



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

19225



**STRIVING FOR
ECOLOGICALLY
SUSTAINABLE
INDUSTRIAL
DEVELOPMENT**



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

To promote and accelerate industrialization in the developing countries, the General Assembly in 1966 created a body within the Secretariat called the United Nations Industrial Development Organization (UNIDO). In recognition of its importance to international development, UNIDO became a specialized agency of the United Nations system in 1986.

Industrial development is the key to a better life for the three quarters of the world's citizens who live in developing countries. The mandate of UNIDO is to promote such development by means of technical assistance, training, the exchange of information, the promotion of investment, national and regional planning and the transfer of technology. UNIDO has the distinct advantage of being able to draw on the joint strength of the public and private sectors to benefit both developing and developed countries. This broad resource base promises closer interaction with industry, which should make state-of-the-art expertise more readily available to the countries of the South.

Field projects have been one of the most conspicuous activities of UNIDO: well over 11,000 have been carried out in 160 countries, providing experts, equipment and fellowships that might not otherwise have been available to these countries. Many sectors are involved, including agro-based industries, engineering, metallurgy and chemicals. Total project approvals for 1990 amounted to \$US 162.7 million, covering over 732 projects. Funds for these projects came from the United Nations Development Programme (UNDP)/Indicative Planning Figure (IPF), 50 per cent; the Industrial Development Fund (IDF), 19 per cent; various trust funds, 18 per cent; and the UNIDO regular budget, including the Industrial Development Decade for Africa (IDDA), 5 per cent; UNDP/Special Industrial Services (SIS), 3 per cent; and other, 5 per cent.

UNIDO is represented in all developing countries by the UNDP Resident Representative/United Nations Resident Coordinator. In 38 countries, UNIDO has established Country Director offices. These offices also have responsibility for neighbouring countries, 124 countries in all. The UNIDO offices are staffed by a UNIDO Country Director and a Junior Professional Officer.

But UNIDO assistance goes beyond field projects. To support activities essential for developing a well-rounded industrial infrastructure, it offers Governments advice on economic planning, carefully integrated with social and environmental considerations. Training is supplied to build up local technical and managerial skills. Technology and know-how are made available to ensure that developing countries have access to up-to-date industrial methods adapted to their special needs.

Foreword

Twenty years ago, the Stockholm Conference on the Human Environment placed the environment issue on the world's agenda. Since then, considerable progress has been made in understanding the critical linkages and dynamic interaction between development and the environment. As the United Nations focal point for industrial development, UNIDO seeks to ensure that the industrial sector is given adequate attention when strategies governing the transition to sustainable development are formulated.

The concept of ecologically sustainable industrial development (ESID) has taken hold, and in implementing its new environmental programme, UNIDO has focused on applying this important concept to all its work. This booklet describes some of the more significant efforts of UNIDO to implement the ESID concept and to support the industrialization efforts of developing countries as they, too, seek to apply that concept. I trust it will provide useful information to member States and that it meets with an attentive and interested reception among those interested in the ways in which UNIDO is providing assistance to the developing countries as they embark on the critically important path of ecologically sustainable industrial development.

DOMINGO L. SLAZON, Jr.
Director-General

CONTENTS

	<i>Page</i>
Foreword	1
Explanatory notes.....	4
Introduction	5
 <i>Chapter</i>	
I. THE ENVIRONMENT PROGRAMME OF THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION.....	7
II. THE STAGES OF A PROJECT CYCLE	11
III. ENVIRONMENTAL GUIDANCE FOR PROJECTS.....	14
IV. THE ENVIRONMENTAL TRAINING OF STAFF.....	17
V. ENVIRONMENTAL COMPONENTS OF INFORMATION SYSTEMS.....	19
VI. COORDINATION WITH OTHER ORGANIZATIONS OF THE UNITED NATIONS SYSTEM.....	21
VII. FUTURE DIRECTIONS.....	24
 <i>Annex. Highlights of projects with environmental components</i>	 27

EXPLANATORY NOTES

The following acronyms are used in this booklet:

DOEM	Designated Officials for Environmental Matters
ESID	Ecologically Sustainable Industrial Development
FAO	Food and Agriculture Organization of the United Nations
IAEA	International Atomic Energy Agency
ICPIC	International Cleaner Production Information Clearinghouse
IDB	Industrial Development Board
IDDA	Industrial Development Decade for Africa
IDF	Industrial Development Fund
ILO	International Labour Organisation
INECA	Industrial Energy Conservation Abstracts
INTIB	Industrial and Technological Information Bank
IPF	Indicative Planning Figure
PPER	Project Performance Evaluation Report
REED	Referral Database on Energy and Environment
SIS	Special Industrial Services
SWMTEP	System-Wide Medium-Term Environment Programme
TIES	Technological Information Exchange System
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

Introduction

In recent decades there has been a growing recognition that economic development and environmental progress are inseparable. UNIDO fully appreciates this linkage and recognizes that "emphasis on one to the detriment of the other will, in the ultimate analysis, undermine the very foundations of socio-economic growth".*

This appreciation led UNIDO to embrace the concept of sustainable development, which was defined by the World Commission on Environment and Development as the idea that all nations should manage existing resources for the current generation without exhausting them for future generations. The idea presents a challenge for UNIDO. It envisages new patterns of industrialization that will increase economic development while efficiently utilizing both non-renewable and renewable resources and respecting the limits of the waste assimilative capacity of the biosphere. These new patterns will, of course, differ from country to country, depending upon the resource endowment and the stage of development.

Sustainable development requires a supportive policy framework. Complex and interrelated global issues such as trade, the transfer of technology and financial flows greatly influence national policy-making. In setting industrial development policies, due consideration must be given to the use of standards, regulations and legislation to promote the cleaner production activities crucial to the attainment of sustainable development.

Cleaner production addresses the problem of pollution by reducing wastes during the production process instead of dealing with them after they have been formed. It requires a shift in thinking, away from just the abatement of pollution towards its prevention altogether. The technology for cleaner production goes far beyond the technology for pollution abatement and waste disposal: it embraces inside-the-factory changes in the equipment, the process or even the product itself.

Because it takes the challenge of sustainable development so seriously, UNIDO has for some time been changing its approach. Specifically, it has been exploring how environmental considerations can be integrated into its day-to-day work. In many cases, improving the efficiency of material and energy inputs yields both economic and environmental benefits. UNIDO works not only to help countries gain access to new technologies on the best possible terms but also to promote research and development and to train personnel in these technologies, with the aim of increasing indigenous capacity and finding solutions suited to local needs. UNIDO recognizes the importance of the environment in all stages of a project cycle as well as in staff training and consultations.

This booklet explains how UNIDO is incorporating the sustainable development approach into its environment policies and programmes and how the approach is affecting its work at the programme, policy, and project levels. It is intended to inform member States and others interested in the progress UNIDO is making in addressing environmental issues.

*From comments made by the Director-General of UNIDO at GLOBE 90: Meeting on Global Opportunities for Business and the Environment, Vancouver, 19-23 March 1990.

I. The environment programme of the United Nations Industrial Development Organization

The Environment Co-ordination Unit

Resolutions adopted by the General Assembly and by the Industrial Development Board (IDB) of UNIDO reflect the increasing concern throughout the world and in the agencies of the United Nations system about environmental problems. In June 1990, the IDB, by its decision IDB.6/D.c.7, adopted a comprehensive environment programme for UNIDO.¹ The decision of the IDB was, in part, a response to the Environmental Perspective to the Year 2000 and Beyond (General Assembly resolution 42/186, annex) and to the report of the World Commission on Environment and Development, *Our Common Future*, which was warmly welcomed by the General Assembly in its resolution 42/187.

In July 1990, just one month after the IDB had adopted the environment programme for UNIDO, the Environment Co-ordination Unit was established within the Special Measures and Activities Division of the Department for Programme and Project Development. The Unit has a number of responsibilities, among them the following:

- To initiate, coordinate and manage the implementation of the environment programme;
- To translate into environmental policies and strategies the decisions and resolutions adopted by the policy-making bodies of UNIDO and other organizations, taking into consideration the needs and priorities of the developing countries.²

To ensure that all UNIDO projects and personnel address environmental considerations when appropriate, the Unit will coordinate the implementation of four subprogrammes.

The environment programme and its four subprogrammes

The environment programme of UNIDO seeks to ensure the environmental sustainability of industrial development and to maximize industry's beneficial impact by minimizing its adverse environmental effects.³ To achieve this goal, the programme was divided into four subprogrammes.

¹UNIDO, "Report of the Industrial Development Board on the work of its sixth session, 28 May-1 June 1990" (GC.4/2).

²UNIDO, *Annual Report of UNIDO 1990* (IDB.8/10), p. 70.

³UNIDO, "UNIDO policies and the Annual Report of the Director-General for 1989 on the activities of the Organization: environment activities" (IDB.6/3).

Subprogramme I aims to enhance, by means of training, the internal capacity of UNIDO in environmental matters. This involves not only the strengthening of in-house expertise but also the identification of regional and sectoral expertise on a given problem. Expertise will be built up by means of courses, seminars, the dissemination of information bulletins and the upgrading and expanding of information and data systems. The environmental capacity of UNIDO is also to be enhanced by the development of guidelines for incorporating environmental considerations into the design and implementation of projects. Tools are being developed to assess the impact of environmental protection and rehabilitation on investment and operating costs at the enterprise level.

Subprogramme II seeks to address the problem of insufficient experience in developing countries to address environmental degradation. The objectives are to raise the awareness of environmental issues and to enhance the capacity of developing countries in industry-related environmental impact assessments, the prevention of accidents and the development of environmental policies, standards and legislation. Under this subprogramme, UNIDO produces a variety of environmental, accident prevention and safety and health guidelines. It also supports projects that help the Governments of developing countries to establish policies, standards and legislation. UNIDO may also assist countries in such areas of policy as taxation, incentives, investment and industrial development.

Subprogramme III emphasizes the prevention of industrial pollution as distinct from the alleviation of its effects. Pollution is prevented by adopting cleaner technology that reduces or eliminates waste, that makes efficient use of energy or that features recycling or reuse. Activities under this subprogramme include the following: expanding rosters of experts and institutes, developing manuals, augmenting information systems on cleaner technologies, supporting technical advisory missions and assisting developing countries in the negotiation of contracts and the transfer of technology.

Subprogramme IV offers technical assistance for pollution abatement, which cannot be ignored, even if pollution prevention has a higher priority. There is still much to be done to improve the maintenance and operation of existing industrial plants and to upgrade them. Training on waste treatment and disposal must continue, and databases and technical manuals on all aspects of pollution abatement must be made available.

Environment activities in other parts of the Organization

Environmental considerations arise not only in field projects but also in virtually all aspects of UNIDO work. They are reflected in the work of the System of Consultations and in the programmes for investment, for technology promotion and for technology development.

System of Consultations

The System of Consultations is a forum that brings together representatives of Governments, industry and labour from North and South to exchange information on particular areas of industry. The aim is to establish production facilities in key industrial sectors, such as fertilizers, iron and steel and leather tanning.

Issues of environment and safety are discussed at the sectoral rather than the project level in the work of the System of Consultations. At the sectoral level, the discussions cover development policy in general; specific sectoral policies; choice of technology and alternative technologies; contractual arrangements and cost

implications. A number of recommendations on the environment have been adopted by sectoral Consultations, on the basis of which follow-up activities take place. For example, the First Consultation on the Electronics Industry, held at Valletta, Malta, in 1989, recommended that environmental standards should be incorporated into the design and structure of plants and that the necessary waste disposal infrastructure should be made available.

Industrial Investment Programme

The Industrial Investment Programme helps developing countries expand industrial production by promoting commercially oriented joint ventures between investors in those countries and foreign partners. The aim is to mobilize financial, technical and managerial resources. The Programme promotes contact between national investors in developing countries and foreign partners in other countries. These efforts are supported by the Industrial Investment Division at UNIDO headquarters and by a network of investment promotion services and industrial cooperation centres in 11 countries. National and regional investment promotion forums are also organized.

The Industrial Investment Programme helps enterprises in developing countries to identify investment projects and to prepare project profiles for submission to foreign partners. The guidelines for preparing a project profile call for a review of the environmental aspects of the project and an assessment of its ability to comply with the environmental standards of the country.

As an aid to identifying and formulating investment projects in developing countries, the Programme has published sector by sector information on how to start up manufacturing industries. This information is updated from time to time and new sections are added. A section on waste water and water purification is to be published shortly, and sections on technologies to combat air pollution and to treat waste are being prepared.

Industrial Technology Promotion Programme

The Industrial Technology Promotion Programme promotes cleaner, safer and energy-saving technologies. Projects initiated under this Programme range from clean technology for the steel industry in Latin America and Asia to a rehabilitation plan for water resources in an African country. Technical, scientific and managerial personnel from several developing countries are being helped to attend international training workshops, conferences and seminars on the latest strategies and technologies for the optimal management of industrial by-products and environmental resources. The Programme has issued a number of technical reports, including reports on the management of hazardous waste and on economic incentives for cleaner technologies.

Industrial Technology Development Programme

The Industrial Technology Development Programme focuses on generating an awareness of the potentials and implications of technological advances in biotechnology, solar energy, marine industrial technology and new materials as well as on building long-term capability in these fields. The Programme has promoted a Consultative Group on Solar Energy Research and Application, which seeks to stimulate solar energy research and application by bringing together institutions in developing countries and donor agencies. It is also promoting centres in the

Mediterranean and Caribbean regions for marine industrial technology, and the environment is being given particular attention, in regard to both its cleaning up and the equipment needed for this purpose.

Resources for implementing the environment programme

Funds for the staffing and coordination activities of the Environment Co-ordination Unit, which is only one part of the environment programme, come from a variety of sources, including redeployed regular budgetary resources.⁴ Other environment programme activities are supported by special-purpose contributions to the Industrial Development Fund (IDF). For example, a workshop on the treatment of waste water, for the Africa region, was financed by a contribution of the Swedish International Development Authority to IDF.⁵

Projects that are environmental in nature or that have an environmental component can be funded in a variety of ways. A number of countries have made special-purpose contributions for environmental work, while others have explicitly said that the environment is a priority for the projects they fund. In recent years, many countries, both donors and recipients, have emphasized the environment.

⁴*Ibid.*, p. 9.

II. The stages of a project cycle

UNIDO projects move through six stages.⁵ The figure depicts how environmental considerations are being integrated into these stages. Six UNIDO field projects that are of interest from an environmental standpoint are described in the annex.

Project identification

UNIDO projects begin in many different ways. Typically, a problem that affects the industrial development of a country or region is identified in a larger context, for example, in a country or sectoral study analysing a set of interrelated problems. Ideas for projects usually originate with a country's Government, but sometimes they are generated by field or headquarters staff of UNIDO, UNDP or other United Nations organizations, in consultation with a country's representatives.

Environmental considerations are most easily incorporated at the identification stage, and doing so can save considerable time later on. Guidance materials are available to help officers explore the environmental implications of a project idea. These materials include the Guidelines for Environmental Appraisal.⁶

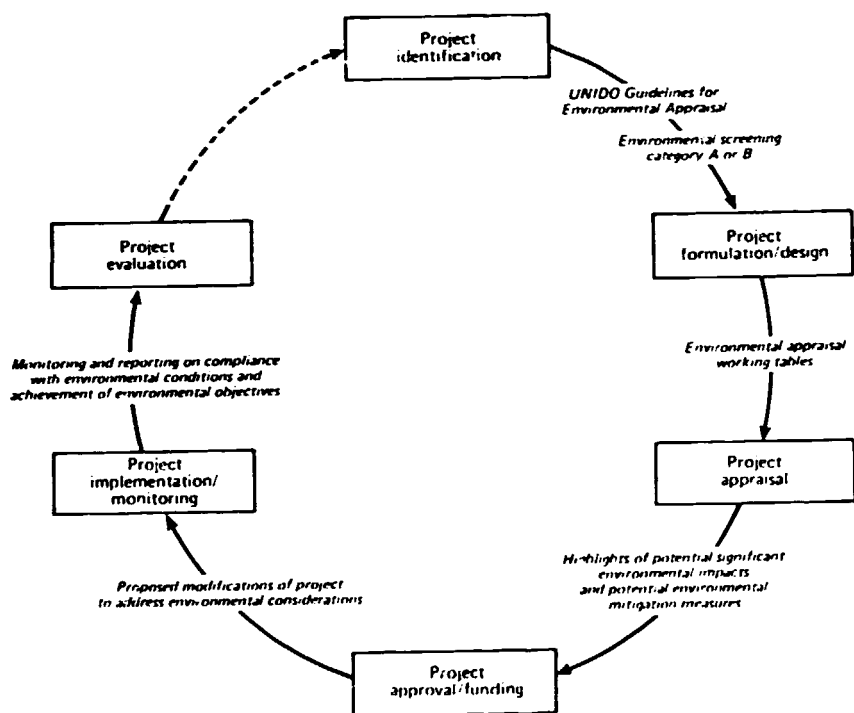
Project formulation/design

Once a project has been identified, background information is collected and analysed, the project idea is clarified and the project document is drafted. The project's relevance, its socio-economic and technical soundness and its implementability are carefully weighed. Environmental implications, possible or certain, are raised and addressed explicitly. The working tables included in the Guidelines for Environmental Appraisal may be used at this stage. Project documents should address the relevant environmental considerations, whether the project focuses on the environment or simply has some implications for it. Assistance for exploring environmental implications is available from the Environment Co-ordination Unit and from the guidance materials discussed in chapter III. Typically, several offices at UNIDO cooperate closely with the recipient Government. Coordination also takes place between UNIDO, the recipient Government and UNDP or another donor. Field consultations are sometimes undertaken and preparatory assistance offered. The assistance often consists of analyses and diagnostic studies, especially for a large or complex project.

⁵UNIDO, *Handbook for UNIDO Field Staff* (IO 36(SPE/C)), pp. 52-64.

⁶UNIDO, *Project Design Reference File, Volume II, Guidelines for Environmental Appraisal*

Incorporating environmental considerations into the UNIDO project cycle



Project appraisal

Appraisal is the critical assessment of the relevance, feasibility and potential cost-effectiveness of a project before a decision is made to undertake the project or approve assistance for it. The appraisal process at UNIDO consists of three steps:

- Desk analysis, intended to verify that the project document conforms to the established design guidelines (Project Design Reference File, volume II of which comprises the Guidelines for Environmental Appraisal) and that the development problem has been correctly identified;
- An appraisal meeting, which discusses the outstanding issues with the drafters of the project document and makes recommendations on how to improve its design;
- The preparation of an appraisal memorandum, which transmits to the approval authorities of UNIDO the findings on relevance, feasibility and potential cost-effectiveness.

Project approval funding

The monetary amount of the project and the funding source (UNDP or UNIDO) affect the steps to be taken to obtain approval and funding. The amount and funding source also determine who has approval authority. UNIDO relies on two main categories of funding: UNDP funds and UNIDO-administered funds. UNIDO-administered funds include the Industrial Development Fund (IDF), Special Industrial Services (SIS), regular programme funds, including resources for the Industrial Development Decade for Africa, and special trust funds. The decision as to which source of funding to seek (UNDP or UNIDO-administered funds) depends on a number of factors, such as the availability of funds. In most cases, the entity that proposes a project, be it a country, UNIDO or a selected executing agency, first consults with the Resident Representative of UNDP, who may decide that the project falls within UNDP country programme priorities. In other cases, a project idea may be channelled for UNIDO funding where UNIDO has approval authority or it may be channelled for negotiations under either the trust fund scheme or IDF for special-purpose donors. An exception to this process is the approval and funding of special trust fund projects.

Project implementation/monitoring

A project is implemented by a technical branch, usually in the Department of Industrial Operations, which is said to "backstop" the process. Experts are recruited, training courses are arranged, equipment is selected and purchased, progress is monitored, advice is provided on project direction and the necessary project adjustments are made. Management/monitoring reports are required for projects with a budget of more than \$US 400,000. Technical reports are usually called for in the project document. For projects with environmental components, compliance with environmental conditions and the achievement of environmental objectives are monitored and reported. A terminal report is usually required for every project.

Project evaluation

The project evaluation system of UNIDO, which follows a system-wide evaluation methodology, focuses on the quality, effectiveness and impact of UNIDO technical assistance activities. Environmental considerations should be explicitly stated in the project document in order to be considered in the evaluation. Specifically, UNIDO undertakes three types of evaluation: self-evaluations, in-depth evaluations and thematic evaluations. Self-evaluations using the Project Performance Evaluation Report (PPER) are required for all UNIDO or UNDP projects having a budget of more than \$US 400,000 or lasting longer than 24 months. The PPER provides a record and analysis of the progress of a project. In-depth evaluations of technical cooperation projects are undertaken for several reasons, for example, if there are problems with a project, if the project is novel or if the project is so successful that UNIDO wants to duplicate it. These in-depth evaluations are carried out by a team of independent evaluators. Thematic evaluations are problem-oriented and typically encompass a number of projects, for example, a group of projects pertaining to a particular subsector. Usually, UNIDO conducts these evaluations in association with UNDP, donors and financing organizations or other organizations of the United Nations system.

III. Environmental guidance for projects

Guidance for taking environmental matters into account in UNIDO project work and other activities is available, from inside and outside UNIDO. This chapter briefly describes some of the existing internal and external guidance. Joint guidance, the result of collaboration between UNIDO and another organization, is also described.

Internal guidance

*Guidelines for Environmental Appraisal*⁶

The Project Appraisal Section of UNIDO has prepared Guidelines for Environmental Appraisal to help backstopping and area officers consider the environment in the design and development of projects. The Guidelines also help the Section to judge whether appropriate environmental measures have been included in a project. These Guidelines, which form part of the Project Design Reference File, are divided into three volumes, the third of which is in four parts.

Volume I presents guidelines for category A projects, which are those technical assistance projects, such as workshops and training, with no capital implications. The environmental appraisal of these projects focuses on environmental awareness and the development of technical and institutional capabilities. While such projects have no capital implications and thus do not create direct environmental impacts, a number of key questions must none the less be asked:

- What are the projects's proposed objectives and outputs?
- What kind of organization is targeted for technical assistance? What is its receptivity to environmental matters, and is it capable of dealing with them?
- What environmental matters are being considered and what additional matters can be recommended? Does the project promote environmental awareness? Is training on environmental issues included? Is environmental information management included?

Volume II presents guidelines for category B projects which are projects with capital implications and primary or secondary environmental impacts. The environmental appraisal of these projects concentrates on measures for environmental management and pollution control. These guidelines examine various stages of the industrial process, with emphasis on the sources of the impacts, the points at which the impacts are likely to occur (receptors), the actual environmental impacts and their significance, and measures to mitigate environmental impacts.

Volume III, parts A, B, C and D, presents sector-specific guidelines for the appraisal of those types of project most frequently funded by UNIDO. The guidelines describe unit processes and operations and contain working tables with

⁶Ibid., p. 10.

supporting annotations, a glossary and references. Four sectors—tanneries, iron and steel, the manufacture of fertilizers and food agro-industries—have been addressed so far, and others will follow.

Other internal guidance

A number of earlier studies and guides also address the environment. In some of these, it is the main topic; in others, it is simply touched upon. In reissuing its *Manual for the Preparation of Industrial Feasibility Studies*, UNIDO has incorporated explicit consideration of environmental costs and benefits in the assessment of investment projects.

Joint guidance

UNIDO and UNEP have collaborated in preparing reports in the UNEP Industry and Environment Technical Series. One such report is *Tanning and Environment: a Technical Guide to Reducing the Environmental Impact of Tannery Operations*,⁸ which deals mainly with emerging opportunities for cleaner production. Another such report is *Audit and Reduction Manual for Industrial Emissions and Wastes*,⁹ which offers guidance on how to identify the origins of wastes and the opportunities for reducing them. Also under preparation is a report on the environmental aspects of the electronics industry.

UNIDO and the World Bank are cooperating on the preparation of sector-specific industrial pollution abatement guidelines, which will be available for a limited number of sectors in early 1992. The new guidelines will update and expand the sector-specific environmental guidelines first issued by the World Bank in 1984.¹⁰

External guidance

UNDP is expected to issue its environmental management guidelines at the end of 1991. They are intended to help UNDP staff incorporate the principles of environmental management and sustainable development into their work. First formulated in 1989, these guidelines have been revised several times to reflect comments from UNDP headquarters and field offices and from other United Nations bodies and specialized agencies. Field offices have tested the guidelines in Asia and the Pacific region. The guidelines are being explained to all UNDP staff, to other United Nations staff and to government officials. UNDP sees its approach as different from existing approaches in that it focuses on the front end of development, that is, the planning of technical assistance and the pre-investment phase, rather than on problem identification and environmental assessment.

Over the years, UNEP has produced a number of guides that have been found useful in designing and formulating projects. The earlier publications covered such topics as the environmental management of nickel production, aluminium smelters, iron and steel works and oil refineries and terminals. A new series of technical

⁸UNEP/UNIDO, *Tanning and Environment: A Technical Guide to Reducing the Environmental Impact of Tannery Operations*, Technical Report Series No. 4, 1991.

⁹UNEP/UNIDO, *Audit and Reduction Manual for Industrial Emissions and Wastes*, Technical Report Series No. 7, 1991.

¹⁰*World Bank Environmental Guidelines* (Washington, D.C., 1988).

reports covers the metal finishing industry, environmental auditing, the storage of hazardous materials and the tanning industry. Available now or in the near future are technical reports on mining, produced jointly with the International Labour Organisation (ILO), and on industrial wood preservation, produced jointly with FAO and Trade Unions International of Chemical, Ore and Allied Workers (ICPS). UNEP also financed a study entitled "Environmental assessment procedures in the United Nations system". The study inventories environmental guidelines and procedures used by the bodies and specialized agencies of the United Nations as of April 1990.

In 1989, the World Bank issued an operational directive on environmental assessment.¹¹ The purpose of the directive is "to ensure that the development options under consideration are environmentally sound and sustainable and that any environmental consequences are recognized early in the project cycle and taken into account in project design".¹² The scope, depth and analytical techniques of an environmental assessment depend on the particular circumstances of a project. The World Bank has also prepared an environment assessment sourcebook to help project officers in implementing the operational directive, of which two of the three volumes are currently available.^{13, 14}

Other organizations of the United Nations system and international, regional and national development organizations, including FAO, WHO, the Organisation for Economic Co-operation and Development and the Asian Development Bank, have environmental guidelines that may be of value to member States.¹⁵

Before it undertakes a new project, UNIDO considers the applicable environmental guidance and legislation of the donor and of the recipient country.

¹¹*World Bank Operational Manual, Operational Directive 4.00, Annex A: Environmental Assessment*, 31 October 1989.

¹²*The World Bank and the Environment - First Annual Report* (Washington, D.C., 1990), p. 62.

¹³World Bank, Environment Department, *Environmental Assessment Sourcebook, Volume I: Policies, Procedures, and Cross-Sectoral Issues*, World Bank Technical Paper No. 139 (Washington, D.C., 1991).

¹⁴World Bank, Environment Department, *Environmental Assessment Sourcebook, Volume II: Sectoral Guidelines*, World Bank Technical Paper No. 140 (Washington, D.C., 1991).

¹⁵Asian Development Bank, *Economic Policies for Sustainable Development* (Manila, 1990).

IV. The environmental training of staff

The Environment Co-ordination Unit of UNIDO, with support from other offices, is now implementing environment subprogramme I, which consists of building its capacity to render assistance in environmental matters. It is doing this by means of training courses and seminars as well as the *Environmental Awareness Bulletin*.

Environmental training courses

General courses

An introductory course on basic tools for promoting ecologically sustainable industrial development was offered in 1990 and 1991 and will continue to be offered several times a year to headquarters and field staff. The course teaches staff how they can incorporate environmental considerations into their work. It explains the requirements for sustainable development, integrated life-cycle analysis, waste auditing, cleaner production techniques and technologies, environmental impact assessment, environmental economics and environmental planning and management. The course also briefs staff on sources of environmental information and on the Guidelines for Environmental Appraisal. By mid-1991, more than 75 employees at UNIDO headquarters had attended the course. A similar course was offered to 14 UNIDO Country Directors in June 1991.

Specialized courses

A number of specialized courses have also been offered. Examples are courses on approaches to cleaner production, regional environmental planning and environmental impact assessment. Other specialized courses are planned on such topics as environmental auditing, environmental economics and the planning of industrial estates.

Information system courses

Three courses on the Referral Database on Energy and Environment (REED) information system were held for 15 senior General Service staff from 15 network focal points in UNIDO. Continuous review of the information activities of these focal points is assured by a working group meeting held once a month.

Environmental awareness seminars

Monthly environmental awareness seminars in the form of one- or two-hour lectures and discussions take place at headquarters. Topics have included environmental impact assessment: theory versus practice; the international aspects of water management; sustainable development issues for the third world; and overcoming business obstacles to waste minimization.

Environmental Awareness Bulletin

The *Environmental Awareness Bulletin* provides information on missions, meetings, training courses and conferences related to industry and the environment. It lists internal and external sources of environmental information and recent publications such as technical reports.

V. Environmental components of information systems

Industrial and Technological Information Bank

UNIDO has a number of computer information systems, networks, services and products that focus on various aspects of industrial development in developing countries. They all come under the umbrella of the Industrial and Technological Information Bank (INTIB). CLEANTEC DATA and the Referral Database on Energy and Environment (REED) are the two subsystems of greatest importance for the environmental aspects of industrial development. INTIB offers on-line and off-line information, technical assistance and access to databases and publications. It compiles and disseminates information requested by developing countries and helps strengthen their own information systems. INTIB also assists individual offices in information searches. The industrial inquiry service of INTIB answers environmental inquiries.

CLEANTEC DATA

CLEANTEC DATA, a subsystem of INTIB, consolidates a number of databases that have energy and environment components. It provides access to REED, to materials technology (via the METADEX Materials Business File), to the Industrial Energy Conservation Abstracts (INECA), to the International Cleaner Production Information Clearinghouse (ICPIC) and to other sources of information.

Referral Database on Energy and Environment

REED is a multi-purpose database under INTIB, but also included under the CLEANTEC subsystem. Designed as an in-house UNIDO support tool for the environment programme, it is now available to outside users. REED provides information on institutions, projects, experts/consultants, books, journals, meetings, training, information sources, technology descriptions, process descriptions, waste stream descriptions and energy/environment audits.

One of the products generated by REED is "Industry and environment: a guide to sources of information". Now being printed, the guide is a directory for accessing information contained in technical reports, handbooks, journals, bibliographies and directories. The information covers a wide spectrum of industrial sectors in many countries and covers such topics as industrial pollution, environment-related research and development, equipment suppliers, technical services and consulting firms. Over 50 commercially available databases are listed, along with audiovisual materials.

METADEX

MICRO-METADEXSM, a personal computer version of METADEX, was introduced by a licence agreement between UNIDEX and Material Information (ASM International (United States) and the Institute of Metals (United Kingdom)).

It is available free of charge to INTIB national focal points and marketed at special rates for other centres in developing countries. The ^{plus} indicates that more than METADEX is included, notably information from the Materials Business File database, also available from UNIDO.

Industrial Energy Conservation Abstracts

INECA is an information network encompassing all aspects of energy conservation. Some of the INECA products are its *Abstract Journal*, directories of experts and institutes, rosters of equipment and manufacturers, listings of research in progress, manuals and a network newsletter.

Other environment-related information systems of the United Nations

UNIDO currently relies heavily on three other systems in its activities. ICPIIC is offered by the United States Environmental Protection Agency to the Industry and Environment Office of UNEP, which makes it available to other United Nations agencies. It contains case-studies on cleaner production, a bibliography of frequently referenced publications, a directory of contacts and descriptions of country and corporate programmes on cleaner production.

INFOTERRA, the environment information system of UNEP, is one of the world's largest international environmental information networks. It now provides referral services but is moving towards the delivery of documents and the provision of substantive information.

The International Register of Potentially Toxic Chemicals, managed by UNEP, offers a network for the exchange of information on potentially toxic chemicals as well as a data bank containing profiles of chemical substances. It also provides information on the international movement of chemicals.

VI. Coordination with other organizations of the United Nations system

As the lead agency for industrial development in the United Nations system, UNIDO is cooperating closely with the other organizations of the system on environmental issues, particularly with the Industry and Environment Office of UNEP. It is helping to coordinate industry-related environmental assistance and is starting to transfer new technologies and cleaner production in sectors such as leather, cement, food processing, electronics, iron and steel and metalworking. UNIDO assists countries by providing project-specific equipment, technical advisers, training and fellowships.

System-wide efforts

UNIDO participates in the System-Wide Medium-Term Environment Programme 1990-1995 (SWMTEP), which is the main means of harmonizing United Nations environmental activities.¹⁴ UNIDO works with donor countries to integrate environmental considerations into industrial development plans and to appraise the hazards posed by specific branches of industry and methods for averting, or at least managing, the risks.

UNIDO also participates in the Administrative Committee on Co-ordination Matters, which coordinates SWMTEP and is responsible for cooperation on the environment among all the organizations of the United Nations system. It works as well with the Designated Officials for Environmental Matters (DOEM), a senior-level working committee representing all United Nations organizations with an interest in the environment. Initially, DOEM concerned itself with the details of environmental activities, but now it plays mostly a coordinating role.

Along with other organizations of the system, UNIDO is preparing for the United Nations Conference on Environment and Development, scheduled to take place in June 1992 in Brazil. UNIDO is laying the groundwork for its input to that Conference by holding the Conference on Ecologically Sustainable Industrial Development at Copenhagen in October 1991. There, senior government officials, representatives of industry and of intergovernmental and non-governmental organizations, and other participants are addressing the roles of industry, Governments and international cooperation, including that of UNIDO, in achieving sustainable development.

Issue-specific cooperation

Some of the cooperation among United Nations agencies focuses on specific issues such as ozone depletion, global warming and the protection of international

¹⁴UNEP *System-Wide Medium-Term Environmental Programme 1990-1995* (UNEP/GCSS.1/7 Add.1).

waters. The Informal UNIDO/WHO/UNEP/FAO Working Group on Biosafety has developed a voluntary code of conduct for the release of organisms into the environment. Together with a number of other international agencies, UNIDO is participating in a plan of action for the rehabilitation and protection of the environment in the countries covered by the Regional Organization for the Protection of the Marine Environment and which were affected by the Gulf war.

Financing environmental activities

UNIDO works with other agencies, notably UNDP, on securing financing for some projects. UNIDO and UNEP jointly fund the development of certain guidance. A new funding source for environmental work, the Global Environment Facility, has also recently been established. UNEP, UNDP and the World Bank are jointly involved in the management of this \$US 1.5 billion fund, which has four priorities: biological diversity, global warming, ozone depletion and the protection of international waters. The Global Environment Facility is to be used to channel technical or financial resources for sustainable development to developing countries. The funds will not be used to replace commercially viable projects. UNIDO projects are eligible for funding from the Global Environment Facility.

Cooperation with individual organizations

United Nations Environment Programme

UNEP is the catalyst and coordinator for environmental action within the United Nations system. It assesses, monitors and coordinates the environmental work of the system and environmental affairs generally. UNEP coordinated the development of SWMTEP. It also carries out environmental research, acts as an information exchange resource and helps with the production of sectoral environmental guidelines. Its Industry and Environment Office focuses on the exchange of information, the promotion of safe and clean technologies, the implementation of environmental protection procedures and the adoption of environmental criteria in industrial development plans.

UNIDO and the Industry and Environment Office cooperate closely in several ways.² For example, they jointly sponsored a workshop held in Paris in 1990 as part of the first phase of a regional programme for Africa on the purification of industrial waste water. UNIDO and UNEP co-sponsored two training courses in 1991 at the International Centre for Genetic Engineering and Biotechnology.

The Industry and Environment Office sees its role in information transfer as important and offers two regular publications: *Industry and Environment Review*, which covers topics ranging from industrial plant monitoring to industrial waste recycling, and *Cleaner Production Newsletter*, a quarterly available in English and French, which offers information on cleaner production technologies and products, conferences and news from a variety of sources. The Office also operates a service that responds to inquiries on industrial pollution and environment issues from individuals, companies and the Governments of developing countries.

United Nations Development Programme

UNDP and UNIDO cooperate closely in the field as well as at the headquarters level on a variety of issues, including environmental issues. Since July 1988, UNDP has facilitated the participation of nearly 80 countries in workshops on the

environment and sustainable development. In early 1990, UNDP initiated its Sustainable Development Network, which seeks to provide needed environmental information to decision makers throughout the developing world.

Specialized agencies and other organizations

UNIDO also works with a host of other organizations on environmental, health and energy issues, including ILO, FAO, the United Nations Educational, Scientific and Cultural Organization (UNESCO), WHO, the World Bank and the International Atomic Energy Agency (IAEA).

VII. Future directions

The traditional pattern of industrial development is not sustainable over a long period because it threatens the basic conditions of life support on earth by placing at risk the ozone layer, the global climate and the key cycles of nature. Industry is a major cause of the present disequilibria in the biosphere. In the past, the industries of developed countries were the main contributor to these problems, but developing countries will become increasingly involved as they continue to industrialize. If present trends continue, the share of global air pollutants and toxic chemicals emitted by developing countries will increase significantly. In fact, it has been pointed out that developing countries tend to attract highly pollution-intensive industries and that the diffusion of cleaner production processes and technologies, the most cost-effective way to abate pollution, is not occurring at a sufficient scale across industries and countries.¹⁷ This tendency, if unchecked, will hinder opportunities for sustainable development.

To avoid further risks to the biosphere and to the sustainability of the industrial development process, the world needs new patterns of industrialization. These new patterns of industrialization, termed ecologically sustainable industrial development (ESID), must enhance the contribution of industry to economic and social benefits for current and future generations without impairing basic ecological processes. They would be characterized by limitations on industrial activities to protect the biosphere, the efficient use of man-made and natural capital and, in the social sphere, equity as the basic principle in the transition to a sustainable society.

UNIDO believes that the key to achieving ESID is the introduction and broad application of cleaner production methods. Cleaner production looks to all aspects of the product life cycle. Cleaner production is at once two things: (a) a new environmental quality goal and (b) a new approach for achieving that goal. The new goal would require industry to move beyond meeting ambient standards to stabilizing and then reducing total loadings of pollutants of global concern, primarily those associated with the use of fossil fuels and toxic heavy metals. The cleaner production approach would turn the traditional environmental management scheme upside down by assigning priority to source reduction (product and process modification), recycling and reuse as the primary options for mitigating environmental impacts. Conventional pollution abatement technology, while it would still be used, would in the longer run be replaced by prevention technology.

Developing countries, which in many cases are still at the beginning of the industrialization process, have a unique opportunity to introduce technologies that are more resource-efficient and less disruptive of the environment than the existing technologies used in developed countries. Moreover, it is significantly cheaper to incorporate cleaner production methods when new plants are being built than to introduce such methods in existing plants.

UNIDO has a vital role to play in integrating the concept of ESID into every project undertaken and consultation provided. While UNIDO has made significant

¹⁷*Industry and Development - Global Report 1990/91* (UNIDO publication, Sales No. E/90.XII.E.12), chap. III.

progress in facilitating sustainable development, much work remains to be done at all levels. At the project level, UNIDO will continue to incorporate environmental considerations into all aspects of project planning, appraisal, selection and implementation. It will also continue to address the environment in its other activities, including industrial planning, investment promotion, technology development and consultations. Still, there are undeniably missed opportunities, and every effort must be made to address environment implications. At the policy level, UNIDO will continue to identify and use opportunities, such as the Conference on Ecologically Sustainable Industrial Development, held at Copenhagen from 14 to 18 October 1991, to further interpret and apply the sustainable development concept to its work.

UNIDO can go beyond its work to date by proceeding in a number of critical directions. First, it can assist developing countries in building the technical and scientific capacity to develop, adapt and diffuse techniques for pollution prevention and processes for cleaner production, which are essential to making the transition to ESID. Such assistance might involve demonstrating the economic advantages of ESID, adapting ESID to the special needs and limited means of developing countries and establishing demonstration and training centres at industrial facilities. Secondly, UNIDO can continue to support the implementation of international environmental conventions and protocols. It can do this by helping the countries locate expertise and funding for projects that would contribute to the implementation of these conventions and protocols. Thirdly, UNIDO can assist developing countries in determining the environmental soundness of industrial technologies by issuing sector-specific guidelines and sponsoring demonstration projects. Fourthly, UNIDO can help developing countries to integrate environmental considerations into their industrial strategies and policies. Such help might consist of identifying sectoral priorities for sound industrial activities and examining policies on taxation, subsidies and resource pricing in order to remove factors that encourage inefficient and environmentally damaging activities. Finally, UNIDO must strengthen its existing databases and its capacity to coordinate the dissemination of technical and policy information. These are just a few of the directions UNIDO is considering.

Progress towards sustainable development depends upon the ideas and contributions of many different participants—industry, developing countries, donor countries, non-governmental organizations and international organizations—as well as UNIDO. UNIDO has made significant strides along the road to ESID and anticipates a fruitful exchange with other participants in the coming decades.

Annex

HIGHLIGHTS OF PROJECTS WITH ENVIRONMENTAL COMPONENTS

UNIDO has undertaken many projects that illustrate its concern with protection of the environment. The following projects show the diversity of sectors and type of assistance provided (policy, technical and others).

Aluminium casting plant at Pleven, Bulgaria

The town of Pleven, Bulgaria, was identified as an appropriate community in which to test a methodology that had been developed in the wake of Chernobyl for analysing the environmental quality of life and to help communities optimize that quality of life. Known decades earlier for their agricultural produce, Pleven and the surrounding region face severe environmental degradation after years of heavy industrialization and totter on the brink of economic catastrophe. The hub of industrial activity in Pleven is an aluminium casting plant. The project sought to answer the following question: When all the relevant factors—financial, occupational and environmental—are taken into account, what is the net benefit or net cost of having this enterprise in the community?

In 1990, a multidisciplinary team of experts and a mobile environmental laboratory collected information and analysed the situation at the aluminium casting plant. The economic assessment showed safety hazards in the amount of \$US 0.8 million and environmental damage in the amount of \$US 2.5 million, for a total of \$US 3.3 million. Product sales of \$US 12 million minus the costs of raw materials and energy (\$US 8 million) yielded a net income of \$US 4 million, before salaries and miscellaneous expenses had been taken into account. On balance, therefore, the plant was at best marginally profitable. Based on this outcome, the team helped develop a comprehensive programme of plant rehabilitation that would minimize occupational safety hazards, environmental damage and production costs and maximize product quality.

Small-scale iron and steel mills in Argentina and Thailand

The iron and steel mills project grew out of an ongoing UNIDO programme to improve the technological capabilities of developing countries in cleaner production. In this project, UNIDO is working with the countries to assess their existing technologies and to acquire cleaner technologies and processes.

In phase I of the project, UNIDO identified two mills in Argentina and three mills in Thailand as promising to become model steel works. In phase II, experts in iron and steel carried out technology impact assessments, analysed the economics of the existing technology and assessed the availability of materials and inputs. In phase III, seven problems were identified at the mills and remedial measures were formulated. These measures entailed either the rehabilitation of the existing technologies or the introduction of new technologies that would produce fewer pollutants. Seven operative handbooks with practical, concrete advice on each of the problems are now being written. They will offer not one but several solutions to each problem and will estimate the cost of the different solutions. In phase IV, a training programme that can be carried out by the countries themselves will be developed. Environmental management personnel at each mill will be trained in all

aspects of environmental impact assessment and in remedial actions. In phase V, the final phase, the results of the project will be reviewed and future programmes for model steel works will be planned.

Biomethanation of agro-industrial wastes at Harare, Zimbabwe

A food-processing company near Harare is giving UNIDO and Zimbabwe the opportunity to validate the technical and economic feasibility of an industrial-scale pilot biogas plant. While many small-scale biogas plants exist, experience with industrial-scale plants is limited. Biomethanation is an anaerobic digestion process that controls wastes by carefully mixing them with selected bacteria. These bacteria produce biogas and degrade the waste, making it more suitable for discharge into sewers, a treatment plant or receiving waters. The biogas can serve as an alternative to imported diesel or fuel oil for operating factory engines and generating process heat, thereby conserving foreign currency. In addition to treating waste and generating biogas, the biomethanation process also generates a digested sludge that can be used as a fertilizer.

At the food-processing plant near Harare, the wastes are being monitored to assess their exact characteristics, paying special attention to any unique features that might require the process to be modified. The next step will be a financial analysis of the feasibility of installing an industrial-scale anaerobic digester. The financial analysis will examine installation costs, financing, operating costs, the income foregone from the sale of the waste as animal feed, projected revenues from biogas and digested sludge and projected annual cash flows. Eventually, a pilot plant will be designed, built and tested and personnel will be trained.

Improving the efficiency of lubricating oil in Viet Nam

When the Government of Viet Nam found it was changing the lubricating oil in its vehicles every 1,000 kilometres instead of every 10,000 kilometres, it approached UNIDO for help in developing a special additive for the oil. UNIDO responded with a project in 1988 that uncovered the reason for the frequent oil changes and then found a solution to the problem.

Two factors were pinpointed: (a) the oil was being imported into Viet Nam with the additives already mixed in and (b) water was getting into the oil during shipping and storage. Both were causing hydrolysis and precipitation of the additives and the formation of sludge, which greatly shortened the useful life of the oil. The solution turned out to be not the development of a special additive. Instead, the oil needs to be handled differently. Once a blending station is in place, Viet Nam will start to import oil without the additives and will blend them in locally. Then, measures will be taken to prevent humidity from getting into the oil. The frequency of oil changes should decline dramatically, producing significant economic and environmental savings.

Plastics recycling at Shanghai, China

This pioneering project, sponsored by UNIDO and the Government of Belgium, led to the building of a pilot plant for recycling plastic waste at the Xiang Guang plastics factory at Shanghai. The project grew out of years of research in Belgium on polymer alloys. In 1977, Fabrique nationale Herstal S.A., at Herstal, Belgium, obtained a licence for its plastics recycling process and developed a complete plastics recycling line, with the main piece of equipment being a short-screw plastifier. In 1983, UNIDO sent two Belgian experts to survey plastics recycling in China and to investigate the possibility of establishing a pilot plastics recycling plant. The Shanghai Resource Recovery and Utilization Company expressed great interest in such a pilot plant, and the project was started up with a special-purpose contribution from the Government of Belgium. Built at a suburban site of the company, the plant now recycles 2,000 tonnes per year of polyvinyl chloride, polymethyl

methacrylate and nylon. The company is presently exploring with UNIDO the possibility of obtaining a pretreatment washing machine, because dirt from waste plastics is hurting the imported recycling equipment.

*Integrated programme for industry and the environment
in the Republic of Montenegro, Yugoslavia*

In 1990, at the request of the government of the Republic of Montenegro in Yugoslavia, UNIDO undertook a project to advise high-level officials on achieving a reasonable balance between industrial development and protection of the environment. Specifically, the project prepared a plan for ecologically sustainable industrial development in Montenegro, including an assessment and evaluation of the environmental impact of existing industrial activities as well as suggestions for immediate actions and strategies to correct existing problems and prevent further environmental degradation. The final report called for additional steps to ensure successful implementation of the plan, including the strengthening of research and higher education and a review of the regulatory framework. On the basis of the environmental plan prepared by the project, the Republic of Montenegro is working on a more detailed programme for carrying out these recommendations.

Bibliography*

- Asian Development Bank. Economic policies for sustainable development. 1990. 253 p.
- United Nations Development Programme. Draft principles and guidelines for environmental management and sustainable development in technical assistance (EMG). March 1991. 59 p.
- United Nations Environment Programme. Audit and reduction manual for industrial emissions and wastes.
Technical series No. 7. In collaboration with UNIDO.
- Environmental assessment procedures in the UN system. April 1990. 80 p. Prepared by Environmental Resources Limited at the request of the United Nations system and funded by UNEP.
- Environmental impact assessment; basic procedures for developing countries. 1988. 16 p.
- Tanning and environment; a technical guide to reducing the environmental impact of tannery operations. 1991. 115 p.
Technical Series No. 4. In collaboration with UNIDO.
- United Nations Industrial Development Organization. Overview of environmental issues. 10 August 1990. 91 p.
- First guide for UNIDO officers in evaluating the environmental impact of industrial projects. 8 April 1988. 25 p. (PPD.76(SPEC.))
- Director-General's bulletin; establishment of an Environment Co-ordination Unit in the Special Measures and Activities Division, 11 July 1990. 2 p. (UNIDO/DG/B.133)
- Environment protection within the context of the work of UNIDO. 1982. 65 p. (ID/282)
- Handbook for UNIDO field staff. 11 September 1989. 278 p. (IO.36(SPEC.))
- Industry and development; global report 1990/91. 1990. 312 p. (ID/371)
Sales No. E.90.III.E.12. "Industry and environment", pp. 91-170.
- Project design reference file; volume II: guidelines for environmental appraisal.
Six sections, separately paginated, are brought together in this loose-leaf binder: I. Environmental appraisal of category A projects. October 1990. 27 p.; II. Environmental appraisal of category B projects. October 1990. 19 p.; IIIA. Tanneries and leather finishing. October 1990. 28 p.; IIIB. Iron and steel. October 1990. 42 p.; IIIC. Fertilizers. October 1990. 29 p.; IIID. Food agro-industries. January 1991. 32 p.
- UNIDO policies and the Annual Report of the Director-General for 1989 on the activities of the Organization; environment activities; UNIDO environment programme; proposed by the Director-General. 29 March 1990. 10 p. (IDB.6/3)

*Selected sources related to the work of UNIDO in the environment.

- World Bank. Environmental assessment sourcebook: volume I: policies, procedures, and cross-sectoral issues. 1991. 227 p.**
World Bank Technical Paper No. 139.
- _____ **Environmental assessment sourcebook: volume II: sectoral guidelines. 1991.**
282 p.
World Bank Technical Paper No. 140.
- _____ **Environmental guidelines. August 1988. 461 p.**
- _____ **The World Bank and the environment; first annual report; fiscal year 1990.**
102 p.
- _____ **The World Bank operational manual; operational directive 4.00, annex A: environmental assessment. 31 October 1989. 12 p.**

For more information contact:

**Environmental Coordination Unit
Special Measures and Activities Division
UNIDO, Vienna International Centre**

P.O. Box 300

A-1400, Vienna, Austria

Telephone: 211 31-3956

Room: D2125

Telefax: 2307449