of Industry**. *Report of the Working Group, Ministry of Environment and Forests, New Delhi. (16 pp.)*

This brief document includes guidelines relating to areas to be avoided for the siting of industries, precautionary measures to be taken during site selection, and a discussion of environmental protection issues requiring incorporation during implementation of industrial development projects. The guidelines are intended for use by industrial entrepreneurs, regulatory agencies and all those organisations connected with environmental issues. Polluting industries, and those required to obtain environmental clearance for siting, are listed in appendices.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Government of Pakistan (1986). **Environmental Impact Assessment Guidelines**. *Ministry of Housing and Works, Islamabad. (117 pp.)*

These guidelines are divided into three sections: agriculture/rural development sector; infrastructure sector; and industry and mining sector. Background information is provided on environmental considerations specific to each sector. The major types of impact for each type of project are identified as well as the information required for project planning.

Contact: Ministry of Housing and Works, Block B, Pakistan Secretariat, Islamabad, Pakistan.

JICA (1993). **Environmental Guideline for Industrial Development**. *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan

NORAD (1994). **Initial Environmental Assessment: Industry and Energy.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 9. Norwegian Agency for Development Cooperation, Oslo. (36 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of industry and energy projects and briefly reviews their impacts on the natural and man-made environment. These include impacts associated with the extraction and processing of natural resources, and impacts caused by products. The physical and chemical working environment is briefly described and the problems of major accidents and accidental discharges are highlighted. The impacts on the landscape and visual environment are also examined. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Actividad Industrial *(Guide for the Conduct of Environmental Impact Assessment Studies for Industrial Activities).*** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.

Technica Ltd. (1988). **Techniques for Assessing Industrial Hazards.** *World Bank, Washington D.C. (170 pp.)*

This manual was developed for use in assessing World Bank development proposals. It provides guidelines for the identification of the potential hazards of new or existing plants or processes in the chemical and energy industries; and for the assessment of the consequences of the release of toxic, flammable, or explosive materials, to the atmosphere. The manual presents a structured, simplified approach for identifying the most serious potential hazards and for calculating their effect distances or damage ranges. It is intended for use by engineers and scientists with little or no experience of hazard analysis.

Hazard analysis is outlined in 14 steps with chapters covering: simplified models for calculating the consequences of a release; guidelines on presentation of results of the analysis; and suggestions for mitigation of effects. An appendix gives the "World Bank Guidelines on Identifying, Analysing and Controlling Major Hazard Installations in Developing Countries".

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Tommila, E. & Sirkeinen, U. (1992). **Environmental Protection Check List for Small and Medium Sized Enterprises.** *Confederation of Finnish Industry and Employers, Helsinki, (13 pp.)*

Contact: Confederation of Finnish Industry and Employers, PO Box 30, FIN 00131, Helsinki, Finland.

UNEP (1982). **Environmental Guidelines for Pulp and Paper Industry.** *UNEP Environmental Management Guidelines No. 4. United Nations Environment Programme, Nairobi. (x, 47 pp.)*

These operational guidelines give an overview of the major environmental concerns, parameters and constraints relating to the pulp industry, covering raw material preparation, pulping,

manufacturing, and forest management practices. They also include a review of the technological trends in manufacturing processes and pollution control.

UNEP (1982). **Environmental Guidelines for Hides and Skins Industry.** *UNEP Environmental Management Guidelines No. 5. United Nations Environment Programme, Nairobi. (23 pp.)*

These guidelines give an overview of the major environmental problems of the hides, skins and leather industry, particularly tanneries. They focus primarily on the processing of cattle hides, sheep and pig skins. There is also a brief discussion of ante-mortem and post-mortem factors which have an impact on the quality of hides and skins.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

UNIDO (1990-1991) **Project Design Reference File Vol II: Guidelines for Environmental Appraisal.** *United Nations Industrial Development Organisation, Vienna.*

This file brings together a number of papers on environmental assessment, previously published as a series of separate guidelines for the Project Appraisal Section of UNIDO. They are technical guidelines covering different industrial sectors, and have the following objectives: (a) to provide guidance to Backstopping and AREA Officers in the introduction of environmental considerations in the design and development of projects under the auspices of UNIDO; and (b) to help the Project Appraisal Section judge whether appropriate environmental measures have been included in the project in order to recommend whether or not the project should proceed as planned.

- **I. Environmental Appraisal of Category A Projects** *(1990) (27 pp.)*

  Category A Projects are defined as technical assistance projects with no capital implications, which produce no direct environmental impacts. The environmental appraisal of such projects therefore concentrates on environmental awareness and the development of technical and institutional capabilities.

  The guidelines are intended to be used by UNIDO officers as a checklist at the project formulation stage, and as an appraisal tool at the review stage. The initial appraisal of Category A projects is divided into three distinct assessments: the characteristics of the project - objectives and outputs; information on possible target institutions for technical assistance; and environmental actions (e.g. training, information management, capacity building) to be included in the project. Tables are provided for each stage, with a backup section of 'annotations' providing the assessor with more detailed information where neccessary.

- **II. Environmental Appraisal of Category B Projects** *(1990) (19 pp.)*

  Category B Projects are defined as those with primary or secondary environmental impacts. The guidelines were designed to allow UNIDO officers to verify, at a glance, whether or not a project is environmentally sound and what can be done to improve it. They take the reader through the industrial process, highlighting the points where environmental impacts are likely to occur, the receptors that may be affected, and the measures to minimise the impact at each stage.

  UNIDO notes that, since environmental impacts of most industrial sectors are readily identifiable, and there is sufficient information available regarding clean practices and waste treatment and disposal, most assessments will be completed at the project formulation stage, and only exceptionally will a full EIA be required.

  The guidelines are presented in the form of tables which can be used for any type of

capital project. However, in order to facilitate the appraisal of projects most frequently sponsored by UNIDO, a series of sector-specific guidelines have been developed covering the following:

- **IIIA. Tanneries and Leather Finishing Industries** *(1990) (28 pp.)*
- **IIIB. Iron and Steel** *(1990) (42 pp.)*
- **IIIC. Fertilizers** *(1990) (29 pp.)*
- **IIID. Food Agro-Industries** *(1991) (32 pp.)*

Each of these sectoral guidelines contains a description of unit processes and operations, working tables for environmental appraisal, annotations supporting the tables, a glossary and references.

Contact: United Nations Industrial Development Organisation, PO Box 200, A-1400 Vienna, Austria.

WHO Commission on Health and Environment (1992). **Report of the Panel on Industry.** *World Health Organization, Geneva. (219 pp.)*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

World Bank (1978). **Environmental Considerations for the Industrial Development Sector.** *World Bank, Washington D.C. (128 pp.)*

World Bank (1985). **Environment, Health and Safety Guidelines for the Use of Hazardous Materials in Small and Medium Scale Industries.** *Office of Environmental and Social Affairs, World Bank, Washington D.C. (43 pp.)*

This document gives general guidelines for small- and medium-scale industries. It covers continuous emissions of hazardous materials and accidental releases, with incompatible hazardous wastes listed in an appendix. Apart from this detailed information, the document has general application with chapters covering: environment, workplace, transport, emergencies, first aid, training, safety and worker morale.

World Bank (1988). **Environmental Guidelines.** *World Bank, Washington D.C. (461 pp.)*

In the preface, this document is sub-titled "*Environmental Industrial Waste Control Guidelines*". As an integral part of its appraisal and supervision function, the World Bank is required to evaluate the adequacy and effectiveness of pollution control measures for projects involving industrial operations. These guidelines were first compiled in 1984, to cover the industries and pollutants most likely to be encountered in the Bank lending programme. They were reissued in 1988 with the caveat that their application must be adjusted to each specific situtation. Permissable pollutant levels are given which are considered achievable at reasonable costs by existing treatment and control technology. The guidelines cover 55 different industrial processes and various industries, including metals, food, chemicals, mining and paper.

World Bank (1991). **Environmental Assessment Sourcebook Vol III: Guidelines for Environmental Assessment of Energy and Industry Projects.** *Technical Paper No. 154. World Bank: Washington D.C. (xiii, 237 pp.)*

This volume comprises Chapter 10 of the World Bank's Environmental Assessment Sourcebook. It discusses energy and industry and includes 20 sections: industry hazard management; hazardous material management; plant siting and industrial estate development; electric power transmission systems; oil and gas pipelines; oil and gas development -

offshore and onshore; hydroelectric projects; thermoelectric projects; financing nuclear power (options for the Bank); cement; chemical and petrochemical industry; fertilizers; food processing; small- and medium-scale industries; iron and steel manufacturing; nonferrous metals; petroleum refining; pulp, paper and timber processing; and mining and mineral processing.

World Bank (1994). **Privatization and Environmental Assessment: Issues and Approaches.** *Environmental Assessment Sourcebook Update No. 6. Environment Department, World Bank, Washington D.C.*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

■ MINING AND OTHER EXTRACTIVE INDUSTRIES

AIDAB (1993). **Environmental Assessment Guidelines for Development Assistance Projects: Mining.** *PDR Branch Report No. 30. Australian International Development Assistance Bureau, Canberra. (32 pp.)*

Contact: Australian International Development Assistance Bureau, PO Box 887, Canberra, ACT 2601, Australia.

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band II - Agrarwirtschaft, Bergbau/Energie, Industrie/Gewerbe** ***(Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume II - Agrarian Economy, Mining/Energy, Industry/Trade).*** *Vieweg/Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn, Braunschweig. (734 pp.)*

Contact: Bundesministerium fur Wirtschaftliche Zusammenarbeit, Freidrich-Ebert-Allee 114-116, D-5300 Bonn, Germany.

Ghana EPC (1993). **Ghana's Mining Environmental Guidelines - Final Guidelines for Draft Regulations.** *Environmental Protection Council, Accra (14 pp.)*

Contact: Environmental Protection Council, PO Box M326, Accra, Ghana.

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental de Proyectos de la Industria Metálica** ***(Environmental Impact Assessment Guidelines for the Metal Industry).*** *Secretaría General del Medio Ambiente, La Paz (123-151 pp.)*

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental para Proyectos de Actividad Minera** ***(Environmental Impact Guidelines for Mining Projects).*** *Secretaría General del Medio Ambiente, La Paz (112-122 pp.)*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz, Bolivia.

Government of France (1980). **Étude d'Impact sur l'Environnement Carrière de Roches Massives à Flanc de Coteau** ***(Environmental Impact Assessment of Hillside Quarries).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie, Paris. (29 pp.)*

Government of France (1980). **Étude d'Impact sur l'Environnement Carrière de Roches Massives en Fosse** ***(Environmental Impact Assessment for Deep Quarries).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie. Paris. (30 pp.)*

Government of France (1981). **Étude d'Impact sur l'Environnement Carrière de Roches Alluvionnaires dans la Nappe** ***(Environmental Impact Assessment of Gravel Pits on the Water Table).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie, Paris. (28 pp.)*

Government of France (1982). **Étude d'Impact sur l'Environnement Carrière de Roches Alluvionnaires Hors Nappe** ***(Environmental Impact Assessment of Gravel Pits Above the Water Table).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie, Paris. (48 pp.)*

Government of France (1983). **Aspects Radiologiques à Prendre en Compte dans les Études d'Impact d'Ouverture de Travaux Miniers pour l'Uranium** ***(Radiation Factors in the Impact Studies for Uranium Mining Works).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie, Paris. (29 pp.)*

Government of France (1983). **Étude d'Impact sur l'Environnement Carrière de Roches Massives Hors Nappe** ***(Environmental Impact Assessment of Quarries Above the Water Table).*** *Ministère de l'Environnement et Ministère de la Réchèrche et de l'Industrie, Paris. (36 pp.)*

Government of France (1984). **L'Étude d'Impact pour l'Ouverture de Travaux d'Exploitation de Gisements d'Hydrocarbures en Mer** ***(Impact Study for Drilling of Hydrocarbon Deposits at Sea).*** *Ministère du Rédeploiement Industriel et du Commerce Exterieur, et Ministère de l'Environnement, Paris. (40 pp.)*

Government of France (1985). **L'Étude d'Impact pour l'Ouverture de Travaux d'Exploitation de Gisements d'Hydrocarbons à Terre** ***(Impact Study for Drilling of Terrestrial Hydrocarbon Deposits).*** *Ministère du Redeploiement Industriel et du Commerce Exterieur, et Ministère de l'Environnement, Paris. (81 pp.)*

Contact: Ministry of the Environment, 20, Avenue de Segur, 75302 Paris 7 SP, France.

Government of India (1982). **Environmental Management of Mining Operations.** *Ministry of Environment and Forests, New Delhi. (23 pp.)*

These guidelines apply to mining operations on land only. Oceanic mining and oil exploration and drilling are not covered. The guidelines identify critical issues relevant to environmental protection in the context of mineral exploitation: water pollution, solid waste management, land degradation, air pollution, noise and vibration, subsidence and landslides, human settlements, and impacts of water regimes. Some of the steps that need to be incorporated during the planning and implementation of mining operations are briefly indicated. Emphasis is placed on the need for appropiate agencies to evolve tolerance standards/limits. Parameters to be covered by environmental quality standards for liquid effluents are listed, and a questionnaire is included (to be completed by mining companies) for the environmental appraisal of mining operations. The guidelines are intended to be of practical use to both the government and the mining industry in India.

Contact: Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Government of Nigeria (1994). **Guidelines for Environmental Impact Assessment (Decree 86, 1992): Draft Sectoral Guidelines for Oil and Gas Industry Projects (Oil and Gas Exploration and Production - Offshore).** *Federal Environmental Protection Agency, Lagos. (24 pp.)*

Contact: Federal Environmental Protection Agency, PMB 1260, Ikoye, Lagos, Nigeria.

Government of Pakistan (1986). **Environmental Impact Assessment Guidelines.** *Ministry of Housing and Works, Islamabad. (117 pp.)*

These guidelines provide background environmental information for particular sectors in three sections: agriculture/rural development sector; infrastructure sector; and industry and mining sector. The major types of impact for projects in each sector are identified and information required for project planning is provided.

Contact: Ministry of Housing and Works, Block B, Pakistan Secretariat, Islamabad, Pakistan.

Government of South Africa (1992). **Aide Memoire for the Preparation of Environmental Management Programme Reports for Prospecting and Mining.** *Department of Mineral and Energy Affairs, Pretoria.*

Contact: Department of Environment Affairs, Private Bag X447, Pretoria 0001, South Africa.

IUCN (1993). **Oil and Gas Exploration and Production in Arctic and Subarctic Onshore Regions.** *The World Conservation Union (IUCN), Gland, Switzerland; with the Oil Industry International Exploration and Production Forum, London. (viii, 56 pp.)*

IUCN (1993). **Oil and Gas Exploration and Production in Mangrove Areas. Guidelines for Environmental Protection.** *The World Conservation Union (IUCN), Gland, Switzerland; with the Oil Industry International Exploration and Production Forum, London. (vii, 47 pp.)*

IUCN (1991). **Oil Exploration in the Tropics. Guidelines for Environmental Protection**. *The World Conservation Union (IUCN), Gland, Switzerland. (vi, 30 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

JICA (1993). **Environmental Guideline for Mining Development.** *Japanese International Development Agency, Tokyo. (200 pp.)*

Contact: Japanese International Development Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan

NCC (1986). **Nature Conservation Guidelines for Onshore Oil and Gas Development**. *Nature Conservancy Council, Peterborough, England. (51 pp.)*

Contact: Nature Conservancy Council, Northminster House, Peterborough PE1 1UA, UK.

NORAD (1994). **Initial Environmental Assessment: Mining and Extraction of Sand and Gravel.** *Environmental Impact Assessment (EIA) of Development Aid Projects No.10. Norwegian Agency for Development Cooperation, Oslo. (29 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA

system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of mining and sand and gravel extraction projects, and briefly reviews the potential impacts of such projects on the natural and man-made environment. These include impacts on soil and water, on ecosystems, on landscape and cultural relics, and pollution and noise. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo, Norway.

Tata Energy Research Institute (1983). **Environmental Guidelines for Coal Transportation.** *Report of a Workshop held at New Delhi, November 14-17, 1983. Tata Energy Research Institute/ Government of India, New Delhi. (42 pp.)*

Contact: Tata Energy Research Institute. 102 Jor Bagh, New Delhi 110 003, India.

UN/DTCD (1992). **Mining and the Environment: The Berlin Guidelines.** *A study based on an International Round Table in June 1991, organized by the Department of Technical Cooperation for Development, United Nations and the Development Policy Forum of the German Foundation for International Development. Mining Journal Books, London.*

Contact: Mining Journal Books, 60 Worship Street, London EC2A 2HD, UK.

UNEP (1990). **Environmental Guidelines for Sand and Gravel Extraction Projects.** *UNEP Environmental Management Guidelines No. 20. United Nations Environment Programme, Nairobi. (37 pp.)*

These guidelines have been developed to build awareness of the potential environmental impacts of sand and gravel extraction and to suggest ways in which the environmental degradation associated with the activity can be minimised. They draw attention to the fact that the environmental impacts of sand and gravel extraction are not always readily obvious and have long been under-estimated. The cumulative, far-reaching effects of numerous uncontrolled operations have contributed substantially to the degradation of river and coastal ecosystems.

UNEP (1991). **Environmental Aspects of Selected Non-ferrous Metals Ore Mining. A Technical Guide.** *Technical Report Series No. 5. United Nations Environment Programme/International Labour Office, Geneva. (xvii, 116 pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

Wright, D. & Greene, G. (1987). **An Environmental Impact Assessment Methodology for Major Resource Developments.** *Journal of Environmental Management, 24, 1-16.*

■ RISKS / HAZARDS

AsDB (1991). **Environmental Risk Assessment. Dealing with Uncertainty in Environmental Impact Assessment.** *ADB Environment Paper No. 7. Asian Development Bank, Manila. (vii, 182 pp.)*

This paper, prepared by the East-West Center, Honolulu, is one of a series published by the Asian Development Bank dealing with environmental and natural resources planning and

management in the Asian and Pacific region. It is a training and reference document to help project managers in the Bank and in developing countries to apply environmental risk assessment (ERA) in decision-making. The document provides a good, though brief, account of ERA and its application.

The document comprises several parts, each designed for different uses. Part 1 presents the state-of-the-art (in 1990) of ERA and serves as a reference for understanding the procedures and guidelines in Part 2. The guidelines themselves are a stepwise approach to setting Terms of Reference for an ERA. The logic diagrams and checklists screen projects to select those which require ERA and to set the scope of the analysis. Part 3 comprises case examples that illustrate the guidelines.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Batstone, R., Smith, J. E. J. & Wilson, D. (Ed.) (1989). **The Safe Disposal of Hazardous Wastes: The Special Needs and Problems of Developing Countries. Volumes I-III.** *A joint study sponsored by the World Bank, the World Health Organization (WHO), and the United Nations Environment Programme (UNEP). Technical Paper No. 93. World Bank, Washington D.C. (823 pp.)*

This three volume manual is intended for administrators and technical staff who are responsible for waste management, public health and the protection of the environment. It is intended primarily for developing countries.

The manual provides an exhaustive examination of all areas of waste and waste disposal. It includes sections on the classification of hazardous wastes, the effects of hazardous waste on public health and the environment, hazardous waste management - focusing on how to implement a management programme, and techniques for safe disposal. The document explores the technological aspects of a waste management system, and uses a cost/benefit analysis to show the dangers of an ineffective system, or worse, a non-existent system.

Chapters 1-5 contain information on the classification of hazardous wastes, their effects on the environment, and the planning and implementation of programmes for waste management. Chapters 6 and 7 deal primarily with the different technologies available for hazardous waste treatment and disposal, along with the advantages and disadvantages of each, including economic and institutional considerations.

The publication provides a framework for evaluating options such as waste minimisation, recycling and waste reduction, and for making decisions on the combination of waste handling processes appropriate to local conditions.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Bruswick, D. J., Gopalan, H. N. B. et al. (Ed.) (1992). **Assessing the Risk of Genetic Damage.** *Hodder and Stoughton for the United Nations Environment Programme and the International Commission for Protection Against Environmental Mutagens and Carcinogens, Gaborone, Botswana. (52 pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

EPA (1992). **Criteria for the Assessment of Risk from Industry.** *EPA Bulletin No. 627. Environmental Protection Authority, Perth. (55 pp.)*

Contact: Environmental Protection Authority, 141 St Georges Terrace, Perth, WA 6000, Australia.

Iskra, A. A. (1994). **Environmental Safety, Principles and Criteria for the Assessment of Dangerous Facilities.** *Russian Federation Ministry of Atomic Energy, Moscow. (8 pp.)*

Contact: Russian Federation Ministry of Atomic Energy, 33 Kashirskoe shosse, Moscow 115230, Russia.

OAS (1991). **Primer on Natural Hazard Management in Integrated Regional Development Planning.** *Department of Regional Development and Environment, Organization of American States, Washington D.C. (320 pp.)*

OAS (1993). **Manual Sobre el Manejo de Peligros Naturales en la Planificación para el Desarrollo Regional Integrado** ***(Manual for the Management of Natural Hazards for Integrated Regional Development Planning).*** *Organization of American States, Washington D.C.*

Contact: Department of Regional Development and Environment, Organization of American States, 17th St and Constitution Ave NW, Washington D.C. 20006, USA.

Sloan, W. M. (1993). **Site Selection for New Hazardous Waste Management Facilities**. *WHO Regional Publications European Series No. 46. World Health Organization Europe, Copenhagen.*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Technica Ltd. (1988). **Techniques for Assessing Industrial Hazards.** *World Bank, Washington D.C. (170 pp.)*

This manual was developed for use in assessing World Bank development proposals. It provides guidelines for the identification of the potential hazards of new or existing plants or processes in the chemical and energy industries; and for the assessment of the consequences of the release of toxic, flammable, or explosive materials, to the atmosphere. The manual presents a structured, simplified approach for identifying the most serious potential hazards and for calculating their effect distances or damage ranges. It is intended for use by engineers and scientists with little or no experience of hazard analysis.

Hazard analysis is outlined in 14 steps with chapters covering: simplified models for calculating the consequences of a release; guidelines on presentation of results of the analysis; and suggestions for mitigation of effects. An appendix gives the "World Bank Guidelines on Identifying, Analysing and Controlling Major Hazard Installations in Developing Countries".

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

UNEP (1990). **Environmental Guidelines for Handling, Treatment and Disposal of Hazardous Wastes.** *UNEP Environmental Management Guidelines No. 18. United Nations Environment Programme, Nairobi. (36 pp.)*

Concern regarding the handling, treatment and disposal of hazardous wastes is growing. There is also an increasing need to develop appropriate hazardous waste management strategies. These guidelines provide a general definition of hazardous wastes; and loosely outline the main issues to be considered in developing waste management strategies for minimising and containing adverse environmental impacts. They are designed to enhance awareness at the policy level regarding the need to consider a wide variety of handling and safety options, and are intended to serve as reference guidelines when developing a management plan.

Contact: United Nations Environmental Programme, PO Box 30552, Nairobi, Kenya.

WHO (1993). **WHO Consultation on the Development and Use of Environmental Health Indicators in the Management of Environmental Risks to Human Health.** *World Health Organisation, Geneva. (30 pp.)*

Contact: World Health Organization. 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

World Bank (1985). **Environment, Health and Safety Guidelines for the Use of Hazardous Materials in Small and Medium Scale Industries**. *Office of Environmental and Social Affairs, World Bank, Washington D.C. (43 pp.)*

This document gives general guidelines for small- and medium-scale industries. It covers continuous emissions of hazardous materials and accidental releases, with incompatible hazardous wastes listed in an appendix. Apart from this detailed information, the document has general application with chapters covering: environment, workplace, transport, emergencies, first aid, training, safety and worker morale.

Contact: the World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

■ TOURISM

CCA (1991). **Environmental Guidelines for Caribbean Planners**. *Prepared for the Organisation of Eastern Caribbean States, the United Nations Development Programme, and the United Nations Centre for Human Settlements by the Carribbean Conservation Association, St Michael, Barbados (124 pp.).*

This publication is the product of a major UNDP/UNCHS(Habitat) project designed to distil information about the environmental assessment processes as they relate to the natural and man-made environment in the Eastern Caribbean. In these small islands, whose economies are generally linked to tourism, the question of how to manage the environment is of paramount importance. Yet very few planners in the islands have been exposed to the concepts of EIA.

The objectives of these guidelines are to redress this problem and provide analytical tools that will enable environmental considerations to be incorporated in the project planning process at an early stage, and to permit the merging of environmental and socio-economic considerations into the traditional physical planning process. The guidelines provide practical and relatively simple approaches to achieve these goals.

Following an introductory chapter outlining the basic steps in the EIA process, guidance is provided for each of the key sectors relevant to the Caribbean economy: agriculture and rural development, tourism, waste management, and coastal zone. Consideration is also given to the social and cultural dimension of EIA in the planning process, the existing regulatory framework and cost-benefit analysis. The document concludes with a number of case studies from different sectors - tourism, industry, mining and coastal zone management.

Contact: Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

Dangroup International (1990). **Guidelines for the Integration of Tourism Development and Environmental Protection in the South Pacific.** *Tourism Council of the South Pacific, Suva, Fiji. (102 pp.)*

Contact: Tourism Council of the South Pacific, GPO Box 13119, Suva, Fiji.

Government of India (1983). **Environmental Guidelines for Development of Beaches.** *Department of Environment, New Delhi. (36 pp.)*

These guidelines are concerned with EIAs for activities related to coastal area developments. The preamble describes the problems of coastal areas in terms of development, population and pollution. Chapter III discusses parameters for coastal area management. Nine major areas of concern in beach development and management are identified: the sea, tourism and recreational value, human settlements and habitat, natural resources and ecosystems, economic development and the social environment, industry and technology, natural/aesthetic potential, and energy. Chapter IV sets out guidelines for EIA covering developments in six areas which require integrated management: tourism, industry, urban areas, fishing villages and rural areas, special areas (mangroves, scenic areas, reefs, etc.), and communication and transport. Activities causing development pressures in the six areas are listed. A broad classification of coastal areas for ecological values is also given. Chapter V outlines a series of management guidelines for a range of potential problems: protection and wise utilisation of valuable ecosystems, prevention of adverse alteration of air and water quality, and physical planning and development. The format for an EIS is given as an annex.

Contact: Department of Environment, Bikaner House, Shahjahan Road, New Delhi 110 011, India.

MIRENEM (1992). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos Turísticos (Guide for the Conduct of Environmental Impact Assessment Studies for Tourism Projects).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (9 pp.)*

This is one of a series of sectoral guides which cover issues to be considered in EIAs by project proponents, and which provide general information to be considered for public works planning and execution. Each guide has similar structure and provides a general description of information needed for addressing the requirements "Governmental Commission for Environmental Impact Studies Control and Evaluation." An annex gives "human health information" for EIAs.

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San Jose, Costa Rica.

UNEP (1982). **Environmental Guidelines for Coastal Tourism.** *UNEP Environmental Management Guidelines No. 6. United Nations Environment Programme, Nairobi. (x, 13 pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

■ TRANSPORT

General

AsDB (1990). **Environmental Guidelines for Selected Infrastructure Projects.** *Asian Development Bank, Manila. (xiv, 128 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover agricultural and natural resource development projects, and industrial and power development projects.

The guidelines are for use by Bank project staff, to enable them to prepare an initial environmental assessment (IEE) for a proposed project. Annexes set out guidelines, checklists and report formats for the IEE of specific project types: airports, highways and roads, ports and harbours, sewerage and excreta disposal, community water supply systems and urban development. As in the other manuals in the series, the final annex provides guidelines relevant to

all types of projects, covering issues such as environmental standards and critical parameters.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Cabral, J. (1994). **Environmental Assessment of Multilateral Transportation Sector Loans in Latin America and The Caribbean.** *Paper presented at the Fourteenth Annual Meeting of the International Association for Impact Assessment, Quebec, June 1994. (18 pp.)*

Contact: Department of Urban Studies and Design, Simon Bolivar University, Apartado 89.000, Caracas 1080-A, Venezuela.

Department of Transport (1983). **Manual of Environmental Appraisal.** *Assessments Policy and Methods Division, Department of Transport, London. (57 pp.)*

The manual comprises three sections. Part 1 defines the essential elements of an appraisal framework and describes the different groups involved. Part 2 includes guidelines for the assessment of specific impacts such as noise, pollution, visual, and social effects. Part 3 provides a listing of relevant references and further reading material.

Contact: Department of Transport, 2 Marsham St, London, SW1P 3EB, UK.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Transport Development.** *ESCAP Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 99 pp.)*

Like other ESCAP guidelines, these summarise existing methodologies. The impacts and management requirements of the transport sector are discussed with reference to port and harbour projects, highways and roads, and airports. Annexes give sample terms of reference for these types of project. Case studies are provided for different types of transport projects. This document is one of a series of four. The other three volumes cover water resources, agriculture and industrial development.

Contact: Economic and Social Commission for Asia and the Pacific, United Nations Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Gobierno de Bolivia (1993). **Directriz de Evaluación de Impacto Ambiental de Proyectos del Sector Transporte. (Environmental Impact Assesment Guidelines for the Transport Sector).** *Secretaría General del Medio Ambiente, La Paz. (34 pp.)*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz.

NORAD (1994). **Initial Environmental Assessment: Transport.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 8. Norwegian Agency for Development Cooperation, Oslo. (35 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of transport projects - road, sea, rail and air - and briefly reviews the impacts of such projects on the natural and man-made environment. These include pollution of water, air and soil, barrier impacts, noise, accidents and other impacts on health. A brief section is included on land use changes and impacts on traditional lifestyles and management of natural resources. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep. 0030 Oslo, Norway.

SNV (1994) **EIA in the Transport Sector - Environmental Protection Aspects.** *Swedish Environmental Protection Agency, Solna, Sweden. (52pp. + annexes)*

Contact: Swedish Environmental Protection Agency, S-171 85 Solna, Sweden.

Tata Energy Research Institute (1983). **Environmental Guidelines for Coal Transportation.** *Report of a Workshop held at New Delhi, November 14-17, 1983. Tata Energy Research Institute/ Government of India, New Delhi. (42 pp.)*

Contact: Tata Energy Research Institute, 102 Jor Bagh, New Delhi 110 003, India.

Ports and Harbours

Davis, J. D., & MacKnight, S. et al. (1990). **Environmental Considerations for Port and Harbour Developments.** *Transport and the Environment Series No. 126. World Bank, Washington D.C. (83 pp. plus attachments)*

This paper was prepared in association with the International Maritime Organisation (IMO). It is aimed at both World Bank staff and borrowers - port authorities, port managers and engineers, and also government officials responsible for port and maritime activities. The introduction highlights environmental problems typically associated with port development. However, the paper is basically a checklist and intended primarily as an aide memoire for those responsible for port and harbour development. It discusses the range of topics that need to be considered, which ones are applicable in particular cases and where to find more information. More detailed information is included on how particular issues are normally resolved, with guidance on information resources and assistance.

Although the paper includes discussion on the disposal of dredged sediments, increasing regulatory constraints and environmental concerns with open-water disposal at sea led the World Bank to augment these discussions with an annex which addresses the various disposal options available.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Government of France (1988). **L'Étude d'Impact des Ports de Plaisance (Impact Study for Marinas).** *Ministère de l'Environnement, Paris. (112 pp)*

Contact: Ministry of the Environment, 20, Avenue de Segur, 75302 Paris 7 SP, France.

Government of India (1981). **Guidelines and Questionnaire for Environmental Impact Asessment of Shipping and Harbour Projects.** *National Committee on Environmental Planning, New Delhi. (41 pp.)*

The guidelines discuss objectives and parameters for policy formulation for the protection of the environment in relation to shipping and harbour activities. They consider the need to prepare projections, design safety features and set out emergency procedures in respect of various types of accidents. Offences and penalties, legal requirements, and the need for independent technical and administrative arrangements for EIAs are also reviewed. Annexes include a comprehensive questionnaire on shipping and harbour development projects, and information on various relevant legal instruments and conventions.

Government of India (1989). **Environmental Guidelines for Ports and Harbour Projects.** *Environmental Impact Appraisal Series, EIAS-4-89 (IA-III). Ministry of Environment and Forests, New Delhi. (42 pp.)*

These guidelines outline the format and content required for an environmental impact statement and environmental management plan, and identify the main impacts of port and harbour projects on physical and ecological resources, human use values and quality of life values. Mitigation measures are discussed for a range of adverse impacts: aquatic, atmospheric, noise, land and other resources, visual, solid waste management, accidental, socio-economic and public health impacts. Some general recommendations for mitigation measures are included. A detailed questionnaire for project environmental appraisal is provided.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Inland Waterways Authority of India (1994). **Guidelines on Environmental Issues Related to Inland Water Transport** *(2 vols). Netherlands Ministry of Foreign Affairs, The Hague/New Delhi (44 pp. plus annexes).*

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

MIRENEM (1993). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para la Ejecución de Obras Públicas. Muelles (Guide for the Conduct of Environmental Impact Assessment Studies of Public Works. Ports)** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (4 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.

Roads and Railways

Department of Transport (1992). **Assessing the Environmental Impact of Road Schemes.** *The Standing Advisory Committee on Trunk Road Assessment. Her Majesty's Stationary Office, London. (200 pp.)*

Department of Transport (1992). **Design Manual for Roads and Bridges Volume II: Environmental Assessment.** *Department of Transport, London.*

Contact: Department of Transport, 2 Marsham St, London, SW1P 3EB, UK.

Government of India (1989). **Environmental Guidelines for Rail/Road/Highway Projects.** *Environmental Impact Appraisal Series, EIAS-1-89 (IA-III). Ministry of Environment and Forests, New Delhi. (35 pp.)*

The document describes the issues required to be covered in an environmental impact statement and the elements to be included in an environmental management plan. It identifies the main impacts of rail, road and highway projects on physical and ecological resources, on human use values and quality of life values. Measures for mitigating adverse impacts are discussed, and recommendations are made for monitoring air, noise and water quality. Management considerations for projects in hilly areas are reviewed. Finally, a questionnaire for project environmental appraisal is provided.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

IEA (1993). **Guidelines for the Environmental Assessment of Road Traffic.** *Guidance Notes No. 1. Institute of Environmental Assessment, Lincoln, England. (52 pp.)*

These guidelines provide systematic and comprehensive information for the assessment of the off-site environmental impact of road traffic associated with major new developments (e.g. quarries, supermarkets). They are not designed to be applied to projects such as motorways or railways. They are intended to complement professional judgement and the experience of trained assessors. The guidelines are structured to mirror the activities necessary to undertake an environmental asssessment. Sections 2 and 3 consider the analyses needed to define and understand the environmental and traffic issues affecting any particular development. Section 4 explains how the various issues can be assessed. Section 5 deals with alternatives and mitigation techniques. Finally, Section 6 covers the presentation of the environmental statement.

Contact: Institute of Environmental Assessment, Fen Road, East Kirkby, Lincolnshire, PE23 4DB, UK.

Indian Roads Congress (1989). **Guidelines for Environmental Impact Assessment of Highway Projects.** *Indian Roads Congress, New Delhi. (28 pp.)*

These guidelines supplement the Indian Roads Council's "Manual for Survey, Investigation and Preparation of Roads Projects" (document SP:19). They set out procedures for EIAs of road projects (new roads and major improvements to existing roads) to assist engineers. Section 5 provides formats for recording baseline data, evaluation of alternatives, and assessment of the environmental impact of the chosen alternatives. Section 6 outlines an approach to data collection and evaluation for preparing the EIA. Key elements include a reconnaissance survey/study of different road alignments (desk studies and field work) followed by more detailed investigations of the most appropriate route. The issues that need to be covered in investigations are discussed with respect to existing roads, roads in hilly areas, noise, highway aesthetics, pollution control (in general), air pollution, and pollution during construction operations. Measures for mitigating adverse impacts are considered, particularly soil erosion and land degradation in hilly areas, for which a checklist of points is included.

Contact: Indian Roads Congress, Jamnagar House, Shahjahan Road, New Delhi 110 011, India.

MIRENEM (1993). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para la Ejecución de Obras Públicas. Carreteras y Ferrocarriles (Guide for the Conduct of Environmental Impact Assessment Studies of Public Works. Roads and Railways).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (12 pp.)*

Contact: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San Jose, Costa Rica.

MOPT (1991). **Guías Metodológicas para la Elaboración de Estudios de Impacto Ambiental. 1: Carreteras y Ferrocarriles (Methodological Guidelines for Environmental Impact Assessment. 1: Roads and Railways).** *Ministerio de Obras Públicas y Transportes, Madrid. (168 pp.)*

Contact: Ministerio de Obras Públicas y Transportes, Paseo de la Castellana 67, 28071 Madrid, Spain.

Swedish Road Administration (1987). **Environmental Impact of Roads.** *Swedish Road Administration, Borlänge, Sweden. (36pp. + annexes)*

Contact: Swedish Road Administration, S-781 87, Borlänge, Sweden.

Swedish National Rail Administration (1992). **Enviommental Impact Assessment of Railways.** *Swedish National Rail Administration, Borlänge, Sweden. (60pp + annexes)*

Contact: Swedish National Rail Administration, S-781 85, Borlänge, Sweden.

Airports

Government of India (1989). **Environmental Guidelines for Airport Projects.** *Environmental Impact Appraisal Series, EIAS-2-89 (IA-III). Ministry of Environment and Forests, New Delhi. (30 pp.)*

These guidelines apply to new projects and those involving substantial changes to existing facilities. Background is provided on the objectives and processes of EIA, with information on the required structure and content of the environmental impact statements and environmental management plans. Guidance is provided on the identification of environmental effects commonly associated with airport projects: impacts on physical resources (soil and geology, water demand and waste water discharge, air quality, and noise); ecological impacts associated with site development, and facility operation; and socio-economic impacts. Measures for mitigation are also discussed. A brief summary of a possible environmental management and monitoring programme is given. A questionnaire for environmental appraisal is also provided.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

MOPT (1991). **Guías Metodológicas para la Elaboración de Estudios de Impacto Ambiental. 4:Aeropuertos (Methodological Guidelines for Environmental Impact Assessment. 4: Airports)** *Ministerio de Obras Públicas y Transportes, Madrid.*

Contact: Ministerio de Obras Públicas y Transportes, Paseo de la Castellana 67, 28071 Madrid, Spain.

■ WASTE

Batstone, R., Smith, J. E. J. & Wilson, D. (Ed.). (1989). **The Safe Disposal of Hazardous Wastes: The Special Needs and Problems of Developing Countries. Volumes I-III.** *A joint study sponsored by the World Bank, the World Health Organization (WHO), and the United Nations Environment Programme (UNEP). Technical Paper No. 93. World Bank, Washington D.C. (823 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Cointreau, S. J. (1982). **Environmental Management of Urban Solid Wastes in Developing Countries: A Project Guide for Urban Development.** *Urban Development Technical Paper No. 5. World Bank, Washington D.C. (214 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Glennie, E., & Frost, R. C. (1989). **Guidance on Carrying out an Environmental Assessment for A Sludge Incineration Plant.** *Water Research Centre Plc, Swindon, England.*

Contact: Water Research Centre, Swindon, PO Box 85, Frankland Road, Blagrove, Swindon, Wilts SN5 8YR.

Government of France (1990). **Guide pour l'Élaboration de l'Étude d'Impact sur l'Environnement d'une Décharge Contrôlée (Guidance for Environmental Impact Assessment of a Controlled Discharge).** *Ministère de l'Environnement, Paris. (50 pp)*

Contact: Ministry of the Environment, 20, Avenue de Segur, 75302 Paris 7 SP, France.

Mara, D. & Cairncross, S. (1989). **Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture.** *World Health Organization, Geneva (182 pp.)*

This booklet is aimed at planners and decision-makers in government departments and consulting engineers involved in human waste management. It concentrates on the steps necessary to ensure that human wastes can be used to their maximum advantage without endangering the health of people working and living in the area. Pollution is not included. Chapters 2 and 3 review the history and benefits of waste reuse. Chapter 4 outlines public health considerations. Sociocultural factors are considered in Chapter 5 and environmental protection in Chapter 6. Methods of control to ensure public health protection are detailed in Chapter 7 while the corresponding institutional, legal and financial aspects are provided in Chapter 8. A bibliography of up-to-date, topical interest is provided together with a glossary.

Contact: World Health Organisation,, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

NORAD (1992). **Initial Environmental Assessment: Waste Management.** *Environmental Impact Assessment of Development Aid Projects No. 11. Norwegian Agency for Development Cooperation, Oslo. (31 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). It aims to assist project planners and desk officers to integrate environmental considerations into waste management projects at an early stage in the planning process. The booklet outlines the general characteristics of waste management projects, and briefly reviews the characteristics of the human and biophysical environment typically affected by these projects. There are sections covering informal waste collection systems, slums and affluent settlements, general sociocultural systems, institutional constraints, and climate, soil, water and air. Various potential environmental impacts are outlined: pollution of air, water and soil; impacts on human health; the potential impacts of hazardous waste; impacts on traditional ways of life, local communities and existing production systems; and impacts on biodiversity. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep., 0030 Oslo 1, Norway.

Shuval, H. I. et al. *(1986).* **Wastewater Irrigation in Developing Countries: Health Effects and Technical Solutions.** *UNDP Project Management Report No 6. World Bank Technical Paper No. 51, World Bank, Washington D.C. (xxxi, 324 pp.)*

This report provides information on wastewater re-use in irrigation together with the technological and public health impacts. It does not deal with the use of sludge or night soil in agriculture, nor with wastewater recycling in aquaculture. The report reviews existing literature, examines the costs and benefits of practices which would reduce health effects, and identifies and evaluates policy options. It establishes that the highest risk of the transmission of pathogens, infection and sickness arises from helminths, bacteria and viruses.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Sloan, W. M. (1993). **Site Selection for New Hazardous Waste Management Facilities.** *European Series No. 4. World Health Organization, Copenhagen (xiv, 118 pp.).*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

UNEP (1990). **Environmental Guidelines for Handling, Treatment and Disposal of Hazardous Wastes.** *UNEP Environmental Management Guidelines No. 18. United Nations Environment Programme, Nairobi. (36 pp.)*

Concern regarding the handling, treatment and disposal of hazardous wastes is growing. There is also an increasing need to develop appropriate hazardous waste management strategies. These guidelines provide a general definition of hazardous wastes, and outline the main issues to be considered in developing waste management strategies for minimising and containing adverse environmental impacts. They are designed to enhance awareness at the policy level regarding the need to consider a wide variety of handling and safety options, and are intended to serve as reference guidelines when developing a management plan.

Contact: United Nations Environment Programme. PO Box 30552, Nairobi, Kenya.

WHO (1989). **Health Guidelines for Use of Wastewater in Agriculture and Aquaculture.** *Technical Report Series No. 778. World Health Organisation, Geneva (74 pp.).*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

World Bank (1988). **Environmental Guidelines.** *World Bank, Washington D.C. (461 pp.)*

In the preface, this document is sub-titled "*Environmental Industrial Waste Control Guidelines*". As an integral part of its appraisal and supervision function, the World Bank is required to evaluate the adequacy and effectiveness of pollution control measures for projects involving industrial operations. These guidelines were first compiled in 1984, to cover the industries and pollutants most likely to be encountered in the Bank lending programme. They were reissued in 1988 with the caveat that their application must be adjusted to each specific situation. Permissable pollutant levels are given which are considered achievable at reasonable costs by existing treatment and control technology. The guidelines cover 55 different industrial processes and various industries, including metals, food, chemicals, mining and paper.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

■ WATER RESOURCES

Birley, M. H. (1991). **Guidelines for Forecasting the Vector-Borne Disease Implications of Water Resources Development.** *PEEM Guidelines Series 2. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (115 pp.)*

This paper outlines a methodology for rapidly assessing health risks associated with water development projects in the tropics or sub-tropics. It uses a minimum number of questions which should provide reasonably accurate answers, and assumes that local information will be available. Early involvement at the planning stage is advocated. Three main components are outlined: community vulnerability, environmental receptivity, and vigilance of health services.

The document outlines what to do, how to do it and who to involve, and provides background information on vector-borne diseases. It also provides a useful summary for non-health specialists, grouped into topics: geophysical; biotic - plants and animals; demographic and socio-cultural, infrastructure; and disease management by vector control. The guidelines are supplemented by references, worksheets, factsheets and pull out flow charts.

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Bolton, P. & Dawson, F. H. (1991). **The Use of a Check-List in Assessing Possible Environmental Impacts in Planning Watercourse Improvements.** *Paper Presented at the International Symposium on Effects of Watercourse Improvements: Assessment, Methodology, Management Assistance, Namur, Belgium: Hydraulics Research Wallingford, Oxford.*

Contact: Hydraulics Research Wallingford Ltd, Howbery Park, Wallingford, Oxon OX10 8BA.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is for use by NGOs and the projects they support. The series is also relevant to project planning in general. It provides project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Small Dams/Reservoirs** *(25 pp.)*: outlines environmental and health impacts of small dams and reservoirs, and also includes a discussion of community participation and water conservation. A checklist for practitioners is provided.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7, Canada.

Coleman, G. (1993). **Evaluating the Health Impact of Water and Sanitation Projects: It Ain't Necessarily Neccesary.** *Project Appraisal, 8 (4), 251-255.*

ESCAP (1990). **Environmental Impact Assessment Guidelines for Water Resource Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 119 pp.)*

These guidelines are intended to assist government agencies in developing countries. They summarise general EIA methodologies, and discuss typical impacts related to water resources development, based on literature references and case studies. The guidelines are limited to fresh water resources including rivers, lakes and estuarine areas. Marine waters *per se* are not considered. The document is one in a series of four. The other volumes cover agriculture, transport, and industrial development.

Contact: Economic and Social Commission for Asia and the Pacific, UN Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Godwin, R. B., Foxworthy, B. L. & Vladimirov, V. A. (1990). **Guidelines for Water Resource Assessments of River Basins.** *Technical Documents in Hydrology Series. International Hydrological Programme, United Nations Educational, Scientific and Cultural Organisation, Paris.*

Contact: United Nations Educational, Scientific and Cultural Organisation, 7, Place de Fontenoy, F-75700 Paris, France.

Government of India (1985). **Guidelines for Environmental Impact Assessment of River Valley Projects.** *Ministry of Environment and Forests, New Delhi. (41 pp.)*

This document is concerned with river valley projects, e.g. irrigation, hydropower, and multi-purpose. It comprises four sections. The first reviews the relevance of environmental considerations to river valley projects. It discusses development priorities, the economics of incorporating environmental considerations, and ecological issues in planning development projects. The second section details the data that should be collected for impact assessment of river valley projects, indicating data sources and those departments/agencies whose opinions should be sought and incorporated within the project report. A questionnaire on the ecological aspects of hydro-electric projects is provided as an annex. The third section is a schematic diagram illustrating the impact assessment procedure. The final section presents a case study of the Heran Reservoir (Lalpur Dam) project.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Lohani, B. N. & Kan, S. A. (1983). **Environmental Evaluation For Water Resources in Thailand.** *Water Resources Development, 1 (3) 185-195.*

MIRENEM (undated). **Borrador de Guía de Estudio de Impacto Ambiental Para Explotación de Cauces de Dominio Público (Draft Guide for Environmental Impact Studies of Public Watersheds).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (8 pp.)*

Available from: Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.

Mock, J. F. & Bolton, P. (1993). **The ICID Environmental Check-List To Identify Environmental Effects of Irrigation, Drainage and Flood Control Projects.** *Prepared for the International Commission on Irrigation and Drainage. Hydraulics Research Wallingford, Oxford. (70 pp.)*

The Working Group established by the International Commision on Irrigation and Drainage (ICID) to investigate the environmental impacts of irrigation, drainage and flood control projects has produced this environmental check-list to help identify posssible changes which such projects may bring. Effects are grouped under eight sectors: hydrology, pollution, soils, sediments, ecology, socio-economic, health and ecological imbalances.

The checklist provides a framework to identify environmental effects of new or existing projects and is intended for use by engineers and planners who are not specialists in the environmental sciences. Practical guidance is given in the use of the procedure in various localities and for various types of projects, and suggestions are given as to how it might be adapted to specific situations. The main components of the procedure are given in a form which can be photocopied for field use.

Contact: Hydraulics Research Wallingford Ltd., Howbery Park, Wallingford, Oxford OX10 8BA, UK.

Pal, K. & Rajappa, R. (1993). **EIA Guidelines for Water Resources Development Projects.** *Water Resources Development, 9 (2), 189-204.*

Palange, R. C. & Zavala, A. (1987). **Water Pollution Control: Guidelines for Project Planning and Financing.** *World Bank Technical Paper No. 73. World Bank, Washington D.C. (211 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

UNEP (1982). **Environmental Guidelines for Watershed Development.** *UNEP Environmental Management Guidelines No. 3. United Nations Environment Programme, Nairobi. (x, 26 pp.)*

These guidelines are limited to small and medium watersheds (up to approximately one million hectares) in mountain areas, and deal essentially with those aspects which are related to the management and development of forests: timber harvesting, afforestation, range management, agro-forestry, mountain roads, dams and reservoirs, river control, and resettlement of rural populations. Other economic activities, such as mining, have not been considered at this stage.

The guidelines are primarily intended for administrators and planners who are required to make decisions at early stages of the project cycle. As such, they are directed at the "informed non-expert" and they are presented in a non-technical way, with environmental issues discussed in simple terms.

UNEP (1988). **Environmental Guidelines for Flood Plain Management.** *UNEP Environmental Management Guidelines No. 16. United Nations Environment Programme, Nairobi. (19 pp.)*

These guidelines are intended to help planners and administrators take environmental considerations into account in decisions concerning the development and management of flood plains. They provide basic background information on the nature and characteristics of floods, river flow across flood plains, and flood management.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

UNEP/UNESCO (1987). **Methodological Guidelines for the Integrated Environmental Evaluation of Water Resources Development.** *United Nations Educational, Scientific and Cultural Organisation, Paris. (152 pp.)*

UNESCO et al. *(1988).* **Water-Resource Assessment Activities. Handbook for National Evaluation.** *United Nations Educational, Scientific and Cultural Organisation/World Meteorological Organisation, Paris. (116 pp.)*

Available from: United Nations Educational, Scientific and Cultural Organisation, 7, Place de Fontenoy, F-75700 Paris, France.

Wooldridge, R. (Ed.). (1991). **Techniques for Environmentally Sound Water Resources Development.** *African Regional Symposium. Pentech Press, London. (332 pp.)*

Available from: HR Wallingford Ltd, Howbery Park, Wallingford, Oxon OX10 8BA, UK.

Specific Ecological Zones

Arctic Region

Coastal Zone

Islands

Mountains

Wetlands

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Specific Ecological Zones

ARCTIC REGION

IUCN (1993). **Oil and Gas Exploration and Production in Arctic and Subarctic Onshore Regions.** *The World Conservation Union (IUCN), Gland; with The Oil Industry International Exploration and Production Forum, London. (viii, 56 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

COASTAL ZONE

AsDB (1991). **Environmental Evaluation of Coastal Zone Projects: Methods and Approaches.** *ADB Environment Paper No. 8. Asian Development Bank, Manila. (ii, 72 pp.)*

The material in this paper supplements that provided in several previous AsDB documents: "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" (1987); "*Guidelines for Integrated Economic-cum-Environmental Development Planning*" (1988); and "*How to Assess Environmental Impacts of Tropical Islands and Coastal Areas*" (prepared by the East-West Centre, Hawaii, 1989).

Key features of selected coastal habitats are described for non-technical readers, followed by a fuller treatment of the potential impacts of development projects at the level of an initial environmental assessment (IEE). These are presented in the form of impact matrices covering three broad categories of projects: managed ecosystems (agriculture, wetland forestry, nearshore fisheries, and aquaculture/mariculture); infrastructure (roads, ports and harbours, and residential urban development); and, industry (location, design, construction, and operations). Cross-sectoral impacts and interactions are also considered.

The document then applies the integrated planning approach (discussed in "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" mentioned above) to coastal zone development. It discusses regional and local coastal resource plans and gives country examples of coastal resource management approaches. Appendices include an AsDB checklist for IEE of coastal zone projects and a list of organisations dealing with wetlands and coastal habitats in AsDB's developing member countries.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Baker, I. & Kaeoniam, P. (Ed.) (1986). **Manual of Coastal Development Planning and Management for Thailand.** *Thailand Institute of Scientific and Technological Research, Bangkok. (179 pp.)*

Contact: Thailand Institute of Scientific and Technological Research, 196 Phaholyothin Road, Bangkhen, Bangkok 10900, Thailand.

Berwick, N. L. (1983). **Guidelines for the Analysis of Biophysical Impacts to Tropical Coastal Marine Resources.** *Centenary Seminar on Conservation in Developing Countries - Problems and Prospects. The Bombay Natural History Society, Bombay. (122 pp.)*

Contact: Conservation Systems, 102 Seventh Street N.E, Washington D.C. 20002, USA.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is for use by NGOs and the projects they support. It is also relevant to project planning in general. The series provides project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes accessible guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Introduction** (*23 pp*): defines basic terminology and outlines general considerations for evaluating the significance of impacts, data collection, screening and the integration of environmental considerations into development project planning. A framework for screening projects is also described.

- **Coastal ecosystems** (*25 pp*): covers estuaries, mangroves and coral reefs, together with a generic discussion of environmental impacts of development projects on coastal ecosystems.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7, Canada.

Geoghegan, T. (1983). **Guidelines for Integrated Marine Resource Management in the Eastern Caribbean.** *Technical Paper No. 2. Caribbean Conservation Association, St Michael, Barbados.*

Contact: Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

Government of India (1983). **Environmental Guidelines for Development of Beaches.** *Department of Environment, New Delhi. (36 pp.)*

These guidelines are concerned with EIAs for activities related to coastal area developments. The preamble describes the problems of coastal areas in terms of development, population and pollution. Chapter III discusses parameters for coastal area management. Nine major areas of concern in beach development and management are identified: the sea, tourism and recreational value, human settlements and habitat, natural resources and ecosystems, economic development and the social environment, industry and technology, natural/aesthetic potential, and energy. Chapter IV sets out guidelines for EIA covering developments in six areas which require integrated management: tourism, industry, urban areas, fishing villages and rural areas, special areas (mangroves, scenic areas, reefs, etc.), and communication and transport. Activities causing development pressures in the six areas are listed. A broad classification of coastal areas for ecological values is also given. Chapter V outlines a series of management guidelines for a range of potential problems: protection and wise utilisation of valuable ecosystems, prevention of adverse alteration of air and water quality, and physical planning and development. The format for an EIS is given as an annex.

Contact: Department of Environment, Bikaner House, Shahjahnan Road, New Delhi 110 011, India.

Pernetta, J. C. & Elder, D. L. (1993). **Cross-sectoral, Integrated Coastal Area Planning (CICAP): Guidelines and Principles for Coastal Area Development.** *A Marine Conservation and Development Report. The World Conservation Union (IUCN)/World Wide Fund for Nature, Gland, Switzerland. (vii, 63 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

Rees, C. (1990). **A Guide to Development in Urban and Coastal Areas.** *Asian Wetland Bureau, Kuala Lumpur, Malaysia (79 pp.)*

This guide promotes the integration of environmental considerations in projects in urban and coastal environments as a basic procedure of good planning. It first describes, in non-technical and graphic format, the function and structure of major natural systems in relation to planning for sound development. In the guidelines that follow, sketches are used to represent improper methods of development that often result in environmental problems, and to illustrate recommended, sound development practice. The guide is available in English, Thai and Indonesian language versions and is currently being translated into Cambodian and Vietnamese.

Contact: Asian Wetland Bureau, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

UNEP (1982). **Environmental Guidelines for Coastal Tourism.** *UNEP Environmental Management Guidelines No. 6. United Nations Environment Programme, Nairobi. (x,13 pp.)*

UNEP (1988). **Environmental Guidelines for Coastal Protection Measures.** *UNEP Environmental Management Guidelines No. 17. United Nations Environment Programme, Nairobi. (18 pp.)*

UNEP (1990). **An Approach to Environmental Impact Assessment for Projects Affecting the Coastal and Marine Environment.** *Regional Seas Reports and Studies. United Nations Environment Programme, Nairobi. (35 pp.)*

This document provides simple procedures and guidelines for the preparation of EIAs in the context of regional agreements on the protection of the marine environment, adopted in support of UNEP's Regional Seas Programme. The approach is limited to a narrowly defined, practical and easily applicable EIA methodology for certain types of project: a marina, a tourist complex, and sewage treatment plants of different sizes. The document has been periodically revised on the basis of experience gained through the testing of the approach on case studies.

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

World Bank (1994). **Coastal Zone Management and Environmental Assessment.** *Environmental Assessment Sourcebook Update No. 7. Environment Department, World Bank, Washington D.C.*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

ISLANDS

Carpenter, R. A. & Maragos, J. E. (1989). **How to Assess Environmental Impacts on Tropical Islands and Coastal Areas.** *South Pacific Regional Environment Programme Training Manual. Environment and Policy Institute, East-West Center, Honolulu. (xiii, 345 pp.)*

This manual is a scientific training guide which outlines various techniques of EIA, whilst stressing the need to develop an individual approach towards each project. It's theme is the prediction of future environmental conditions resulting from economic development and technological change.

The manual explains how to design an EIA, and suggests key references to assist the practitioner undertake a full assessment. The document provides a framework for drawing up terms of reference for EIA consultants, and is also a useful standard for EIA reviews. It is a useful desk reference work, providing definitions of common terms, and examples of impacts and mitigative measures. Specific sectors covered include: agriculture, forestry, fisheries, tourism, energy, mining, waste management, construction, ports and harbours.

Contact: Environment and Policy Institute, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848 USA.

McEarchern, J. & Towle, E. L. (1974). **Ecological Guidelines for Island Development.** *IUCN Publications New Series No. 30. International Union for the Conservation of Nature and Natural Resources, Gland. (65 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

MOUNTAINS

Dasmann, R. F. & Poore, D. (1979). **Ecological Guidelines for Balanced Land Use, Conservation, and Development in High Mountains**. *International Union for the Conservation of Nature and Natural Resources/United Nations Environment Programme/World Wildlife Fund, Gland Switzerland. (viii, 40 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

Government of India (1990). **Parameters for Determining Ecological Fragility.** *Ministry of Environment and Forests, New Delhi. (29 pp.)*

The report sets out parameters to assist in the identification of specific areas in different regions of India which could be categorised as ecologically fragile or sensitive. They aim to help in ensuring that such areas are not subjected to environmentally unacceptable activities. Some fragile or sensistive ecosystems are listed. They include ecosystems: with unique properties; with intrinsically low resilience; with high species richness and biological diversity; susceptible to species loss; linking two or more protected ecosystems; with aquifers and water recharge areas of mountain springs; and those with active geological faults and seismic hazards. The parameters are outlined in sections on various ecosystems: deserts, Himalayas, glaciated areas, seismic zones, landslide zones, and watersheds. A list of some of the ecologically fragile and sensitive areas in India is given in an annex.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

WETLANDS

Bond, W. E. A. (1992). **Wetland Evaluation Guide. Final Report of the Wetlands Are Not Wastelands Project.** *Issues Paper No. 1992 - 1. North American Wetlands Conservation Council (Canada) in partnership with Wildlife Habitat Canada, Ottawa. (121 pp.)*

Contact: North American Wetlands Conservation Council, Suite 200, 1750 Courtwood Crescent, Ottawa, Ontario K2C 2B5, Canada.

Howe, C. P., Claridge, G. F., Hughes R. & Zuwendra (1991). **Manual of Guidelines for Scoping EIA in Tropical Wetlands.** *PHPA/AWB Sumatra Wetland Project Report (International version). Asian Wetland Bureau, Indonesia; and Directorate General for Forest Protection and Nature Conservation, Department of Forestry, Bogor. (xvi, 261 pp. + annexes)*

The manual is designed to assist in the identification of wetland benefits at a site before project plans are finalised, and to assess the potential impacts of development projects on these benefits. Originally developed for use in Indonesia, this 'internationalised' text will be of use for scoping development projects that may impact on tropical wetlands in general. The manual includes descriptions and diagrams of all recognised benefits provided by tropical wetlands, together with lists of the types of activities associated with development projects that may have impacts on such benefits. The manual is designed to assist users to determine potential impacts of particular projects on specific wetland types.

Howe, C. P., Claridge, G. F., Hughes R. & Zuwendra (1991). **Manual of Guidelines for Scoping EIA in Indonesian Wetlands** *(Pedoman Pelingkupan Analisis Mengenai Dampak Lingkungan di Lahan Basah). PHPA/AWB Sumatra Wetland Project Report. Asian Wetland Bureau, Bogor. (315 pp.)*

This manual is targetted specifically at scoping EIA affecting Indonesian wetlands. Copies are available in English and Bahasa Indonesian.

Contact: Asian Wetland Bureau-Indonesia, PO Box 254, Bogor 16001, Indonesia.

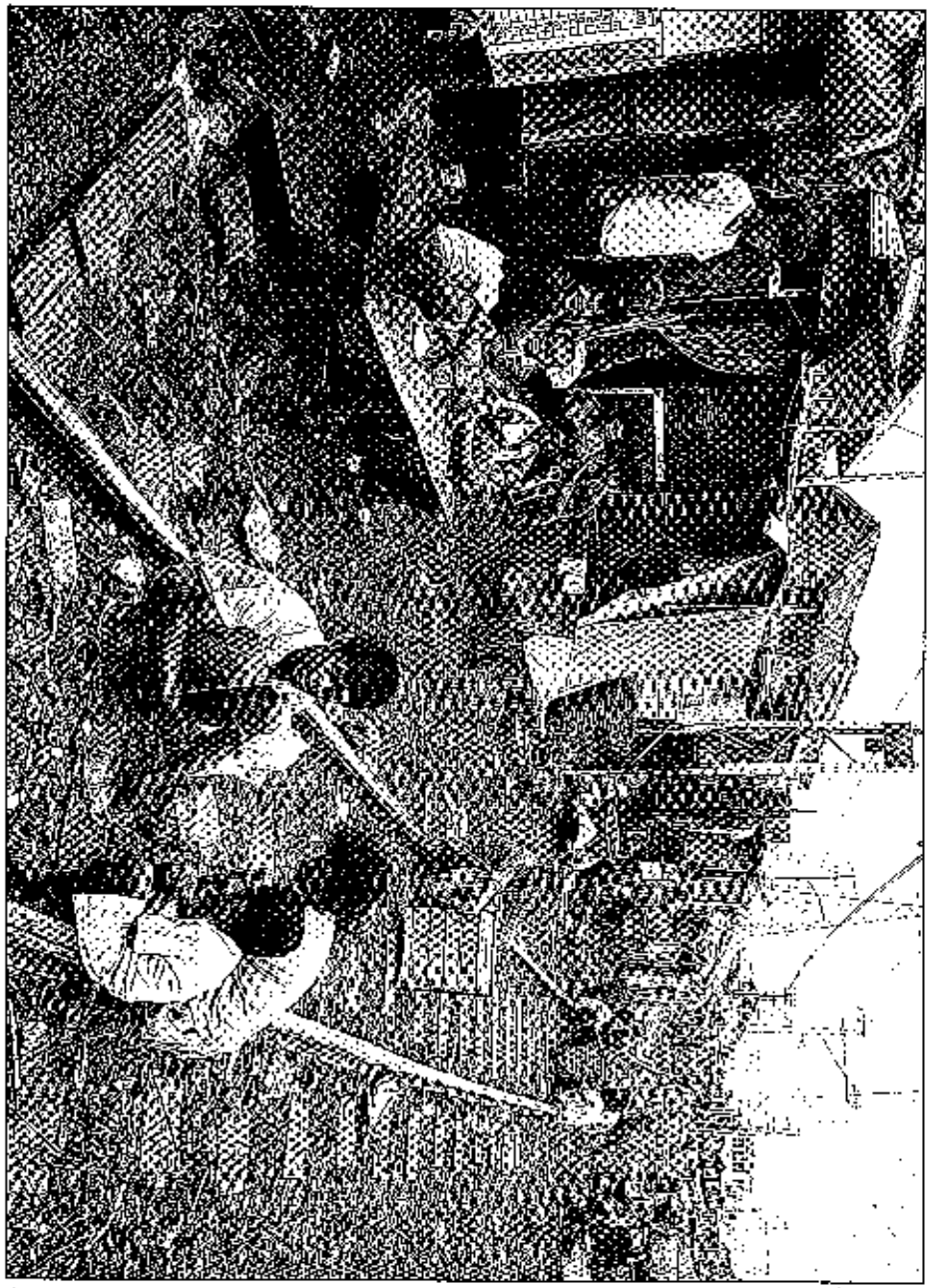
IUCN (1993). **Oil and Gas Exploration and Production in Mangrove Areas. Guidelines for Environmental Protection.** *The World Conservation Union (IUCN), Gland; with The Oil Industry International Exploration and production Forum, London. (vii, 47 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos de Acuicultura en Refugios de Vida Silvestre y Humedales (Guide for the Conduct of Environmental Impact Assessment Studies for Aquaculture Projects in Wildlife Reserves and Wetlands).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos de Salinas en Refugios de Vida Silvestre y Humedales (Guide for the Conduct of Environmental Impact Assesment Studies for Saltland Projects in Wildlife Reserves and Wetlands).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (2 pp.)*

Contact: Ministerio de Recursos Naturales, Avda 8-10, Calle 25, Apdo 10.104, 1000 San José, Costa Rica.



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Social Impact Assessment

Social Impact Assessment

AsDB (1987). **Guidelines for Assessing Socio-Cultural Impacts of Economic Development Projects.** *Asian Development Bank, Manila.*

AsDB (1991). **Guidelines for Social Analysis of Development Projects.** *Asian Development Bank, Manila (18 pp.)*

These guidelines have been prepared by the Asian Development Bank to equip that Bank project staff to identify and assess the range of potential social impacts resulting from Bank-financed projects in any sector - agriculture, industry or infrastructure - and to design socially-sensitive projects which minimise or eliminate negative social impacts.

The main text of the document sets out the general principles of social analysis, at both macro and project levels, and then applies these at each stage of the project cycle. Comprehensive appendices are attached which deal with the specialised aspects of social analysis in different sectors and in greater procedural detail. The guidelines are also intended for use by NGOs, research institutes, bilateral and multilateral donor agencies.

AsDB (1993). **Guidelines for Incorporation of Social Dimensions in Bank Operations.** *Asian Development Bank, Manila. (viii, 39 pp.)*

These guidelines supersede the 1991 *Guidelines for Social Analysis of Development Projects.* They aim to encourage the incorporation of social dimensions in the formulation of development strategies, in the translation of strategies into operational programmes, and in the design, implementation and evaluation of development programmes and projects.

The guidelines are for use by Bank staff, consultants, member countries and other practitioners, and provide an overall framework for the incorporation of social issues and associated processes in all the Bank's operations. Detailed instructions for incorporating specific social dimensions are provided in the companion volume *Handbook for Incorporation of Social Dimensions in Projects* (1994).

AsDB (1994). **Handbook for Incorporation of Social Dimensions in Projects.** *Asian Development Bank, Manila. (105 pp.)*

This handbook is a supplement to *Guidelines for Incorporation of Social Dimensions in Bank Operations* (1993) and provides detailed suggestions for incorporating social dimensions into projects. It presents an overview of the elements which are covered in a social analysis, describes a framework for application of this analysis, and provides guidance on conducting the analysis. Checklists are provided for 19 subsectors including forestry, water supply and sanitation, health and education, and development of small scale enterprises.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Burbridge, P. R., Norgaard, R. B. & Hartshorn, G. S. (1988). **Environmental Guidelines for Resettlement Projects in the Humid Tropics.** *FAO Environment and Energy Paper No. 9. Food and Agriculture Organisation, Rome. (vii, 67 pp.)*

Contact: Food and Agriculture Organisation, Via delle Terme Di Caracalla, 00100 Rome.

Burdge, R. J. (1994). **A Community Guide to Social Impact Assessment.** *Social Ecology Press, Middleton, Wisconsin. (173 pp.)*

This document is structured as a workbook to assist the user, with the aid of an instructor or

workshop facilitator, to undertake a social impact assessment (SIA) of a proposed project or policy change at the community level. The first three chapters outline the field of social impact analysis (SIA); discuss its evolution in the context of environmental assessment, environmental planning and project evaluation; and outline the concepts used by social scientists in practising SIA and conducting related research.

Chapters 4-6 focus on a community-level project. They discuss the steps in the process, how to determine project boundaries, and sources of information. Chapters 7-11 give detailed instructions for obtaining data and evaluating the significance of 26 SIA variables, organised under five categories: population impacts; community and institutional change; conflict between local residents and newcomers; individual and family level impacts; and community and infrastructure needs. Chapter 12 provides a format to consolidate and rank the most significant social impacts, while chapter 13 outlines a community-level approach to the identification and mitigation of social impacts.

Contact: Social Ecology Press, PO Box 620863, Middleton, Wisconsin 53562-0863, USA.

Cernea, M. M. (1988). **Involuntary Resettlement in Development Projects: Policy Guidelines in World Bank Financed Projects.** *World Bank Technical Paper No: 80. World Bank, Washington D.C. (vii, 88pp.)*

This paper addresses policy issues and the operational implications of development projects that cause involuntary resettlement. It discusses general principles for resettlement as a planned change, with emphasis on government responsibility, involvement of resettlers in choosing from resettlement options, and prevention of adverse impacts on the host population and environment. The operational procedures described are tailored to each of the different stages of the project cycle.

The guidelines cover the following issues: types of projects causing involuntary resettlement, and ways of minimising it; the social nature of involuntary resettlement processes and lessons from past project experiences; general principles in approaching resettlement: policy objectives; resettlement plans; and environmental implications. Annexes contain technical checklists for preparing and appraising resettlement plans, and for monitoring and evaluating resettlement projects, as well as guidelines for the economic and financial analysis of project components addressing involuntary resettlement.

Cernea, M. M. (1991). **Socio-Economic and Cultural Approaches to Involuntary Population Resettlement.** *World Bank Reprint Series No. 468. World Bank, Washington D.C. (177-188 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Finsterbusch, K., Ingersoll, J. & Llewellyn, L. G. (1990). **Methods for Social Analysis in Developing Countries.** *Social Impact Assessment Series, Westview Press, Boulder, Colorado. (225 pp.)*

Contact: Westview Press, 5500 Central Avenue, Boulder, Colorado 80301, USA.

Goldsmith, E. & Hildyard, N. (1984). **The Social and Environmental Effects of Large Dams. Volume 1: Overview.** *Wadebridge Ecological Centre, Camelford, England. (346 pp.)*

Contact: Wadebridge Ecological Centre, Worthyvale Manor, Camelford, Cornwall, PL32 9TT, UK.

Goodland, R. (1982). **Tribal Peoples and Economic Development: Human Ecologic Considerations**. *World Bank, Washington D.C. (111 pp.)*

Goodland, R., & Webb, M. (1987). **Management of Cultural Property in World Bank-Assisted Projects. Archaeological, Historical, Religious and Natural Unique Sites.** *World Bank Technical Paper No. 62 . World Bank, Washington D.C. (102 pp.)*

In 1986, the World Bank adopted an official policy to help to preserve cultural property and seek to avoid its degradation in development projects that it finances. Cultural property encompasses both remains left by previous human inhabitants (e.g. shrines and battlegrounds) and unique natural environmental features or 'wonders' (e.g. canyons and waterfalls). Around the world, irreplaceable cultural sites are damaged daily, particularly in areas rich in preserved cultural artefacts such as the Middle East. This is usually the consequence of construction activities related to large public works, such as dams and reservoirs, irrigation systems, transportation routes, mining and urban development. In many cases, the destruction is unnecessary, but cultural property is usually taken into consideration only at an advanced stage of the project planning process.

This document reviews and codifies the Bank's experience with cultural property, mainly archaeological and historical sites, and outlines Bank policy and procedures for any future Bank-financed projects that may affect cultural property.The focus is primarily on tangible and immovable cultural property. This publication is also intended to raise awareness of cultural issues amongst Bank staff so that they can incorporate these policies and procedures in project design.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

IADB (1990). **Strategies and Procedures on Socio-Cultural Issues as Related to the Environment.** *Environmental Committee, Inter-American Development Bank, Washington D.C. (8 pp.)*

Contact: Inter-American Development Bank, 1300 New York Avenue NW, Washington D.C. 20577, USA.

IFAD (1984). **Guiding Principles for the Design and Use of Monitoring and Evaluation in Rural Development Projects and Programmes**. *United Nations ACC Task Force on Rural Development/ International Fund for Agricultural Development, Rome. (76 pp.)*

Contact: International Fund for Agricultural Development, 107 Via del Serafico, 00142, Rome, Italy.

Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (1994). **Guidelines and Principles for Social Impact Assessment**. *NOAA Technical Memorandum NMFS-F/SPO-16 . U.S. Dept. of Commerce, Washington D.C. (29 pp.)*

This monograph presents the central principles of social impact assessments (SIA) and some operational guidelines for use by federal agencies. Social impacts are defined in terms of efforts to assess or estimate, in advance, the social consequences that are likely to follow from specific policy actions and specific government actions, particularly in the context of the US National Environmental Policy Act (NEPA) of 1969.

The document is the first systematic and interdisciplinary statement to offer guidelines and principles to assist government agencies and private sector interests in using SIA to make better decisions under NEPA. A broad overview on SIA is provided, focusing less on methodological details - although the basic steps in the SIA process are laid out - and more on the guidelines and principles for the preparation of technically and substantively adequate SIA's within reasonable time and resource constraints.

Contact: International Association for Impact Assessment, PO Box 70, Belhaven NC 27810, USA.

Oberai, A. S. (1992). **Assessing the Demographic Impact of Development Projects.** *Routledge, London. (xiii, 143 pp.)*

Very little is currently known about the demographic impacts of most development projects and about the ways in which such impacts can be assessed. This book, based on studies in Third World countries, focuses on conceptual, methodological and policy issues. It considers whether demographic effects of projects can be assessed and why development planners should be interested in such an assessment.

The book examines the extent to which economic and social changes generated by specific development interventions have influenced demographic behaviour in a particular context. Suggestions are made for how desired effects can be enhanced and undesired effects minimised by policy makers and planners in developing countries, in order to deal with problems of population growth and its distribution. The major shortcomings of existing methodologies are identified and the future direction which research might take in order to be more scientifically valid and useful to policy-makers is indicated.

Contact: Routledge, 11 New Fetter Lane, London EC4P 4EE, UK.

ODA (1993). **Social Development Handbook. A Guide to Social Issues in ODA Projects and Programmes.** *UK Overseas Development Administration, London. (93 pp.)*

This first edition supplements advice on how to address social issues described in ODA's *Guide to Aid Procedures.*

- Part 1 explains what is meant by social development and social issues, and can be used either as an introduction to the rest of the manual or as a stand-alone document.
- Part 2 summarises the basic questions for social impact assessment. This part of the handbook is designed for use by administrators and advisers during project identification and design, sector reviews and project appraisal.
- Part 3 outlines the way in which social issues should be identified and addressed in ODA aid procedures, and this is expanded in Part 4 which examines social issues in various sectoral and non-sectoral aspects of ODA's work. Nine sectoral checklists are provided (primarily intended for use by professional advisers working in those sectors) to help identify and address social issues in projects.
- The final part of the handbook is also available as a separate document. It summarises ODA's approach to gender planning as a means of enhancing women's participation in development, providing examples of how to incorporate this approach into project design.

Contact: Overseas Development Administration, Social Development Department, 94 Victoria Street, London SW1E 5JL UK.

OECD (1992). **Guidelines for Aid Agencies on Involuntary Displacement and Resettlement in Development Projects.** *Development Assistance Committee Guidelines on Environment and Aid No. 3. Organisation for Economic Cooperation and Development, Paris. (15 pp.)*

This document provides guidance on the basic elements to consider in preparing a resettlement action plan, how to involve the local community, and effective sequencing of steps in planning and implementation. The guidelines aim to ensure that project designers and implementors follow best practices so that people displaced by projects receive benefits from them, and are re-established on a sound productive basis.

This document is one of a series of Guidelines on Environment and Aid produced by the

Development Assistance Committee (DAC) of the OECD. The guidelines are designed to help policy-makers and practitioners in developing countries and donor agencies prepare strategies to address serious national, regional and international environmental concerns.

Contact: Organisation for Economic Cooperation and Development, Development Cooperation Directorate, 2 Rue Andre Pascal, Paris 75016, France.

Rickson, R. E., Hundloe, T. et al. *(1990).* **Social Impacts of Development: Putting Theory and Methods into Practice.** *Environmental Impact Assessment Review (Special Issue), 10 (1/2), 1-244.*

Contact: International Association for Impact Assessment, PO Box 70, Belhaven NC 27810, USA.

UNHCR (1994). **Interim Guidelines for Environment-Sensitive Management of Refugee Programmes.** *United Nations High Commission For Refugees, Geneva. (15 pp)*

Contact: United Nations High Commission for Refugees, CP-2500, CH 1211 Geneva 2 Depot, Switzerland

World Bank (1990). **Operational Directive 4.30: Involuntary Resettlement.** *World Bank, Washington D.C.*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

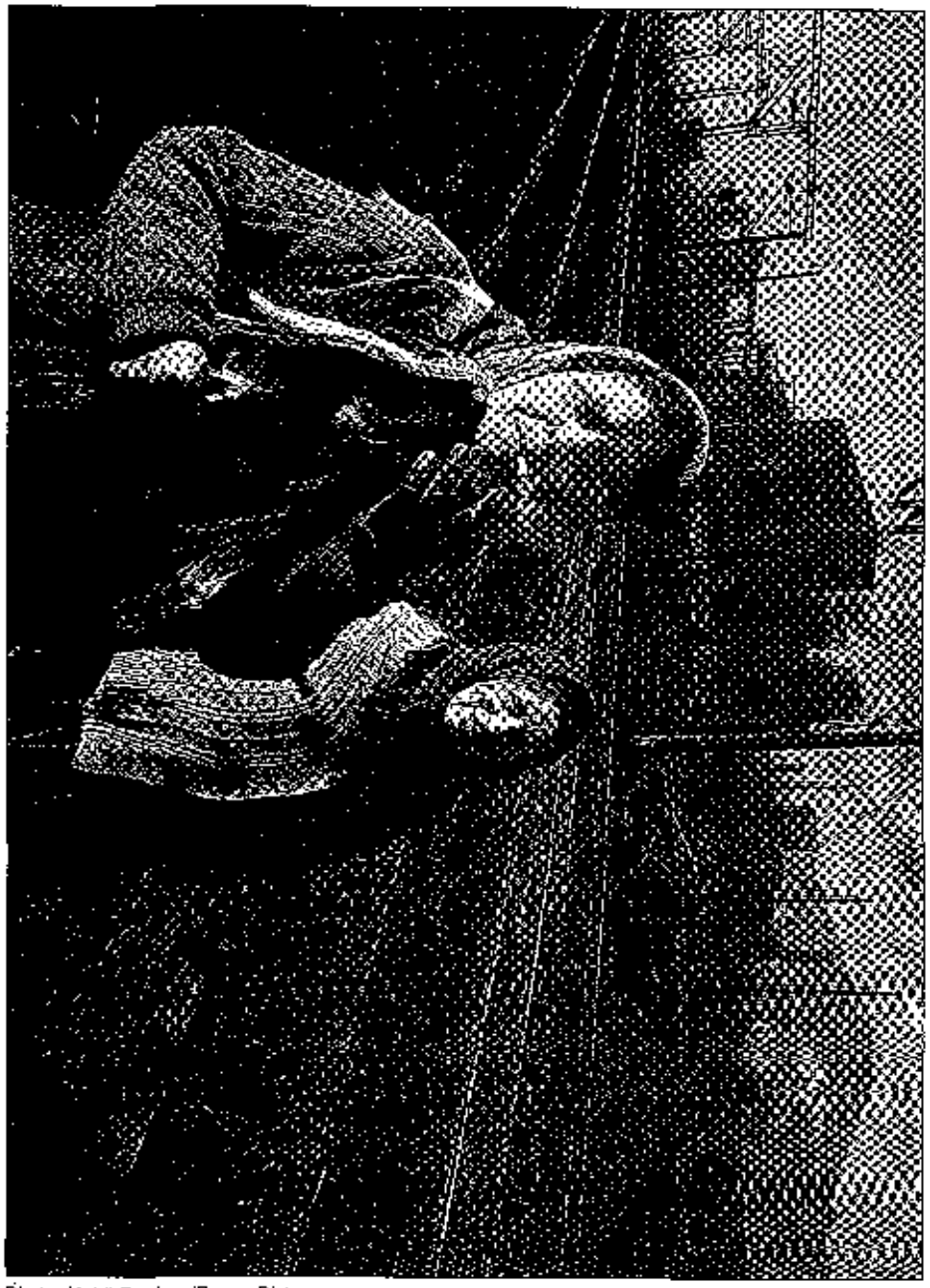

Photo: Heidi Bradner/Panos Pictures

Health Impact Assessment

Health Impact Assessment

Batstone, R., Smith, J. E. J. & Wilson, D. (Eds.). (1989). **The Safe Disposal of Hazardous Wastes: The Special Needs and Problems of Developing Countries. Volumes I-III.** *A joint study sponsored by the World Bank, the World Health Organization (WHO), and the United Nations Environment Programme (UNEP). Technical Paper No. 93. World Bank, Washington D.C. (823 pp.)*

This three volume manual is intended for administrators and technical staff who are responsible for waste management, public health and the protection of the environment. It is intended primarily for developing countries.

The manual provides an exhaustive examination of all areas of waste and waste disposal. It includes sections on the classification of hazardous wastes, the effects of hazardous waste on public health and the environment, hazardous waste management - focusing on how to implement a management programme, and techniques for safe disposal. The document explores the technological aspects of a waste management system, and uses a cost-benefit analysis to show the dangers of an ineffective system, or worse, a non-existent system.

Chapters 1-5 contain information on the classification of hazardous wastes, their effects on the environment, and the planning and implementation of programmes for waste management. Chapters 6 and 7 deal primarily with the different technologies available for hazardous waste treatment and disposal, along with the advantages and disadvantages of each, including economic and institutional considerations.The publication provides a framework for evaluating options such as waste minimisation, recycling and waste reduction, and for making decisions on the combination of waste handling processes appropriate to local conditions.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Birley, M. (1991). **Methods of Forecasting the Vector-borne Disease Implications in the Development of a Water Resources Project.** *In R. Wooldridge (Ed.), Techniques for Environmentally Sound Water Resources Development (pp. 50-63). Pentech Press, London.*

Contact: Hydraulics Research Wallingford Ltd., Howbery Park, Wallingford, Oxford OX10 8BA, UK.

Birley, M. H. (1991). **Guidelines for Forecasting the Vector-Borne Disease Implications of Water Resources Development.** *PEEM Guidelines Series No. 2. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (115 pp.)*

This paper outlines a methodology for rapidly assessing health risks associated with water development projects in the tropics or sub-tropics. It uses a minimum number of questions which should provide reasonably accurate answers, and assumes that local information will be available. Early involvement at the planning stage is advocated. Three main components are outlined: community vulnerability, environmental receptivity, and vigilance of health services.

The document outlines what to do, how to do it and who to involve, and provides background information on vector-borne diseases. It also provides a useful summary for non-health specialists, grouped into topics: geophysical; biotic - plants and animals; demographic and socio-cultural, infrastructure; and disease management by vector control. The guidelines are supplemented by references, worksheets, factsheets and pull-out flow charts.

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Birley, M. H. & Peralta, G. L. (1992). **Guidelines for the Health Impact Assessment of Development Projects.** *ADB Environment Paper No 11. Asian Development Bank, Manila. (45 pp + appendices)*

This is one of a series of documents produced by the Asian Development Bank describing tools for use in the field. It is aimed at a non-technical audience and provides a methodological framework. The document guides readers to more detailed information in reading lists. This approach makes for a clear and succinct guide.

The main text contains five chapters describing health and its rationale for inclusion, types of health hazard, their identification, Initial Health Examination (IHE), and Health Impact Assessment (HIA). IHE aims to screen projects for health hazards as part of an Initial Environmental Examination (IEE). If projects pose a potential health risk, a full HIA will be required. This involves three main tasks - the identification of the hazard, interpreting the health risk, and risk management. Stress is placed on the need for good collaboration between organisations and experts and on the need for community involvement. Appendices outline the background to HIA and cover cross-boundary issues (e.g. malaria, nutrition, mobility, resettlement and construction) as well as sectoral impacts such as agriculture, energy, industry, mining, transport and communication, urban renewal, water supply and sanitation, and tourism.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Bolton, P., Imvebore, A. M. A. & Fraval, P. (1990). **A Rapid Assessment Procedure for Identifying Environmental and Health Hazards in Irrigation Schemes: Initial Evaluation in Northern Nigeria.** *Hydraulics Research Wallingford, Oxford. (81 pp.)*

This is an interim progress report outlining on-going trials of a procedure for rapidly assessing small-scale irrigation projects (<1,000 ha) in northern Nigeria. The document emphasises environmental and health hazards, accepting that cumulative, subtle problems may not be recognised until it is too late. The guidelines propose a method for assessing an area within two weeks, at low cost, using non-experts and low technology.

Appendix 1 gives details of the projects examined while Appendix 2 contains the questionnaire in three parts: one to be completed by the project manager or equivalent, the second comprising questions for the village head or equivalent, and the third aimed at medical staff. Appendix 3 gives guidance on interpretation of the information, while Appendix 4 contains examples of technical sheets on Schistosomiasis and Guinea worm. Finally, Appendix 5 reviews the literature on rapid appraisal techniques.

Contact: HR Wallingford Ltd., Howbery Park, Wallingford, Oxford OX10 8BA, UK.

Bradley, D., Stephens, C., Harpham, T. & Cairncross, S. (1992). **A Review of Environmental Health Impacts in Developing Country Cities.** *Urban Management Program Discussion Paper No. 6. World Bank, Washington D.C. (58 pp.)*

This paper has a number of aims: to produce a classification of environmental variables relevant to urban health in developing countries; to propose an analytical framework for relating environmental variables to health; to review intra-urban differentials in mortality, morbidity and causes of death in developing countries with particular reference to vulnerable groups; to review the literature that attempts to link, causally, urban environmental conditions to health in developing counties; and to propose future related research. The paper establishes that few good studies on intra-urban differentials in morbidity and mortality, and on linkages to environmental conditions, have been undertaken. It proposes the analysis of Demographic and Health Surveys (DHS) in three or four countries and the compilation of environmental health profiles for two cities, Accra in Ghana and Sao Paulo in Brazil. The analysis suggests that environmental components could be grouped according to whether

they provide a resource, act as a hazard (from a health point of view), or form an ambience to which people have to adapt. A clearly laid out and thorough literature review is provided.

Bruswick, D. J., Gopalan, H. N. B. et al. (Eds.). (1992). **Assessing the Risk of Genetic Damage.** *Hodder and Stoughton for the United Nations Environment Programme and the International Commission for Protection Against Environmental Mutagens and Carcinogens, Gaborone. (52 pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi , Kenya.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is for use by NGOs and the projects they support. It is also relevant to project planning in general. The series provides project planners and programme officers with guidance on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes guides on the environmental impacts of different categories of small development projects. Each guide contains a list of relevant publications for future reading. Those relevant to health impact assessment are referenced separately below.

- **Pest control - Pesticides and Integrated Pest Management** (*31 pp.*): outlines the general effects of pesticides on ecosystems and human health, and provides a list of basic precautions for pesticide application. There is also a limited amount of technical information on selected pesticides and a checklist to guide practitioners. A summary description of Integrated Pest Management (IPM) is included.

- **Domestic Water Supply and Sanitation** (*27 pp.*): briefly covers environmental, social and health impacts of water supply and sanitation projects, with an emphasis on the latter. Also included is a brief discussion of water conservation (covering quality and quantity) and community participation aspects of project planning and implementation.

- **Irrigation** (*25 pp.*): provides an outline of the environmental and health impacts of irrigation projects and a checklist for practitioners.

- **Small Dams/Reservoirs** (*25 pp.*): outlines environmental and health impacts of small dams and reservoirs and also includes a discussion of community participation and water conservation considerations. A checklist for practitioners is provided.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300. Ottawa, Ontario K1N 7B7, Canada.

Coleman, G. (1993). **Evaluating the Health Impact of Water and Sanitation Projects: It Ain't Necessarily Necessary**. *Project Appraisal, 8 (4), 251-255.*

de Koning, H. W. (Ed.) (1987). **Setting Environmental Standards: Guidelines for Decision Making**. *World Health Organisation, Geneva. (98 pp.)*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27. Switzerland.

Grover, B. (1983). **Water Supply and Sanitation Project Preparation Handbook. Volume 1: Guidelines**. *World Bank Technical Paper No. 12. World Bank, Washington D.C. (171 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Iskra, A. A. (1994). **Environmental Safety, Principles and Criteria for the Assessment of Dangerous Facilities.** *Russian Federation Ministry of Atomic Energy, Moscow. (8 pp.)*

Contact: Ministry of Atomic Energy, 33, Kashirskoe shosse, Moscow 115230, Russian Federation.

Listorti, J. A. (1990). **Environmental Health Components for Water Supply, Sanitation and Urban Projects.** *World Bank Technical Paper No. 121. World Bank, Washington D.C. (xii, 142 pp.)*

The Technical Papers series are published to "communicate the results of the Bank's work to the development community with the least possible delay". The stated objectives of this report are to act as a pragmatic guide for improving health to help identify where more extensive efforts are required, to alert appropriate health authorities, and to emphasise what health components can contribute. It is intended to indicate to project officers and borrowers how projects can achieve better outcomes at minimal cost, and also to encourage client governments to include environmental health components in their thinking.

Four chapters give background information, outline the rationale for an integrated approach to health, indicate a methodology, and provide detailed information on 26 widespread diseases. The report also contains 5 appendices. A lot of potentially useful information is jeopardised by poor presentation, a lack of clarity and convoluted language.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Mara, D. & Cairncross, S. (1989). **Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture.** *World Health Organization, Geneva. (182 pp.)*

This booklet is aimed at planners and decision-makers in government departments and consulting engineers involved in human waste management. It concentrates on the steps necessary to ensure that human wastes can be used to their maximum advantage without endangering the health of people working and living in the area. Pollution is not included. Chapters 2 and 3 review the history and benefits of waste reuse. Chapter 4 outlines public health considerations. Sociocultural factors are considered in Chapter 5 and environmental protection in Chapter 6. Methods of control to ensure public health protection are detailed in Chapter 7 while the corresponding institutional, legal and financial aspects are provided in Chapter 8. A bibliography of up-to-date, topical interest is provided together with a glossary.

Contact: World Health Organisation,, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

OECD (1992). **Guiding Principles for Chemical Accident Prevention, Preparedness and Response.** *Environment Monograph No. 51. Organisation for Economic Cooperation and Development, Paris. (123 pp.)*

This monograph outlines issues important in the planning, construction, management, operation and review of safety of hazardous installations. There are sections on principles, actions to minimise adverse effects, community awareness, emergency planning, research and development, technology transfer, international investments, and aid programmes. A list of acronyms and glossary are included, and a key word index enables particular areas to be located quickly and easily.

Contact: Organisation for Economic Cooperation and Development, 2 Rue Andre Pascal, F-75775 Paris, France.

Oomen, J. M. V., de Wolf, J. & Jobin, W. R. (1990). **Health and Irrigation. Incorporation of Disease Control Measures in Irrigation, a Multi-faceted Task in Design, Construction and Operation.** *ILRI Publication 45, Vol 1. International Institute for Land Reclamation and Improvement, Wageningen. (304 pp.)*

This very detailed book originated in a research thesis which highlighted the mistakes often made in irrigation schemes - politicians repeatedly promoted the development of such schemes, believing that economic answers would be provided by creating lakes. There are chapters on: health and irrigation; diseases; vectors of diseases; data collection; engineering control measures in large reservoirs, in irrigation systems and on farm water schemes; biological and chemical control; disease control in the domestic environment; and the economics of health in irrigation schemes. Technical notes outline the epidemiology of mosquito-borne diseases and schistosomiasis, and provide a review of the cost of control measures.

Contact: International Institute for Land Reclamation and Improvement, Lawickse Allee 11, POB 45, 6700 AA Wageningen, Netherlands.

Phillips, M., Mills, A. & Dye, C. (1993). **Guidelines for Cost-Effectiveness Analysis of Vector Control.** *PEEM Guidelines Series No. 3. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (192 pp.)*

Cost is an important issue in selecting control methods for vector-borne diseases. This guide is aimed at health planners and managers of vector control programmes. It provides guidelines on the principles and methods of cost-effectiveness analysis and their application to the control of disease vectors. There are separate chapters on planning a cost-effective study, procedures for estimating the costs and the effectiveness of vector control, and data analysis and presentation. Two case studies are included: one from India concerning malaria control; the other examining schistosomiasis in Ghana. Five appendices give clear guidance on particular issues.

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Shuval, H.I. (1986). **Wastewater Irrigation in Developing Countries: Health Effects and Technical Solutions.** *UNDP Project Management Report No 6. World Bank Technical Paper No. 51. World Bank, Washington D.C. (xxxi, 324 pp.)*

This report provides information on wastewater re-use in irrigation together with the technological and public health impacts. It does not deal with the use of sludge or night soil in agriculture, nor with wastewater recycling in aquaculture. The report reviews existing literature, examines the costs and benefits of practices which would reduce health effects, and identifies and evaluates policy options. It establishes that the highest risk of the transmission of pathogens, infection and sickness arises from helminths, bacteria and viruses.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Sloan, W. M. (1993). **Site Selection for New Hazardous Waste Management Facilities.** *European Series No. 46. World Health Organisation Europe, Copenhagen. (xiv, 118 pp.)*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Tiffen, M. (1991). **Guidelines for the Incorporation of Health Safeguards into Irrigation Projects Through Intersectoral Cooperation.** *PEEM Guidelines Series No. 1. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (81pp.)*

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Turnbull, R. G. H. (Ed.). (1992). **Environmental and Health Impact Assessment of Development Projects. A Handbook for Practitioners.** *Prepared for the Centre for Environmental Planning and Management, Aberdeen, and the World Health Organisation, Geneva. Elsevier Applied Science, London. (xi, 282 pp.)*

This handbook is based on 29 papers which were written in 1987 and 1988 as part of a series of training seminars. Aimed at EIA and Environmental Health Impact Assessment (EHIA) practitioners, it assumes experience in environmental or public health, toxicology or ecotoxicology. Seven chapters outline EIA methods, highlighting health considerations which should be included. Health issues are outlined and incorporated into environmental and public health impact assessment. The handbook deals with effects on local inhabitants as well as workers, and emphasises the need to consider groups which may be more sensitive, such as the young, the elderly or women. Research needs are discussed and various case studies examine how health can be incorporated into EIA. These cover irrigation, water provision, industrial areas, and iron smelting, drawing on situations in Africa, Indonesia, Thailand, Turkey, Poland, Brazil and Italy.

Contact: World Health Organisation, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

WHO (1973). **Environmental and Health Monitoring in Occupational Health.** *Technical Report Series. World Health Organisation, Geneva. (48 pp.)*

WHO (1974). **Health Aspects of Environmental Pollution Control: Planning and Implementation of National Programmes.** *Technical Report Series. World Health Organisation, Geneva. (57 pp.)*

WHO (1982). **Rapid Assessment of Sources of Air, Water and Land Pollution.** *Offset Publications No. 62. World Health Organisation, Geneva. (113 pp.)*

WHO (1989). **Health Guidelines for Use of Wastewater in Agriculture and Aquaculture.** *Technical Report Series No. 778. World Health Organisation, Geneva. (74 pp.)*

WHO (1993). **Consultation on the Development and Use of Environmental Health Indicators in the Management of Environmental Risks to Human Health.** *World Health Organisation, Geneva. (30 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Energy.** *World Health Organization, Geneva. (155 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Food and Agriculture.** *World Health Organization, Geneva. (191 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Industry.** *World Health Organization, Geneva. (219 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Urbanization.** *World Health Organization, Geneva. (160 pp.)*

WHO/UNEP (1990). **Public Health Impact of Pesticides used in Agriculture.** *World Health Organization, Geneva. (128 pp.)*

This publication reviews current knowledge on the effects of pesticides on health. It is intended for use by national health officials responsible for pest management and by research workers in the epidemiology of pesticide poisoning. Individual chapters cover the production and use of pesticides, their toxic effects, short- and long-term health effects, sources and indicators, populations at risk, public health impact and prevention. It ends with proposals and recommendations.

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

World Bank (1985). **Environment, Health and Safety Guidelines for the Use of Hazardous Materials in Small and Medium Scale Industries.** *Office of Environmental and Social Affairs, World Bank, Washington D.C. (43 pp.)*

This document gives general guidelines for small- and medium-scale industries. It covers continuous emissions of hazardous materials and accidental releases, with incompatible hazardous wastes listed in an appendix. Apart from this detailed information, the document has general application with chapters covering: environment, workplace, transport, emergencies, first aid, training, safety and worker morale.

World Bank (1988). **Occupational Health and Safety Guidelines.** *World Bank, Washington D.C. (230 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Photo: Mark Edwards/Still Pictures

Strategic Environmental Assessment

Strategic Environmental Assessment

CIDA (1994). **Guide to Integrating Environmental Considerations into CIDA's Policies and Programs.** *Environmental Assessment and Compliance Division, Canadian International Development Agency, Hull, Quebec. (78 pp.)*

Contact: Canadian International Development Agency, 200 Promenade du Portage, Hull K1A 0GA, Canada.

Department of Environment (1993). **Environmental Appraisal of Development Plans: A Good Practice Guide.** *Her Majesty's Stationary Office, London. (57 pp.)*

This guide has been designed to help local planning authorities carry out environmental appraisals of plans. It offers guidance on a range of straightforward techniques and procedures which can easily be used at each stage of the plan-making process, without the need for specialist staff. The guidelines draw heavily on the general experience of local planning authorities in England and Wales, on relevant literature, and on detailed studies of practice in twelve local authorities. The proposed appraisal process is intended to be adaptable to every level of plan. Key stages in the process are clearly described, with extensive use of diagrams, checklists, matrices and examples from scoping to presentation.

Department of Environment (1994). **Environmental Appraisal in Government Departments.** *Her Majesty's Stationery Office, London. (viii, 70 pp.)*

Contact: Her Majesty's Stationary Office, PO Box 276, London SW8 5DT UK.

Government of Denmark (1994). **Guidance on Procedures for Environmental Assessments of Bills and other Government Proposals.** *English Version. Spatial Planning Department, Ministry of the Environment, Copenhagen. (14 pp.)*

Contact: Miljoministeriet, Hojbro Plads 4, DK-1200 Copenhagen K, Denmark.

Pinfield, G. (1992). **Strategic Environmental Assessment and Land-use Planning.** *Project Appraisal, 7 (3), 157-163.*

Therivel, R., Wilson, E., Thompson, S., Heaney, D. and Pritchard, D. (1992). **Strategic Environmental Assessment.** *Earthscan, London. (160 pp.)*

Strategic Environmental Assessment (SEA) is a method of EIA aimed at ensuring that development and other projects involving strategic decisions are based on a full understanding of their likely environmental consequences. The book argues that SEA is likely to become the most direct method for implementing sustainability. Using UK-based examples, it reviews the past, present and future of SEA in relation to other approaches to environmental protection. The difficulties in policy impact appraisal and problems of implementation are examined and case studies display the variety of proposed and existing systems of SEA worldwide. The book concludes with a review of the global implications of SEA and the status of relevant UK government policy.

Contact: Earthscan Publications, 120 Pentonville Road, London N1 9JN UK.

van Eck, M. (1993). **EIA for Policy Plans and Programmes in the Netherlands.** *Paper presented at the International Association for Impact Assessment (IAIA) Annual Conference, Shanghai, June 1993*

Contact: International Association for Impact Assessment, Box 70, Belhaven NC 27810, USA.

Regional and National Guidelines

Africa

Asia and Pacific

Australasia

Caribbean

Europe

Latin America

North America

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Regional and National Guidelines

■ AFRICA

Africa Regional

ADB (1992). **Environmental Assessment Guidelines.** *African Development Bank and African Development Fund, Abidjan. (39 pp.)*

These guidelines aim to assist the implementation of the African Development Bank's Environmental Policy Paper (1990). They are intended primarily for the internal use of African Development Bank staff and officials of Regional Member Countries, as an aid for the screening of all ADB projects. The document combines EIA methods with administrative procedures with the aim of integrating EIA into project planning and decision-making.

The document comprises three sections. The first is introductory, providing explanations of various terms and steps in the project cycle. The second section consists of sectoral guidelines and includes a checklist for initial environmental assessment and project categorisation. The main sectors covered include: agriculture and rural development, industry and infrastructure, public utilities, and transportation. The last section outlines procedural environmental assessment guidelines for the various stages of the project cycle, for use within the Bank Group. Annexes provide suggested terms of reference, a format for EIA studies and a suggested outline of an EIA report.

Contact: African Development Bank, BP 1387, Abidjan 01, Cote d'Ivoire.

Kakonge, J. O. & Imevbore, A. M. (1993). **Constraints on Implementing Environmental Impact Assessments** in **Africa.** *Environmental Impact Assessment Review, (51) 299-309.*

Wooldridge, R. (Ed.) (1991). **Techniques for Environmentally Sound Water Resources Development.** *African Regional Symposium. Pentech Press, London. (332 pp.)*

Contact: Hydraulics Research Wallingford Ltd., Howberry Park, Wallingford, Oxford OX10 8BA, UK.

World Bank (1991). **Country Capacity to Conduct Environmental Assessments** in **Sub-Saharan Africa.** *Environmental Assessment Working Paper No. 1. Environment Division, Africa Region, World Bank, Washington D.C. (92 pp.)*

World Bank (1990). **Local Participation** in **Environmental Assessments of Projects.** *Environmental Assessment Working Paper No. 2. Environment Division, Africa Region, World Bank, Washington D.C. (11 pp.)*

The World Bank's Environmental Assessment Operational Directive (OD 4.00) calls for the involvement of affected groups and NGOs in project design and implementation, and particularly in the preparation of EA reports. It is recognised, however, that conditions for effective local participation vary significantly between regions of the developing world, between countries within a region, and even between different parts of the same country. These guidelines are thus intended to promote the most effective local participation possible in the context of the Africa region.

The guidelines were prepared to assist regional staff, consultants, and borrower staff in planning for local participation in project environmental assessments. They are intended to complement the instructions given in Operational Directive 4.00, Annex A, and the more extensive guidance provided in Chapter 7 of the Bank's *Environmental Assessment Sourcebook* (World Bank 1991). A short checklist for Task Managers follows the guidelines, a more detailed version of which may be found in Chapter 7 of the Sourcebook.

Contact: The World Bank, Environment Division, Africa Region, 1818 H Street NW, Washington D.C. 20433, USA.

Botswana

IUCN (1990). **Environmental Impact Assessment Manual for In-Service Training.** *Government of Botswana/The World Conservation Union (IUCN), Gland, Switzerland. (looseleaf).*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

Mpotokwane, M. & Ngcongco, N. (Eds.) (1992). **Report of the Workshop on Environmental Impact Assessment Legislation. 2-4 December 1992.** *National Conservation Strategy (Coordinating) Agency, Gaborone. (v, 148 pp.)*

Contact: University of Botswana, P/Bag 0022, Gaborone, Botswana.

Ghana

Ghana EPC (1993). **Ghana's Mining Environmental Guidelines - Final Guidelines for Draft Regulations.** *Environmental Protection Council, Accra. (14 pp.)*

Ghana EPC (1993). **Guidelines for Environmental Impact Assessment.** *Draft. Environmental Protection Council, Accra. (28 pp.)*

Contact: Environmental Protection Council, PO Box M326, Accra, Ghana.

Sam, E. K. & Ayibotele, N. B. (1991). **Techniques for the Assessment of the Impacts of Water Projects in Ghana.** *In R. Wooldridge (Ed.), Techniques for Environmentally Sound Water Resources Development. (251-265 pp.) Pentech Press, London.*

Contact: HR Wallingford Ltd., Howberry Park, Wallingford, Oxford OX10 8BA, UK.

Mozambique

Comissão Nacional do Meio Ambiente (1994). **Plano Director do Enquadramento Institucional e Legal da Gestäodos Impactes Ambientais dos Projectos de Investimento. Vols 1-3. (Institutional and Legal Requirements for the Management of the Environmental Impacts of Investment Projects).** *Comissão Nacional do Meio Ambiente, Maputo, Mozambique.*

Contact: United Nations Development Programme, 1 United Nations Plaza, New York NY 100017, USA.

Namibia

Government of Namibia (1993). **Environmental Impact Assessment. An Essential Part of Planning for Sustainable Development.** *Environmental Planning Unit, Ministry of Wildlife, Conservation and Tourism, Windhoek. (19 pp.)*

Tarr, P. (1993). **Namibia's Environmental Assessment Policy. Second Draft.** *Directorate of Environmental Affairs, Ministry of Wildlife, Conservation and Tourism, Windhoek, Namibia.*

Contact: Ministry of Wildlife, Conservation and Tourism, P/Bag 13306, Windhoek, Namibia.

Nigeria

Ayanda, J. O. (1988). **Incorporating Environmental Impact Assessment in the Nigerian Planning Process: Need and Procedure.** *Third World Planning Review, 10 , 51-64.*

Bolton, P., Imvebore, A. M. A. & Fraval, P. (1990). **A Rapid Assessment Procedure for Identifying Environmental and Health Hazards in Irrigation Schemes: Initial Evaluation in Northern Nigeria.** *Hydraulics Research Wallingford, Oxford. (81 pp.)*

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Contact: HR Wallingford Ltd., Howberry Park, Wallingford, Oxford OX10 8BA, UK.

Government of Nigeria (1994). **Environmental Impact Assessment Procedure for Nigeria.** *Federal Environmental Protection Agency, Lagos. (16 pp.)*

Government of Nigeria (1994). **Guidelines for Environmental Impact Assessment (Decree 86, 1992): Draft Sectoral Guidelines for Oil and Gas Industry Projects (Oil and Gas Exploration and Production - Offshore).** *Federal Environmental Protection Agency, Lagos. (24 pp.)*

Contact: Federal Environmental Protection Agency, PMB 1260, Ikoye, Lagos, Nigeria.

South Africa

DEA (1992). **The Integrated Environmental Management Procedure.** *Integrated Environmental Management Guideline Series No. 1. Department of Environment Affairs, Pretoria. (19 pp.)*

This is an introductory document - the first in a series of six outlining a procedure for Integrated Environmental Management (IEM). The series is part of a process to formalise IEM as government policy in South Africa. This document provides broad guidelines for key stages in the procedure. IEM is designed to ensure that the environmental implications of development proposals are considered adequately in the planning process of South Africa. Five further documents provide guidance on specific aspects of the procedure:

DEA (1992). **Guidelines for Scoping.** *Integrated Environmental Management Guideline Series No. 2. Department of Environment Affairs, Pretoria. (21 pp.)*

DEA (1992). **Guidelines for Report Requirements.** *Integrated Environmental Management Guideline Series No. 3. Department of Environment Affairs, Pretoria. (21 pp.)*

DEA (1992). **Guidelines for Review.** *Integrated Environmental Management Guideline Series No. 4. Department of Environment Affairs, Pretoria. (15 pp.)*

DEA (1992). **Checklist of Environmental Characteristics.** *Integrated Environmental Management Guidelines Series No. 5. Department of Environment Affairs, Pretoria. (13 pp.)*

DEA (1992). **Glossary of Terms Used in Integrated Environmental Management.** *Integrated Environmental Management Guideline Series No. 6. Department of Environment Affairs, Pretoria. (5 pp.)*

DEA (1993). **Policy on a National Environmental Management System for South Africa.** *White Paper. Department of Environment Affairs, Pretoria.*

Contact: Department of Environment Affairs, Private Bag x447, Pretoria 0001, South Africa.

Government of South Africa (1992). **Aide Memoire for the Preparation of Environmental Management Programme Reports for Prospecting and Mining.** *Department of Mineral and Energy Affairs, Pretoria.*

Contact: Department of Mineral and Energy Affairs, Pretoria 0001, South Africa.

Kamukala, G. L. (1992). **Application of the Environmental Impact Assessment in the Appraisal of Major Development Projects in Tanzania.** *In A. K. Biswas & S. B. C. Agarwala (Eds.), Environmental Impact Assessment for Developing Countries. (185-190 pp.). Butterworth-Heinemann Ltd, Oxford.*

Tanzania

Contact: Butterworth-Heinemann, Linacre House, Jordan Hill, Oxford OX2 8DP, UK.

Preston, G. (1993). **Tanzania National Parks Environmental Impact Assessment Procedure and Screening Guidelines.** *Tanzania National Parks Authority, Arusha. (22 pp.)*

Contact: Tanzania National Parks Authority, PO Box 3134, Arusha, Tanzania.

Adger, N. & Chigume, S. (1992). **Methodologies and Institutions in Zimbabwe's Evolving Environmental Assessment Framework.** *Third World Planning Review, 14(3), 283-296.*

Zimbabwe

Chaibva, S. (1994). **Environmental Impact Assessment in Zimbabwe: Past, Present and Future.** *Paper presented at the International Association of Impact Assessment (IAIA) Conference, Quebec City, Canada. 14-18 June 1994. (4 pp.)*

Contact: Ministry of Environment and Tourism, P/Bag 7753, Causeway, Harare, Zimbabwe.

Government of Zimbabwe (1994). **Interim EIA Policy.** *Ministry of Environment and Tourism, Harare.*

Government of Zimbabwe (1993). **Prospectus for Environmental Assessment Policy in Zimbabwe.** *Public Background and Discussion Paper Ministry of Environment and Tourism, Harare.*

Contact: Ministry of Environment and Tourism, P/Bag 7753, Causeway, Harare, Zimbabwe.

■ ASIA/PACIFIC/MIDDLE EAST

AsDB (1994). **Handbook for Incorporation of Social Dimensions in Projects.** *Asian Development Bank, Manila. (105 pp.)*

Asia and Pacific Regional

This handbook, in four chapters, is a supplement to *Guidelines for Incorporation of Social Dimensions in Bank Operations* (1993) and provides detailed suggestions for incorporating social dimensions into projects. It presents an overview of the elements which are covered in a social analysis, describes a framework for application of this analysis, and provides guidance on conducting the analysis. Checklists are provided for 19 subsectors including for-

estry, water supply and sanitation, health and education, and development of small scale enterprises.

AsDB (1993). **Guidelines for Incorporation of Social Dimensions in Bank Operations.** *Asian Development Bank, Manila. (viii, 39 pp.)*

These guidelines supersede the 1991 *Guidelines for Social Analysis of Development Projects.* They aim to encourage the incorporation of social dimensions in the formulation of development strategies, in the translation of strategies into operational programmes, and in the design, implementation and evaluation of development programmes and projects.

The guidelines are for use by Bank staff, consultants, member countries and other practitioners, and provide an overall framework for the incorporation of social issues and associated processes in all the Bank's operations. Detailed instructions for incorporating specific social dimensions are provided in the companion volume *Handbook for Incorporation of Social Dimensions in Projects* (1994).

AsDB (1993). **Environmental Assessment Requirements and Environmental Review Procedures of the Asian Development Bank.** *Asian Development Bank, Manila. (43 pp.)*

AsDB (1991). **Environmental Considerations in Energy Development.** *Asian Development Bank, Manila.*

AsDB (1991). **Environmental Evaluation of Coastal Zone Projects: Methods and Approaches.** *Environment Paper No. 8. Asian Development Bank, Manila. (ii, 72pp.)*

The material in this paper supplements that provided in several previous AsDB documents: "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" (1987); "*Guidelines for Integrated Economic-cum-Environmental Development Planning*" (1988); and "*How to Assess Environmental Impacts of Tropical Islands and Coastal Areas*" (prepared by the East-West Centre, Hawaii, 1989).

Key features of selected coastal habitats are described for non-technical readers, followed by a fuller treatment of the potential impacts of development projects at the level of an initial environmental assessment (IEE). These are presented in the form of impact matrices covering three broad categories of projects: managed ecosystems (agriculture, wetland forestry, nearshore fisheries, and aquaculture/mariculture); infrastructure (roads, ports and harbours, and residential urban development); and, industry (location, design, construction, and operations). Cross-sectoral impacts and interactions are also considered.

The document then applies the integrated planning approach (discussed in "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" mentioned above) to coastal zone development. It discusses regional and local coastal resource plans and gives country examples of coastal resource management approaches. Appendices include an AsDB checklist for IEE of coastal zone projects and a list of organisations dealing with wetlands and coastal habitats in AsDB's developing member countries.

AsDB (1991). **Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects.** *Asian Development Bank, Manila. (iv, 115 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover industrial and power development projects, and infrastructure projects.

The purpose of the guidelines is to enable Bank project staff to prepare an initial environmental assessment in order to incorporate environmental considerations into project design and implementation. The sectors considered are irrigation, fisheries/aquaculture, watershed development, coastal zone development, forestry and land clearance. For each sector, the required procedure for conducting the initial assessment is detailed with a checklist of environmental parameters to be considered, examples of mitigation measures and an outline for a full EIA. As in the other manuals, the final annex contains guidelines for all types of projects including resettlement, encroachment and noise abatement.

AsDB (1991). **Environmental Risk Assessment. Dealing with Uncertainty in Environmental Impact Assessment.** *ADB Environment Paper No. 7. Asian Development Bank, Manila. (vii, 182 pp.)*

This paper, prepared by the East-West Center, Honolulu, is one of a series published by the Asian Development Bank dealing with environmental and natural resources planning and management in the Asian and Pacific region. It is a training and reference document to help project managers in the Bank and in developing countries to apply environmental risk assessment (ERA) in decision-making. The document provides a good, though brief, account of ERA and its application.

The document comprises several parts, each designed for different uses. Part 1 presents the state-of-the-art (in 1990) of ERA and serves as a reference for understanding the procedures and guidelines in Part 2. The guidelines themselves are a stepwise approach to setting Terms of Reference for an ERA. The logic diagrams and checklists screen projects to select those which require ERA and to set the scope of the analysis. Part 3 comprises case examples that illustrate the guidelines.

AsDB (1991). **Guidelines for Social Analysis of Development Projects.** *Asian Development Bank, Manila (18 pp.)*

These guidelines have been prepared by the Asian Development Bank to equip that Bank project staff to identify and assess the range of potential social impacts resulting from Bank-financed projects in any sector - agriculture, industry or infrastructure - and to design socially-sensitive projects which minimise or eliminate negative social impacts.

The main text of the document sets out the general principles of social analysis, at both macro and project levels, and then applies these at each stage of the project cycle. Comprehensive appendices are attached which deal with the specialised aspects of social analysis in different sectors and in greater procedural detail. The guidelines are also intended for use by NGOs, research institutes, bilateral and multilateral donor agencies.

AsDB (1990). **Environmental Guidelines for Selected Industrial and Power Development Projects.** *Asian Development Bank, Manila. (xiii, 154 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes in the series cover agricultural and natural resource development projects, and infrastructure projects.

The guidelines are designed for use by Bank project staff to enable them to incorporate environmental protection into the project preparation process. Their purpose is to assist Bank project staff to prepare an initial environmental assessment (IEE) for a proposed project. The annexes of the manual set out guidelines, checklists and report formats for the IEE for specific types of project. These include: dams, reservoirs and hydropower; thermal power development; industries; fertilizer; mining; cement manufacturing plants; power transmission lines; oil and gas distribution lines. The final annex provides guidelines relevant to all types of projects, covering issues such as resettlement, pollution control and monitoring.

AsDB (1990). **Environmental Guidelines for Selected Infrastructure Projects**. *Asian Development Bank, Manila. (xiv, 128 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover agricultural and natural resource development projects, and industrial and power development projects.

The guidelines are for use by Bank project staff, to enable them to prepare an initial environmental assessment (IEE) for a proposed project. Annexes set out guidelines, checklists and report formats for the IEE of specific project types: airports, highways and roads, ports and harbours, sewerage and excreta disposal, community water supply systems and urban development. As in the other manuals in the series, the final annex provides guidelines relevant to all types of projects, covering issues such as environmental standards and critical parameters.

AsDB (1990). **Integration of Environmental Considerations in the Program Cycle.** *Environment Paper No. 5. Asian Development Bank, Manila. (21 pp.)*

AsDB (1988). **Guidelines for Integrated Regional Economics-cum-Environmental Development Planning: A Review of Regional Environmental Development Planning Studies in Asia. I: Guidelines. II: Case Studies**. *ADB Environment Paper No 3. Asian Development Bank. (xi, 125 pp. + case studies)*

AsDB (1988). **Proceedings of Workshop on Economic-cum-Environmental Planning.** *Asian Development Bank, Manila. (approx. 125 pp.)*

AsDB (1988). **Training Workshop on Environmental Impact Assessment and Evaluation: Proceedings and Training Manual. Volumes I & II.** *Asian Development Bank, Manila. (402 & 388 pp.)*

AsDB (1987). **Guidelines for Assessing Socio-Cultural Impacts of Economic Development Projects.** *Asian Development Bank, Manila.*

AsDB (1987). **Handbook on the Use of Pesticides in the Asia-Pacific Region.** *Asian Development Bank, Manila. (294 pp.)*

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Birley, M. H., & Peralta, G. L. (1992). **Guidelines for the Health Impact Assessment of Development Projects.** *Environment Paper No. 11. Asian Development Bank, Manila. (45pp. + appendices)*

This is one of a series of documents produced by the Asian Development Bank describing tools for use in the field. It is aimed at a non-technical audience and provides a methodological framework. The document guides readers to more detailed information in reading lists. This approach makes for a clear and succinct guide.

The main text contains five chapters describing health and its rationale for inclusion, types of health hazard, their identification, Initial Health Examination (IHE), and Health Impact Assessment (HIA). IHE aims to screen projects for health hazards as part of an Initial Environmental Examination (IEE). If projects pose a potential health risk a full HIA will be

required. This involves three main tasks - the identification of the hazard, interpreting the health risk, and risk management. Stress is placed on the need for good collaboration between organisations and experts and on the need for community involvement. Appendices outline the background to HIA and cover cross-boundary issues (e.g. malaria, nutrition, mobility, resettlement and construction) as well as sectoral impacts such as agriculture, energy, industry, mining, transport and communication, urban renewal, water supply and sanitation, and tourism.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Dangroup International (1990). **Guidelines for the Integration of Tourism Development and Environmental Protection in the South Pacific.** *Tourism Council of the South Pacific, Suva, Fiji. (102 pp.)*

Contact: Tourism Council of the South Pacific, GPO Box 13119, Suva, Fiji.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Agricultural Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 51 pp.)*

These guidelines were written to assist government agencies concerned with environmental protection in developing countries (specifically the Asia-Pacific region) in the planning and execution of EIAs for agricultural development projects, in particular land clearance projects. A brief overview is given of the EIA process, as well as its application to agricultural development projects. Summaries of current EIA methodologies are provided and methodologies applicable to land clearing projects are recommended. Annexes provide project case studies and sample terms of reference. This document is one of a series of four. Other volumes cover industrial development, water resources and transport.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Industrial Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 61 pp.)*

These guidelines aim to assist government agencies concerned with environmental protection in developing countries in the planning and execution of EIAs for industrial development projects. They summarise general assessment methodologies, identify data collection and evaluation methodologies for assessing the quality and quantity of key parameters, and present the typical impacts and pathways relevant to industrial development projects based on literature references and case studies. Annexes provide sample terms of reference for industrial development EIA studies, and case studies of industrial development projects. This document is one in a series of four - the other volumes cover agriculture, transport and water resources.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Transport Development.** *ESCAP Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 99 pp.)*

Like other ESCAP guidelines, these summarise existing methodologies. The impacts and management requirements of the transport sector are discussed with reference to port and harbour projects, highways and roads, and airports. Annexes give sample terms of reference for these types of project. Case studies are provided for different types of transport projects. This document is one of a series of four. The other three volumes cover water resources, agriculture and industrial development.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Water Resource Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 119 pp.)*

These guidelines are intended to assist government agencies in developing countries. They summarise general EIA methodologies, and discuss typical impacts related to water resources development, based on literature references and case studies. The guidelines are limited to fresh water resources including rivers, lakes and estuarine areas. Marine waters *per se* are not considered. The document is one in a series of four. The other volumes cover agriculture, transport, and industrial development.

Contact: Environment and Social Commission for Asia and the Pacific, UN Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Hitun, N. (1988). **The EIA Process in Asia and the Pacific Region.** *In P. Wathern (Eds.)* **Environmental Impact Assessment: Theory and Practice** *(pp. 225-238) Unwin Hyman, London.*

Contact: Unwin Hyman, 8 Grafton Street, London W1X 3LA, UK.

IUCN (1976). **Proceedings of an International Meeting on Ecological Guidelines for the Use of Natural Resources in the Middle East and South West Asia,** *held at Persepolis, Iran 24 -30 May 1975. Publications New Series No. 34. The World Conservation Union (IUCN), Gland, Switzerland. (231 pp.)*

IUCN (1974). **Proceedings of a Regional Meeting on the Use of Ecological Guidelines for Development in the Tropical Forest Areas of South East Asia,** *held at Bandung, Indonesia, 29 May to 1 June 1974. Publications New Series No. 32. The World Conservation Union (IUCN), Gland, Switzerland.*

Contact: The World Conservation Union (IUCN). Rue Mauverney 28, CH 1196 Gland, Switzerland.

Lohani, B.N. (1992). **Environmental Assessment and Review During the Project Cycle: The Asian Development Bank's Approach.** *In Biswas, A.K. and Agarwala, S.B.C. (Eds.)* **Environmental Impact Assessment for Developing Countries.** *(pp. 178-183) Butterworth-Heinemann, Oxford.*

Contact: Butterworth-Heinemann, Linacre House, Jordan Hill, Oxford OX2 8DP, UK.

Morgan, R. K. (1993). **A Guide to Environmental Impact Assessment in the South Pacific.** *South Pacific Regional Environment Programme, Apia, Western Samoa. (51 pp.)*

Contact: South Pacific Regional Environment Programme, PO Box 240, Apia, Western Samoa.

Rees, C. (1990). **A Guide to Development in Urban and Coastal Areas.** *Asian Wetland Bureau, Kuala Lumpur, Malaysia. (79 pp.)*

This guide promotes the integration of environmental considerations in projects in urban and coastal environments as a basic procedure of good planning. It first describes, in non-technical and graphic format, the function and structure of major natural systems in relation to planning for sound development. In the guidelines that follow, sketches are used to represent improper methods of development that often result in environmental problems, and to illustrate recommended, sound development practice. The guide is available in English, Thai and Indonesian language versions and is currently being translated into Cambodian and Vietnamese.

Contact: Asian Wetland Bureau, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

Werner, G. (1992). **Environmental Impact Assessment in Asia: Lessons from the Past Decade.** *In A. K. Biswas & S. B. C. Agarwala (Eds.)* **Environmental Impact Assessment for Developing Countries** *(pp 16-21). Butterworth-Heinemann, Oxford.*

Contact: Butterworth-Heinemann, Linacre House, Jordan Hill, Oxford OX2 8DP, UK.

ISPAN (1992). **Bangladesh Action Plan for Flood Control. Guidelines for Environmental Impact Assessment**. *Irrigation Support Project for Asia and the Near East (ISPAN)/Ministry of Irrigation, Water Development and Flood Control, Dhaka. (75 pp.)*

Bangladesh

These guidelines were compiled for use in ongoing and future flood control, drainage and irrigation projects in Bangladesh. They include a (very) general discussion of environmental impacts of the Bangladesh Flood Action Plan (FAP). Subsequent sections address the role of EIA in planning and project appraisal; procedural steps in EIA; a general discussion of people's participation; and EIA review procedures. The document also provides a sectoral checklist of potential environmental impacts of the Flood Action Plan, and outlines a suggested table of contents for a typical EIA report. The guidelines are designed to accompany the *Manual for Environmental Impact Assessment* (ISPAN 1993).

ISPAN (1993). **Bangladesh Flood Action Plan: Manual for Environmental Impact Assessment.** *Final Draft. Irrigation Support Project for Asia and the Near East (ISPAN)/Ministry of Irrigation, Water Development and Flood Control, Dhaka. (75 pp.)*

This document has been prepared to provide specific guidance for flood control, drainage and irrigation planning in Bangladesh. The manual provides a step-by-step practical guide to EIA planning, management, data collection, evaluation and reporting. It covers aspects of people's participation, and provides background information on surface- and ground-water resources, together with land, biological and human resources. This manual is intended as a supplement to the *Guidelines for Environmental Impact Assessment* (ISPAN 1992).

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

Royal Government of Bhutan (1993). **Environmental Impact Assessment Guidelines for Bhutan.** *National Environment Commission, Thimpu, Bhutan. (40 pp.)*

Bhutan

This report is a comprehensive review of EIA in the Kingdom of Bhutan. The first part provides background information on environmental problems in Bhutan and existing environmental policies. The Paro Resolution, which resulted from a workshop on Environment and Development in 1990, stressed the importance of EIA. These guidelines are the first step in integrating EIA in a systematic manner into the planning and implementation of development programmes in Bhutan. The National Environment Commission (NEC) is the body charged with responsibility for EIA, and the guidelines are intended for use by NEC staff, government departments, the Planning Commission Secretariat, consultants, planners and project proponents.

The manual first provides an introduction to EIA, its purpose, and its application in Bhutan. Subsequent chapters describe the various steps in the EIA process, from screening through to monitoring and review. An annex sets out the required format for an EIA report.

Contact: National Environment Commission, PO Box 466, Thimphu, Bhutan.

China

Government of China (1986). **Management Guidelines on Environmental Protection of Construction Projects.** *Environmental Protection Commission Under the State Council, Beijing. (32 pp.)*

Government of China (1990). **Management Procedures for Environmental Protection of Construction Projects.** *National Environmental Protection Agency of China, Beijing. (5 pp.)*

Contact: National Environment Protection Agency, 115 Xizhimennei Nanxiaojie, Beijing 100035, China.

Ning, D., Wang, H. & Whitney, J. (1988). **Environmental Impact Assessment in China: Present Practice and Future Developments.** *Environmental Impact Assessment Review, (8) 85-95.*

Wenger, R. B., Huadong, W. & Xiaoying, M. (1990). **Environmental Impact Assessment in the People's Republic of China.** *Environmental Management, (14) 429-439.*

Zhiqi, Q. & Xinmin, L. (1994). **The Practice and Development of Chinese EIA.** *Paper prepared for the International Summit on EIA, Quebec City, June 1994. (8 pp.)*

Zipei, Z. (undated). **Technical Guideline for Regional Development Projects EIA.** *Paper prepared for the National Environmental Protection Agency of China for Trial Implementation. Shanghai Research Institute of Environmental Protection. (12 pp.)*

Contact: National Environment Protection Agency, 115 Xizhimennei Nanxiaojie, Beijing 100035, China.

Hong Kong

Au, E. W. K. & Baldwin, P. J. (1994). **Application of the EIA Process in Hong Kong - Toward a More Effective and Formal System.** *Paper prepared for the International Summit on EA, Quebec, June 1994. (21 pp.)*

Environmental Protection Department (1992). **Application of the Environmental Impact Assessment Process to Major Private Sector Projects.** *Advice Note, 2/92. Environmental Protection Department, Hong Kong. (18 pp.)*

Environmental Protection Department (1993). **Monitoring and Audit of Major Projects (Implementation).** *In:* **Environmental Assessment and Planning Group Operation Manual.** *Environmental Protection Department, Hong Kong. (41 pp.)*

Environmental Protection Department (1993). **Standardized Environmental Impact Assessment (EIA) Study Brief.** *In:* **Environmental Assessment and Planning Group Operation Manual.** *Environmental Protection Department, Hong Kong. (41 pp.)*

Government of Hong Kong (1991). **Environmental Guidelines for Planning in Hong Kong.** *Environmental Protection Department and Planning Department, Hong Kong. (66 pp.)*

Contact: Environmental Protection Department, 27th Floor, Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong.

Government of Hong Kong (1992). **Environmental Impact Assessment of Major Development Projects.** *Planning, Environment and Lands Branch Technical Circular No. 2/92; Works Branch Technical Circular No. 14/92. Planning, Environment, Lands and Works Branches, Hong Kong. (13 pp.)*

Contact: Government Secretariat, Murray Building, Garden Road, Hong Kong.

India

Central Pollution Control Board (1993). **Guidelines for Environmental Audit.** *Central Pollution Control Board, Delhi. (vi, 80 pp.)*

Environmental Audit is an exercise of self-assessment to minimise the generation of wastes and pollution potential. A procedure is set out for conducting an environmental audit, with case studies from the organochlorine and organophosphorus industry. Technologies are described for detoxification of waste, treatment options for wastewater from the pesticides industry, limits for water use and wastewater generation, and emission standards for specific pollutants. A questionnaire for environmental audit and terms of reference for an environmental statement are includeds as annexes.

Contact: Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi - 110032, India

Gopalan, R., Sekaran, K. & Banerjee, M. (1992). **Proposed EIA Methodology for India.** *In A. K. Biswas & S. B. C. Agarwala (Eds.).* ***Environmental Impact Assessment for Developing Countries*** *(204-213 pp.) Butterworth-Heinemann Ltd, Oxford.*

Contact: Butterworth-Heinemann, Westbury House, Bury Street, Guildford, Surrey GU2 5BH UK.

Government of India (1990). **Parameters for Determining Ecological Fragility.** *Ministry of Environment and Forests, New Delhi. (29 pp.)*

The parameters set out in this report are to assist in the identification of specific areas in different regions of India which could be categorised as ecologically fragile or sensitive. They aim to help ensure that such areas are not subjected to environmentally unacceptable activities. Some fragile or sensistive ecosystems are listed. They include ecosystems: with unique properties; with intrinsically low resilience; with high species richness and biological diversity; susceptible to species loss; linking two or more protected ecosystems; with aquifers and water recharge areas of mountain springs; and those with active geological faults and seismic hazards. The parameters are outlined in sections on various ecosystems: deserts, Himalayas, glaciated areas, seismic zones, landslide zones, and watersheds. A list of some of the ecologically fragile and sensitive areas in India is given in an annex.

Government of India (1989). **Environmental Guidelines for Airport Projects.** *Environmental Impact Appraisal Series, EIAS-2-89 (IA-III). Ministry of Environment and Forests, New Delhi. (30 pp.)*

These guidelines apply to new projects and those involving substantial changes to existing facilities. Background is provided on the objectives and processes of EIA, with information on the required structure and content of the environmental impact statements and environmental management plans. Guidance is provided on the identification of environmental effects commonly associated with airport projects: impacts on physical resources (soil and geology, water demand and waste water discharge, air quality, and noise); ecological impacts associated with site development, and facility operation; and socio-economic impacts. Measures for mitigation are also discussed. A brief summary of a possible environmental management and monitoring programme is given, and a questionnaire for environmental appraisal is included.

Government of India (1989). **Environmental Guidelines for Communication Projects.** *Environmental Impact Appraisal Series, EIAS-3-89 (IA-III). Ministry of Environment and Forests, New Delhi. (30 pp.)*

These guidelines aim to assist project authorities in planning and carrying out EIA for communication and electrical transmission projects, including TV/radio/microwave stations or towers, telephone exchanges and lines, and radar installations. They apply to new projects and those involving substantial changes to existing facilities (e.g. capacity expansion). Background is provided on the objectives and processes of EIA, with information on the required structure and content of environmental impact statements and environmental management plans. The guidelines discuss general considerations, and aspects that need to be considered during site selection, construction, alignment of overhead lines together with safety matters. Specific guidelines for electrical transmission lines and telephone cables are summarised in a separate section. Interaction with local authorities and the dissemination of information to the public are discussed. Finally, a questionnaire for environmental appraisal is provided.

Government of India (1989). **Environmental Guidelines for Ports and Harbour Projects.** *Environmental Impact Appraisal Series, EIAS-4-89 (IA-III). Ministry of Environment and Forests, New Delhi. (42 pp.)*

These guidelines outline the format and content required for an environmental impact statement and environmental management plan, and identify the main impacts of port and harbour projects on physical and ecological resources, human use values and quality of life values. Mitigation measures are discussed for a range of adverse impacts: aquatic, atmospheric, noise, land and other resources, visual, solid waste management, accidental, socio-economic and public health impacts. Some general recommendations for mitigation measures are included. A detailed questionnaire for project environmental appraisal is provided.

Government of India (1989). **Environmental Guidelines for Rail/Road/Highway Projects.** *Environmental Impact Appraisal Series, EIAS-1-89 (IA-III). Ministry of Environment and Forests, New Delhi. (35 pp.)*

The document describes the issues required to be covered in an environmental impact statement and the elements to be included in an environmental management plan. It identifies the main impacts of rail, road and highway projects on physical and ecological resources, on human use values and quality of life values. Measures for mitigating adverse impacts are discussed, and recommendations are made for monitoring air, noise and water quality. Management considerations for projects in hilly areas are reviewed. Finally, a questionnaire for project environmental appraisal is provided.

Government of India (1989). **Environmental Impact Assessment of Development Projects.** *Background Note. Ministry of Environment and Forests, New Delhi. (66 pp.)*

This paper provides an outline of the procedural requirements of the Government of India for the environmental (including forestry) assessment and clearance of projects by the Ministry of Environment and Forests. The various sectors for which EIAs have been undertaken are described, and the organisational arrangements and procedures for appraisal and monitoring are outlined.

Government of India (1989). **Guidelines for Environmental Impact Assessment of New Towns.** *Ministry of Environment and Forests, New Delhi. (83 pp.)*

The first part of this document presents a status report on environmental situations that have arisen in selected new towns in India during the 1970s and 1980s. Based on this review, a

typology of new town types is used in Chapter IV (environmental appraisal) to guide the EIA methodology to be used and the environmental issues to be considered: project (construction) colonies; market or service, mining, and port towns; State Capital or District Administrative Centres; satellites to metropolitan cities; those established in connection to cantonments; and new towns established for miscellaneous purposes (e.g. university, technical institutions). Chapter V sets out broad procedures for EIA of new towns. They include the directions that need to be issued by the central and state governments. A proforma for environmental appraisal is given in an annex.

Government of India (1987). **Environmental Guidelines for Thermal Power Plants.** *Ministry of Environment and Forests, New Delhi. (10 pp.)*

This document presents a brief set of guidelines setting out siting criteria, and detailing the format and content required for an environmental impact statement for thermal power plant projects. Important issues in the management of such plants are discussed: solid wastes, human settlements, air and water pollution, occupational safety and health, house-keeping, emergency planning, environmental management, and environmental appraisal procedures.

Government of India (1985). **Environmental Guidelines for the Siting of Industry.** *Report of the Working Group, Ministry of Environment and Forests, New Delhi. (16 pp.)*

This brief document includes guidelines relating to areas to be avoided for the siting of industries, precautionary measures to be taken during site selection, and a discussion of environmental protection issues requiring incorporation during implementation of industrial development projects. The guidelines are intended for use by industrial entrepreneurs, regulatory agencies and all those organisations connected with environmental issues. Polluting industries, and those required to obtain environmental clearance for siting, are listed in appendices.

Government of India (1985). **Guidelines for Environmental Impact Assessment of River Valley Projects.** *Ministry of Environment and Forests, New Delhi. (41 pp.)*

This document is concerned with river valley projects, e.g. irrigation, hydropower, and multipurpose. It comprises four sections. The first reviews the relevance of environmental considerations to river valley projects. It discusses development priorities, the economics of incorporating environmental considerations, and ecological issues in planning development projects. The second section details the data that should be collected for impact assessment of river valley projects, indicating data sources and those departments/agencies whose opinions should be sought and incorporated within the project report. A questionnaire on the ecological aspects of hydro-electric projects is provided as an annex. The third section is a schematic diagram illustrating the impact assessment procedure. The final section presents a case study of the Heran Reservoir (Lalpur Dam) project.

Government of India (1983). **Environmental Guidelines for Development of Beaches.** *Department of Environment, New Delhi. (36 pp.)*

These guidelines are concerned with EIAs for activities related to coastal area developments. The preamble describes the problems of coastal areas in terms of development, population and pollution. Chapter III discusses parameters for coastal area management. Nine major areas of concern in beach development and management are identified: the sea, tourism and recreational value, human settlements and habitat, natural resources and ecosystems, economic development and the social environment, industry and technology, natural/aesthetic potential, and energy. Chapter IV sets out guidelines for EIA covering developments in six

areas which require integrated management: tourism, industry, urban areas, fishing villages and rural areas, special areas (mangroves, scenic areas, reefs, etc.), and communication and transport. Activities causing development pressures in the six areas are listed. A broad classification of coastal areas for ecological values is also given. Chapter V outlines a series of management guidelines for a range of potential problems: protection and wise utilisation of valuable ecosystems, prevention of adverse alteration of air and water quality, and physical planning and development. The format for an EIS is given as an annex.

Government of India (1982). **Environmental Management of Mining Operations.** *Ministry of Environment and Forests, New Delhi. (23 pp.)*

These guidelines apply to mining operations on land only. Oceanic mining and oil exploration and drilling are not covered. The guidelines identify critical issues relevant to environmental protection in the context of mineral exploitation: water pollution, solid waste management, land degradation, air pollution, noise and vibration, subsidence and landslides, human settlements, and impacts of water regimes. Some of the steps that need to be incorporated during the planning and implementation of mining operations are briefly indicated. Emphasis is placed on the need for appropiate agencies to evolve tolerance standards/limits. Parameters to be covered by environmental quality standards for liquid effluents are listed, and a questionnaire is included (to be completed by mining companies) for the environmental appraisal of mining operations. The guidelines are intended to be of practical use to both the government and the mining industry in India.

Government of India (1981). **Guidelines and Questionnaire for Environmental Impact Assessment of Shipping and Harbour Projects.** *National Committee on Environmental Planning, New Delhi. (41 pp.)*

The guidelines discuss objectives and parameters for policy formulation for the protection of the environment in relation to shipping and harbour activities. They consider the need to prepare projections, design safety features and set out emergency procedures in respect of various types of accidents. Offences and penalties, legal requirements, and the need for independent technical and administrative arrangements for EIAs are also reviewed. Annexes include a comprehensive questionnaire on shipping and harbour development projects, and information on various relevant legal instruments and conventions.

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Indian Roads Congress (1989). **Guidelines for Environmental Impact Assessment of Highway Projects.** *Indian Roads Congress, New Delhi. (28 pp.)*

These guidelines supplement the Indian Roads Council's "Manual for Survey, Investigation and Preparation of Roads Projects" (document SP:19). They set out procedures for EIAs of road projects (new roads and major improvements to existing roads) to assist engineers. Section 5 provides formats for recording baseline data, evaluation of alternatives, and assessment of the environmental impact of the chosen alternatives. Section 6 outlines an approach to data collection and evaluation for preparing the EIA. Key elements include a reconnaissance survey/study of different road alignments (desk studies and field work) followed by more detailed investigations of the most appropriate route. The issues that need to be covered in investigations are discussed with respect to existing roads, roads in hilly areas, noise, highway aesthetics, pollution control (in general), air pollution, and pollution during construction operations. Measures for mitigating adverse impacts are considered, particularly soil erosion and land degradation in hilly areas, for which a checklist of points is included.

Contact: Indian Roads Congress, Jamnagar House, Shahjahan Road, New Delhi 110 011, India.

Inland Waterways Authority of India (1994). **Guidelines on Environmental Issues Related to Inland Water Transport.** *Netherlands Ministry of Foreign Affairs, The Hague/New Delhi. (44 pp. plus annexes)*

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Pandey, G. K. (1994). **Environmental Impact Assessment of Development Projects in India.** *Paper presented at the International Summit on Environmental Assessment, Quebec, 12-14 June 1994. (15 pp.)*

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Singh, H., Duraisamy, A., Subramaniam, U. & De, D. (Ed.). (1994). **Handbook of Environmental Procedures and Guidelines.** *Ministry of Environment and Forests, New Delhi. (98 pp.)*

Contact: Ministry of Environment and Forests, Paryavarn Bhavan, CGO Complex Phase II, Lodi Road, New Delhi 110 003, India.

Tata Energy Research Institute (1983). **Environmental Guidelines for Coal Transportation.** *Report of a Workshop held at New Delhi, November 14-17, 1983. Tata Energy Research Institute/ Government of India, New Delhi. (42 pp.)*

Contact: Tata Energy Research Institute, 102 Jor Bagh, New Delhi 110 003, India.

Indonesia

Bailey, L.D. **Environmental Impact Assessment in Indonesia.** *A Background Report for the 1992 UN Conference on Environment and Development. State Ministry of Population Management and Environment, and Environmental Assessment Management Agency (BAPEDAL), Jakarta. (22 pp.)*

Contact: Environmental Assessment Management Agency (BAPEDAL), Gedung Arthaloka Lantai 11, Jl. Jendral Sudirman No 2, Jakarta, Indonesia.

BAPEDAL (1992). **A Guide to Environmental Assessment in Indonesia.** *Environmental Assessment Management Agency (BAPEDAL) with Environmental Management Development in Indonesia (EMDI), Jakarta. (22 pp.)*

BAPEDAL (1991). **Panduan Evaluasi Dokumen Andal. (Guidelines for Evaluating EIS Documents).** *Environmental Assessment Management Agency (BAPEDAL), Jakarta. (14 pp.)*

BAPEDAL (1991). **Panduan Pelingkupan Untuk Penyusunan Kerangka Acuan Andal (Scoping Guidelines).** *Environmental Assessment Management Agency (BAPEDAL), Jakarta. (19 pp.)*

Contact: Environmental Assessment Management Agency (BAPEDAL), Gedung Arthaloka Lantai 11, Jl. Jendral Sudirman 2, Jakarta 10220, Indonesia.

Berwick, S., Soewardi, B. & Pertanian, D. (1987). **Guidelines for Applying the Environmental Impact Assessment Process to Resource Development in Indonesia.** *Department of Agriculture, Jakarta. (192 pp. + annexes)*

This document is intended for use by all offices within the Department of Agriculture (DOA)

and other agencies, contractors and consultants participating in the EIA process of the DOA, as well as by project proponents outside the DOA including the private sector and donor agencies. It describes the regulatory structure within which the guidelines are set and provides methods for planning, management and analysis related to the EIA process. Although the guidelines have been prepared for projects encountered by the DOA, the approach depends upon an interdisciplinary project evaluation early in the EIA process. Such an approach may well transcend sectoral ministries.

Contact: Bureau of Planning, Department of Agriculture, Jl Harsona RM No. 3 Ragunan, Jakarta Selatan, Indonesia.

Davidson, J. (1986). **Ecological Guidelines for Nature Conservation in an Area of Tropical Moist Forest Affected by Transmigration.** *International Union for the Conservation of Nature and Natural Resources (IUCN), Gland, Switzerland. (54 pp.)*

Contact: The World Conservation Union (IUCN), Forest Conservation Programmme, Rue Mauverney 28, CH 1196 Gland, Switzerland.

EMDI (1991). **Documents Relating to the Environmental Impact Analysis Process in Indonesia.** *Unofficial Translations. Environmental Management Development in Indonesia (EMDI), Jakarta. (143 pp.)*

Contact: Environmental Management Development in Indonesia, Gedung Arthaloka Lantai 12, Jl. Jendral Sudirman 2, Jakarta 10220, Indonesia.

Howe, C. P., Claridge, G. F. **et al.** *(1991).* **Manual of Guidelines for Scoping EIA in Indonesian Wetlands** *(Pedoman Pelingkupan Analisis Mengenai Dampak Lingkungan di Lahan Basah). PHPA/ AWB Sumatra Wetland Project Report. Asian Wetland Bureau, Bogor. (315 pp.)*

This manual is designed to assist in the identification of wetland benefits at a site before project plans are finalised and to assess the potential impacts on these benefits. The manual includes descriptions and diagrams of all recognised benefits provided by Indonesian wetlands. Copies are available in English and Babasa Indonesian.

Contact: Asian Wetland Bureau, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

Israel

Brachya, V. (1993). **Environmental Assessment in Land Use Planning in Israel.** *Landscape and Urban Planning, (23) 167-181.*

Brachya, V., & Marinov, U. (1994). **Operation of the EIA System in Israel Compared to Some Other EIA Systems.** *Paper prepared for the International Summit on Environmental Assessment, Quebec, June 1994. (9 pp.)*

Government of Israel (1992). **Environmental Impact Statements (EISs).** *In* **The Environment in Israel** *(132-136 pp.), Ministry of the Environment, Jerusalem.*

Contact: Ministry of the Environment, PO Box 6234, Jerusalem 91061, Israel.

Japan

Barrett, B. F. D. & Therivel, R. (1990). **Environmental Policy and Impact Assessment in Japan.** *Routledge, London. (288 pp.)*

Contact: Routledge, 11 New Fetter Lane, London EC4P 4EE, UK.

Japan Environment Agency (1994). **Environmental Impact Assessment Systems in Japan.** *Report prepared for the International Summit on Environmental Assessment, Quebec, June 1994.*

Contact: Planning and Coordination Bureau, Environment Agency of Japan, 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100, Japan.

Korea

Kim, K. & Murabayashi, D. H. L. (1992). **Recent Developments in the Use of Environmental Impact Statements in Korea.** *Environmental Impact Assessment Review, (12) 295-314.*

Kuwait

Environment Protection Council (1990). **Proposed Environmental Protection Standards and Guidelines for the State of Kuwait. 1: Ambient Air Quality Standards. 2: Ambient Sea Water Quality Standards.** *Environment Protection Council, Kuwait.*

Contact: Environment Protection Council, PO Box 24395, Safat, Kuwait.

Malaysia

Government of Malaysia (1989). **A Handbook of Environmental Impact Assessment Guidelines** *(3rd ed.). Department of the Environment, Kuala Lumpur. (116 pp.)*

Malaysia's EIA policy is derived from a government initiative outlined in Chapter XI of the Third Malaysia Plan, 1976-1980. These guidelines are drawn from the Fifth Malaysia Plan, 1980-1986. The handbook first outlines the relevant legislation (the Environmental Control Act of 1985) and gives a general introduction to EIA. Chapter Two is a guide to procedural steps for preliminary environmental assessment in Malaysia. The text uses set matrices which the developer must follow during the initial stages of the assessment. Public participation is discussed, and an outline of a preliminary report is included. Chapter Three discusses the procedural steps for a detailed assessment. Terms of reference, methodologies, data collection, public participation, and mandatory environmental standards are all covered. The review process is presented in Chapter Four, while Chapters Five and Six provide guidelines for preparing preliminary and final assessment reports.

Government of Malaysia (1992). **Environmental Impact Assessment (EIA) Procedure and Requirements in Malaysia.** *Department of Environment, Kuala Lumpur. (28 pp.)*

Contact: Ministry of Science, Technology and the Environment, 12 & 13 Floor, Wisma Sime Darby, Jalan Raja Laut, 50662 Kuala Lumpur, Malaysia.

Nepal

National Planning Commission (1992). **National Environmental Impact Assessment Guidelines.** *National Planning Commission, HMG Nepal, Kathmandu/The World Conservation Union (IUCN), Gland, Switzerland. (54 pp.)*

The need for EIA has been well recognised in Nepal but, to date, it has not been applied systematically. EIAs have been conducted for individual development projects, usually at the initiative of bilateral and multilateral donor agencies, according to their own procedures. These guidelines were prepared as a result of a collaborative project between the National Planning Commission and the World Conservation Union (IUCN), as part of a larger programme which also includes preparation of sectoral guidelines and the establishment of a formal system for the appraisal of all development projects.

The guidelines outline the steps of the EIA process from screening and initial environmental examination to evaluation, environmental impact auditing and public involvement. The aim is to ensure that EIA is incorporated in project planning and implementation processes, and that approaches are adapted to the existing administrative, institutional and political system of Nepal.

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

Oman

Government of Oman (1993). **Data and Information Required for the EIA Report.** *Ministry of Municipalities and Environment, Sultanate of Oman. (2 pp.)*

Contact: Ministry of Municipalities and Environment, PO Box 3461, Muscat, Sultanate of Oman.

Pakistan

Government of Pakistan (1986). **Environmental Impact Assessment Guidelines.** *Ministry of Housing and Works, Islamabad. (117 pp.)*

These guidelines are divided into three sections: agriculture/rural development sector; infrastructure sector; and industry and mining sector. Background information is provided on environmental considerations specific to each sector. The major types of impact for each type of project are identified as well as the information required for project planning.

Contact: Ministry of Housing and Works, Block B, Pakistan Secretariat, Islamabad, Pakistan.

IUCN (1991). **EIA Guidelines for the Pakistan Energy Sector.** *Environmental and Urban Affairs Division, Government of Pakistan, The World Conservation Union (IUCN), Gland, Switzerland. (42 pp.)*

These guidelines provide comprehensive information on EIA for the energy sector in Pakistan. They are intended for use in connection with a World Bank loan to Pakistan for energy sector projects, but also have general application.

The document is in two parts. Part 1 provides background information including an introduction to EIA, the legal requirement for EIA in Pakistan, a perspective on the Pakistan energy sector and the sensitivity of Pakistan's environment to disturbance by development projects. Part 2 includes a generalised procedure for the EIA of all energy sector projects except nuclear power proposals, gives guidance on the environmental issues associated with each specific type of energy sector development, and provides checklists of factors which need to be taken into account in their assessment.

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH-1196, Gland, Switzerland.

Philippines

Alcances, R. P., Supetran, A. D. D. & Anderson, M. B. (1983). **Environmental Impact Assessment Handbook.** *Ministry of Human Settlements, National Environmental Protection Council, Manila, Philippines. (242 pp.)*

This comprehensive guide to EIA in the Philippines was produced in response to a lack of EIA information, the enactment of legislation relating to environmentally critical projects (ECPs), and confusion about the EIS system in the country. The handbook provides an elementary scheme for EIA. It sets out the initial groundwork on EIA, provides a practical guide and reference for better understanding the Philippine EIS system, and is intended to enhance the content, quality and scope of EIA documents submitted to the National Environmental Protection Council (NEPC).

The Handbook is composed of seven sections, including a framework for EIA; a description of environmental impacts; the prediction and assessment of impacts; and the preparation of EIA documents. Detailed information is provided on the Philippine EIS system, ranging from the scope of the system to post EIS concerns (e.g. project monitoring). Annexes provide reference and background materials including environmental standards, legislation, an EIS outline, and a checklist format for EIA.

Contact: Department of the Environment and Natural Resources, Visayas Ave, Diliman, Quezon City, Metro Manila, Philippines.

Singapore

Government of Singapore (1993). **Environmental Audit Handbook.** *Ministry of the Environment and National Council on the Environment, Singapore. (66 pp.)*

Contact: Ministry of Environment, 40 Scotts Road, Singapore 0922.

Sri Lanka

CEA (1993). **Guidance for Implementing the Environmental Impact Assessment (EIA) Process. No 1: A General Guide for Project Approving Agencies.** *Central Environmental Authority, Ministry of Environment and Parliamentary Affairs, Colombo. (42 pp.)*

At present, 14 state agencies are specified as Project Approving Agencies (PAA) by the Ministry of Environment under the National Environment Act of 1980. These guidelines define the responsibilities of the PAAs under the broad framework of the Act. Procedures are described for compliance with EIA regulations and include guidelines for scoping, significance criteria and standard Terms of Reference (TOR). Appendices provide guidance on the format and content of EIA reports.

Contact: Central Environmental Authority, Ministry of Environment and Parliamentary Affairs, Maligawatte New Town, Colombo 10, Sri Lanka.

IUCN (1993). **Manual on Environmental Assessment for Sustainable Forest Development.** *A report prepared for the U.N. Food and Agriculture Organization. The World Conservation Union (IUCN), Gland, Switzerland. (65 pp.)*

This manual was prepared as part of the Environmental Management in Forestry Development Project - a project of the Forestry Department, Ministry of Lands, Irrigation and Mahaweli Development, Sri Lanka. It sets out guidelines for EIA applicable to natural forests and forest plantations in Sri Lanka. Part I describes the legal and administrative framework for EIA in Sri Lanka and introduces the process of environmental assessment. Part II examines the ways in which this might affect work within the forest sector. It introduces procedures to be adopted in the Forest Department to deal with the formal requirements of EIA, and to ensure that environmental considerations are taken into account at all levels - in the formulation of policy, in planning and in field operations.

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

Meier, P. & Munasinghe, M. (1994). **Incorporating Environmental Concerns into Power Sector Decision-Making. A Case Study of Sri Lanka.** *World Bank Environment Paper No. 6. World Bank, Washington D.C. (167 pp.)*

This case study shows how environmental concerns can be incorporated into the planning stage of power sector development. The techniques and procedures described are designed to complement existing approaches to environmental assessment that are now a routine part of project development.

The methodology presented uses techniques of multi-attribute analysis - a process which appraises alternatives with differing objectives and varied costs and benefits, often assessed in differing units of measurement. The problem of comparing different types of impacts is particularly acute in Sri Lanka, where the main power generation options - hydro and baseload thermal - have impacts that are totally different in character. The mitigation of power sector impacts also needs to be seen in the broader context of optimal resource allocation. In addition, power sector planning in Sri Lanka is undergoing fundamental policy changes.

In this study, the methodology is applied to the assesment of a wide range of policy alternatives, including renewable energy options (such as wind power) and clean coal technologies. Conclusions are presented in discussions of procedural issues (how current planning proce-

dures should be modified to better incorporate environmental consideration), policy issues (such as criteria for setting environmental standards), and technology choice issues. The study also recommends further areas of research to complement the work.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Thailand

Baker, I. & Kaeoniam, P. (Ed.) (1986). **Manual of Coastal Development Planning and Management for Thailand.** *Thailand Institute of Scientific and Technological Research, Bangkok. (179 pp.)*

Contact: Thailand Institute of Scientific and Technological Research, 196 Phaholyothin Road, Bangkhen, Bangkok 10900, Thailand.

Government of Thailand (undated). **Manual of OEPP Guidelines for Preparation of Environmental Impact Evaluations: General EIA Guidelines.** *Office of Environmental Policy and Planning, Bangkok. (30 pp.)*

Contact: Office of Environmental Policy and Planning, Soi Phibun Watthana 7, Rama VI Bangkok 10400, Thailand.

Lohani, B. N. & Kan, S. A. (1983). **Environmental Evaluation For Water Resources in Thailand.** *Water Resources Development, 1 (3),.185-195.*

Lohani, B. N. & Halim, N. (1987). **Recommended Methodologies for Rapid Environmental Impact Assessment in Developing Countries: Experiences Derived From Case Studies in Thailand.** *In A. K. Biswas and Q Geping (Eds.),* **Environmental Impact Assessment for Developing Countries.** *(65-111 pp.) Tycooly International for the United Nations University, London.*

Contact: Tycooly International, Cassell Plc, Villiers House, 41-47 Strand, London WC2N 5JE, UK.

NEB (1979). **Manual of NEB Guidelines for Preparation of Environmental Impact Evaluations.** *National Environment Board, Bangkok. (160 pp.)*

This manual is intended for all agencies or individuals in both the public and private sectors involved in the development of any project in Thailand likely to alter significantly the natural or man-made environment. Although drawing on experience for the USA and other countries, careful attention has been given to utilise concepts and criteria on environmental values that are appropriate for Thailand, so that realistic environmental protection can be achieved within realistic economic, and other, constraints.

The manual includes four sets of guidelines: general guidelines for the preparation of environmental impact statements (EISs), applicable to all types of project; sectoral EIS guidelines, including transport, human settlements, industry, mining and energy projects; guidelines for preparing Initial Environmental Examinations (IEEs); and guidelines for preparing terms of reference for consulting firms.

Contact: National Environment Board, 60/1 Soi Phibun Watthana 7, Rama VI Road, Bangkok 10400, Thailand.

■ AUSTRALASIA

Australia

ANZECC (1991). **A National Approach to Environmental Impact Assessment in Australia.** *Australian and New Zealand Environment and Conservation Council, Canberra. (32 pp.)*

ANZECC (1993). **Basis for a National Agreement on Environmental Impact Assessment.** *Draft. Australian and New Zealand Environment and Conservation Council, Canberra. (22 pp.)*

ANZECC (1993). **Guidelines and Criteria for Determining the Need for and Level of Environmental Impact Assessment in Australia.** *Australian and New Zealand Environment and Conservation Council, Canberra. (15 pp.)*

These guidelines are based on the premise that, on a national basis, it is not possible to provide a standard formula for EIA due to the immense range of natural and human environmental conditions present in Australia and the variations in statutory provisions. These guidelines and criteria outline the process and the factors which provide the basis for decisions on applying EIA to development proposals. The document accepts that not all the criteria will be applicable to every proposal in every environment in every jurisdiction, but it provides a common starting point, and common principles for the practice of EIA around the country.

Contact: Australian and New Zealand Environment and Conservation Council, GPO Box 787, Canberra, ACT 2601, Australia.

Buckley, R. (1991). **A Handbook for Environmental Audit.** *AIDAB Sector Report 1991 No 1. Australian International Development Assistance Bureau, Canberra. (32 pp.)*

Contact: Australian International Development Assistance Bureau, PO Box 887, Canberra, ACT 2601, Australia.

CEPA (1994). **Climate Change in the Environmental Impact Assessment Process. Guide for Environmental Assessment Officers.** *Draft. Environment Assessment Branch, Commonwealth Environment Protection Agency, Canberra. (43 pp.)*

Contact: Commonwealth Environment Protection Agency, PO Box E305, Queen Victoria Terrace, Canberra, ACT 2600, Australia.

Department of Housing and Urban Development (1993). **Guide to the Assessment of Projects of Major Significance. An Integrated Planning and Development Assessment System.** *Government of South Australia, Adelaide. (41 pp.)*

Contact: Department of Housing and Urban Development, POB 667, Adelaide SA 5000, Australia.

Department of Planning and Housing (1992). **Guidelines for Environmental Impact Assessment and the Environment Effects Act.** *State Government of Victoria, Melbourne. (16 pp.)*

Contact: Department of Planning and Housing Bookshop, Ground Floor, 477 Collins St, Melbourne, Australia.

EPA (1993). **A Guide to Environmental Impact Assessment in Western Australia.** *Environmental Protection Authority, Perth. (31 pp.)*

EPA (1992). **Criteria for the Assessment of Risk from Industry**. *EPA Bulletin No. 627. Environmental Protection Authority, Perth. (55 pp.)*

EPA (1992). **Guidance Notes from Environmental Protection Authority Reports 1971-1992, Western Australia.** *EPA Bulletin No. 625. Environmental Protection Authority, Perth. (59 pp.)*

Contact: Environmental Protection Authority, Westralia Square, 141 St Georges Terrace, Perth, WA 6000, Australia.

New Zealand

Dixon, J. E. (1993). **The Integration of EIA and Planning** in **New Zealand: Changing Process and Practice**. *Journal of Environmental Planning and Management, 36(2), 239-251.*

Government of New Zealand (1992). **Scoping of Environmental Effects**. *Resource Management Series. Ministry for the Environment, Wellington. (31 pp.)*

Contact: Ministry for the Environment, PO Box 10362, Wellington, New Zealand.

Morgan, R. K., & Memon, A. (1993). **Assessing the Environmental Effects of Major Projects - A Practical Guide.** *Environmental Policy and Management Research Centre Publication No. 4. University of Otago, Dunedin, New Zealand. (120 pp.)*

This publication is intended to provide a general understanding of the EIA process, and more specifically, to provide practical guidance in assessing the effects of large resource development or utilisation projects, within the context of the Resources Management Act. The guide is targeted mainly at professional staff in district and regional councils and central government agencies, as well as private and public sector developers and interested members of the public. The guide is intended to be a source of ideas to be considered in relation to particular situations, rather than as a set of rigidly-defined procedures. The main emphasis is on adaptive approaches to EIA. Part I provides background information on the theory and concepts of EIA, while Part II considers the practical aspects of EIA including a case study, bibliography and annexes detailing information sources, EIA techniques and, finally, a classification of New Zealand EIAs.

Contact: Environmental Policy and Management Research Centre, University of Otago, PO Box 56, Dunedin, New Zealand.

■ CARIBBEAN

Caribbean Regional

Cabral, J. (1994). **Environmental Assessment of Multilateral Transportation Sector Loans** in **Latin America and The Caribbean**. *Paper presented at the Fourteenth Annual Meeting of the International Association for Impact Assessment, Quebec, June 1994. (18 pp.)*

Contact: Department of Urban Studies and Design, Simon Bolivar University, Apartado 89.000, Caracas 1080-A, Venezuela.

CCA (1991). **Environmental Guidelines for Caribbean Planners.** *Prepared for the Organisation of Eastern Caribbean States, United Nations Development Programme, and United Nations Centre for Human Settlements. Caribbean Conservation Association, St Michael, Barbados.*

This publication is the product of a major UNDP/UNCHS(Habitat) project designed to distil information about environmental assessment processes as they relate to the natural and man-

made environment in the Eastern Caribbean. In these small islands, whose economies are generally linked to tourism, the question of how to manage the environment is of paramount importance. Yet very few planners in the islands have been exposed to the concepts of EIA. These guidelines aim to provide practical and relatively simple analytical tools to enable environmental considerations to be incorporated in the project planning process at an early stage, and to permit the merging of environmental and socioeconomic considerations into the traditional physical planning process.

An introductory chapter outlines the basic steps in the EIA process. Guidance is then provided for each of the key sectors relevant to the Caribbean economy: agriculture and rural development, tourism, waste management, and coastal zone. Consideration is also given to the social and cultural dimensions of EIA in the planning process, the existing regulatory framework and cost-benefit analysis. The document concludes with a number of case studies from different sectors - tourism, industry, mining and coastal zone management.

Contact: The Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

CDB (undated). **Procedures for Environmental Impact Assessment (EIA).** *Caribbean Development Bank, Barbados. (5 pp.)*

Contact: Caribbean Development Bank, PO Box 408, Wildey, St Michael, Barbados.

Gamman, J. K. & McCreary, S. T. (1988). **Suggestions for Integrating Environmental Impact Assessment and Economic Development in the Caribbean.** *Environmental Impact Assessment Review, 8(1), 43-62.*

Geoghegan, T. (1983). **Guidelines for Integrated Marine Resource Management in the Eastern Caribbean.** *Caribbean Environment Technical Paper (2). Caribbean Conservation Association, St Michael, Barbados.*

Contact: The Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

Natural Resources Conservation Authority (1993). **Guidelines for the Preparation of an Environmental Impact Assessment.** *Draft. Natural Resources Conservation Authority, Government of Jamaica, Kingston. (17 pp + annexes.)*

Contact: Natural Resources Conservation Authority, 53 1/2 Molynes road, Kingston 10, Jamaica.

OAS (1984). **Integrated Regional Development Planning: Guidelines and Case Studies from OAS Experience.** *Organization of American States, Washington D.C. (231 pp.)*

Contact: Organization of American States, 17th St and Constitution Ave NW, Washington D.C. 20006, USA.

OECS (1993). **Environmental Monitoring in the Eastern Caribbean.** *Regional Workshop Series 1.93.EM. Environmental & Coastal Resources Project, Organization of Eastern Caribbean States, St Lucia.*

Contact: Organization of Eastern Caribbean States, PO Box 1383, Castries, St Lucia.

Bermuda

Department of Planning (1992). **Environmental Analysis.** *In:* **The Bermuda Plan 1992: Planning Statement.** *(pp. 10-11). Government of Bermuda, Hamilton, Bermuda.*

Contact: Ministry of Environment, Government Administration Building, 30 Parliament Street, Hamilton HM 12, Bermuda.

Saint Lucia

Bisset, R. (1989). **Environmental Impact Assessment in Saint Lucia and Trinidad and Tobago: Current Practice and Recommendations for the Future.** *ICEA Report No. 4 (ICEA/WG/989/106). International Commission for Environmental Assessment. (29 pp.)*

Contact: International Commission for Environmental Assessment, c/o Mariaplaats 3, PO Box 2345, 3500 GH Utrecht, The Netherlands.

Trinidad and Tobago

Sammy, G. K. (1993). **Implementing an EIA Requirement in Trinidad and Tobago.** *The Journal of The Association of Professional Engineers of Trinidad and Tobago 27(1), 51-58.*

Turks and Caicos Islands

Bisset, R. (1992). **Devising an Effective EIA System for a Developing Country: The Case of the Turks and Caicos Islands.** *In A. K. Biswas & S. B. C. Agarwala (Eds.),* **Environmental Impact Assessment for Developing Countries,** *pp. 214-234. Butterworth-Heinemann, Oxford.*

Contact: Butterworth-Heinemann, Linacre House, Jordan Hill, Oxford OX2 8DP, UK.

■ EUROPE

Europe Regional

CEC (1993). **Report from the Commission on the Implementation of Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment. Annexes for All Member States.** *Com (93) 28 final, Vol 13. Commission of the European Communities, Brussels.*

EEC (1985). **Council Directive 85/337/EEC of 27 June 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment.** *Council of the European Communities, Brussels.*

Prieur, M. & Lambrechts, C. (1980). **Model Outline Environmental Impact Statement from the Standpoint of Integrated Management or Planning of the Natural Environment.** *Nature and Environment Series, Council of Europe, Brussels.*

Contact: European Commission, Rue de la Loi 200, B-1049 Brussels, Belgium.

Eastern Europe Regional

EBRD (1992). **Environmental Procedures.** *European Bank for Reconstruction and Development, London. (iv, 52 pp. + annexes)*

The procedures are presented as guidelines for specific users - project teams and Bank environmental staff, and are organised into three sections. Part 1 comprises an overview, outlining the steps in the project cycle, the responsibilities of Bank staff and the relevant project documentation. Part 2 is a self-contained guide to the procedures for the team leader, and Part 3 provides a detailed set of guidelines for environmental staff. There are six annexes to the document including guidelines for public participation, and standard report formats for EIA and environmental audit.

These procedures are for the use of Bank staff, to help ensure that projects are environmentally, financially, economically and legally sound. They aim to ensure that environmental implications (including costs) are taken into account throughout the project approval process, and to identify opportunities for environmental enhancement associated with the project.

Contact: European Bank for Reconstruction and Development, 1 Exchange Square, London EC2A 2EH, UK.

EBRD (1994). **Investors' Environmental Guidelines.** *Graham and Trotman, London. (540 pp.)*

These guidelines are designed to clarify the environmental requirements in nine European countries: Bulgaria, the Czech and Slovak Republics, Estonia, Hungary, Latvia, Lithuania, Poland and Romania. For each country, an overview is provided covering the administrative structure, environmental legislation and other regulatory requirements. The EIA process is described and environmental requirements applicable to industrial and commercial facilities are presented for air emissions, water use, noise, waste management, and use of chemicals. Annexes for each country detail key legislation, regulatory bodies, environmental standards and investment projects subject to EIA.

Contact: Graham and Trotman, Sterling House, 66 Wilton Road, London SW1V 1DE UK.

Belgium

Devuyst, D. & Hens, L. (1991). **Environmental Impact Assessment in Belgium.** *Environmental Impact Assessment Review, 11(2), 157-170.*

Cyprus

Georgiades, N. S. (1993). **Environmental Impact Assessment in Cyprus.** *Paper Prepared for the National Training Course on the Application of Environmental Impact Assessment as an Important Tool in the Decision-Making Process, Nicosia, November 1-4 1993. Ministry of Agriculture and Natural Resources, Cyprus. (15 pp.)*

Contact: Ministry of Agriculture and Natural Resources, Loukis Akritas Ave, Nicosia, Cyprus.

Denmark

Government of Denmark (1994). **Guidance on Procedures for Environmental Assessments of Bills and other Government Proposals.** *(English Version). Spatial Planning Department, Ministry of the Environment, Copenhagen. (14 pp.)*

Contact: Miljøministeriet, Højbro Plads 4, DK-1200 Copenhagen K, Denmark.

Estonia

Ecological Studies Institute Estonia (1993). **Environmental Assessment Legislation and Policy in Central and Eastern Europe. Republic of Estonia.** *European Bank for Reconstruction and Development, London.*

Contact: European Bank for Reconstruction and Development, 1 Exchange Square, London EC2A 2EH UK.

Finland

Nurmi, M. (1994). **Environmental Impact Assessment in Finland.** *Prepared for the International Summit on Environmental Assessment, Quebec City, June 1994.*

Contact: Environmental Policy Department, Ministry of Environment, POB 399, Rakatu 3, 00121 Helsinki, Finland.

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Contact: Confederation of Finnish Industry and Employers, PO Box 30, FIN 00131, Helsinki, Finland.

France

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Government of France (1985). **L'Étude d'Impact pour l'Ouverture de Travaux d'Exploitation de Gisements d'Hydrocarbures à Terre (Impact Study for Drilling of Terrestrial Hydrocarbon Deposits).** *Ministère du Redeploiement Industriel et du Commerce Exterieur, et Ministère de l'Environnement, Paris. (81 pp.)*

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Contact: Ministry of the Environment, 20, Avenue de Segur 75302 Paris 7 SP, France

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Netherlands

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Contact: Ministry of Health and Environmental Protection, Rijnstraat 8, 2515 XP, The Hague. The Netherlands.

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Contact: Distributive Trades VROM, Postbox 351, 2700 AJ Zoetermeer, The Netherlands

Ministry of Housing, Spatial Planning and the Environment (1994). **Milieu-Effectrapportage: Besluiten Voor een Leefbaar Nederland. Handleiding. (Environmental Impact Reporting: Decisions for an Inhabitable Holland. A Manual).** *Koninklijke Vermande, Lelystad, Netherlands. (400 pp.)*

Contact: Directoraat-Generaal Milieubeheer, Postbus 30945, 2500GX 's-Gravenhage, Netherlands

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Norway

Government of Norway (1994). **Konsekvensutredninger: Veileder i Plan-og Bygningslovens Bestemmelser (Environmental Impact Assessment: Guidelines According to the Planning and Building Act).** *Ministry of the Environment, Oslo. (172 pp.)*

Contact: Statens Forurensningstilsyn, Strømsvn 96, Postboks 8100 Dep, 0032 Oslo, Norway

Portugal

DGQA/DSPI (1988). **Estudos de Impacte Ambiental - Directrizes. (Environmental Impact Studies - Guidelines).** *Direcção - Geral da Qualidade de Ambiente, Ministério do Planeamento, Lisbon. (101 pp.)*

Contact: Ministério do Planeamento e da Administração do Território, Praca do Comercio, P-1100 Lisbon, Portugal.

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Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

Russian Federation

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Contact: Russian Federation Ministry of Atomic Energy, 33, Kashirskoe shosse, Moscow 115230, Russian Federation.

Spain

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Contact: Ministerio de Obras Públicas y Transportes, Paseo de la Castellana 67, 28071 Madrid, Spain.

Sweden

SNV (1995). **Manual on EIA (Draft).** *National Board of Housing, Building and Planning & Swedish Environmental Protection Agency, Solna, Sweden. (130 pp. + annexes)*

SNV (1995). **Guidelines on EIA in the Environment Protection Act and in the Nature Conservancy Act.** *Swedish Environmental Protection Agency, Solna, Sweden. (67 pp. + annexes)*

SNV (1994) **EIA in the Transport Sector - Environmental Protection Aspects.** *Swedish Environmental Protection Agency, Solna, Sweden. (52 pp. + annexes)*

SNV (1990). **Environmental Impact Assessment in the Swedish Planning and Decision System.** *Swedish Environmental Protection Agency, Solna, Sweden. (150 pp. + annexes)*

Contact: Swedish Environmental Protection Agency, S-171 85 Solna, Sweden

Swedish Road Administration (1987). **Environmental Impact of Roads.** *Swedish Road Administration, Borlänge, Sweden. (36 pp. + annexes)*

Contact: Swedish Road Administration, S-781 87, Borlänge, Sweden.

Swedish National Rail Administration (1992). **Enviornmental Impact Assessment of Railways.** *Swedish National Rail Administration, Borlänge, Sweden. (60 pp + annexes)*

Contact: Swedish National Rail Administration, S-781 85, Borlänge, Sweden.

United Kingdom

CEC (1993). **Report from the Commission on the Implementation of Directive 85/337/EEC on the Assessment of the Effects fo Certain Public and Private Projects on the Environment: Annex for the United Kingdom.** *COM (93) 28 final, Vol 12. Commission of the European Communities, Brussels.*

Contact: European Commission, Rue de la Loi 200, B-1049 Brussels, Belgium.

Clark, B. D., Chapman, K. **et al.** *(1981).* **A Manual for the Assessment of Major Development Proposals.** *Her Majesty's Stationary Office, London. (249 pp.)*

Contact: Her Majesty's Stationary Office, PO Box 276, London SW8 5DT, UK.

Cobham Resource Consultants (1993). **Landscape Assessment Guidance.** *Countryside Commission, Cheltenham. (45 pp.).*

Contact: Countryside Commission, John Dower House, Crescent Place, Cheltenham, Glos GL50 3LX, UK.

Department of Environment (1994). **Environmental Appraisal in Government Departments.** *Her Majesty's Stationary Office, London. (vii, 70 pp.)*

Department of Environment (1993). **Environmental Appraisal of Development Plans: A Good Practice Guide.** *Her Majesty's Stationary Office, London. (57 pp.)*

This guide has been designed to help local planning authorities carry out environmental appraisals of plans. It offers guidance on a range of straightforward techniques and proce-

dures which can easily be used at each stage of the plan-making process, without the need for specialist staff.

The guidelines draw heavily on the general experience of local planning authorities in England and Wales, on relevant literature, and on detailed studies of practice in twelve local authorities. The proposed appraisal process is intended to be adaptable to every level of plan. Key stages in the process are clearly described, with extensive use of diagrams, checklists, matrices and examples from scoping to presentation.

Department of Environment (1991). **Environmental Assessment - A Guide to the Procedures.** *Her Majesty's Stationary Office, London. (64 pp.)*

This booklet is intended primarily for developers and their advisers. It explains how requirements for the environmental assessment of major projects have been incorporated into consent procedures in the UK in response to EC Directive 85/337/EEC which came into effect in 1988. The effect of the Directive is to require environmental assessment to be carried out before development consent is granted, for certain types of major project which are judged likely to have significant environmental effects.

Parts I and II explain the procedures which apply to projects which fall within the scope of the Directive and require planning permission in England and Wales. They give some general guidance on the nature of environmental assessment, and on the practical aspects of preparing an environmental statement. Part III provides a brief account of the procedures which apply to other projects within the scope of the Directive which are not subject to planning procedures. It also deals briefly with environmental assessment procedures in Scotland and Northern Ireland.

Contact: Her Majesty's Stationary Office, PO Box 276, London SW8 5DT, UK.

Department of Trade and Industry (1992). **Guidelines for the Environmental Assessment of Cross-Country Pipelines.** *Her Majesty's Stationary Office, London. (55 pp.)*

Contact: Her Majesty's Stationary Office, PO Box 276, London SW8 5DT, UK.

Department of Transport (1992). **Assessing the Environmental Impact of Road Schemes. The Standing Advisory Committee on Trunk Road Assessment.** *Her Majesty's Stationary Office, London. (200 pp.)*

Department of Transport (1992). **Design Manual for Roads and Bridges Volume II: Environmental Assessment.** *Her Majesty's Stationary Office, London.*

Department of Transport (1983). **Manual of Environmental Appraisal.** *Assessments Policy and Methods Division, Department of Transport, London. (57 pp.)*

The manual is divided into three parts. Part 1 defines the essential elements of an appraisal framework and describes the different groups involved. Part 2 includes guidelines for the assessment of specific impacts such as noise, pollution, visual, and social effects. Part 3 provides a listing of relevant references and further reading material.

Contact: Department of Transport, 2 Marsham St, London, SW1P 3EB UK.

IEA (1995). **Guidelines for Baseline Ecological Assessment.** *Institute of Environmental Assessment, Lincoln, UK. (136 pp.)*

These guidelines provide a source of information on survey methods for a wide range of species within the UK. They represent a consensus on the level of baseline data required to assess adequately the ecological impacts of a proposed development. Several baseline survey techniques are described for most habitat types. Criteria for more detailed studies are given for the major groups of living organisms.

IEA (1995). **Guidelines for Landscape and Visual Impact Assessment.** *Institute of Environmental Assessment, Lincoln, UK. (125 pp.)*

IEA (1993). **Guidelines for the Environmental Assessment of Road Traffic.** *Guidance Notes No. 1. Institute of Environmental Assessment, Lincoln, England. (52 pp.)*

These guidelines provide systematic and comprehensive information for the assessment of the off-site environmental impact of road traffic associated with major new developments (e.g. quarries, supermarkets). They are not designed to be applied to projects such as motorways or railways. The guidelines are intended to complement professional judgement and the experience of trained assessors. They are structured to mirror the activities necessary to undertake an environmental asssessment. Sections 2 and 3 consider the analyses needed to define and understand the environmental and traffic issues affecting any particular development. Section 4 explains how the various issues can be assessed. Section 5 deals with alternatives and mitigation techniques. Finally, Section 6 covers the presentation of the environmental statement.

Contact: Institute of Environmental Assessment, Fen Road, East Kirkby, Lincolnshire PE23 4DB, UK.

Kent County Council (undated). **Kent Environmental Assessment Handbook.** *Planning Department, Kent County Council, Maidstone, England. (74 pp.)*

Contact: Kent County Council, Springfield, Maidstone, Kent ME14 2LX, UK.

NCC (1986). **Nature Conservation Guidelines for Onshore Oil and Gas Development.** *Nature Conservancy Council, Peterborough, England. (51 pp.)*

Contact: English Nature, Northminster House, Peterborough PE1 1UA, UK.

■ LATIN AMERICA

Latin America Regional

Cabral, J. (1994). **Environmental Assessment of Multilateral Transportation Sector Loans in Latin America and The Caribbean.** *Paper presented at the Fourteenth Annual Meeting of the International Association for Impact Assessment, Quebec City, June 1994. (18 pp.)*

Contact: Department of Urban Studies and Design, Simon Bolivar University, Apartado 89.000, Caracas 1080-A, Venezuela.

IADB (1990). **Procedures for Classifying and Evaluating Environmental Impacts of Bank Operations.** *Inter-American Development Bank, Washington D.C. (5 pp.)*

These procedures formalise the established practice of the Environmental Management Committee to identify early those Bank operations that may have significant environmental im-

pacts. Bank operations are classified according to their environmental impacts as follows: Category I - operations which are designed specifically to improve environmental quality and, in general, do not require an EIA; Category II - operations that have no direct or indirect environmental impact and, therefore, do not require an EIA; Category III - operations which may have a moderate impact on the environment and those that have recognised and well-defined solutions, usually requiring a preliminary EIA (in some cases with a full EIA for specific components); and Category IV - operations which may have significant negative impacts and require a full EIA.

Contact: Inter-American Development Bank, 1300 New York Avenue NW, Washington D.C. 20577, USA.

IUCN (1974). **Proceedings of an International Meeting on the Use of Ecological Guidelines for Development in the American Humid Tropics**, *held at Caracas, Venezuela, 20-22 February 1974. IUCN Publications New Series No. 31. The World Conservation Union (IUCN), Gland, Switzerland.*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

OAS (1984). **Integrated Regional Development Planning: Guidelines and Case Studies from OAS Experience**. *Organization of American States, Washington D.C. (231 pp.)*

OAS (1993). **Manual Sobre el Manejo de Peligros Naturales en la Planificación para el Desarrollo Regional Integrado (Manual for the Management of Natural Hazards for Integrated Regional Development Planning)**. *Organization of American States, Washington D.C.*

Contact: Department of Regional Development and Environment, OAS, 17th St and Constitution Ave NW, Washington D.C. 20006, USA.

Bolivia

Gobierno de Bolivia (1993). **Directriz de Evaluación de Impacto Ambiental de Proyectos del Sector Transporte (Environmental Impact Assessment Guidelines for Transport Sector Guidelines).** *Secretaría General del Medio Ambiente, La Paz. (34 pp.)*

This series of "Environmental Impact Directives" include guidelines for EIA of projects in various industrial sectors (e.g. food industries, mining projects). The guidelines are complemented by the "General Directive on Environmental Assessment" described in Valle *et al.* (1993). Each of the sector guidelines contains the following information: a list of project types within that sector; a description of the different activities associated with different phases of the project - for example construction, operation, etc; a generic "environmental analysis matrix" for each sector; a descripton of the potential environmental impacts and mitigation measures; and a list of essential information that should be included in environmental assessment reports.

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental. Proyectos Energeticos, Termoeléctricos, Subestaciones y Redes (Environmental Impact Guidelines. Thermoelectric Energy projects, Substations and Networks).** *Secretaría General del Medio Ambiente, La Paz. (35-59 pp.)*

Gobierno de Bolivia (1993). **Análisis Ambiental para Proyectos de la Industria Alimenticia (Environmental Analysis for Food Industry Projects).** *Secretaría General del Medio Ambiente, La Paz. (pp. 60-79)*

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental para Represas Hidroeléctricas (Environmental Impact Guidelines for Hydroelectric Dams)**. *Secretaría General del Medio Ambiente, La Paz. (pp. 80 -111)*

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental para Proyectos de Actividad Minera (Environmental Impact Guidelines for Mining Projects).** *Secretaría General del Medio Ambiente, La Paz. (pp. 112-122)*

Gobierno de Bolivia (1993). **Directriz de Impacto Ambiental de Proyectos de la Industria Metálica (Environmental Impact Assessment Guidelines for the Metal Industry).** *Secretaría General del Medio Ambiente, La Paz. (pp. 123-151)*

Gobierno de Bolivia (1993). **Análisis Ambiental para Proyectos de la Industria de la Curtiembre (Environmental Analysis for Tanning Industry Projects).** *Secretaría General del Medio Ambiente, La Paz. (pp. 152-172)*

Contact: Secretaría General del Medio Ambiente, Edificio Batallon, Colorados 162, Piso 3, La Paz, Bolivia.

Valle, H. C., Vaquez, E. L. & Ballester, W. V. (1993). **Manual de Evaluación de Impacto Ambiental para Proyectos de Desarollo Urbano - 2 Tomos. (Environmental Impact Assessment Manual for Urban Development - 2 Vols).** *Seguridad Industrial-Control Ambiental - Salud e Higiene Ocupacional. Fondo Nacional de Desarrollo Regional, La Paz, Bolivia.*

This manual was developed to promote the inclusion of an "integral protection component" in projects funded by the National Fund for Regional Development (Fondo Nacional de Desarollo Regional - FNDR). It covers health and hygiene, industrial safety, and environmental control and protection issues. Volume One discusses general issues and EIA methodologies. The introduction describes FNDR environmental policies and strategies. A variety of EIA methodologies are examined including the Leopold matrix, Delphi techniques, Characteristic Indicators, and Weight and Scale Techniques. An "Environmental Questionnaire for Urban Development Projects" is provided which is intended to allow comparisons between project activities and FNDR policies.

Volume Two includes more specific guidelines for the most common types of project funded by FNDR. Each set of guidelines has two sections: (a) Environmental Analysis: this includes a list of activities, an environmental analysis matrix, a descriptive list of identified impacts and typical mitigation measures; and (b) Environmental Assessment: this indicates the studies and activities that the project proponents must carry out for predicting and evaluating impacts identified through environmental analysis. Guidance is provided for the following sectors: transportation infrastructure; basic sanitation; energy projects (including hydropower, thermoelectric stations, substations and networks); urban planning; urban cleaning; and food industries.

Contact: SEMTA, c Alfredo Arruna 2675, Telf 360042, Casilla 15041, La Paz, Bolivia.

Brazil

Fowler, H. G. & Dias de Aduiar, A. M. (1993). **Environmental Impact Assessment in Brazil.** *Environmental Impact Assessment, (13), 169-176.*

Government of Brazil (1993). **Manual de Procedimentos de Avaliçäo de Impacto Ambiental (Manual of Procedures for Environmental Impact Assessment).** *Special Secretariat for the Environment (SEMA) and the State Foundation for Engineering and the Environment (FEEMA), Brasilia. (350 pp.)*

Contact: Special Secretariat for the Environment, Superintendencia do Recursos Hidricos e Meio Ambiente, Rua Engenheiros Rebouças 1206, 80215-100 Curitiba - PR - Brazil.

Government of Brazil (1990). **The Brazilian Power Sector's Environmental Master Plan. Summary.** *Ministry of Infrastructure/National Secretariat of Energy/Centrais Electricas Brasilieiras S.A. - ELECTROBRAS, Rio de Janeiro. (72 pp.)*

Contact: Ministry of Infrastructure/National Secretariat of Energy/Centrais Electricas Brasilieiras S.A. - ELECTROBRAS. Rio de Janeiro.

Govt. of the State of Sao Paulo (1992). **Environmental Impact Assessment Orientation Manual.** *Secretariat for the Environment, Sao Paulo. (39 pp.)*

This Orientation Manual comprises the Resolution of the National Council for the Environment (CONAMA) related to EIAs and Environmental Impact Reports (EORs); and the basic guidelines for preparation of these assessments, as well as the technical and administrative procedures adopted by the Secretariat for the Environment (SMA) and by the State Council for the Environment (CONSEMA) in the jurisdiction of the State of Sao Paulo. The Manual also sets out the administrative procedures for EIA/EIRs in the State.

Contact: Secretario do Meio Ambiente, Rua Tabapua 81, 04533 Sao Paulo SP, Brazil.

Programa de Impactos Ambientais de Barragens (1993). **MAIA - Manual de Avaliacao de Impactos Ambientais (Environmental Impact Assessment Manual).** *Governo do Estados do Parana, Curitiba. (looseleaf).*

This is a very comprehensive handbook covering EIA of dams and hydropower projects. It was compiled under the framework of the Dams Environmental Impact Programme (PIAB) and developed by the Environment and Hydrological Resources Administration (SURHEMA) jointly with the German GTZ.

Although the manual is aimed specifically at projects in one sector, it contains enough information to be useful for other kinds of sectoral projects. It includes an introductory analysis of Brazilian environmental issues, sustainable development opportunities and future perspectives. Provincial and federal environmental policies and legislation are considered. EIA is analyzed with respect to selected Latin American countries (Argentina, Brazil, Colombia, Mexico, Peru and Venezuela). The document also considers the Parana State EIA procedures and approval mechanisms for activities which modify the environment. Techniques for the development of hydropower project studies and reports are detailed.

Contact: Dams Environmental Impact Programme, Rua Engenheiros Rebouças 1206, 80215-100 Curitiba. Parana, Brazil.

Chile

Comisión Nacional del Medio Ambiente (1993). **Instructivo Presidencial - Pauta para la Evaluacion del Impacto Ambiental de Proyectos de Inversion (Presidential Instructive - Guidelines for Environmental Assessment of Investment Projects).** *Comisión Nacional del Medio Ambiente, Santiago.*

Pisani, P., Espinoza, G. A. & Tanaka, K. (1993). **Evaluación de Impacto Ambiental: Nociones Básicas de Una Herramienta Para el Desarrollo Sustenable en Chile (Environmental Impact Assessment: Basic Concepts of a Tool for Chilean Sustainable Development).** *Comisión Nacional del Medio Ambiente, Santiago. (9 pp.)*

Contact: Comisión Nacional del Medio Ambiente, Avda Holanda 1515, Casilla 16362, Santiago 9, Chile.

Colombia

Interconexion Eléctrica SA (1991). **Manual de Etapas: Definición de Actividades Ambientales en las Etapas de un Proyectos Hidroeléctrico (Stages Manual: Definition of the Environmental Activities in the Stages of a Hydroelectric Project).** *Environment Office, Ministry of Mines and Energy, Medellin, Colombia. (29 pp.)*

Interconexion Electrica SA (1991). **Metodologia para la Evaluación Ambiental del Plan de Expansion del Sector Eléctrico Colombiano (Methodology for the Environmental Assessment of the Expansión Plan for the Colombian Electricity Sector).** *Environment Office, Ministry of Mines and Energy, Medellin, Colombia. (28 pp.)*

"Multi-objective analysis" techniques are used for the EIA of a range of electricity generation projects. This includes well defined biophysical and socioeconomic objectives, qualitative and quantitative indicators and their variables. The method, and the associated weighting factors, have been approved by the electricity sector companies in Colombia and have been tested using information from operating power plants. It is an original approach for environmental and socioeconomic assessment in Latin America.

Contact: Interconexion Eléctrica SA, Calle 12 sur No 18-168, Medellin. PO Box 8915/8762, Colombia.

Costa Rica

MIRENEM (undated). **Borrador de Guía de Estudio de Impacto Ambiental Para Explotacion de Cauces de Dominio Público (Draft Guide for Environmental Impact Studies of Public Watersheds).** *Comisión Gubernamental de Control y Evaluacion de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (8 pp.)*

MIRENEM (undated). **Guía Básica para la Elaboración de Estudios de Impacto Ambiental de Proyectos Urbanisticos (Basic Guide for the Conduct of Environmental Impact Assessment Studies for Urban Projects).** *Comision Gubernamental de Control y Evaluacion de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (3 pp.)*

MIRENEM (undated). **Guía Básica Para la Elaboración de Estudios de Impacto Ambiental Para Actividades Agricolas (Basic Guide for the Conduct of Environmental Impact Assessment Studies for Agricultural Activities).** *Comisión Interinstitucional de Evaluación y Control de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental de Proyectos Avicolas, Para Mas de 5000 Animales (Guide for the Conduct of Environmental Impact Assessment Studies for Aviculture Projects of more than 5000 Animals).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (3 pp.)*

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Actividad Industrial (Guide for the Conduct of Environmental Impact Assessment Studies for Industrial Activities).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos de Acuicultura en Refugios de Vida Silvestre y Humedales (Guide for the Conduct of Environmental Impact Assessment Studies for Aquaculture Projects in Wildlife Reserves and Wetlands).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (5 pp.)*

MIRENEM (undated). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos de Salinas en Refugios de Vida Silvestre y Humedales (Guide for the Conduct of Environmental Impact Assesment Studies for Saltland Projects in Wildlife Reserves and Wetlands).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (2 pp.)*

MIRENEM (1993). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para la Ejecución de Obras Públicas. Carreteras y Ferrocarriles (Guide for the Conduct of Environmental Impact Assessment Studies of Public Works. Roads and Railways).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (12 pp.)*

MIRENEM (1993). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para la Ejecución de Obras Públicas. Muelles (Guide for the Conduct of Environmental Impact Assessment Studies of Public Works. Ports).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (4 pp.)*

MIRENEM (1992). **Guía Para la Elaboración de Estudios de Impacto Ambiental Para Proyectos Turísticos (Guide for the Conduct of Environmental Impact Assessment Studies for Tourism Projects).** *Comisión Gubernamental de Control y Evaluación de Estudios de Impacto Ambiental, Ministerio de Recursos Naturales, Costa Rica. (9 pp.)*

This series of sectoral guides indicates relevant issues to be considered by project proponents for environmental impact studies. Each guide has similar structure, providing a general description of sectoral information needed for addressing the requirements of the "Governmental Commission for Environmental Impact Studies Control and Evaluation." An annex with "human health information" for environmental impact studies is included. The series provides general information to be considered for public works planning and execution.

Contact: Ministerio de Recursos Naturales. Apdo 10.104-1000, San José, Costa Rica.

Ecuador

Paez, J. C. (1991). **Introdución a los Métodos de Evaluación de Impactos Ambientales. Recomendaciones para los Gobiernos Seccionales del Ecuador** *(Introduction to Environmental Impact Assessment Methods. Recommendations for the Regional Governments of Ecuador). Fundación Natura - Programa de Asesoría Ambiental para la Region Andina, Quito. (55 pp.)*

This document discusses the importance of including EIA in development projects planned or carried out by Ecuadorian sectoral governmental organisations at municipal and provincial levels. It aims to raise awareness amongst public officials and technicians of the EIA process. Some recommended methodologies are described including review lists; cause-effect matrices (Leopold); mapping systems; and quantitative methods (Batelle). Advantages and disadvantages of the various methods are compared, and their applicability to projects in Ecuador is assessed.

Contact: Fundación Natura, Avda America 5653 y Voz Andes, Casilla 17-01-253, Quito, Ecuador.

Honduras

SEDA (1993). **Reglamento del Sistema Nacional de Evaluación de Impacto Ambiental** *(Rules for the National System of Environmental Impact Assessment). Secretaría de Estado en el Despacho del Ambiente, Honduras. (approx. 35 pp.)*

Contact: Secretaría de Estado en el Despacho del Ambiente, Apartado Postal T-250, Tegucigalpa, Honduras.

Mexico

Gobierno del Estado de Mexico (undated). **Dirección General de Normatividad, Reordenamiento e Impacto Ambiental (General Directive on Regulations, Realignment and Environmental Impact).** *Secretaría de Ecología, Mexico City. (Looseleaf)*

Contact: Secretaría de Ecología, Rio Elba 20, 16 Col Cuauhtemoc, 06500 Mexico DF, Mexico.

Pisanty-Levy, J. (1993). **Mexico's Environmental Impact Assessment Experience.** *Environmental Impact Assessment Review, (13), 267-272.*

■ NORTH AMERICA

Canada

Beanlands, G. E. & Duinker, P. N. (1983). **An Ecological Framework for Environmental Impact Assessment in Canada.** *Institute for Resource and Environmental Studies, Dalhousie University, in Cooperation with Federal Environmental Assessment Review Office, Ottawa. (132 pp.)*

Contact: Federal Environmental Assessment Review Office, 200 Sacre Coeur Blvd, Hull, Quebec, K1A 0H3, Canada.

Bond, W. K. (1992). **Wetland Evaluation Guide. Final Report of the Wetlands Are Not Wastelands Project.** *Issues Paper No. 1992 - 1. North American Wetlands Conservation Council (Canada), in partnership with Wildlife Habitat Canada, Ottawa. (121 pp.)*

Contact: North American Wetlands Conservation Council, Suite 200, 1750 Courtwood Crescent, Ottawa, Ontario K2C 2B5, Canada.

CEAA (1993). **A Guide to the Canadian Environmental Assessment Act.** *Draft. Canadian Environmental Assessment Agency, Hull, Quebec. (195 pp.)*

This document explains the legal framework for EA established by the Canadian government, and provides guidance for conducting environmental assessments of various project types. The text is written from a user's point of view, addressing what needs to be done, when it must be done and what decisions are required. The focus is on mandatory procedures, key steps, concepts and applications which are illustrated by examples. The handbook is divided into three parts: Part one is the Manager's Guide, presenting an overview of the EA process and summarising the responsibilities of the participants. Part two is the Practioner's Guide, reviewing the EA process in detail. It provides details on the procedures required to conduct EAs in compliance with the legislation. A set of appendices contain information on the key regulations and their relevance to practitioners. Part three is the Reference Guide with detailed guidance on topics relating to the federal EA process.

Contact: Canadian Environmental Assessment Agency, 200 Sacre Coeur Blvd, Hull, Quebec, K1A 0H3, Canada.

Duffy, P. J. B. (Ed.) (1986). **Initial Assessment Guide. Federal Environmental Assessment and Review Process.** *Federal Environmental Asessment Review Office, Ottawa, Ontario. (37 pp.)*

This guide, in French and English, provides initiating departments with procedural guidelines for the preliminary environmental assessment of proposals. Designed primarily for government officers responsible for assessing the environmental implications of projects, the guide gives advice on the Canadian laws associated with EIA and encourages better techniques and efficiency in initial assessment. The manual first outlines the mandate of the Canadian Federal Environmental Assessment Office, FEARO (which became the Canadian Environmental Assessment Agency in 1995), and the policy regarding environmental assessment, providing a general description of the review process. A detailed description of the

initial assessment phase, and how it fits into the full process, is covered in chapter two. The roles and responsibilities of all participants in initial assessment are then examined. A concluding section describes how to undertake an initial assessment. Appendices include a glossary, worksheets, sources and various forms which are required.

FEARO (1988). **Manual on Public Involvement in Environmental Assessment: Planning and Implementing Public Involvement Programs.** *Federal Environmental Assessment Review Office, Hull, Quebec. (260 pp.)*

This four part manual was prepared for use by departmental agencies of the Government of Canada. The manual was designed to guide senior managers in the development of public involvement programmes that may be needed as part of the environmental review process. The executive summary provides a rationale for public involvement and a brief overview of the public involvement planning process. Part One is designed to enable the upper management of governmental organisations to monitor current issues of public concern. Part Two focuses on the public involvement process, with numerous examples gained from experience around the world. It uses a step-by-step approach from the initial consultation, culminating in the final public involvement plan. Part Three examines the techniques involved in public consultation. Approaches for setting up effective public meetings, open houses, workshops and seminars are discussed. Various information feedback techniques, polls, interview and questionnaires, are also examined.

Contact: Canadian Environmental Assessment Agency, 200 Sacre Couer Blvd. Hull, Quebec, KIA 0H3, Canada.

Government of Newfoundland and Labrador (undated). **Environmental Assessment - A Guide to the Process.** *Environmental Assessment Division, Department of Environment and Lands, St Johns, Newfoundland, (34 pp.)*

Contact: Department of Environment and Lands, PO Box 4750, St Johns, Newfoundland, A1C 5T7, Canada.

Hydro-Quebec (undated). **Processes; Techniques and Tools; Specialized Methods. Environmental Assessment Method for Transmission Lines and Substations.** *Hydro-Quebec, Montreal. (21 pp.)*

Contact: Hydro-Quebec, 1010 Sainte Catherine East, Montreal H2L 2G3, Canada.

Le Groupe Viauinc **et al.** *(1993).* **Landscape Study Method for Transmission Line and Substation Projects - Condensed version.** *Prepared for Hydro-Quebec, Montreal. (26 pp. + appendices.)*

Contact: Hydro-Quebec, 1010 Sainte Catherine East, Montreal H2L 2G3, Canada.

United States

Adamus, P. R. (1983). **A Method for Wetland Functional Assessment: Vols I and II.** *US Department of Transport, Washington D.C. (Vol I, 176 pp.; Vol II, 134 pp.)*

Contact: National Technical Information Service, Springfield, VA 22161, USA.

Bass, R. E. & Herson, A. I. (1993). **Mastering NEPA: A Step-by-Step Approach.** *Solano Press Books, Point Arena, California. (233 pp.)*

The National Environmental Policy Act (NEPA) is the United States' broadest environmental law. It applies to all federal agencies and most of the agencies they manage and regulate

that affect the environment. It requires all agencies to disclose and consider the environmental impact of their proposed actions, through the preparation of an environmental impact statement (EIS). This guidebook provides users with a simplified framework for understanding NEPA and incorporating it into their agencies' day-to-day activities, helping them obtain maximum benefit from the environmental review process.
The first chapter provides background to NEPA, and the steps involved in its implementation. The following three chapters examine, in depth, the preparation of an EIS, from how to determine whether to prepare one to a detailed analysis of the required contents. The final two chapters cover NEPA's role in federal agency decision-making, and judicial review. Appendices include guidance on scoping, Council on Environmental Quality (CEQ) regulations and guidelines, and sources of information.

Contact: Solano Press, PO Box 773, California 95468, USA.

CEQ (1981) **Council on Environmental Quality Memorandum - Scoping Guidance.** *Council on Environmental Quality, Washington D.C. (19 pp.)*

CEQ (1992) **The Council on Environmental Quality Regulations Implementing the Procedural Provisions of the National Environmental Policy Act.** *Council on Environmental Quality, Washington D.C. (46 pp.)*

Contact: Council on Environmental Quality, 722 Jackson Place NW, Washington D.C. 20006, USA.

EPA (1993). **Sourcebook for the Environmental Assessment (EA) Process.** *United States Environmental Protection Agency, Washington D.C. (400 pp.)*

This sourcebook was developed in response to an increasing demand for information on the EA process in the United States by foreign governments, states and others. Although the sourcebook reflects the U.S. experience in implementing the National Environmental Policy Act (NEPA), the process described is widely applicable.

The focus is on project-level EA, and the sourcebook is organised around the major EA components, including scoping, assessment, decision-making and post-decision analysis. Each section contains a description of the activity followed by subsections describing the relevant needs, tools, issues, linkages and references. In addition, attachments to each section provide information that is often not widely available, e.g. internal reports, pertinent journal articles, etc.

The sourcebook is intended to be an easy-to-use reference manual. It is in a loose-leaf format, designed to facilitate frequent updating. A supplement is provided on diskettes.

Contact: United States Environmental Protection Agency, 401 M Street, SW, Washington D.C. 20460, USA.

Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (1994). **Guidelines and Principles for Social Impact Assessment.** *NOAA Technical Memorandum NMFS-F/SPO-16. U.S. Department of Commerce, Washington D.C. (29 pp.)*

This monograph presents the central principles of social impact assessment (SIA) and some operational guidelines for use by federal agencies. Social impacts are defined in terms of efforts to assess or estimate, in advance, the social consequences that are likely to follow from specific policy actions and specific government actions, particularly in the context of the US National Environmental Policy Act (NEPA) of 1969.

The document is the first systematic and interdisciplinary statement to offer guidelines and principles to assist government agencies and private sector interests in using SIA to make better decisions under NEPA. A broad overview on SIA is provided; focusing less on methodological details - although the basic steps in the SIA process are laid out - and more on the guidelines and principles for the preparation of technical and substantive SIA's within reasonable time and resource constraints.

Contact: International Association for Impact Assessment, PO Box 70, Belhaven NC 27810. USA.

Office of Planning and Research (1992). **California Environmental Quality Act - Statutes and Guidelines.** *Governor's Office of Planning and Research, Sacramento, California.*

Most proposals for physical development in California (USA) are subject to the provisions of the California Environmental Quality Act (CEQA). Some project proposals are also subject to the provisions of the National Environmental Protection Act (NEPA). Every development project which requires discretionary government approval, and which is not exempt from CEQA process, also requires the completion of an environmental review. This document aims to make the CEQA process more comprehensive to those who administer it, to those subject to it and to those for whose benefit it exists. It sets out the CEQA guidelines, providing additional information, background, explanations and interpretive material in discussion paragraphs after each section. Appendices contain reproductions of the forms and official notices used in the CEQA process. The final section of the book contains supplementary information, including reference materials, checklists, and a flow chart of the CEQA process.

Contact: California Environmental Protection Agency, 555 Capitol Mall, Suites 235 and 525, Sacramento, CA 95814, USA.

US Dept of Housing and Urban Development (1981). **Areawide Environmental Impact Assessment. A Guidebook.** *US Department of Housing and Urban Development, Washington D.C. (270 pp.)*

Contact: Department of Housing and Urban Development, 451 Seventh Street NW, Washington D.C. 20410, USA.

Agency Guidelines

Multilateral Development Banks
Bilateral Donor Agencies
United Nations Agencies
Intergovernmental Organisations
Non Governmental Organisations

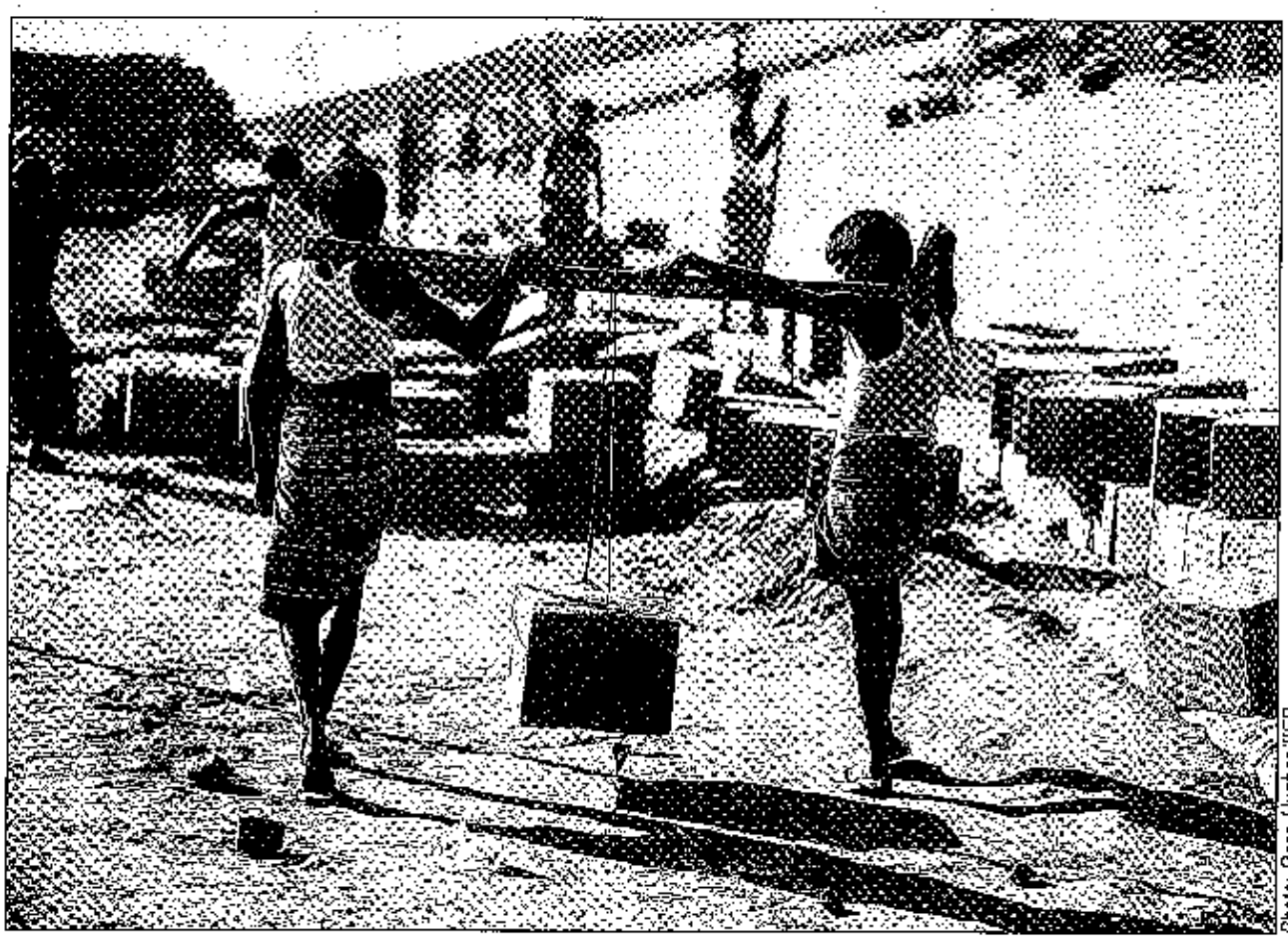

Photo: Ross Hughes/IIED

■ MULTILATERAL DEVELOPMENT BANKS

African Development Bank

ADB (1992). **Environmental Assessment Guidelines.** *African Development Bank and African Development Fund, Abidjan. (39 pp.)*

These guidelines aim to assist the implementation of the African Development Bank's Environmental Policy Paper (1990). They are intended primarily for the internal use of African Development Bank staff and officials of Regional Member Countries, as an aid for the screening of all ADB projects. The document combines EIA methods with administrative procedures with the aim of integrating EIA into project planning and decision-making.

The document comprises three sections. The first is introductory, providing explanations of various terms and steps in the project cycle. The second section consists of sectoral guidelines and includes a checklist for initial environmental assessment and project categorisation. The main sectors covered include: agriculture and rural development, industry and infrastructure, public utilities, and transportation. The last section outlines procedural environmental assessment guidelines for the various stages of the project cycle, for use within the Bank Group. Annexes provide suggested terms of reference, a format for EIA studies and a suggested outline of an EIA report.

Contact: African Development Bank, BP 1387, Abidjan 01, Cote d'Ivoire.

Asian Development Bank

AsDB (1994). **Handbook for Incorporation of Social Dimensions in Projects.** *Asian Development Bank, Manila. (105 pp.)*

This handbook, in four chapters, is a supplement to *Guidelines for Incorporation of Social Dimensions in Bank Operations* (1993) and provides detailed suggestions for incorporating social dimensions into projects. It presents an overview of the elements which are covered in a social analysis, describes a framework for application of this analysis, and provides guidance on conducting the analysis. Checklists are provided for 19 subsectors including forestry, water supply and sanitation, health and education, and development of small scale enterprises.

AsDB (1993). **Guidelines for Incorporation of Social Dimensions in Bank Operations.** *Asian Development Bank, Manila. (viii, 39 pp.)*

These guidelines supersede the 1991 *Guidelines for Social Analysis of Development Projects.* They aim to encourage the incorporation of social dimensions in the formulation of development strategies, in the translation of strategies into operational programmes, and in the design, implementation and evaluation of development programmes and projects.

The guidelines are for use by Bank staff, consultants, member countries and other practitioners, and provide an overall framework for the incorporation of social issues and associated processes in all the Bank's operations. Detailed instructions for incorporating specific social dimensions are provided in the companion volume *Handbook for Incorporation of Social Dimensions in Projects* (1994).

AsDB (1993). **Environmental Assessment Requirements and Environmental Review Procedures of the Asian Development Bank.** *Asian Development Bank, Manila. (43 pp.)*

AsDB (1991). **Environmental Considerations in Energy Development.** *Asian Development Bank, Manila.*

AsDB (1991). **Environmental Evaluation of Coastal Zone Projects: Methods and Approaches.** *ADB Environment Paper No. 8. Asian Development Bank, Manila. (ii, 72 pp.)*

The material in this paper supplements that provided in several previous AsDB documents: "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" (1987); "*Guidelines for Integrated Economic-cum-Environmental Development Planning*" (1988); and "*How to Assess Environmental Impacts of Tropical Islands and Coastal Areas*" (prepared by the East-West Centre, Hawaii, 1989).

Key features of selected coastal habitats are described for non-technical readers, followed by a fuller treatment of the potential impacts of development projects at the level of an initial environmental assessment (IEE). These are presented in the form of impact matrices covering three broad categories of projects: managed ecosystems (agriculture, wetland forestry, nearshore fisheries, arid aquaculture/mariculture); infrastructure (roads, ports and harbours, and residential urban development); and industry (location, design, construction and operations). Cross-sectoral impacts and interactions are also considered.

The document then applies the integrated planning approach (discussed in "*Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*" mentioned above) to coastal zone development. It discusses regional and local coastal resource *plans and gives country examples of coastal resource management approaches.* Appendices include an AsDB checklist for IEE of coastal zone projects and a list of organisations dealing with wetlands and coastal habitats in AsDB's developing member countries.

AsDB (1991). **Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects.** *Asian Development Bank, Manila. (iv, 115 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover industrial and power development projects, and infrastructure projects. The purpose of the guidelines is to enable Bank project staff to prepare an initial environmental assessment in order to incorporate environmental considerations into project design and implementation. The sectors considered are irrigation, fisheries/aquaculture, watershed development, coastal zone development, forestry and land clearance. For each sector, the required procedure for conducting the initial assessment is detailed with a checklist of environmental parameters to be considered, examples of mitigation measures and an outline for a full EIA. As in the other manuals, the final annex contains guidelines for all types of projects including resettlement, encroachment and noise abatement.

AsDB (1991). **Environmental Risk Assessment. Dealing with Uncertainty in Environmental Impact Assessment.** *ADB Environment Paper No. 7. Asian Development Bank, Manila. (vii, 182 pp.)*

This paper, prepared by the East-West Center, Honolulu, is one of a series published by the Asian Development Bank dealing with environmental and natural resources planning and management in the Asian and Pacific region. It is a training and reference document to help project managers in the Bank and in developing countries to apply environmental risk assessment (ERA) in decision-making. The document provides a good, though brief, account of ERA and its application.

The document comprises several parts, each designed for different uses. Part 1 presents the state-of-the-art (in 1990) of ERA and serves as a reference for understanding the procedures and guidelines in Part 2. The guidelines themselves are a stepwise approach to setting Terms of Reference for an ERA. The logic diagrams and checklists screen projects to select those which require ERA and to set the scope of the analysis. Part 3 comprises case examples that illustrate the guidelines.

AsDB (1991). **Guidelines for Social Analysis of Development Projects.** *Asian Development Bank, Manila (18 pp.)*

These guidelines have been prepared by the Asian Development Bank to equip Bank project staff to identify and assess the range of potential social impacts resulting from Bank-financed projects in any sector - agriculture, industry or infrastructure - and to design socially-sensitive projects which minimise or eliminate negative social impacts.

The main text of the document sets out the general principles of social analysis, at both macro and project levels, and then applies these at each stage of the project cycle. Comprehensive appendices are attached which deal with the specialised aspects of social analysis in different sectors and in greater procedural detail. The guidelines are also intended for use by NGOs, research institutes, bilateral and multilateral donor agencies.

AsDB (1990). **Environmental Guidelines for Selected Industrial and Power Development Projects.** *Asian Development Bank, Manila. (xiii, 154 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes in the series cover agricultural and natural resource development projects, and infrastructure projects.

The guidelines are designed for use by Bank project staff to enable them to incorporate environmental protection into the project preparation process. Their purpose is to assist Bank project staff to prepare an initial environmental assessment (IEE) for a proposed project. The annexes of the manual set out guidelines, checklists and report formats for the IEE for specific types of project. These include: dams, reservoirs and hydropower; thermal power development; industries; fertilizer; mining; cement manufacturing plants; power transmission lines; oil and gas distribution lines. The final annex provides guidelines relevant to all types of projects, covering issues such as resettlement, pollution control and monitoring.

AsDB (1990). **Environmental Guidelines for Selected Infrastructure Projects**. *Asian Development Bank, Manila. (xiv, 128 pp.)*

This manual is one of a series of three prepared by the Asian Development Bank for use by the Bank's project divisions. The other two volumes cover agricultural and natural resource development projects, and industrial and power development projects.

The guidelines are for use by Bank project staff, to enable them to prepare an initial environmental assessment (IEE) for a proposed project. Annexes set out guidelines, checklists and report formats for the IEE of specific project types: airports, highways and roads, ports and harbours, sewerage and excreta disposal, community water supply systems and urban development. As in the other manuals in the series, the final annex provides guidelines relevant to all types of projects, covering issues such as environmental standards and critical parameters.

AsDB (1990). **Integration of Environmental Considerations in the Program Cycle.** *ADB Environment Paper No. 5. Asian Development Bank, Manila. (21 pp.)*

AsDB (1988). **Guidelines for Integrated Regional Economics-cum-Environmental Development Planning: A Review of Regional Environmental Development Planning Studies in Asia. I: Guidelines. II: Case Studies.** *ADB Environment Paper No 3. Asian Development Bank. (xi, 125 pp. + case studies.)*

AsDB (1988). **Proceedings of Workshop on Economic-cum-Environmental Planning.** *Asian Development Bank, Manila. (approx. 125 pp.)*

AsDB (1988). **Training Workshop on Environmental Impact Assessment and Evaluation: Proceedings and Training Manual. Volumes I & II.** *Asian Development Bank, Manila. (402 & 388 pp.)*

AsDB (1987). **Guidelines for Assessing Socio-Cultural Impacts of Economic Development Projects.** *Asian Development Bank, Manila.*

AsDB (1987). **Handbook on the Use of Pesticides in the Asia-Pacific Region.** *Asian Development Bank, Manila. (294 pp.)*

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Birley, M. H., & Peralta, G. L. (1992). **Guidelines for the Health Impact Assessment of Development Projects.** *ADB Environment Paper No. 11. Asian Development Bank, Manila. (45 pp. + appendices)*

This is one of a series of documents produced by the Asian Development Bank describing tools for use in the field. It is aimed at a non technical audience and provides a methodological framework. The document guides readers to more detailed information in reading lists. This approach makes for a clear and succinct guide.

The main text contains five chapters describing health and its rationale for inclusion, types of health hazard, their identification, Initial Health Examination (IHE), and Health Impact Assessment (HIA). IHE aims to screen projects for health hazards as part of an Initial Environmental Examination (IEE). If projects pose a potential health risk a full HIA will be required. This involves three main tasks - the identification of the hazard, interpreting the health risk, and risk management. Stress is placed on the need for good collaboration between organisations and experts and on the need for community involvement.

Appendices outline the background to HIA and cover cross-boundary issues (e.g. malaria, nutrition, mobility, resettlement and construction) as well as sectoral impacts such as agriculture, energy, industry, mining, transport and communication, urban renewal, water supply and sanitation, and tourism.

Contact: Asian Development Bank, PO Box 789, 1099 Manila, Philippines.

Caribbean Development Bank

CDB (undated). **Procedures for Environmental Impact Assessment.** *Caribbean Development Bank, Barbados. (5 pp.)*

Contact: Caribbean Development Bank, PO Box 408, Wildey, St Michael, Barbados.

European Bank for Reconstruction and Development

EBRD (1992). **Environmental Procedures.** *European Bank for Reconstruction and Development, London. (iv, 52 pp. + annexes)*

The procedures are presented as guidelines for specific users - project teams and Bank environmental staff, and are organised into three sections. Part 1 comprises an overview, outlining the steps in the project cycle, the responsibilities of Bank staff and the relevant project documentation. Part 2 is a self-contained guide to the procedures for the team leader, and Part 3 provides a detailed set of guidelines for environmental staff. There are six annexes to

the document including guidelines for public participation, and standard report formats for EIA and environmental audit.

These procedures are for the use of Bank staff, to help ensure that projects are environmentally, financially, economically and legally sound. They aim to ensure that environmental implications (including costs) are taken into account throughout the project approval process, and to identify opportunities for environmental enhancement associated with the project.

Contact: European Bank for Reconstruction and Development, 1 Exchange Square, London EC2A 2EH UK.

EBRD (1994). **Investors' Environmental Guidelines.** *Graham and Trotman, London. (540 pp.)*

These guidelines are designed to clarify the environmental requirements in nine European countries: Bulgaria, the Czech and Slovak Republics, Estonia, Hungary, Latvia, Lithuania, Poland and Romania. For each country, an overview is provided covering the administrative structure, environmental legislation and other regulatory requirements. The EIA process is described and environmental requirements applicable to industrial and commercial facilities are presented for air emmisions, water use, noise, waste management, and use of chemicals. Annexes for each country detail key legislation, regulatory bodies, environmental standards and investment projects subject to EIA.

Contact: Graham and Trotman, Sterling House, 66 Wilton Road, London SW1V 1DE UK.

Inter-American Development Bank

IADB (1990). **Procedures for Classifying and Evaluating Environmental Impacts of Bank Operations.** *Inter-American Development Bank, Washington D.C. (5 pp.)*

These procedures formalise the established practice of the Environmental Management Committee to identify early those Bank operations that may have significant environmental impacts. Bank operations are classified according to their environmental impacts as follows: Category I - operations which are designed specifically to improve environmental quality and, in general, do not require an EIA; Category II - operations that have no direct or indirect environmental impact and, therefore, do not require an EIA; Category III - operations which may have a moderate impact on the environment and those that have recognised and well-defined solutions, usually requiring a preliminary EIA (in some cases with a full EIA for specific components); and Category IV - operations which may have significant negative impacts and require a full EIA.

IADB (1990). **Strategies and Procedures on Socio-Cultural Issues as related to the Environment.** *Environmental Committee, Inter-American Development Bank, Washington D.C. (8 pp.)*

Contact: Inter-American Development Bank, 1300 New York Avenue NW, Washington D.C. 20577, USA.

World Bank

Batstone, R., Smith, J. E. J. & Wilson, D. (Eds.) (1989). **The Safe Disposal of Hazardous Wastes: The Special Needs and Problems of Developing Countries. Volumes I-III.** *A joint study sponsored by the World Bank, the World Health Organization (WHO), and the United Nations Environment Programme (UNEP). World Bank Technical Paper No. 93. World Bank, Washington D.C. (823 pp.)*

Bradley, D., Stephens, C., Harpham, T. & Cairncross, S. (1992). **A Review of Environmental Health Impacts in Developing Country Cities.** *Urban Management Program Discussion Paper No. 6. World Bank, Washington D.C. (58 pp.)*

This paper has a number of aims: to produce a classification of environmental variables

relevant to urban health in developing countries; to propose an analytical framework for relating environmental variables to health; to review intra-urban differentials in mortality, morbidity and causes of death in developing countries with particular reference to vulnerable groups; to review the literature that attempts to link, causally, urban environmental conditions to health in developing counties; and to propose future related research.

The paper establishes that few good studies on intra-urban differentials in morbidity and mortality, and on linkages to environmental conditions, have been undertaken. It proposes the analysis of Demographic and Health Surveys (DHS) in three or four countries and the compilation of environmental health profiles for two cities, Accra in Ghana and Sao Paulo in Brazil. The analysis suggests that environmental components could be grouped according to whether they provide a resource, act as a hazard (from a health point of view), or form an ambience to which people have to adapt. A clearly laid out and thorough literature review is provided.

Cernea, M. M. (1988). **Involuntary Resettlement in Development Projects: Policy Guidelines in World Bank Financed Projects.** *World Bank Technical Paper No. 80. World Bank, Washington D.C. (vii, 88 pp.)*

This paper addresses policy issues and the operational implications of development projects that cause involuntary resettlement. It discusses general principles for resettlement as a planned change, with emphasis on government responsibility, involvement of resettlers in choosing from resettlement options, and prevention of adverse impacts on the host population and environment. The operational procedures described are tailored to each of the different stages of the project cycle.

The guidelines cover the following issues: types of projects causing involuntary resettlement, and ways of minimising it; the social nature of involuntary resettlement processes and lessons from past project experiences; general principles in approaching resettlement; policy objectives; resettlement plans; and environmental implications. Annexes contain technical checklists for preparing and appraising resettlement plans, and for monitoring and evaluating resettlement projects, as well as guidelines for the economic and financial analysis of project components addressing involuntary resettlement.

Cernea, M. M. (1991). **Socio-Economic and Cultural Approaches to Involuntary Population Resettlement.** *Reprint Series No. 468. World Bank, Washington D.C. (11pp.)*

Cointreau, S. J. (1982). **Environmental Management of Urban Solid Wastes in Developing Countries: A Project Guide for Urban Development.** *Urban Development Technical Paper No. 5. World Bank, Washington D.C. (214 pp.)*

Davis, J. D. & MacKnight, S. (1990). **Environmental Considerations for Port and Harbour Developments.** *Transport and the Environment Series No. 126. World Bank, Washington D.C. (x, 83 pp. + attachments)*

This paper was prepared in association with the International Maritime Organisation (IMO). It is aimed at both World Bank staff and borrowers - port authorities, port managers and engineers, and also government officials responsible for port and maritime activities. The introduction highlights environmental problems typically associated with port development. However, the paper is basically a checklist and intended primarily as an aide memoire for those responsible for port and harbour development. It discusses the range of topics that need to be considered, which ones are applicable in particular cases and where to find more information. More detailed information is included on how particular issues are normally

resolved, with guidance on information resources and assistance. Although the paper includes discussion on the disposal of dredged sediments, increasing regulatory constraints and environmental concerns with open-water disposal at sea led the World Bank to augment these discussions with an annex which addresses the various disposal options available.

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

Dixon, J. A., Talbot, L. M. & Le Moigne, G. J. M. (1989). **Dams and the Environment: Considerations in World Bank Projects.** *World Bank Technical Paper No. 110. World Bank, Washington D.C. (65 pp.)*

This paper explores the relationship between dams and the environment - both the effect of dams on the environment and the effect of the environment on dams, and the economic analysis of these effects. The paper reviews the environmental factors associated with large storage dams. Consideration is given to environmental effects that occur upstream, on-site and downstream. Examples provide lessons from completed projects and highlight the environmental issues associated with several proposed dams. The paper concludes with the World Bank's response to this issue.

Goodland, R. (1982). **Tribal Peoples and Economic Development: Human Ecologic Considerations.** *World Bank, Washington D.C. (111 pp.)*

Goodland, R. (1989). **The World Bank's New Policy on the Environmental Aspects of Dam and Reservoir Projects.** *Reprint Series No. 458. World Bank, Washington D.C. (26 pp.)*

Goodland, R., & Webb, M. (1987). **Management of Cultural Property in World Bank-Assisted Projects. Archaeological, Historical, Religious and Natural Unique Sites.** *Technical Paper No. 62. World Bank, Washington D.C. (102 pp.)*

Cultural property encompasses both remains left by previous human inhabitants (e.g. shrines and battlegrounds) and unique natural environmental features or 'wonders' (e.g. canyons and waterfalls). Around the world, irreplaceable cultural sites are damaged daily, particularly in areas rich in preserved cultural artefacts such as the Middle East. This is usually the consequence of construction activities related to large public works, such as dams and reservoirs, irrigation systems, transportation routes, mining and urban development. In many cases, the destruction is unnecessary, but cultural property is usually taken into consideration only at an advanced stage of the project planning process. In 1986, the World Bank adopted an official policy to help to preserve cultural property and seek to avoid its degradation in development projects that it finances.

This document reviews and codifies the Bank's experience with cultural property, mainly archaeological and historical sites, and outlines Bank policy and procedures for any future Bank-financed projects that may affect cultural property.The focus is primarily on tangible and immovable cultural property. This publication is also intended to raise awareness of cultural issues amongst Bank staff so that they can incorporate these policies and procedures in project design.

Grover, B. (1983). **Water Supply and Sanitation Project Preparation Handbook. Volume 1: Guidelines.** *World Bank Technical Paper No. 12. World Bank, Washington D.C. (171 pp.)*

Le Moigne, G., Barghouti, S. & Plusquellec, H. (1990). **Dam Safety and the Environment.** *World Bank Technical Paper No. 115. World Bank, Washington D.C.*

Listorti, J. A. (1990). **Environmental Health Components for Water Supply, Sanitation and Urban Projects.** *World Bank Technical Paper No. 121. World Bank, Washington D.C. (xii, 142 pp.)*

The Technical Papers series are published to "communicate the results of the Bank's work to the development community with the least possible delay". The stated objectives of this report are to act as a pragmatic guide for improving health to help identify where more extensive efforts are required, to alert appropriate health authorities, and to emphasise what health components can contribute. It is intended to indicate to project officers and borrowers how projects can achieve better outcomes at minimal cost, and also to encourage client governments to include environmental health components in their thinking.

Four chapters give background information, outline the rationale for an integrated approach to health, indicate a methodology, and provide detailed information on 26 widespread diseases. The report also contains 5 appendices. A lot of potentially useful information is jeopardised by poor presentation, a lack of clarity and convoluted language.

Meier, P. & Munasinghe, M. (1994). **Incorporating Environmental Concerns into Power Sector Decision-making. A Case Study of Sri Lanka.** *Environment Paper No. 6. World Bank, Washington D.C. (167 pp.)*

This case study shows how environmental concerns can be incorporated into the planning stage of power sector development. The techniques and procedures described are designed to complement existing approaches to environmental assessment that are now a routine part of project development.

The methodology presented uses techniques of multi-attribute analysis - a process which appraises alternatives with differing objectives and varied costs and benefits, often assessed in differing units of measurement. The problem of comparing different types of impacts is particularly acute in Sri Lanka, where the main power generation options - hydro and baseload thermal - have impacts that are totally different in character. The mitigation of power sector impacts also needs to be seen in the broader context of optimal resource allocation. In addition, power sector planning in Sri Lanka is undergoing fundamental policy changes.

In this study, the methodology is applied to the assesment of a wide range of policy alternatives, including renewable energy options (such as wind power) and clean coal technologies. Conclusions are presented in discussions of procedural issues (how current planning procedures should be modified to better incorporate environmental consideration), policy issues (such as criteria for setting environmental standards), and technology choice issues. The study also recommends further areas of research to complement the work.

Palange, R. C. & Zavala, A. (1987). **Water Pollution Control: Guidelines for Project Planning and Financing.** *World Bank Technical Paper No. 73 . World Bank, Washington D.C. (211 pp.)*

Shuval, H. I. et al. (1986). **Wastewater Irrigation in Developing Countries: Health Effects and Technical Solutions.** *UNDP Project Management Report No 6., World Bank Technical Paper No. 51, World Bank, Washington D.C. (xxxi, 324 pp.)*

This report provides information on wastewater re-use in irrigation together with the technological and public health impacts. It does not deal with the use of sludge or night soil in agriculture, nor with wastewater recycling in aquaculture. The report reviews existing litera-

ture, examines the costs and benefits of practices which would reduce health effects, and identifies and evaluates policy options. It establishes that the highest risk of the transmission of pathogens, infection and sickness arises from helminths, bacteria and viruses.

Technica Ltd. (1988). **Techniques for Assessing Industrial Hazards.** *World Bank, Washington D.C. (170 pp.)*

This manual was developed for use in assessing World Bank development proposals. It provides guidelines for the identification of the potential hazards of new or existing plants or processes in the chemical and energy industries, and for the assessment of the consequences of the release of toxic, flammable, or explosive materials to the atmosphere. The manual presents a structured, simplified approach for identifying the most serious potential hazards and for calculating their effect distances or damage ranges. It is intended for use by engineers and scientists with little or no experience of hazard analysis.

Hazard analysis is outlined in 14 steps with chapters covering: simplified models for calculating the consequences of a release; guidelines on presentation of results of the analysis; and suggestions for mitigation of effects. An appendix gives the "World Bank Guidelines on Identifying, Analysing and Controlling Major Hazard Installations in Developing Countries".

World Bank (1995). **Implementing Geographic Information Systems in Environmental Assessment.** *Environmental Assessment Sourcebook Update No. 9. The World Bank, Washington D.C. (8 pp.)*

World Bank (1994). **Privatization and Environmental Assessment: Issues and Approaches.** *Environmental Assessment Sourcebook Update No. 6. Environment Department, World Bank, Washington D.C. (8 pp.)*

World Bank (1994). **Coastal Zone Management and Environmental Assessment.** *Environmental Assessment Sourcebook Update No. 7. Environment Department, World Bank, Washington D.C. (8 pp.)*

World Bank (1994). **Cultural Heritage in Environmental Assessment.** *Environmental Assessment Sourcebook Update No. 8. World Bank, Washington D.C. (8 pp.)*

World Bank (1993). **The World Bank and Environmental Assessment : An Overview.** *Environmental Assessment Update No. 1. Environment Department, The World Bank, Washington D.C. (4 pp.)*

World Bank (1993). **Environmental Screening.** *Environmental Assessment Sourcebook Update No. 2. Environment Department, The World Bank, Washington D.C. (4 pp.)*

World Bank (1993). **Geographic Information Systems for Environmental Assessment and Review.** *Environmental Assessment Sourcebook Update No. 3. Environment Department, The World Bank, Washington D.C. (4 pp.)*

World Bank (1993). **Sectoral Environmental Assessment.** *Environmental Assessment Sourcebook Update No. 4. Environment Department, The World Bank, Washington D.C. (8 pp.)*

World Bank (1993). **Public Involvement in Environmental Assessment: Requirements, Oppportunities and Issues.** *Environmental Assessment Sourcebook Update No. 5. Environment Department, The World Bank, Washington D.C. (8 pp.)*

World Bank (1991). **Operational Directive 4.01: Environmental Assessment.** *World Bank, Washington D.C.*

World Bank (1991). **Country Capacity to Conduct Environmental Assessments in Sub-Saharan Africa.** *Environmental Assessment Working Paper No. 1. Environment Division, Africa Region, World Bank, Washington D.C. (92 pp.)*

World Bank (1991). **Environmental Assessment Sourcebook,** Volumes I-III. *World Bank, Washington D.C.*

This sourcebook collects World Bank policies and procedures, guidelines, precedents and practices regarding the environment into a three volume set of documents (referenced separately below). It is a reference manual which contains the information needed to manage the process of EA according to the requirements of the Bank's Operational Directive on EA (OD 4.00 Annex A, October 1989). It is specifically designed to assist EA practitioners, project designers and Bank task managers, but will be of interest and value to environmentalists in general and to all those concerned with EA or involved in establishing EA guidelines. The sourcebook aims to assist task managers in their advisory responsibilities, through discussion of fundamental environmental considerations, summaries of relevant Bank policies, and analyses of other topics that affect project implementation (e.g. financial intermediary lending, community involvement, economic evaluation).

The contents have been organised to be individually accessible. The focus is on those operations with major potential for negative environmental impact, such as new infrastructure, dams and highways. Projects with relatively less negative potential, such as maintenance and rehabilitation, are not examined in detail. The updates issued to date are referenced separately below. The most up-to-date version is available electronically to those able to access the Bank's "All-in-One" electronic mail.

World Bank (1991). **Environmental Assessment Sourcebook, Vol I: Policies, Procedures and Cross-Sectoral Issues.** *World Bank Technical Paper No. 139. World Bank, Washington D.C. (xv, 227 pp.)*

Chapter 1 is recommended reading for those responsible for a Bank-supported project with potentially significant environmental impacts. It summarises Bank EA requirements and outlines the Bank's environmental review process - from project screening, at the time of identification, to post-completion evaluation. A number of 'boxes' illustrate different applications of EA in development activities. OD 4.00, Annex A is provided as an appendix with other Bank operational policy and procedural documents relevant to EA. Annex 1-3 offers a standard format for Terms of Reference for an EA.

Chapters 2 and 3 consider, respectively, ecological and socio-cultural issues which are likely to arise in EA. In contrast, Chapters 4, 5 and 6 deal with 'methods': economic evaluation; institutional strengthening; and sector and financial intermediary lending. Chapter 7 discusses the implications of OD 4.00, Annex A, with respect to community involvement and the role of NGOs.

World Bank (1991). **Environmental Assessment Sourcebook, Vol II: Sectoral Guidelines.** *World Bank Technical Paper No. 140. World Bank, Washington D.C. (282 pp.)*

Chapters 8 and 9 in this volume, and Chapter 10 in Volume 3, each outline general considerations pertaining to EA in the sector(s) covered and discuss particularly relevant topics. The topics are indicated in the contents and are cross-referenced throughout the sourcebook. The balance of each chapter covers specific types of projects chosen primarily because they have potentially significant environmental impacts. Project types are described briefly, potential impacts summarised and special issues noted. Possible alternatives to projects are outlined, and management and training needs discussed along with monitoring requirements. Each review provides a table of potential impacts and mitigatory measures. Sample terms of reference for the various project types are given.

Chapter 8 is concerned with agriculture and rural development with sections covering: management of agricultural production; integrated pest management and use of agrochemicals; agro-industry; dams and reservoirs; fisheries; flood protection; natural forest management; plantation development/reforestation; watershed development; irrigation and drainage; livestock and rangeland management; and rural roads.

Chapter 9 covers population, health and nutrition, transportation, urban development, water supply and sewerage. The following sections are included: public health and safety; environmental considerations for development projects in urban areas; roads and highways; inland navigation; port and harbour facilities; large-scale housing projects; solid waste collection and disposal systems; tourism development; water supply; and wastewater collection, treatment, reuse, and disposal systems.

World Bank (1991). **Environmental Assessment Sourcebook Vol III : Guidelines for Environmental Assessment of Energy and Industry Projects.** *World Bank Technical Paper No. 154. World Bank, Washington D.C. (xiii, 237 pp.)*

This volume comprises Chapter 10 of the World Bank's EA Sourcebook. It discusses energy and industry and includes 20 sections: industry hazard management; hazardous material management; plant siting and industrial estate development; electric power transmission systems; oil and gas pipelines; oil and gas development - offshore and onshore; hydroelectric projects; thermoelectric projects; financing nuclear power (options for the Bank); cement; chemical and petrochemical industry; fertilizers; food processing; small- and medium-scale industries; iron and steel manufacturing; nonferrous metals; petroleum refining; pulp, paper and timber processing; and mining and mineral processing.

World Bank (1990). **Operational Directive 4.30: Involuntary Resettlement.** *World Bank, Washington D.C.*

World Bank (1990). **Local Participation in Environmental Assessments of Projects.** *Environmental Assessment Working Paper No. 2. Environment Division, Africa Region, World Bank, Washington D.C. (11 pp.)*

The World Bank's Environmental Assessment Operational Directive (OD 4.00) calls for the involvement of affected groups and NGOs in project design and implementation, and particularly in the preparation of EA reports. It is recognised, however, that conditions for effective local participation vary significantly between regions of the developing world, between countries within a region, and even between different parts of the same country. These guidelines are thus intended to promote the most effective local participation possible in the context of the Africa region.

The guidelines were prepared to assist regional staff, consultants, and borrower staff in planning for local participation in project environmental assessments. They are intended to complement the instructions given in Operational Directive 4.00, Annex A, and the more extensive guidance provided in Chapter 7 of the Bank's *Environmental Assessment Sourcebook* (World Bank 1991). A short checklist for Task Managers follows the guidelines, a more detailed version of which may be found in Chapter 7 of the Sourcebook.

World Bank (1989). **Operational Directive 4.00 Annex B: Environmental Policy for Dam and Reservoir Projects.** *World Bank, Washington D.C.*

World Bank (1988). **Environmental Guidelines.** *World Bank, Washington D.C. (461 pp.)*

In the preface, this document is sub-titled "*Environmental Industrial Waste Control Guidelines*". As an integral part of its appraisal and supervision function, the World Bank is required to evaluate the adequacy and effectiveness of pollution control measures for projects involving industrial operations. These guidelines were first compiled in 1984, to cover the industries and pollutants most likely to be encountered in the Bank lending programme. They were reissued in 1988 with the caveat that their application must be adjusted to each specific situtation. Permissable pollutant levels are given which are considered achievable at reasonable costs by existing treatment and control technology. The guidelines cover 55 different industrial processes and various industries, including metals, food, chemicals, mining and paper.

World Bank (1988). **Occupational Health and Safety Guidelines.** *World Bank, Washington D.C. (230 pp.)*

World Bank (1985). **Environment, Health and Safety Guidelines for the Use of Hazardous Materials in Small and Medium Scale Industries**. *Office of Environmental and Social Affairs, World Bank, Washington D.C. (43 pp.)*

This document gives general guidelines for small- and medium-scale industries. It covers continuous emissions of hazardous materials and accidental releases, with incompatible hazardous wastes listed in an appendix. Apart from this detailed information, the document has general application with chapters covering: environment, workplace, transport, emergencies, first aid, training, safety and worker morale.

World Bank (1984). **Environmental Policies and Procedures of the World Bank**. *World Bank, Washington D.C.*

World Bank (1978). **Environmental Considerations for the Industrial Development Sector**. *World Bank, Washington D.C. (128 pp.)*

Contact: The World Bank, 1818 H Street NW, Washington D.C. 20433, USA.

■ BILATERAL DONOR AGENCIES

Australian International Development Assistance Bureau

AIDAB (1991). **Environmental Assessment for International Development Cooperation.** *Incorporating Environmental Screening Guidelines. Activity Guideline No. 1. Australian Government Publishing Service, Canberra. (32 pp.)*

This document supercedes the 1989 Activity Guideline, *Environmental Assessment of Official Development Assistance*. It is designed to simplify procedures and develop a clear assessment strategy to improve the environmental sensitivity of Australia's overseas aid programme.

The document describes the background to environmental assessment and the need for AIDAB procedures, and sets out the basic steps in the assessment process. Appendices include Environmental Screening Guidelines, presented in the form of a checklist of questions to be considered during the screening process. The OECD Environmental Checklist is also included, along with forms to assist the screening, review and monitoring of development projects. Guidelines to assist in the design and appraisal of specific development proposals are being prepared on a sectoral basis to supplement this publication.

AIDAB (1993). **Environmental Assessment Guidelines for Development Assistance Projects: Mining**. *PDR Branch Report No. 30. Australian International Development Assistance Bureau, Canberra. (32 pp.)*

AIDAB (1993). **Environmental Assessment Guidelines for Development Assistance Projects: Industry**. *PDR Branch Report No. 31. Australian International Development Assistance Bureau, Canberra. (44 pp.)*

Buckley, R. (1991). **A Handbook for Environmental Audit.** *Sector Report 1991 No. 1. Australian International Development Assistance Bureau, Canberra.*

Contact: Australian International Development Assistance Bureau, PO Box 887, Canberra. ACT 2601, Australia.

Bundesministerium fur Wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation)

BMZ (1987). **Environmental Effects of Development Cooperation Projects. Perspectives on Environmental Impact Assessment.** *Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn.*

BMZ (1989). **Categories Established by the Government of the Federal Republic of Germany for the Classification of Financial and Technical Cooperation Projects (Information Sheet).** *Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn. (2 pp.)*

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band 1 - Einfuhrung, Sektorubergreifende Planung, Infrastruktur (Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume 1 - Introduction, Sector Planning, Infrastructure).** *Vieweg/Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn. (591 pp.)*

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band II - Agrarwirtschaft, Bergbau/Energie, Industrie/Gewerbe (Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume II - Agrarian Economy, Mining/Energy, Industry/Trade).** *Vieweg/Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn. (734 pp.)*

BMZ (1993). **Umwelt-Handbuch: Arbeitsmaterialien zur Erfassung und Bewertung von Umweltwirkungen. Band III - Katalog umweltrelevanter Standards (Environment Handbook: Working Material for the Registration and Assessment of Environmental Effectiveness. Volume III - Catalogue of Standards Relevant to the Environment).** *Vieweg/Bundesministerium fur wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation), Eschborn. (743 pp.)*

Contact: BMZ, Freidrich-Ebert-Allee 114-116, D-5300 Bonn, Germany.

Canadian International Development Agency

CIDA (undated). **Guide for Proponents Preparing a Submission to CIDA: Integration of Environmental Considerations.** *Draft. Canadian Agency for International Development, Hull, Quebec. (31 pp.)*

CIDA (1994). **CIDA's Bilateral Project Approval Roadmap.** *Environmental Assessment and Compliance Division, Canadian International Development Agency, Hull, Quebec. (120 pp.)*

CIDA (1994). **CIDA's Procedural Guide for Environmental Assessment.** *Environmental Assessment and Compliance Division, Canadian International Development Agency, Hull, Quebec. (60 pp.)*

CIDA (1994). **Guide to Integrating Environmental Considerations into CIDA's Policies and Programs.** *Environmental Assessment and Compliance Division, Canadian International Development Agency, Hull, Quebec. (78 pp.)*

CIDA (1989). **La Procédure Interne d'Examen des Risques d'Impact sur l'Environnement (Internal Procedure for Examining the Risks of Impact on the Environment).** *Canadian International Development Agency, Directorate General for Natural Resources, Forestry Sector, Hull, Quebec.*

Contact: Canadian International Development Agency, 200 Promenade du Portage, Hull K1A 0G4, Quebec, Canada.

Danish International Development Agency

Danida (1994). **Environmental Assessment for Sustainable Development.** *Danish International Development Agency, Copenhagen. (37 pp.)*

This document describes Danida's environmental assessment procedures. It outlines the responsibilities and decisions appropriate to different stages of the project cycle, as defined in *Guidelines for Project Preparation* (Danida 1992). The aim of these guidelines is to examine the environmental effects (adverse and beneficial) of development projects and programmes, and to ensure that these effects are taken into account in an appropriate way at all stages of the project cycle. The primary target groups for the guidelines are embassy staff and country desk officers. In addition, they may be used by project proponents, government offi-

cials, consultants, representatives of NGOs and others involved with Danida in development projects or programmes.

The guidelines describe various environmental assessment techniques and procedures in a practical, user-friendly format. The presentation is in the form of a 'tool kit' for each stage in the assessment process, from initial screening to review. The tool kits include sector checklists, sample terms of reference, World Bank procedures, and suggestions of questions to be considered. Environmental assessment is described by these guidelines as ".. a management exercise involving some technical inputs, rather than a pure technical exercise involving management inputs".

Contact: Danida, 2 Asiatisk Plads, DK 1448 Copenhagen K, Denmark.

Directorate General for International Cooperation - The Netherlands

DGIS (1994). ***Gender Assessment Study: A Guide for Policy Staff.*** *Special Programme Women and Development, Directorate-General for International Cooperation (DGIS), Ministry of Foreign Affairs, The Hague.*

The purpose of this guide is to explain what a gender assessment study is, why and when it can be useful, and which methodologies can be used. The guide is intended to be used within the Netherlands' bilateral aid programme and is primarily intended for DGIS staff. It also provides useful information for other policy staff and development officers seeking to incorporate gender concerns in the planning of development projects. Chapter one of the guide sets the policy context for gender assessment. Chapter two describes the objectives of the study, and outlines the key features including its relationship to the project cycle. Chapter three describes the design and organisation of the study while the final chapter sets out a methodology. Annexes provide further information on reserach methods and techniques.

DGIS (1993). **Environmental Impact Assessment in Development Cooperation.** *Directorate-General for International Cooperation (DGIS), Ministry of Foreign Affairs, The Hague. (19 pp. plus annexes).*

This publication is intended to present a procedure for the initial environmental screening of development projects, not the complete EIA process. It contains information and some practical guidelines for the identification of impacts at the early stages of project development. The material is based partly on statements reports and recommendations of the World Bank, OECD and bilateral donors as well as on current policy documents of the Netherlands Ministry of Foreign Affairs. The document is intended for the use of embassy staff involved in the identification and appraisal of projects and programes, country desk officers, consultants and counterpart staff. The EIA process is described in general terms, with more specific details on the Netherlands project cycle process which stresses that EIA should be implemented at an early stage of project identification and is relevant for all phases of the project cycle. A procedure for initial screening of projects and programmes is described.

DGIS (1990). **Environmental Impact Assessment in Development Cooperation. A Practical Tool for Initial Screening of Development Projects and Programmes.** *Directorate-General for International Cooperation (DGIS), Ministry of Foreign Affairs, The Hague. (31pp.)*

DGIS (undated). ***Explanatory Notes on "Development Screening" of Project Assistance.*** *Directorate-General for International Cooperation (DGIS) Ministry of Foreign Affairs, The Hague. (56pp.)*

Contact: Directorate General for International Cooperation, Ministry of Foreign Affairs, PO Box 20061, 2500 EB The Hague, The Netherlands.

Finnish International Development Agency

FINNIDA (1989). **Guidelines for Environmental Impact Assessment in Development Assistance.** *Finnish International Development Agency, Helsinki. (Looseleaf).*

The guidelines are presented in two parts - general EIA guidelines and sectoral guidelines. The general guidelines set out the EIA procedure to be followed in FINNIDA-funded projects. A number of methodologies are introduced including checklists, matrices and models. The sectoral guidelines focus on the types of projects most important in FINNIDA's development assistance programme. The sectors covered are forestry and agriculture; human settlements and basic services development; transport; mining; electrification; fisheries and aquaculture. Within each sector, the main types of environmental problems and the potential negative impacts are considered, and mitigation measures suggested.

The guidelines are intended for use in FINNIDA's development assistance programme by project planners, administrators and implementing agencies, both in the recipient country and in Finland. The guidelines are designed for use by NGOs, commercial companies and multilateral agencies.

Contact: Finnish International Development Agency, Katajanokanlaituri 3, 00160 Helsinki, Finland.

Japanese International Cooperation Agency

JICA (1993). **Environmental Guideline for Fisheries.** *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

JICA (1993). **Environmental Guideline for Forestry Development.** *Japanese International Cooperation Agency, Tokyo. (172 pp.)*

JICA (1993). **Environmental Guideline for Industrial Development.** *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

JICA (1993). **Environmental Guideline for Mining Development.** *Japanese International Development Agency, Tokyo. (200 pp.)*

JICA (1993). **Environmental Guideline for Power Plant.** *Japanese International Cooperation Agency, Tokyo. (200 pp.)*

JICA (1992). **Environmental Guidelines for Infrastructure Projects.** *Japanese International Cooperation Agency, Tokyo. (533 pp.)*

This document includes guidelines for the following sectors: ports and harbours; airports; roads; railways; river and erosion control; solid waste management; sewerage; groundwater development; water supply; regional development; tourism development; transport development; and urban transportation development.

JICA (1992). **Environmental Guidelines on JICA Development Study for Agricultural and Rural Development Projects.** *Japanese International Cooperation Agency, Tokyo. (220 pp.)*

JICA (1990). **Environmental Guidelines for Dam Construction Projects.** *Japanese International Cooperation Agency, Tokyo. (72 pp.)*

Contact: Japanese International Cooperation Agency, PO Box 215, Mitsui Building, 2-1-1 Nishi-Shinjuki, Shinjuki-Ku, Tokyo 163-04, Japan.

Norwegian Agency for Development Cooperation

NORAD (1995). **Initial Environmental Assessment: Agriculture.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 1. Norwegian Agency for Development Cooperation, Oslo. (32 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). The booklet outlines the characteristics of agricultural projects, with specific reference to tropical agriculture, and briefly reviews the environmental impacts associated with such projects. These include impacts on air, climate, soil, water, ecosystems, natural and cultural landscapes. Attention is paid to the transmission of pests and diseases, impacts of the use of seeds and biotechnology, and changes in land use and their impacts on traditional lifestyles. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Animal Husbandry.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 2. Norwegian Agency for Development Cooperation, Oslo. (30 pp.)*

The booklet outlines the characteristics of animal husbandry projects and the potential environmental impacts of such projects. These include overgrazing and soil erosion, pollution of air, soil and water, disease and infection, and loss of genetic material. Specific impacts associated with livestock-based industries, such as tanneries and animal transportation, are also reviewed. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Forestry**. *Environmental Impact Assessment (EIA) of Development Aid Project No. 3. Norwegian Agency for Development Cooperation, Oslo. (28 pp.)*

The booklet outlines the characteristics of forestry projects and briefly reviews the potential impacts of such projects on the environment. These include impacts on water resources, climatic changes and erosion. Impacts on local communities are also reviewed, including health problems, and disruptions to traditional ways of life and utilisation of natural resources. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Water Supply, Wastewater, Irrigation.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 7. Norwegian Agency for Development Cooperation, Oslo. (33 pp.)*

The booklet outlines the characteristics of projects within water supply, wastewater management and irrigation, and briefly reviews the impacts of such projects on the physical and social environment. This includes over-exploitation of water resources, pollution and health problems. The specific impacts of dam construction and irrigation are also examined. Cultural and other potential impacts on local communities are briefly reviewed. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Transport.** *Environmental Impact Assessment (EIA) of Development Aid Projects No. 8. Norwegian Agency for Development Cooperation, Oslo. (35 pp.)*

The booklet outlines the characteristics of transport projects - road, sea, rail and air - and

briefly reviews the impacts of such projects on the natural and man-made environment. These include pollution of water, air and soil, barrier impacts, noise, accidents and other impacts on health. A brief section is included on land use changes and impacts on traditional lifestyles, and management of natural resources. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Industry and Energy**. *Environmental Impact Assessment (EIA) of Development Aid Projects No. 9. Norwegian Agency for Development Cooperation, Oslo. (36 pp.)*

The booklet outlines the characteristics of industry and energy projects and briefly reviews their impacts on the natural and man-made environment. These include impacts associated with the extraction of natural resources and with processing, and impacts caused by products. The physical and chemical working environment is briefly described and the problems of major accidents and accidental discharges are highlighted. The impacts on the landscape and visual environment are also examined. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1994). **Initial Environmental Assessment: Mining and Extraction of Sand and Gravel**. *Environmental Impact Assessment (EIA) of Development Aid Projects No. 10. Norwegian Agency for Development Cooperation, Oslo. (29 pp.)*

The booklet outlines the characteristics of mining and sand and gravel extraction projects, and briefly reviews the potential impacts of such projects on the natural and man-made environment. These include impacts on soil and water, on ecosystems, on landscape and cultural relics, and pollution and noise. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1992). **Initial Environmental Assessment: Aquaculture.** *Environmental Impact Assessment of Development Aid Projects No. 5. Norwegian Agency for Development Cooperation, Oslo. (23 pp.)*

The booklet outlines the characteristics of aquaculture projects, and briefly reviews their impacts on social systems, aquatic environments and existing production systems. These potential impacts include those associated with the introduction of new species, pollution and waste disposal, human health, traditional production systems, and increased demand for water and energy. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1992). **Initial Environmental Assessment: Waste Management.** *Environmental Impact Assessment of Development Aid Projects No. 11. Norwegian Agency for Development Cooperation, Oslo. (31 pp.)*

The booklet outlines the general characteristics of waste management projects, and briefly reviews the characteristics of the human and biophysical environment typically affected by these projects. There are sections covering informal waste collection systems, slums and affluent settlements, general socio-cultural systems, institutional constraints, and climate, soil, water and air. Various potential environmental impacts are outlined: pollution of air, water and soil; impacts on human health; the potential impacts of hazardous waste; impacts on traditional ways of life, local communities and existing production systems; and impacts on biodiversity. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1991). **Initial Environmental Assessment: Fisheries.** *Environmental Impact Assessment of Development Aid Projects No. 4. Norwegian Agency for Development Cooperation, Oslo. (21 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). It aims to assist project planners and desk officers to integrate environmental considerations into fisheries projects at an early stage in the planning process. The booklet provides a general description of marine and freshwater fisheries systems, and briefly reviews the possible direct and indirect impacts of fisheries development projects on these systems. The latter include over-exploitation of fish stocks, removal of non-target (bycatch) species, the impact of introduced species, pollution, waste disposal and various social impacts. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1990). **Initial Environmental Assessment: Hydropower Development.** *Environmental Impact Assessment of Development Aid Projects No. 6. Norwegian Agency for Development Cooperation, Oslo. (21 pp.)*

This booklet is one of a series presenting guidelines for initial assessment within the EIA system of the Norwegian Agency for Development Cooperation (NORAD). It aims to assist project planners and desk officers to integrate environmental considerations into hydropower development projects at an early stage in the planning process. The booklet outlines the characteristics of hydropower projects and briefly reviews the potential impacts of hydropower projects on the environment. These include potential impacts on climate, surface water flow, groundwater, nutrient dynamics and biodiversity. Social impacts are also considered, such as potential impacts on traditional land and water use systems and involuntary displacement. In addition, there is a brief discussion of health impacts and associated activities that may accompany hydropower development projects. The final section of the booklet includes a checklist to assist project planners to assess and evaluate potential impacts.

NORAD (1988). **Check Lists for Initial Screening of Projects. Environmental Impact Assessment (EIA) of Development Aid Projects.** *Norwegian Agency for Development Cooperation, Oslo. (29 pp.)*

This is the first of a series of booklets compiled to assist project planners and desk officers to integrate environmental considerations into various types of aid projects at an early stage in the planning process. This volume describes the role and scope of environmental impact assessment in development planning and provides an outline of the main components of the EIA process. The booklet also provides checklists for the initial screening of projects. These cover the following categories : agriculture; animal husbandry; forestry; fisheries; aquaculture; hydro-electric power; water supplies - irrigation; transport; industry; mining activities; waste treatment and disposal; development of densely populated or urban areas; and use of chemical pesticides.

Contact: Norwegian Agency for Development Cooperation, PO Box 8034 Oslo Dep, 0030 Oslo 1, Norway.

Overseas Economic Cooperation Fund

OECF (1989). **OECF Environmental Guidelines.** *Overseas Economic Cooperation Fund: Tokyo. (99 pp.)*

Contact: Takevashi Godo Bldg, 4-1 Otemachi 1- Chome, Chiyoda-Ku, Tokyo 100, Japan

Swedish International Development Authority

Freudenthal, S. & Narrowe, J. (1993). **Baseline Study Handbook. Focus on the Field (2nd ed.).** *Evaluation Unit, Swedish International Development Authority, Stockholm. (51 pp.)*

SIDA (1991). **Riktlinjer for Miljokonsekvensbedomningar i Bistandet (Guidelines for Environmental Impact Assessment).** *Swedish International Development Authority Stockholm. (39 pp.)*

Contact: Swedish International Development Authority, Birjir Jarsgatan 61, S10525 Stockholm, Sweden.

UK Overseas Development Administration

ODA (1993). **Social Development Handbook. A Guide to Social Issues in ODA Projects and Programmes.** *UK Overseas Development Administration, London. (93 pp.)*

This first edition supplements advice on how to address social issues described in ODA's Guide to Aid Procedures. Part 1 explains what is meant by social development and social issues, and can be used either as an introduction to the rest of the manual or as a stand-alone document. Part 2 summarises the basic questions for social impact assessment. This part of the handbook is designed for use by administrators and advisers during project identification and design, sector reviews and project appraisal.

Part 3 outlines the way in which social issues should be identified and addressed in ODA aid procedures, and this is expanded in Part 4 which examines social issues in various sectoral and non-sectoral aspects of ODA's work. Nine sectoral checklists are provided (primarily intended for use by professional advisers working in those sectors) to help identify and address social issues in projects. The final part of the handbook is also available as a separate document. It summarises ODA's approach to gender planning as a means of enhancing women's participation in development, providing examples of how to incorporate this approach into project design.

ODA (1992). **Manual of Environmental Appraisal (Second Edition).** *UK Overseas Development Administration, London. (iv, 146 pp.)*

The manual provides practical guidance to ODA staff to address environmental issues early in the project cycle. It comprises 9 sections. Sections 1 - 4 address broad environmental considerations and procedures relevant to ODA aid policy. Section 5 discusses ecosystems, with an emphasis on those which are particularly sensitive to change. Section 6 reviews potential environmental impacts for different project sectors: natural resources (agriculture, pesticides and fertilizers, forestry, fisheries, livestock, and irrigation); infrastructure, utilities and public works (dams and hydropower, road and rail, ports, harbours and coastal structures, airports, and thermal power); human settlements and urban development (including housing, water supply, sewerage, sanitation and waste disposal); industry and mining; and tourism. Section 8 includes outlines of selected practical methods for environmental appraisal and the final section gives details on managing EIAs, including commissioning, setting terms of reference, and monitoring and evaluation.

Contact: Overseas Development Administration, 94 Victoria Street, London SW1E 5JL UK.

United States Agency for International Development

Kenning Massa, A. (1992). **Planning and Production of Environmentally Sound Housing. Environmental Impact Assessment for Housing Development Projects.** *Office of Housing and Urban Programs Working Paper. United States Agency for International Development, Washington D.C. (71 pp.)*

Phelps, R. P. (1981). **Environmental Considerations in Aquaculture.** *International Center for Aquaculture, Auburn, Alabama. (97 pp.)*

This manual provides planners with a background to environmental issues associated with donor-funded aquaculture development. It is intended principally for use by United States Agency for International Development (AID) program staff. The document describes basic procedures and methods associated with aquaculture development, and reviews environ-

mental aspects of aquaculture. The latter include impacts on soils, hydrology, land use patterns, water quality, natural resources, air quality, and economic, social and cultural effects. A checklist of environmental effects is included and special considerations for brackish water aquaculture are discussed.

Tillman, R. (1981). **Environmental Guidelines for Irrigation.** *US Man and the Biosphere Program/ United States Agency for International Development, Washington D.C. (74 pp.)*

USAID (1980). **22 CFR 216 - Environmental Procedures.** *In AID Handbook 3 (US Government Federal Register). United States Agency for International Development, Washington D.C.*

USAID uses the guidelines/procedures laid out in "22 CFR 216 *Environmental Procedures*" for the majority of its projects. However, when a project has a direct significant impact on the environment of the United States (for example a project in Mexico along the US border) or on the global commons, USAID uses regulations/guidelines of the Council for Environmental Quality (CEQ) and the Environmental Protection Agency (EPA). USAID has resisted issuing formal guidelines that explain how to implement 22 CFR 216 because of the legal ramification that a US government agency may not change a Federal Regulation other than by a very lengthy and difficult formal amendment process. Issuing official guidelines on how to implement 22CFR 216 would be challenged in court.

Contact: United States Agency for International Development, 320 21st Street NW, Washington D.C. 20523, USA.

■ UNITED NATIONS AGENCIES

United Nations Development Programme

UNDP (1992). **Handbook and Guidelines for Environmental Management and Sustainable Development.** *United Nations Development Programme, New York. (72 pp.)*

This document comprises three main parts. Part I presents general concepts and ideas relevant to environmental management and sustainable development, setting out basic environmental information needed by a general development practitioner. Separate sections discuss: (a) policies, legislation, institution-building, and environmental management strategies; (b) economic development, conservation, socio-economic appraisal and economic analysis; (c) socio-economic development, basic needs, women, children and the workplace; and (d) population growth, the urban environment, industry, education and information, and community participation.

Part II consists of a set of operational guidelines to assist UNDP professionals to introduce the "environmental dimension" systematically into all UNDP technical co-operation activities. Sections cover: (a) environmental management steps (technical assistance, country programme cycle, project cycle), (b) environmental management tools (checklists, environmental overviews, screening, environmental management strategies), (c) integration of steps and tools, (d) appraisal of UNDP-sponsored activities, and (e) reducing environmental impact in UNDP offices.

Part III is a bibliography of selected environmental assessment and management guidelines covering: general references, agriculture, water, conservation/biodiversity, industry, chemicals and metals, planning, economics, and regional and national EA studies.

There are four annexes. The first discusses various techniques for environmental assessment and management. The use of particular techniques are not specifically recommended, but information is provided on existing alternatives. The other annexes provide an environmen-

tal overview of a sample UNDP country programme, and an overview and environmental management strategy for a sample project.

Contact: United Nations Development Programme, 1 United Nations Plaza, New York NY 100017, USA.

United Nations Environment Programme

Ahmad, Y. J. & Sammy, G. K. (1987). **Guidelines to Environmental Impact Assessment in Developing Countries.** *Regional Seas Reports and Studies No. 85. United Nations Environment Programme, Nairobi. (44 pp.)*

These guidelines were originally printed by Hodder and Stoughton in 1985. They have been reprinted by UNEP as part of its Regional Seas Programme. The authors explain the history of EIA in developed countries and how it has been adopted in the Third World. The first chapters explain the importance of EIA to developing countries. Subsequent chapters outline steps in EIA, from information gathering and analysis through to project monitoring. Common problems in EIA are illustrated and examples are provided of ways in which they have sometimes been solved.

An important instrument for environmental decision-making is cost-benefit analysis. Some of the problems that arise when this technique is used as a component of EIA, or as a separate exercise, are considered. The document also discusses the importance of fostering relationships between the various institutions that need to work together, to improve the use of EIA as a decision-making tool in developing countries. The book concludes with a perspective on the future of EIA in developing countries.

UNEP (1991). **Environmental Aspects of Selected Non-ferrous Metals Ore Mining.** *Technical Report Series No. 5. United Nations Environment Programme/International Labour Office, Geneva. (xvii, 116 pp.)*

Contact: United Nations Environment Programme, PO Box 30552, Nairobi, Kenya.

UNEP (1990). **An Approach to Environmental Impact Assessment for Projects Affecting the Coastal and Marine Environment.** *Regional Seas Reports and Studies. United Nations Environment Programme, Nairobi. (35 pp.)*

This document provides simple procedures and guidelines for the preparation of EIAs in the context of regional agreements on the protection of the marine environment, adopted in support of UNEP's Regional Seas Programme. The approach is limited to a narrowly defined, practical and easily applicable EIA methodology for certain types of project: a marina, a tourist complex, and sewage treatment plants of different sizes. The document has been periodically revised on the basis of experience gained through the testing of the approach on case studies.

UNEP (1988). **Environmental Impact Assessment: Basic Procedures for Developing Countries.** *United Nations Environment Programme, Nairobi. (16 pp)*

UNEP (1982 -1990) **Environmental Management Guidelines Series.** *United Nations Environment Programme, Nairobi.*

Between 1982-1990, UNEP, in close consultation with various United Nations agencies prepared a series of twenty environmental operational guidelines, in order to assess and minimise the possible adverse environmental impacts of development activities. The first six guidelines were jointly financed by UNEP and UNDP. They were adopted by UNDP and

distributed to UNDP Resident Representatives. The remaining guidelines in the series were prepared by UNEP to cover important areas of emerging concern.

The guidelines are not intended to be prescriptions for corrective actions, or constraints on the methods, nature and scope of development activities. The measures outlined are meant to be illustrative rather than exhaustive in nature, and the overall aim is to draw attention to the kind of considerations that must be kept in mind in undertaking development activities. The guidelines with the most relevance to EIA are referenced separately below.

UNEP (1990). **Environmental Guidelines for Handling, Treatment and Disposal of Hazardous Wastes.** *UNEP Environmental Management Guidelines No. 18. United Nations Environment Programme, Nairobi. (36 pp.)*

Concern regarding the handling, treatment and disposal of hazardous wastes is growing. There is also an increasing need to develop appropriate hazardous waste management strategies. These guidelines provide a general definition of hazardous wastes, and outline the main issues to be considered in developing waste management strategies for minimising and containing adverse environmental impacts. They are designed to enhance awareness at the policy level regarding the need to consider a wide variety of handling and safety options, and are intended to serve as reference guidelines when developing a management plan.

UNEP (1990). **Environmental Guidelines for Fish Farming.** *UNEP Environmental Management Guidelines No. 19. United Nations Environment Programme, Nairobi. (52 pp.)*

These guidelines are intended to build awareness of the relationship between fish farming and the environment, and the factors that determine that relationship. The booklet discusses how the culture system used, the scale and intensity of operations, the species cultivated, the choice of site, and the management system adopted, all affect the incidence and severity of environmental impacts. It is stressed that most environmental impacts can be avoided by careful site selection and planning. Management measures aimed at mitigating impacts which may be overlooked, or which may be difficult to predict, are described.

UNEP (1990). **Environmental Guidelines for Sand and Gravel Extraction Projects.** *UNEP Environmental Management Guidelines No. 20. United Nations Environment Programme, Nairobi. (37 pp.)*

These guidelines have been developed to build awareness of the potential environmental impacts of sand and gravel extraction and to suggest ways in which the environmental degradation associated with the activity can be minimised. They draw attention to the fact that the environmental impacts of sand and gravel extraction are not always readily obvious and have long been under-estimated. The cumulative, far-reaching effects of numerous uncontrolled operations have contributed substantially to the degradation of river and coastal ecosystems.

UNEP (1988). **Environmental Guidelines for Domestic Water Management.** *UNEP Environmental Management Guidelines No. 14. United Nations Environment Programme, Nairobi. (29 pp.)*

In many countries, the provision of piped water has proceeded without sufficient consideration for the adequate treatment and disposal of resulting wastewater. Environmentally sound management of wastewater requires an understanding of the range of treatment, disposal and re-use options available. These guidelines are intended to generate awareness of the opportunities and constraints associated with these options, with particular emphasis on maximising the re-use potential of wastewater resources.

UNEP (1988). **Environmental Guidelines for Flood Plain Management.** *UNEP Environmental Management Guidelines No. 16. United Nations Environment Programme, Nairobi. (19 pp.)*

These guidelines are intended to help planners and administrators take environmental considerations into account in decisions concerning the development and management of flood plains. They provide basic background information on the nature and characteristics of floods, river flow across flood plains, and flood management.

UNEP (1988). **Environmental Guidelines for Coastal Protection Measures.** *UNEP Environmental Management Guidelines No. 17. United Nations Environment Programme, Nairobi. (18 pp.)*

Coastlines exist in a state of dynamic equilibrium, constantly adjusting in response to changing environmental parameters. Attempts have been made to stabilise coastal systems with artificial structures to protect property and infrastructure. Often, such protection structures have led to adverse environmental impacts. These guidelines aim to make the reader aware of the potentials for, and constraints of, alternative coastal protection measures.

UNEP (1986). **Environmental Guidelines for Afforestation Projects.** *UNEP Environmental Management Guidelines No. 9. United Nations Environment Programme, Nairobi.*

UNEP (1986). **Environmental Guidelines for Agricultural Mechanization.** *UNEP Environmental Management Guidelines, No. 10. United Nations Environment Programme, Nairobi. (x, 17 pp.)*

The adoption of mechanised techniques has had a dramatic effect on the environment. These guidelines are intended for the use of administrators and planners who are required to evaluate the costs and benefits of increased mechanisation in terms of real and potential environmental costs.

UNEP (1986). **Environmental Guidelines for Agroforestry.** *UNEP Environmental Management Guidelines Series No. 11. United Nations Environment Programme, Nairobi.*

UNEP (1982). **Environmental Guidelines for Pesticide Use on Industrial Crops.** *UNEP Environmental Management Guidelines No. 1. United Nations Environment Programme, Nairobi. (x, 9 pp.)*

Pest control is related directly to two of man's most pressing problems: the provision of food for expanding human populations, and the suppression of vectors of disease. New pesticides are being developed and introduced regularly. The rate of increase in production and consumption of pesticides is greatest amongst developing countries, in spite of a widening recognition of the disadvantages of excessive reliance on chemicals. These guidelines have been prepared to draw attention to the environmental problems that have been encountered in the use of pesticides with particular emphasis on "industrial crops" (those produced for trade rather than for local consumption).

UNEP (1982). **Environmental Guidelines for Watershed Development.** *UNEP Environmental Management Guidelines No. 3. United Nations Environment Programme, Nairobi. (x, 26 pp.)*

There can be many economic and development activities in watersheds, and the interactions between physical, biotic and socio-economic factors are very complex. Watershed management and development therefore requires an integrated approach to maximise the use of natural resources and to prevent adverse environmental effects.

These guidelines are limited to small and medium watersheds (up to approximately one million hectares) in mountain areas, and deal essentially with those aspects which are related to the management and development of forests: timber harvesting, afforestation, range management, agro-forestry, mountain roads, dams and reservoirs, river control, and resettlement of rural populations. Other economic activities, such as mining, have not been considered at this stage.The guidelines are primarily intended for administrators and planners who are required to make decisions at early stages of the project cycle. As such, they are directed at the "informed non-expert" and they are presented in a non-technical way, with environmental issues discussed in simple terms.

UNEP (1982). **Environmental Guidelines for Pulp and Paper Industry.** *UNEP Environmental Management Guidelines No. 4. United Nations Environment Programme, Nairobi. (x, 47 pp.)*

These operational guidelines give an overview of the major environmental concerns, parameters and constraints relating to the pulp industry, covering raw material preparation, pulping, manufacturing, and forest management practices. They also include a review of the technological trends in manufacturing processes and pollution control.

UNEP (1982). **Environmental Guidelines for Hides and Skins Industry.** *UNEP Environmental Management Guidelines No. 5. United Nations Environment Programme, Nairobi. (23 pp.)*

These guidelines give an overview of the major environmental problems of the hides, skins and leather industry, particularly tanneries. They focus primarily on the processing of cattle hides, sheep and pig skins. There is also a brief discussion of ante-mortem and post-mortem factors which have an impact on the quality of hides and skins.

UNEP (1982). **Environmental Guidelines for Coastal Tourism.** *UNEP Environmental Management Guidelines No. 6. United Nations Environment Programme, Nairobi. (x, 13 pp.)*

United Nations Educational, Scientific and Cultural Organisation

Godwin, R. B., Foxworthy, B. L. & Vladimirov, V. A. (1990). **Guidelines for Water Resource Assessments of River Basins.** *Technical Documents in Hydrology. International Hydrological Programme, United Nations Educational, Scientific and Cultural Organisation, Paris.*

UNEP/UNESCO (1987). **Methodological Guidelines for the Integrated Environmental Evaluation of Water Resources Development.** *United Nations Educational, Scientific and Cultural Organisation, Paris. (152 pp.)*

UNESCO (1988). **Water-Resource Assessment Activities. Handbook for National Evaluation.** *United Nations Educational, Scientific and Cultural Organisation/World Meteorological Organisation, Paris. (116 pp.)*

Contact: United Nations Educational, Scientific and Cultural Organisation, 7, Place de Fontenoy, F-75700 Paris, France.

United Nations Industrial Development Organisation

UNIDO (1990-1991) **Project Design Reference File Vol II: Guidelines for Environmental Appraisal.** *United Nations Industrial Development Organisation, Vienna.*

This file brings together a number of papers on environmental assessment, previously published as a series of separate guidelines for the Project Appraisal Section of UNIDO. They are technical guidelines covering different industrial sectors, and have the following objectives: (a) to provide guidance to Backstopping and AREA Officers in the introduction of

environmental considerations in the design and development of projects under the auspices of UNIDO; and (b) to help the Project Appraisal Section judge whether appropriate environmental measures have been included in the project in order to recommend whether or not the project should proceed as planned.

- **I. Environmental Appraisal of Category A Projects** *(1990) (27 pp.)*

  Category A Projects are defined as technical assistance projects with no capital implications, which produce no direct environmental impacts. The environmental appraisal of such projects therefore concentrates on environmental awareness and the development of technical and institutional capabilities.

  The guidelines are intended to be used by UNIDO officers as a checklist at the project formulation stage, and as an appraisal tool at the review stage. The initial appraisal of Category A projects is divided into three distinct assessments: the characteristics of the project - objectives and outputs; information on possible target institutions for technical assistance; and environmental actions (e.g training, information management, capacity building) to be included in the project. Tables are provided for each stage, with a backup section of 'annotations' providing the assessor with more detailed information where neccessary.

- **II. Environmental Appraisal of Category B Projects** *(1990) (19 pp.)*

  Category B Projects are defined as those with primary or secondary environmental impacts. The guidelines were designed to allow UNIDO officers to verify, at a glance, whether or not a project is environmentally sound and what can be done to improve it. They take the reader through the industrial process, highlighting the points where environmental impacts are likely to occur, the receptors that may be affected, and the measures to minimise the impact at each stage.

  UNIDO notes that, since environmental impacts of most industrial sectors can be identified readily, and since there is sufficient information available regarding clean practices and waste treatment and disposal, most assessments will be completed at the project formulation stage, and only exceptionally will a full EIA be required.

  The guidelines are presented in the form of tables which can be used for any type of capital project. However, in order to facilitate the appraisal of projects most frequently sponsored by UNIDO, a series of sector-specific guidelines have been developed covering the following:

- **IIIA. Tanneries and Leather Finishing Industries** *(1990) (28 pp.)*
- **IIIB. Iron and Steel** *(1990) (42 pp.)*
- **IIIC. Fertilizers** *(1990) (29 pp.)*
- **IIID. Food Agro-Industries** *(1991) (32 pp.)*

Each of these sectoral guidelines contains a description of unit processes and operations, working tables for environmental appraisal, annotations supporting the tables, a glossary and references.

Contact: United Nations Industrial Development Organisation, PO Box 200, A-1400 Vienna, Austria.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Agricultural Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii , 51 pp.)*

Economic and Social Commission for Asia and the Pacific

These guidelines were written to assist government agencies concerned with environmental protection in developing countries (specifically the Asia-Pacific region) in the planning and

execution of EIAs for agricultural development projects, in particular land clearance projects. A brief overview is given of the EIA process, as well as its application to agricultural development projects. Summaries of current EIA methodologies are provided and methodologies applicable to land clearing projects are recommended. Annexes provide project case studies and sample terms of reference. This document is one of a series of four. Other volumes cover industrial development, water resources and transport.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Industrial Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 61 pp.)*

These guidelines aim to assist government agencies concerned with environmental protection in developing countries in the planning and execution of EIAs for industrial development projects. They summarise general assessment methodologies, identify data collection and evaluation methodologies for assessing the quality and quantity of key parameters, and present the typical impacts and pathways relevant to industrial development projects based on literature references and case studies. Annexes provide sample terms of reference for industrial development EIA studies, and case studies of industrial development projects. This document is one in a series of four - the other volumes cover agriculture, transport and water resources.

Contact: Economic and Social Commission for Asia and the Pacific, United Nations Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Transport Development.** *ESCAP Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 99 pp.)*

Like other ESCAP guidelines, these summarise existing methodologies. The impacts and management requirements of the transport sector are discussed with reference to port and harbour projects, highways and roads, and airports. Annexes give sample terms of reference for these types of projects. Case studies are provided for different types of transport projects. This document is one of a series of four. The other three volumes cover water resources, agriculture and industrial development.

ESCAP (1990). **Environmental Impact Assessment Guidelines for Water Resource Development.** *Environment and Development Series. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (viii, 119 pp.)*

These guidelines are intended to assist government agencies in developing countries. They summarise general EIA methodologies, and discuss typical impacts related to water resources development, based on literature references and case studies. The guidelines are limited to fresh water resources including rivers, lakes and estuarine areas. Marine waters *per se* are not considered. The document is one in a series of four. The other volumes cover agriculture, transport, and industrial development.

Contact: Economic and Social Commission for Asia and the Pacific, UN Building, Rajdamnern Avenue, Bangkok 10200, Thailand.

Food and Agriculture Organisation

Barg, U. C. (1992). **Guidelines for the Promotion of Environmental Management of Coastal Aquaculture Development.** *Fisheries Technical Paper, No. 328. Food and Agriculture Organisation, Rome. (122 pp.)*

This document is aimed at aquaculture development specialists, coastal resource use planners and government officials involved in the planning and management of coastal aquaculture

development within the wider context of resource use in coastal areas. Guidelines are given for improved environmental management of coastal aquaculture based on an overview of selected published experiences. The potential adverse environmental effects of, and on, coastal aquaculture practices are outlined, and the main socio-economic and bio-physical factors are considered. Methodologies for the assessment and monitoring of environmental hazards and impacts of coastal aquaculture are presented. Finally, selected environmental management options are described for application both at policy-level and farm-level.

Contact: Food and Agriculture Organisation, Via Terme di Caracalla, I-00100 Rome, Italy.

Burbridge, P. R., Norgaard, R. B. & Hartshorn, G. S. (1988). **Environmental Guidelines for Resettlement Projects in the Humid Tropics.** *Environment and Energy Paper No. 9. Food and Agriculture Organisation, Rome. (vii, 67 pp.)*

FAO (1989). **Revised Guidelines on Environmental Criteria for the Registration of Pesticides.** *Food and Agriculture Organisation, Rome. (15 pp.)*

FAO (1984). **Cage and Pen Fish Farming: Carrying Capacity Models and Environmental Impact.** *Fisheries Technical Paper No. 255. Food and Agriculture Organisation, Rome. (131 pp.)*

Zimmerman, R. C. (1982, reprinted 1992). **Environmental Impact of Forestry. Guidelines for its Assessment in Developing Countries**. *Conservation Guide. Food and Agriculture Organisation, Rome. (85 pp.)*

Contact: Food and Agriculture Organisation, Via delle Terme Di Caracalla, 00100 Rome, Italy.

International Fund for Agricultural Development

IFAD (1987). **Monitoring and Evaluation of Irrigation Projects.** *International Fund for Agricultural Development, Rome. (67 pp.)*

IFAD (1984). **Guiding Principles for the Design and Use of Monitoring and Evaluation in Rural Development Projects and Programmes.** *United Nations ACC Task Force on Rural Development/ International Fund for Agricultural Development, Rome. (76 pp.)*

Contact: International Fund for Agricultural Development, 107 Via del Serafico, 00142, Rome.

World Health Organisation

Birley, M. H. (1991). **Guidelines for Forecasting the Vector-Borne Disease Implications of Water Resources Development.** *PEEM Guidelines Series No. 2. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (115 pp.)*

This paper outlines a methodology for rapidly assessing health risks associated with water development projects in the tropics or sub-tropics. It uses a minimum number of questions which should provide reasonably accurate answers, and assumes that local information will be available. Early involvement at the planning stage is advocated. Three main components are outlined: community vulnerability, environmental receptivity, and vigilance of health services.

The document outlines what to do, how to do it and who to involve, and provides background information on vector-borne diseases. It also contains a useful summary for non-health specialists, grouped into topics: geophysical; biotic - plants and animals; demographic and socio-cultural, infrastructure; and disease management by vector control. The guidelines are supplemented by references, worksheets, factsheets and pull out flow charts.

de Koning, H. W. (Ed.) (1987). **Setting Environmental Standards: Guidelines for Decision Making.** *World Health Organisation, Geneva. (98 pp.)*

Go, F. C. (1988). **Environmental Impact Assessment: Operational Cost Benefit Analysis. An EIA Guidance Document.** *MARC Report No. 42. Monitoring and Assessment Research Centre/ World Health Organization, London/Geneva. (60 pp.)*

Phillips, M., Mills, A. & Dye, C. (1993). **Guidelines for Cost-Effectiveness Analysis of Vector Control.** *PEEM Guidelines Series No. 3. Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (192 pp.)*

Cost is an important issue in selecting control methods for vector-borne diseases. This guide is aimed at health planners and managers of vector control programmes. It provides guidelines on the principles and methods of cost-effectiveness analysis and their application to the control of disease vectors. There are separate chapters on planning a cost-effective study, procedures for estimating the costs and the effectiveness of vector control, and data analysis and presentation. Two case studies are included: one from India concerning malaria control; the other examining schistosomiasis in Ghana. Five appendices give clear guidance on particular issues.

Sloan, W. M. (1993). **Site Selection for New Hazardous Waste Management Facilities.** *European Series No. 46. World Health Organization Europe, Copenhagen. (xiv, 118 pp.)*

Tiffen, M. (1991). **Guidelines for the Incorporation of Health Safeguards into Irrigation Projects Through Intersectoral Cooperation.** *PEEM Guidelines Series No. 1. Joint WHO/FAO/UNEP/ UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM), Geneva. (81 pp.)*

Turnbull, R. G. H. (Ed.) (1992). **Environmental and Health Impact Assessment of Development Projects. A Handbook for Practitioners.** *Prepared for the Centre for Environmental Planning and Management, Aberdeen, and the World Health Organisation, Geneva. Elsevier Applied Science, London. (xi, 282 pp.)*

This handbook is based on 29 papers which were written in 1987 and 1988 as part of a series of training seminars. Aimed at EIA and Environmental Health Impact Assessment (EHIA) practitioners, it assumes experience in environmental or public health, toxicology or ecotoxicology. Seven chapters outline EIA methods, highlighting health considerations which should be included. Health issues are outlined and incorporated into environmental and public health impact assessment. The handbook deals with effects on local inhabitants as well as workers, and emphasises the need to consider groups which may be more sensitive, such as the young, the elderly or women. Research needs are discussed and various case studies examine how health can be incorporated into EIA. These cover irrigation, water provision, industrial areas, and iron smelting, drawing on situations in Africa, Indonesia, Thailand, Turkey, Poland, Brazil and Italy.

WHO (1993). **WHO Consultation on the Development and Use of Environmental Health Indicators in the Management of Environmental Risks to Human Health.** *World Health Organisation, Geneva. (30 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Energy.** *World Health Organization, Geneva. (155 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Food and Agriculture.** *World Health Organization, Geneva. (191 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Industry.** *World Health Organization, Geneva. (219 pp.)*

WHO Commission on Health and Environment (1992). **Report of the Panel on Urbanization.** *World Health Organization, Geneva. (160 pp.)*

WHO/UNEP (1990). **Public Health Impact of Pesticides used in Agriculture.** *World Health Organization, Geneva. (128 pp.)*

This publication reviews current knowledge on the effects of pesticides on health. It is intended for use by national health officials responsible for pest management and by research workers in the epidemiology of pesticide poisoning. Individual chapters cover the production and use of pesticides, their toxic effects, short- and long-term health effects, sources and indicators, populations at risk, public health impact and prevention. It ends with proposals and recommendations.

WHO (1989). **Health Guidelines for Use of Wastewater in Agriculture and Aquaculture.** *Technical Report Series No. 778. World Health Organisation, Geneva. (74 pp.)*

WHO (1982). **Rapid Assessment of Sources of Air, Water and Land Pollution.** *Offset Publications No. 62. World Health Organisation, Geneva. (113 pp.)*

WHO (1974). **Health Aspects of Environmental Pollution Control: Planning and Implementation of National Programmes.** *Technical Report Series. World Health Organisation, Geneva. (57 pp.)*

WHO (1973). **Environmental and Health Monitoring in Occupational Health.** *Technical Report Series. World Health Organisation, Geneva. (48 pp.)*

Contact: World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.

Others

ERL (1990). **Environmental Assessment Procedures in the UN System.** *Environmental Resources Limited, London. (vii, 50 pp.)*

Contact: Environmental Resources Management, 8, Cavendish Square, London W1H 0ER UK.

UN/DTCD (1992). **Mining and the Environment. The Berlin Guidelines.** *A study based on an International Round Table in June 1991 organized by the Department of Technical Cooperation for Development, United Nations, and the Development Policy Forum of the German Foundation for International Development. Mining Journal Books, London. (xi, 180 pp.)*

Contact: Mining Journal Books, 60 Worship Street, London EC2A 2HD UK.

UNHCR (1994). **Interim Guidelines for Environment-Sensitive Management of Refugee Programmes.** *United Nations High Commission For Refugees, Geneva. (15 pp)*

Contact: United Nations High Commission for Refugees, CP-2500, CH 1211 Geneva 2 Depot, Switzerland.

■ INTER-GOVERNMENTAL ORGANISATIONS

European Community

CEC (1993). **Environmental Procedures and Methodology Governing Lome IV Development Cooperation Projects. User's Guide.** *Environment Manual. Commission of the European Communities, Directorate General for Development, Brussels. (loose leaf, includes 3.5" diskette)*

The guide sets out the recommended methodology for the initial screening of projects funded under Lome IV into three categories according to the potential significance of their environmental effects: Category A projects that are unlikely to have significant environmental impacts and require no EIA; Category B projects that have potential to cause some significant impacts and require a preliminary EIA; and Category C projects that are highly likely to have significant impacts, and therefore require a full EIA. A Preliminary Environmental Assessment methodology is set out, and sectoral checklists provided. The guide also describes a methodology to undertake a full EIA study. Later parts of the guide provide methodologies for the review and evaluation of EIAs, and for monitoring and project evaluation. A separate *Sectoral Environmental Assessment Sourcebook* (CEC, 1993) provides sector checklists for a full EIA study. This is supplied on diskette with the User's Guide.

This guide is a response to commitments on sustainable development and environmental protection in the Lome IV Convention. It is based on a number of similar texts, including the OECD Good Practices on Environmental Assessment, Community legislation, environmental assessment procedures of the Member States and the World Bank Operational Directives.

CEC (1993). **Sectoral Environmental Assessment Sourcebook.** *Environment Manual. Commission of the European Communities, Directorate-General for Development, Brussels. (415 pp.)*

This sourcebook is designed to support the environmental appraisal system established for the Lome IV Convention, laid out in an accompanying *Users Guide*. The Sourcebook is an edited compilation of existing environmental guidelines produced within the donor community. It has been designed to assist government authorities in Asian, Caribbean and Pacific (ACP) countries to prepare terms of reference (TOR) for an EIA, incorporate EIA into the TOR for a project or programme feasibility study, appraise the results of an EIA, and place monetary values on environmental impacts.

Part I is a guide to the economic valuation of environmental costs and benefits. Part II comprises sixteen sections, setting out guidelines for each sector within the Commission's development programme. The sectors covered are rural and urban water supply and sanitation; solid waste management; urban infrastructure development; transport infrastructure; ports and harbours; energy; agriculture; irrigation; forestry; fisheries and aquaculture; livestock; mining; industry; tourism; resettlement; pesticides and fertilisers. For each sector there is a checklist, intended to assist in the preparation of the TOR for an EIA, background notes to provide non-technical explanations of the key environmental issues in each sector, and references to existing environmental guidelines. The sector checklists and background notes are each divided into four sections - sources of impacts, receptors of impacts, significance of environmental impacts and mitigating measures. The final part of the document is a bibliography of cross-sectoral and miscellaneous environmental assessment guidelines.

CEC (1993). **Report from the Commission on the Implementation of Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment. Annex for the United Kingdom.** *COM (93) 28 final, Vol 12. Commission of the European Communities, Brussels.*

CEC (undated). **Etudes d'Impact sur l'Environnement Adaptées aux Ecosystemes Forestiers Tropicaux (EIA adapted for Tropical Forest Ecosystems)** *Vols I & II. Commission of the European Communities, Directorate-General XI, Brussels.*

Contact: Directorate General for Development, Commission of the European Communities, Rue de la Loi 200, B-1049 Brussels, Belgium.

Organisation of American States

OAS (1984). **Integrated Regional Development Planning: Guidelines and Case Studies from OAS Experience.** *Organization of American States, Washington D.C. (231 pp.)*

OAS (1991). **Primer on Natural Hazard Management in Integrated Regional Development Planning.** *Department of Regional Development and Environment, Organization of American States, Washington D.C. (320 pp.)*

OAS (1993). **Manual Sobre el Manejo de Peligros Naturales en la Planification para el Desarollo Regional Integrado (Manual for the Management of Natural Hazards for Integrated Regional Development Planning).** *Organization of American States, Washington D.C.*

Contact: Organization of American States, 17th St and Constitution Ave NW, Washington D.C. 20006, USA.

Organisation for Economic Cooperation and Development

CIDA (1994). **Towards Coherence in Environmental Assessment. Results of the Project on Coherence of Environmental Assessment for International Bilateral Aid.** *3 Vols . Draft Report Submitted to the OECD/DAC Working Party on Development Assistance and Environment. Canadian International Development Agency, Hull, Quebec. (Vol. I - 73 pp.; Vol. II - 13 pp. plus annexes; Vol III - 11 pp. plus annexes).*

Contact: Environmental Policy and Assessment Branch, Canadian International Development Agency, 200 Promenade du Portage, Hull, Quebec, Canada K1A 0G4.

OECD (1989). **Compendium of Environmental Exposure Assessment Methods for Chemicals.** *Environmental Monograph. Organisation for Economic Cooperation and Development, Paris. (305 pp.)*

OECD (1992). **Good Practices for Environmental Impact Assessment of Development Projects.** *Guidelines on Environment and Aid No. 1. Development Assistance Committee, Organisation for Economic Cooperation and Development, Paris. (17 pp.)*

The guidelines are designed for policy-makers and practitioners in donor agencies and developing countries. The first part of the document describes the basic purpose of EIA, and the second part goes on to set out a number of 'good practices' for the various steps in the EIA process. These guidelines are part of a series of four entitled "Guidelines on Environment and Aid."

OECD (1992). **Guidelines for Aid Agencies on Involuntary Displacement and Resettlement in Development Projects.** *Guidelines on Environment and Aid No. 3. Development Assistance Committee Organisation for Economic Cooperation and Development, Paris. (15 pp.)*

This document provides guidance on the basic elements to consider in preparing a resettlement action plan, how to involve the local community, and effective sequencing of steps in planning and implementation. The guidelines aim to ensure that project designers and implementors follow best practices so that people displaced by projects receive benefits from them, and are re-established on a sound productive basis.

This document is one of a series of Guidelines on Environment and Aid produced by the Development Assistance Committee (DAC) of the OECD. The guidelines are designed to help policy-makers and practitioners in developing countries and donor agencies prepare strategies to address serious national, regional and international environmental concerns.

Contact: Organisation for Economic Cooperation and Development, Development Cooperation Directorate. 2 rue Andre Pascal, Paris 75016, France.

OECD (1992). **Guiding Principles for Chemical Accident Prevention, Preparedness and Response.** *Environment Monograph No. 51. Organisation for Economic Cooperation and Development, Paris. (123 pp.)*

This monograph outlines issues important in the planning, construction, management, operation and review of safety of hazardous installations. There are sections on principles, actions to minimise adverse effects, community awareness, emergency planning, research and development, technology transfer, international investments, and aid programmes. A list of acronyms and glossary are included, and a key word index enables particular areas to be located quickly and easily.

Contact: Organisation for Economic Cooperation and Development, 2 rue Andre Pascal, F-75775 Paris, France.

Organisation of Eastern Caribbean States

OECS (1993). **Environmental Monitoring in the Eastern Caribbean.** *Regional Workshop Series 1.93.EM. Environmental & Coastal Resources Project, Organization of Eastern Caribbean States, St Lucia.*

Contact: Organization of Eastern Caribbean States, PO Box 371, Roseau, Dominica.

South Pacific Regional Environment Programme

Carpenter, R. A. & Maragos, J. E. (1989). **How to Assess Environmental Impacts on Tropical Islands and Coastal Areas.** *South Pacific Regional Environment Programme Training Manual. Environment and Policy Institute, East-West Center, Honolulu. (xiii, 345 pp.)*

This manual is a scientific training guide which recommends various techniques of EIA, whilst stressing the need to develop an individual approach towards each project. It's theme is the prediction of future environmental conditions resulting from economic development and technological change.

The manual explains how to design an EIA, and suggests key references to assist the practitioner undertake a full assessment. The document provides a framework for drawing up terms of reference for EIA consultants, and is also a useful standard for EIA reviews. It is a good desk reference work, providing definitions of common terms, examples of impacts and mitigative measures. Specific sectors covered include: agriculture, forestry, fisheries, tourism, energy, mining, waste management, construction, ports and harbours.

Contact: Environment and Policy Institute, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848 USA.

Morgan, R. K. (1993). **A Guide to Environmental Impact Assessment in the South Pacific.** *South Pacific Regional Environment Programme, Apia, Western Samoa. (51 pp.)*

Contact: South Pacific Regional Environment Programme, PO Box 240, Apia, Western Samoa.

The World Conservation Union (IUCN)

Dasmann, R. F. & Poore, D. (1979). **Ecological Guidelines for Balanced Land Use, Conservation, and Development in High Mountains.** *International Union for the Conservation of Nature and Natural Resources/United Nations Environment Programme/World Wildlife Fund, Gland, Switzerland. (viii, 40 pp.)*

Davidson, J. (1986). **Ecological Guidelines for Nature Conservation in an Area of Tropical Moist Forest Affected by Transmigration.** *International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (54 pp.)*

IUCN (1993). **Manual on Environmental Assessment for Sustainable Forest Development.** *A report prepared for the U.N. Food and Agriculture Organisation. The World Conservation Union (IUCN), Gland, Switzerland. (65 pp.)*

This manual was prepared as part of the Environmental Management in Forestry Development Project -- a project of the Forestry Department, Ministry of Lands, Irrigation and Mahaweli Development, Sri Lanka. It sets out guidelines for EIA applicable to natural forests and forest plantations in Sri Lanka. Part I describes the legal and administrative framework for EIA in Sri Lanka and introduces the process of environmental assessment. Part II examines the ways in which this might affect work within the forest sector. It introduces procedures to be adopted in the Forest Department to deal with the formal requirements of EIA, and to ensure that environmental considerations are taken into account at all levels - in the formulation of policy, in planning and in field operations.

IUCN (1993). **Oil and Gas Exploration and Production in Arctic and Subarctic Onshore Regions.** *The World Conservation Union (IUCN), Gland, Switzerland; with The Oil Industry International Exploration and Production Forum, London. (viii, 56 pp.)*

IUCN (1993). **Oil and Gas Exploration and Production in Mangrove Areas. Guidelines for Environmental Protection.** *The World Conservation Union (IUCN), Gland, Switzerland; with The Oil Industry International Exploration and Production Forum, London. (vii, 47 pp.)*

IUCN (1991). **EIA Guidelines for the Pakistan Energy Sector.** *Environmental and Urban Affairs Division, Government of Pakistan; and The World Conservation Union (IUCN), Gland, Switzerland. (42 pp.)*

These guidelines provide comprehensive information on EIA for the energy sector in Pakistan. They are intended for use in connection with a World Bank loan to Pakistan for energy sector projects, but also have general application.

The document is in two parts. Part 1 provides background information including an introduction to EIA, the legal requirement for EIA in Pakistan, a perspective on the Pakistan energy sector and the sensitivity of Pakistan's environment to disturbance by development projects. Part 2 includes a generalised procedure for the EIA of all energy sector projects except nuclear power proposals, gives guidance on the environmental issues associated with each specific type of energy sector development, and provides checklists of factors which need to be taken into account in their assessment.

IUCN (1991). **Oil Exploration in the Tropics. Guidelines for Environmental Protection.** *The World Conservation Union (IUCN), Gland, Switzerland. (vi, 30 pp.)*

IUCN (1990). **Environmental Impact Assessment Manual for In-Service Training.** *Government of Botswana/The World Conservation Union (IUCN), Gland, Switzerland. (loose leaf.)*

IUCN (1976). **Proceedings of an International Meeting on Ecological Guidelines for the Use of Natural Resources in the Middle East and South West Asia**, *held at Persepolis, Iran, 24-30 May 1975. IUCN Publications New Series No. 34. International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (231 pp.)*

IUCN (1974). **Proceedings of an International Meeting on the Use of Ecological Guidelines for Development in the American Humid Tropics**, *held at Caracas, Venezuela, 20-22 February 1974. IUCN Publications New Series No. 31. International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (249 pp.)*

IUCN (1974). **Proceedings of a Regional Meeting on the Use of Ecological Guidelines for Development in the Tropical Forest Areas of South East Asia**, *held at Bandung, Indonesia, 29 May to 1 June 1974. IUCN Publications New Series No. 32. International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (185 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

McEarchern, J. & Towle, E. L. (1974). **Ecological Guidelines for Island Development.** *IUCN Publications New Series No. 30. International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland. (65 pp.)*

National Planning Commission (1992). **National Environmental Impact Assessment Guidelines.** *National Planning Commission, HMG Nepal, Kathmandu; and The World Conservation Union (IUCN), Gland, Switzerland. (54 pp.)*

The need for EIA has been well recognised in Nepal but, to date, it has not been applied systematically. EIAs have been conducted for individual development projects, usually at the initiative of bilateral and multilateral donor agencies, according to their own procedures. These guidelines were prepared as a result of a collaborative project between the National Planning Commission and the World Conservation Union (IUCN), as part of a larger programme which also includes preparation of sectoral guidelines and the establishment of a formal system for the appraisal of all development projects.

The guidelines outline the steps of the EIA process from screening and initial environmental examination to evaluation, environmental impact auditing and public involvement. The aim is to ensure that EIA is incorporated in project planning and implementation processes, and that approaches are adapted to the existing administrative, institutional and political system of Nepal.

Contact: The World Conservation Union, Rue Mauverney 28, CH 1196 Gland, Switzerland.

Pernetta, J. C. & Elder, D. L. (1993). **Cross-sectoral, Integrated Coastal Area Planning (CICAP): Guidelines and Principles for Coastal Area Development.** *A Marine Conservation and Development Report. The World Conservation Union (IUCN); and World Wide Fund for Nature, Gland, Switzerland. (vii, 63 pp.)*

Contact: The World Conservation Union (IUCN), Rue Mauverney 28, CH 1196 Gland, Switzerland.

■ NON-GOVERNMENTAL ORGANISATIONS

Berwick, N. L. (1983). **Guidelines for the Analysis of Biophysical Impacts on Tropical Coastal Marine Resources.** *Centenary Seminar on Conservation in Developing Countries - Problems and Prospects. The Bombay Natural History Society, Bombay. (122 pp.)*

Contact: Conservation Systems, 102 Seventh Street N.E, Washington D.C. 20002, USA.

Bond, W. E. A. (1992). **Wetland Evaluation Guide. Final Report of the Wetlands Are Not Wastelands Project.** *Issues Paper No. 1992 - 1. North American Wetlands Conservation Council (Canada) in partnership with Wildlife Habitat Canada, Ottawa. (121 pp.)*

Contact: North American Wetlands Conservation Council, Suite 200, 1750 Courtwood Crescent, Ottawa, Ontario K2C 2B5, Canada.

CCA (1991). **Environmental Guidelines for Caribbean Planners** *Prepared for the Organisation of Eastern Caribbean States, United Nations Development Programme, and United Nations Centre for Human Settlements. Caribbean Conservation Association, St Michael, Barbados. (124 pp. plus annexes).*

This publication is the product of a major UNDP/UNCHS(Habitat) project designed to distil information about environmental assessment processes as they relate to the natural and man-made environment in the Eastern Caribbean. In these small islands, whose economies are generally linked to tourism, the question of how to manage the environment is of paramount importance. Yet very few planners in the islands have been exposed to the concepts of EIA.

These guidelines aim to provide practical and relatively simple analytical tools to enable environmental considerations to be incorporated in the project planning process at an early stage, and to permit the merging of environmental and socioeconomic considerations with the traditional physical planning process.

An introductory chapter outlines the basic steps in the EIA process. Guidance is then provided for each of the key sectors relevant to the Caribbean economy: agriculture and rural development, tourism, waste management, and coastal zone. Consideration is also given to the social and cultural dimension of EIA in the planning process, the existing regulatory framework and cost-benefit analysis. The document concludes with a number of case studies from different sectors - tourism, industry, mining and coastal zone management.

Contact: The Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

CCIC (undated). **Environmental Screening of NGO Development Projects.** *Canadian Council for International Co-operation, Ottawa.*

This series of booklets is prepared specifically for use by NGOs and the projects they support, but it is also relevant to project planning in general. They provide project planners and programme officers with guidances on the identification of potential negative environmental impacts, and on measures which might be used to reduce the scale of such impacts. The series includes accessible guides on the environmental impacts of different categories of small development projects. Each contains a list of relevant publications for future reading.

- **Introduction** *(23 pp.)*: defines basic terminology and outlines general considerations for evaluating the significance of impacts, data collection, screening and the integration of environmental considerations into development project planning. A framework for screening projects is also described.

- **Coastal ecosystems** (*25 pp.*): covers estuaries, mangroves and coral reefs, together with a generic discussion of environmental impacts of development projects on coastal ecosystems.

- **Pest control - Pesticides and Integrated Pest Management** (*31 pp.*): outlines the general effects of pesticides on ecosystems and human health, and provides a list of basic precautions for pesticide application. There is also a limited amount of technical information on selected pesticides and a checklist to guide practitioners. A summary description of Integrated Pest Management (IPM) is included.

- **Domestic Water Supply and Sanitation** (*27 pp.*): briefly covers environmental, social and health impacts of water supply and sanitation projects, with an emphasis on the latter. Also included is a brief discussion of water conservation (covering quality and quantity) and community participation in project planning and implementation.

- **Irrigation** (*25 pp.*): provides an outline of the environmental and health impacts of irrigation projects and a checklist for practitioners.

- **Small Dams/Reservoirs** (*25 pp.*): outlines environmental and health impacts of small dams and reservoirs, and discusses community participation and water conservation. A checklist for practitioners is also provided.

Contact: Canadian Council for International Co-operation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7.

CIRIA (1993). **Environmental Assessment - A Guide to the Identification, Evaluation and Mitigation of Environmental Issues in Construction Schemes.** *Pre-publication Draft. Construction Industry Research and Information Association, London. (iii, 270 pp.)*

This document is targetted at construction and environmental groups. It aims to raise awareness of the interaction between development schemes and their related activities, and the environment. It is stressed that, while most building and construction activities will lead to long-term benefits to communities and society as a whole, the location of these developments, and the way they are planned, designed, constructed and operated, can have environmental implications. Information is provided on the engineering and operational activities associated with a range of different development schemes, together with their likely environmental effects. Guidance is given on available techniques to identify the nature and extent of these effects, and on measures which are likely to avoid or minimise their impact with reference to case studies. Where appropriate, the document also describes opportunities for environmental enhancement.

The document is applicable to developments of all scales, irrespective of whether formal environmental assessment is required. It is aimed at a broad readership including government agencies, planning authorities, developers and environmental interest groups.

Contact: Construction Industry Research and Information Association, 6 Storeys Gate, London SW1P 3AU, UK.

Dangroup International (1990). **Guidelines for the Integration of Tourism Development and Environmental Protection in the South Pacific.** *Tourism Council of the South Pacific, Suva, Fiji. (102 pp.)*

Contact: Tourism Council of the South Pacific, GPO Box 13119, Suva, Fiji.

Geoghegan, T. (1983). **Guidelines for Integrated Marine Resource Management in the Eastern Caribbean.** *Caribbean Environment Technical Paper No. 2. Caribbean Conservation Association, St Michael, Barbados.*

Contact: Caribbean Conservation Association, Savannah Lodge, The Garrison, St Michael, Barbados.

Goldsmith, E. & Hildyard, N. (1984). **The Social and Environmental Effects of Large Dams. Volume 1: Overview.** *Wadebridge Ecological Centre, Camelford, England. (346 pp.)*

Contact: Wadebridge Ecological Centre, Worthyvale Manor, Camelford, Cornwall, PL32 9TT UK.

Howe, C. P., Claridge, G. F., Hughes, R. & Zuwendra (1991). **Manual of Guidelines for Scoping EIA in Tropical Wetlands.** *PHPA/AWB Sumatra Wetland Project Report, International Version. Asian Wetland Bureau, Indonesia; and Directorate General for Forest Protection and Nature Conservation, Department of Forestry, Bogor. (xvi, 261pp. + annexes)*

The manual is designed to assist in the identification of wetland benefits at a site before project plans are finalised, and to assess the potential impacts of development projects on these benefits. Originally developed for use in Indonesia, this 'internationalised' text will be of use for scoping development projects that may impact on tropical wetlands in general. The manual includes descriptions and diagrams of all recognised benefits provided by tropical wetlands, together with lists of the types of activities associated with development projects that may have impacts on such benefits. The manual is designed to assist users to determine potential impacts of particular projects on specific wetland types.

Howe, C. P., Claridge, G. F., Hughes, R. & Zuwendra (1991). **Manual of Guidelines for Scoping EIA in Indonesian Wetlands** *(Pedoman Pelingkupan Analisis Mengenai Dampak Lingkungan di Lahan Basah). PHPA/AWB Sumatra Wetland Project Report. Asian Wetland Bureau, Bogor. (315 pp.)*

This manual is intended to accompany *Manual of Guidelines for Scoping EIA in Tropical Wetlands* (Howe *et al.* 1991), and is prepared specifically for the Indonesian situtation. Copies are available in English and Bahasa Indonesian.

Contact: Asian Wetland Bureau-Indonesia, PO Box 254, Bogor 16001, Indonesia.

ITTO (1993). **Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests.** *Policy Development Series No.4. International Tropical Timber Organisation, Yokohama, Japan. (38 pp)*

ITTO (1992). **Criteria for the Measurement of Sustainable Tropical Forest Management.** *International Tropical Timber Organisation, Yokohama. (6 pp)*

ITTO (1990). **ITTO Guidelines for the Sustainable Management of Natural Forests.** *Technical Series No. 5. International Tropical Timber Organization: Yokohama, Japan. (18 pp.)*

Contact: International Tropical Timber Organization, Sangyo-Boeki Centre Building, 2 Yamashita-cho, Naka-ku, Yokohama 231, Japan.

Rees, C. (1990). **A Guide to Development in Urban and Coastal Areas.** *Asian Wetland Bureau, Kuala Lumpur, Malaysia. (79 pp.)*

This guide promotes the integration of environmental considerations in projects in urban and coastal environments as a basic procedure of good planning. It first describes in non-technical and graphic format, the function and structure of major natural systems in relation to planning for sound development. In the guidelines that follow, sketches are used to represent improper methods of development that often result in environmental problems, and to illustrate recommended, sound development practice. The guide is available in English, Thai and Indonesian language versions and is currently being translated into Cambodian and Vietnamese.

Contact: Asian Wetland Bureau, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

Part III
Notes for Users

Photo: Al Grillo/Still Pictures

How to Acquire Copies of the Guidelines

- Copies of documents should be obtained from source. IIED is **not** able to provide an information service.

- A note after each citation indicates where the document may be obtained. If consecutive citations are cited from the same agency, the note indicating availability is included **after the last citation** to avoid repetition.

- Journal articles can be obtained through standard procedures. These may vary from country to country.

- **Some commercially published documents may be expensive.** Users are advised to **check prices** with the publishers before ordering copies.

Useful Addresses

African Development Bank (ADB)
BP 1387
Abidjan 01
Côte d'Ivoire

Asian Development Bank (AsDB)
PO Box 789
1099 Manila
Philippines

Asian Wetland Bureau (AWB)
IPT - Institute of Advanced Studies
University of Malaya
Lembah Pantai
59100 Kuala Lumpur
Malaysia

Australian International Development Assistance Bureau (AIDAB)
PO Box 887
Canberra
ACT 2601
Australia

Bundesministerium für Wirtschaftliche Zusammenarbeit (BMZ)
Friedrich-Ebert-Allee 114-116
D-5300 Bonn
Germany

Canadian Council for International Co-operation (CCIC)
1 Nicholas Street
Suite 300
Ottawa
Ontario K1N 7B7

Canadian International Development Agency (CIDA)
200 Promenade du Portage
Hull K1A 0G4
Quebec
Canada

Caribbean Conservation Association (CCA)
Savannah Lodge
The Garrison
St Michael
Barbados

Caribbean Development Bank (CDB)
PO Box 408
Wildey
St Michael
Barbados

Commonwealth Secretariat
Marlborough House
Pall Mall
London SW1Y 5HX
UK

Danish International Development Assistance (DANIDA)
2 Asiatisk Plads
DK 1448 Copenhagen K
Denmark

Directorate General for International Cooperation - (DGIS)
Ministry of Foreign Affairs
PO Box 20061
2500 EB The Hague
Netherlands

Environment and Policy Institute
East-West Centre
1777 East-West Road
Honolulu
Hawaii 96848

European Bank for Reconstruction and Development (EBRD)
1 Exchange Square
London EC2A 2EH
UK

European Community
Rue de la Loi 200
B-1049 Brussels
Belgium

Finnish International Development Agency (FINNIDA)
Katajanokanlaituri 3
00160 Helsinki
Finland

Food and Agriculture Organisation (FAO)
Via Terme di Caracalla
I-00100 Rome
Italy

Institute of Environmental Assessment (IEA)
Fen Road
East Kirkby
Lincolnshire PE23 4DB
UK

Inter-American Development Bank (IADB)
1300 New York Avenue NW
Washington DC 20577
USA

International Fund for Agricultural Development (IFAD)
Via del Serafico 107
I-00142 Rome
Italy

International Tropical Timber Organisation (ITTO)
Sangyo-Boeki Centre Building
2 Yamashita-cho
Naka-ku
Yokahama 231
Japan

Norwegian Agency for Development Cooperation (NORAD)
PO Box 8034 Oslo Dep
0030 Oslo 1
Norway

Organisation for Economic Cooperation and Development (OECD)
2 Rue Andre Pascal
F-75775 Paris
France

Organisation of American States (OAS)
17th St and Constitution Ave NW
Washington D.C. 20006
USA

Organisation of Eastern Caribbean States (OECS)
PO Box 1383
Castries
St Lucia

South Pacific Regional Environment Programme (SPREP)
PO Box 240
Apia
Western Samoa

Swedish International Development Authority (SIDA)
Birjir Jarsgatan 61
S10525 Stockholm
Sweden

United Kingdom Overseas Development Administration (UK ODA)
94 Victoria Street
London SW1E 5JL
UK

United Nations Environment Programme (UNEP)
PO Box 30552
Nairobi
Kenya

United Nations Development Programme (UNDP)
1 United Nations Plaza
New York NY 100017
USA

United Nations Educational, Scientific and Cultural Organisation (UNESCO)
7, Place de Fontenoy
F-75700 Paris
France

United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
United Nations Building
Rajdamnern Avenue
Bangkok 10200
Thailand

United Nations High Commission for Refugees (UNHCR)
CP-2500, CH 1211
Geneva 2 Depot
Switzerland

United Nations Industrial Development Organisation (UNIDO)
PO Box 300
Vienna International Centre
A-1400 Vienna
Austria

US Agency for International Development (USAID)
320 21st Street NW
Washington DC 20523
USA

World Bank
1818 H Street NW
Washington DC 20433
USA

The World Conservation Union (IUCN)
Rue Mauverney 28
CH 1196 Gland
Switzerland

World Health Organisation (WHO)
20 Avenue Appia
CH-1211 Geneva 27
Switzerland

Impact Assessment Guidelines Update

This directory was produced as a result of a survey carried out in 1993-1994. We are aware that some of the guidelines listed may now be out of date or superceded. Additionally, new documents may have been published, or there may be omissions.

If you are aware of any guidelines that have not been included in the directory, or if you have published any yourself, please complete the tear-out form overleaf and return it to IIED with your name and address. Please provide **full details** of the document so that these may be included in the next edition. If possible enclose a copy of the document with the form so that it may be abstracted.

Completed forms should be sent to:

Impact Assessment Directory
The Environmental Planning Group
IIED
3, Endsleigh Street
London WC1H 0DD
United Kingdom

Tel: (+44 171) 388 2117
Fax: (+44 171) 388 2826
E-mail: iiedepg@gn.apc.org

*Please remember we are looking for **guidelines** only, not impact assessment reports, statements, legislation, etc.*

To: Impact Assessment Directory
The Environmental Planning Group
IIED
3, Endsleigh Street
London WC1H 0DD
United Kingdom

The document detailed below is not included/included but out of date (delete as appropriate) in the first edition of the directory.

FULL TITLE .....

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TRANSLATED TITLE .....

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SERIES / JOURNAL .....

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VOLUME / NUMBER .....

AUTHOR(S) .....

DATE ..... PAGES .....

PUBLISHER ..... CITY .....

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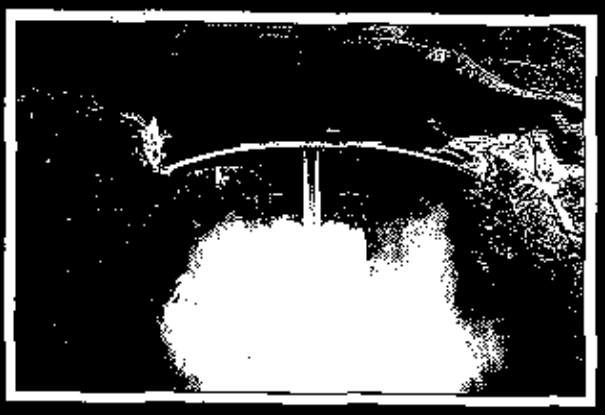

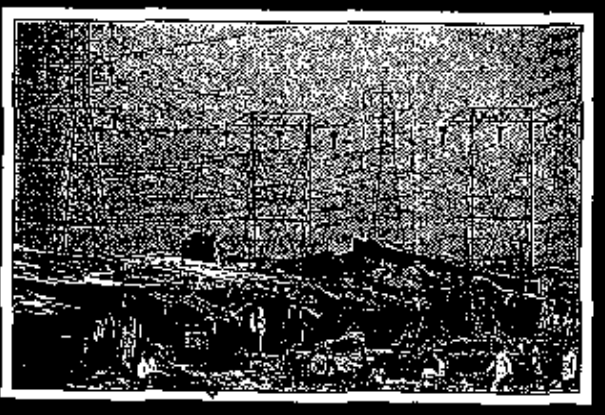

A Directory of Impact Assessment Guidelines

This directory includes guidelines for environmental, health and social impact assessment, drawing together documents from a wide range of sources including country governments, multilateral development banks, donor agencies, international organisations and NGOs. The directory is an invaluable source of information for anyone concerned with impact assessment in both developing and industrialised countries, from commercial consultants to government policy-makers. Over 450 documents are cited, with 150 abstracts, covering key sectors in every region of the world. This unique bibliographic reference work is the first of its kind and represents the results of an extensive survey conducted by the Environmental Planning Group of IIED.

The International Institute for Environment and Development

IIED is an independent, non-profit organisation which seeks to promote sustainable patterns of world development through research, services, training, policy studies, consensus-building and public information. Established in 1971, the Institute advises policy-makers and supports and collaborates with southern specialists and institutions working in similar areas.

IIED's work is undertaken with, or on behalf of, governments and international agencies, the academic community, foundations and non-governmental organisations, community groups and the people they represent.

The Environmental Planning Group (EPG) combines research on the mechanisms and "tools" for sustainable development planning and assessment, with the delivery of project services to donors and governments, giving institutional support to governmental and non-governmental organisations, and providing related information. EPG's work includes research on environmental assessment, strategies for sustainable development, wetlands and water management, community approaches to wildlife management, land use planning and the provision of information services.

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UK Overseas Development Administration (ODA), and
United Nations Environment Programme (UNEP).

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