

**Report on
Non-governmental Organization activities
on environmental issues related
to UNEP programmes**

**Prepared for the
Sixth Governing Council
of the
United Nations Environment Programme**

April 1978

**Environment Liaison Centre
Nairobi, Kenya**

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REPORT ON

NON-GOVERNMENTAL ORGANIZATION ACTIVITIES
ON ENVIRONMENTAL ISSUES RELATED
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Foreword

I am pleased that the United Nations Environment Programme has been associated with the Environment Liaison Centre in the survey of NGO activities in subject areas to be reviewed in-depth by the Governing Council of UNEP at its sixth session (May 1978) and in the production of this report on the findings of the survey. We hope that the information contained in the report will be found useful by Governments, both at the time of the Governing Council and subsequently, and by others, not least the NGO community to which UNEP attaches great importance.

A survey of this kind depends upon the willing cooperation of the NGOs themselves. I would like to take this opportunity to express our appreciation for the time devoted by so many NGOs to answering the questionnaire sent to them during 1977.

The material collected by the Environment Liaison Centre has been found useful in preparing the Executive Director's report to the Governing Council on the environment programme. However, the views expressed in this present document do not necessarily reflect those of UNEP.

M.K. Tolba
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APRIL, 1978

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INTRODUCTION

This document presents an overview of NGO activities in seven of the eight subject areas to be considered at the sixth session of the United Nations Environment Programme's Governing Council.* It illustrates both the diversity and the intensity of NGO programmes, confirming the constructive contribution they make towards achieving the goal of environmental protection.

1. The Survey

The survey of NGO activities was undertaken by the Environment Liaison Centre (ELC), Nairobi, Kenya, at the request of UNEP as part of UNEP's preparations of the programme document for the sixth session of the Governing Council (document UNEP/GC6/7). A summary of the findings is given in the programme document and in document UNEP/GC/INFORMATION 10 and this present report may thus be said to supplement the information therein.

The contents of this report are based upon a survey which included the following elements:

- Questionnaire: A detailed questionnaire was sent to nearly 300 NGOs, each with interest and competence in at least one of the subject areas under consideration. The mailing list was prepared by the ELC, using the selective retrieval capability of the ELC's Profile Survey data bank (see below). Due attention was paid to geographical balance, though recognising that NGOs are not evenly distributed globally. Seventy replies were received.
- Profile Survey: The NGO Profile Survey, UNEP Project Number O303-75-01, was carried out by the ELC in 1976. Detailed information was received from over 1500 organisations, less detailed information was received from another 1600. The ELC has computerized this information and developed programmes to search the computer file enabling the selection of lists of NGOs which meet any particular search criteria. This information was used extensively in the survey.
- ELC files: The ELC is in routine contact with a large number of NGOs, and therefore in regular receipt of current information which it uses to correct and update its files.
- IRS: An IRS search produced names of additional NGOs in the relevant fields.
- Directories: The ELC maintains a library of directories listing inter alia environmental NGOs. These were extensively used.

* The eighth topic is environmental education. A separate survey of NGO activities in this area was undertaken by UNEP as a part of the preparations of the Level One Report, and a summary account of the that survey is available from UNEP.

- Miscellaneous: NGOs present at the U.N. Conference on Desertification were surveyed; the ELC entered into correspondence with selected NGOs asking a number of them to review drafts; and UNEP personnel supplied further suggestions.

2. The Limitations

Every effort has been made to ensure that the information contained in the report is accurate. However, readers should bear in mind the following limitations to the survey:

- All information has been supplied by the NGOs themselves. This ensured factual accuracy, but also introduces a subjective element in any evaluation of the NGOs' successes (and failures). Though the Profile Survey was carried out in 1976, the information contained therein has been updated whenever possible. Consequently, the vast majority of information in this document is current. In a limited number of cases, however, it may be somewhat dated.
- The NGOs covered in this report are examples only, representing just a few of the many NGOs involved in these areas. It is recognised that there are many others which could have been cited as well. For brevity and readability, however, we chose to cite only a few. Furthermore, the NGOs cited are not necessarily the most significant in their field. The examples are intended instead to illustrate the range of NGO activity.

3. NGOs, Non-Governmental Organisations

The determination of whether or not a given organisation is an "NGO" was difficult. For purposes of this paper, an organisation that is not directly controlled by any government or any intergovernmental body has been defined as an NGO. In particular, this implies that government financing of an organisation does not eliminate its consideration as an NGO - unless the financing implies governmental control.

Commercial organisations such as industry associations, profit-making consulting firms, etc., while meeting these criteria, were not considered in this document.

The names of NGOs have been given in English for any organisation that has supplied a translation. Otherwise they have been printed in the original language.

4. The Environment Liaison Centre

The Environment Liaison Centre was first conceived in 1972, at the U.N. Conference on the Human Environment by participating NGOs concerned with the environment as a means by which they could liaise with UNEP. The Centre was established in 1974 in Nairobi and represents more than 80 non-governmental organisations from around the world of which half are from developing countries. In total, the Centre represents more than 800,000 people.

The Centre's purpose is to establish a working relationship with UNEP on behalf of NGOs and to assist communications between NGOs in the developing and the developed countries. Apart from the above-mentioned Profile Survey, the ELC has undertaken two major programmes, both partially funded

by UNEP. One is animating global non-governmental organisation actions for WORLD ENVIRONMENT DAY, JUNE 5th, 1978. The other is establishing a working international network of NGOs active in environmental education.

5. For Further Information

Addresses and profile information are available from the Environment Liaison Centre or from the UNEP NGO Liaison Office in Nairobi, on the non-governmental organisations discussed in this report. For a more complete listing of NGOs in your region, you may consult the Sierra Club World Directory of Environmental Organisations, 2nd Edition (obtainable from 800 Second Street, New York, NY 10017), alternatively, the Yearbook of International Organizations 1977 by the Union of International Associations (obtainable from 1 rue aux Laines, 1000 Brussels, Belgium), or the Environment Liaison Centre, computer printout Profile Survey. Enquiries may be addressed to ELC, P.O. Box 72461, Nairobi, Kenya, telephone Nairobi 24770.

6. Acknowledgements

This document was researched and written by George Matheson and Chris Epplett of the Environment Liaison Centre. Editing was done by Centre Director, Gary Gallon. Translation and research assistance were provided by Anne Brannan. The ELC acknowledges with appreciation the assistance supplied by many others - in particular, the 70 NGOs who gave of their valuable time to reply to the questionnaire and also to the various UNEP personnel associated with the project. In particular, we wish to express our appreciation for the advice and assistance given by Adrian Phillips and Denis Schmidt. The views expressed herein are those of the Environment Liaison Centre and ultimately of the authors and they do not represent the views of UNEP.

CHAPTER 1

Role of NGOs in the Field of Potentially Toxic Chemicals

INTRODUCTION

1.1 Scope of the Chapter

This Chapter deals with the activity of non-governmental organisations from all parts of the world, in the field of potentially toxic chemicals. Particular emphasis is placed on information collection and dissemination, in line with the priorities of UNEP's International Register of Potentially Toxic Chemicals.

1.2 Level of Activity

Apart from those NGOs primarily concerned with potentially toxic chemicals, the issue is of interest to most organisations involved in such environmental issues as air pollution, water pollution, energy, agricultural practices, human settlements, and so on. However, it is clear that the majority of this NGO activity is concentrated in the developed countries and a few of the more highly industrialized developing countries. Nevertheless, with the international nature of trade and toxic substances, and with vigorous industrial and agricultural development programmes being undertaken by many developing countries, NGO activity in this field is growing in all parts of the world.

With the exception of certain specific aspects of the issue of potentially toxic chemicals (particularly nuclear power/plutonium), it is apparent that the activity of NGOs primarily concerned with potentially toxic chemicals is less extensive than NGO activity in a number of other fields. On the other hand, the survey revealed that the actions that have been taken have been remarkably successful and worthwhile.

1.3 Types of NGOs involved

The survey revealed two general categories of NGOs involved in the issue of potentially toxic chemicals.

The first category involves NGOs of a non-technical nature concerned with the more general aspects of chemical contamination of the environment, rather than with particular chemicals (though they will frequently focus on one or several chemicals by way of example). Their major mode of action is through collection and redissemination of general information of interest and value to the public at large. Such groups range from community level organisations all the way to international NGOs, and in total their impact can be very significant.

The second general category of NGOs involved in the field of toxic chemicals includes the semi-technical, the technical, and the specialist organisations. Though they frequently engage in activities much like those of the generalist organisations just described, their activities are normally

directed at certain particular chemicals or groups of chemicals.

Though there are of course differences, the first category above parallels UNEP's "extensive" programme, while the second category parallels UNEP's "intensive" programme.

2. WHAT NGOS ARE DOING

2.1 NGO Activity Related to UNEP Strategy and Objectives

2.1.1 Data Collection on Potentially Toxic Chemicals

NGOs are involved in two major types of data collection on potentially toxic chemicals:

- a) primary research/scientific investigation
- b) secondary research/literature investigation

These are discussed separately below. Note that the NGOs involved in "intensive" programmes as per 1.3 above engage in both types of data collection; those involved in an "extensive" programme are normally only involved in secondary research.

a) Primary Research/Scientific Investigation

NGOs carry out a tremendous range of research on potentially toxic chemicals per se. The following listing includes a few general examples to indicate the extent and nature of this activity:

- The International Union of Pure and Applied Chemistry (IUPAC) has a commission on food additives, a commission on food contaminants, a commission on air quality, a commission on terminal pesticide residues, a commission on water quality, etc. Among their research activities, they are working to solve problems of identification and measurement of toxic chemicals.
- BC Research, the technical operation of the non-profit and independent BC Research Council, Canada, has activities concerned with the elucidation of the toxicity in pulp and paper effluents.
- The International Centre for Industry and the Environment (ICIE), representing the major world industries, provides a medium of exchange between its industrial members, of the latest information concerning toxic chemicals and the environment. Part of the information exchange is accomplished through the monthly publication "ICIE NOTES". ICIE also provides an industrial interface with UNEP in order to provide UNEP with the information it requires on toxic chemicals and other industry-related environment topics.
- The International Commission on Radiological Protection (ICRP) is preparing a revised report on permissible dose for internal radiation, which will give maximum permissible levels for over two hundred radionuclides.
- Scientists at the Bermuda Biological Station have investigated the role of atmospheric transport of chlorinated

pesticides in the North Atlantic and have examined polynuclear aromatic hydrocarbons in the water column.

- The International Union of Pharmacology has as one of its principal objectives stimulation of international coordination of research in all fields of pharmacology, including clinical pharmacology and toxicology.
- The Polish Forest Society is studying the impact of polluting gases, dusts and industrial wastes on the biological life of the woodland. They are also investigating ways and means of countering any damage caused.
- SCOPE (Scientific Committee on Problems of the Environment - a committee of the International Council of Scientific Unions) is involved in a project entitled "Environmental Toxicology" which will result in the preparation of a monograph on principles for the assessment of the effects of noxious agents in the environment.

b) Secondary Research/Literature Investigation

As NGOs are very frequently concerned about the non-application of existing information, many carry out in-depth research projects which synthesize and analyse technical research information available from other sources. This process normally provides basic material necessary for NGO information campaigns, political action and legal action. The following examples illustrate each of these three end uses:

- The Colombian Committee for Environmental Information has done investigations on the use of the insecticide phosvel in Colombia. This information was then disseminated to the public at large, in part through the media.
- The Public Citizen's Health Research Group has done extensive research on a variety of chemicals. This work has formed the basis for a number of petitions for regulation to the US government.
- The Environmental Defence Fund in the United States has, on the basis of its research activities, launched numerous law suits aimed at controlling discharge, production or use of a wide variety of toxic chemicals.

Apart from these activities, which could be classified as "intensive" as per section 1.2 above, a much larger number of NGOs are engaged in "extensive" activities depending almost entirely on other sources for their information on toxic chemicals.

2.1.2 Information Dissemination on Potentially Toxic Chemicals

One of the strengths of NGOs is their ability to disseminate important environmental information to a variety of audiences. The discussion which follows divides these activities into three categories:-

- a) Dissemination of Information - Initiated by the User

D) Dissemination of Information - Initiated by the NGO
(Scientific/Specialized Audience)

c) Dissemination of Information - Initiated by the NGO
(General Public Audience)

a) Dissemination of Information - Initiated by the User

The survey revealed no NGOs operating a highly institutionalized information or referral service of the nature of IRS or IRPTC, though some NGOs are participating in such systems. For instance,

- The Marine Biological Association of the United Kingdom has provided data to ECDIN (Environmental Chemicals Data and Information Network of the European Community) on the fate and effects of a number of chemicals in the Marine and estuarine environments.
- The Environment Liaison Centre (international, headquarters Kenya) has supplied information to IRS on a large number of NGOs, some with interests in potentially toxic chemicals.

A much larger number of NGOs act more informally as information centres. Thus, they will maintain libraries, answer enquiries, produce their own publications which are available on request, and so on. They operate in a style which is relevant to the needs of the particular constituency they serve and they are readily and rapidly accessible by their potential users. Thus, though such NGO activities are not as glamorous as the large informational networks operated by governments and inter-governmental agencies, their importance is very significant. Examples include:-

- The Rachel Carson Trust for the Living Environment (United States) describes itself as a "clearinghouse of information for both scientists and laymen". They handle many enquiries from the public on toxicology and related problems.
- Jishu-Koza (Japan) invites enquiries from organisations and individuals in other countries concerned with the local impact of Japanese industries discharging harmful chemicals to the environment.
- Public Citizen's Health Research Group (United States) acts as an information resource for unions and health/safety activist groups concerned with toxic chemicals.
- Nature et Progrès (France) responds to enquiries from journalists and the public at large concerning, in particular, agricultural chemicals.

b) Dissemination of Information - Initiated by the NGO (Scientific/Specialized Audience)

Many NGOs are involved in the process of dissemination of scientific information on potentially toxic chemicals to a scientific constituency. As in most research activities, organisations such as those mentioned in 2.1.1. (a) distribute their information widely through scientific journals, symposia, conferences etc. The following additional examples further illustrate the nature of this activity:

- The International Union of Nutritional Sciences holds scientific congresses which have included sessions on Nutrition and Toxicity, with papers on food additives and contaminants such as PCB.
- The Royal Society (United Kingdom) Study Group on long-term toxic effects recently sponsored a scientific meeting on the long-term hazards to man from man-made chemicals in the environment.
- The Commonwealth Human Ecology Council's annotated bibliography "Pollution, Mental Stress, and Personality" includes entries relating psychological responses to toxic chemicals.
- Congresses, symposia, etc., organized by the Argentinian Association Against Contamination of the Air devote attention to toxic chemicals.
- The IUPAC International Company Associates Group provides scope for possible industrial input of data concerning production, distribution, and use of potentially toxic chemicals.

c) Dissemination of Information - Initiated by the NGO (General Public Audience)

As in most disciplines, the informational activities of non-governmental organisations, directed at the general public, are extensive and not readily quantified. Chapter 7 deals with these activities in detail; the following examples give some indication of their scope:

- The International Organisation of Consumer's Unions and its 103 member organisations inform their individual members regularly on the environmental aspects of their material consumption, with chemical dangers one of the major issues.
- The Conservation Foundation (United States) is planning for 1978 a programme of public education and citizen involvement in toxic chemical issues.
- Toxic chemicals are one of the areas of concentration in the information programme of Inter-environment a.s.b.l. (Belgium). This programme includes publications, press conferences, public meetings, and more. A great many NGOs have carried articles on chemical problems in their regular publications.
- The Grupo Ecologico del Universidad del Tolima (Colombia) has published a booklet entitled "Mercury in the Environment" (title translation from the Spanish).
- Social Audit (United Kingdom) is publishing a guide for the layperson on how to obtain, interpret, and apply information about toxic hazards in the environment and at work.
- The Worldwatch Institute (United States) has just published a book entitled "The Picture of Health" dealing with the environmental causes of disease (including carcinogens).

2.1.3 Early Warning Capability

The survey revealed only limited NGO capabilities that allow for advance identification of possible negative effects of new chemicals. Nevertheless, some steps are being taken towards development of this capability. The SCOPE project "Environmental Toxicology" described earlier should ultimately lead to early assessment of the effects of noxious agents in the environment; the Conservation Foundation in the United States plans work which will help in possible use of chemical structure to predict human health effects of a chemical; and the Public Citizen Health Research Group is pressing for proper labelling of all chemicals to allow industrial workers to quickly associate a chemical with a perceived negative effect. However, in spite of such initiatives, most NGOs find themselves reacting to problems associated with chemicals currently on the market, rather than endeavouring to predict and avoid problems associated with new chemicals.

2.2 Other Activities

2.2.1 Political and Legal Action

In this as in other fields, NGOs are highly oriented towards inducing governmental action that will effectively deal with the problem of potentially toxic chemicals. Most importantly, perhaps, NGO information activities represent a very powerful force for action. In addition however, NGOs take more direct action, illustrated by the following examples:

- The United States Government has passed standards for 14 particular carcinogens under the Occupational Safety and Health Act, based on a petition from Public Citizen's Health Research Group. In addition, a petition from the same group resulted in the banning by the Government of Vinyl Chloride as an aerosol propellant.
- The National Council of Women in Great Britain has passed a resolution urging the Government to ensure that no new substance is manufactured and allowed to enter the hydrosphere before its toxicity and biodegradability have been tested and the results made public.
- The Caribbean Conservation Association has urged the Government to regulate the use of chemical pesticides so as to avoid both the threat of cancer for the human population and the impoverishment of wildlife populations.
- The Nordic Council of Trade Unions has called for legislation to ensure that all potentially toxic products are supplied with complete product descriptions and directions for use; responsibility allocated to manufacturers and importers to ensure that the products they sell are free of hazards; governmental bodies to register and control such substances, with authority to stop distribution; and finally active policies leading to development of substitute products to replace those with undesirable and dangerous side effects.
- The Natural Resources Defense Council (United States) successfully petitioned the governmental Consumer Products Safety Commission to ban fluorocarbon propellants (suspected to cause depletion of the ozone layer, leading to increased skin cancer in man).

Many other modes of political action are open to NGOs: participation in governmental advisory bodies, demonstrations, joint projects

with government agencies, media campaigns, etc.

Most of the political/legal activities concerning potentially toxic chemicals were shown by the survey to be in the developed countries, with their long tradition of such citizen involvement and with their strong concern over toxic chemicals (see section 1.2). Nevertheless, many developing country NGOs do exhibit considerable political influence in this field. Apart from activities such as those referred to above, many individuals from developing country NGOs are well integrated into the governmental decision-making machinery, thereby ensuring that the NGO influence is felt from within.

2.2.2 Nuclear Power

The most vigorous field of activity for environmental NGOs is currently the issue of nuclear energy. This almost certainly will continue to be the case for a number of years to come. Though there is a tremendous variety of opinion on the topic, it is certain that the majority of NGOs are opposed to the development of nuclear power as a major source of energy.

The various categories of NGO activity discussed in all the preceding sections apply equally to NGO activity in the field of nuclear power. Discussion of this issue in a separate section is meant to both highlight the importance of this topic to NGOs, as well as to distinguish it from those activities which relate more closely to UNEP's strategy and objectives.

The arguments put forward to NGOs opposed to nuclear power are diverse. They include concern for intentional persistent low-level radioactive emissions, concern for workers' health, the possibility of accidents leading to major releases of radioactive contaminants, the proliferation of nuclear weapons from materials created by nuclear power plants, possible sabotage and difficulties with the safe disposal of radioactive wastes. The question of the toxicity of the radioactive chemicals is a major component of the debate. NGOs consider all stages of the nuclear fuel cycle, from the mining, to processing, through to the transportation and disposal of waste, and/or re-processing, as presenting significant health hazards. In particular, many environmental NGOs consider plutonium and related radioactive contaminants to be among the most toxic substances known to mankind.

The international campaign against nuclear power has become extensive and global. In many countries, the NGO best known for its nuclear activities is Friends of the Earth (FOE - a number of independent national organisations from a wide variety of countries, loosely linked by Friends of the Earth International). However, the interest is not limited to groups such as FOE. The Salzburg Conference for Non-Nuclear Futures, April/May 1977 attracted NGO environmentalists from some 20 countries throughout the world, representing dozens of organisations. The Conference was extensively covered by the international media, and re-confirmed that opposition to nuclear power is extensive, responsible, and knowledgeable. The Conference concluded with a declaration including the following statement:

"Our concern is that the present and future wellbeing of mankind is being needlessly endangered by the decisions of governments to continue the use and development of nuclear power."

2.2.3 Alternatives

A variety of NGOs deal indirectly with issues relating to potentially toxic chemicals, by virtue of their activities in promoting alternatives to these chemicals. Thus, the International Federation of Organic Agricultural Movements, and their member associations, are engaged in promoting and practising agricultural techniques which do not use pesticides or chemical fertilisers. Similarly, the International Organisation for Biological Control of Noxious Animals and Plants (a Commission of the Union of Biological Sciences) has the broad objective of stimulating throughout the world scientific activity directed towards the development of effective and harmless methods of controlling pests of any kind, thereby reducing the need for chemical controls.

On another level, a variety of environmental and consumers organisations undertake programmes to encourage individuals to alter their lifestyles in such a way that environmental impact is reduced. Thus, promotion of public transportation as an alternative to the private automobile is in part a campaign to reduce the emissions of toxic chemicals by the internal combustion engine, as well as by the petroleum industry generally. Reduced consumption of material goods selection of other items of low environmental impact, and promotion of alternative energy sources are all indirectly NGO activities contributing to a reduction in the release of toxic chemicals.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT IN THE FIELD OF POTENTIALLY TOXIC CHEMICALS

Though NGOs are frequently critical of international programmes in a number of disciplines, there is acknowledgement that in certain fields (e.g. water, arid lands, regional seas, etc.) a great deal is being done. However, though the sample is somewhat limited, this survey revealed little in the way of praise for current international activities in the field of potentially toxic chemicals (though one NGO felt the general directions now being pursued by WHO and OECD were correct). At the same time, there was a strong feeling that indeed the problem was international. The following recommendations, drawn primarily from the questionnaire replies, indicate not only what NGOs feel should be done on the international level but by implication indicate where they feel the greatest weaknesses exist.

3.1 International trade

There was great concern over international trade in toxic chemicals. Proposed controls included the following:

- Toxic chemicals should be regulated internationally by convention.
- Chemical products prohibited in one country because they are considered toxic should be entered in an index maintained by UNEP. Each new listing should be sent immediately to the relevant authorities in each country as well as to non-governmental organisations with an interest.
- An international marketing board with power to sanction or prohibit the manufacture or marketing of certain chemicals should be established. Countries should be made aware of the reasons any chemicals are considered unsuitable.

- An international labelling system for toxic chemicals should be established.
- Some mechanism for recall of exported chemicals shown to be hazardous should be established.
- In general, cooperation between agencies responsible for import regulation and environmental organisations/agencies should be encouraged.

3.2 Industrial location

As the chemical industry is international, uniform standards should be adopted worldwide to avoid concentration of more and more industry in the countries with the weaker environmental standards.

3.3 Alternatives

An active international policy should be pursued to develop substances and products which can replace those with undesirable side-effects.

3.4 Research

Several NGOs recommended increased efforts to gather data on the short and long-term effects of a variety of chemicals, with even the data available on such extensively researched chemicals as lead and various pesticides being considered insufficient. A number of NGOs further suggested that such information should be deemed prerequisite before the chemicals are introduced to the environment (which in turn relates back to point 3.1).

3.5 Training

Increased training opportunities are necessary for relevant specialists in the field of toxic chemicals and related disciplines.

3.6 Information Dissemination

Information on individual chemicals should be made widely available by manufacturers and importers to the users of the chemicals as well as to interested NGOs. Information on the dangers and how to curb them must be included. IRPTC should be expanded.

CHAPTER 2 - Part A

The Role of NGOs in the Field of Human and Environmental Health

INTRODUCTION

1.1 Scope of Chapter

This chapter deals with the activity of non-governmental organisations from all parts of the world in the field of human and environmental health.* The information presented was acquired through a UNEP supported survey, described in the introduction to this document.

The NGOs referred to by name are examples only - no attempt has been made to ensure that the listing is comprehensive (which would be impossible in any case). Furthermore, the NGOs cited are not necessarily the most significant in their chosen field - the examples are intended instead to illustrate the range of NGO activity.

1.2 Level of Activity

NGOs are involved in all facets of human and environmental health. Because of the great diversity of NGOs their choice of activity or activities varies greatly, but there is unanimous support for the ultimate goal - an environment that provides optimum health for all.

The nature and level of NGO activity is dependent on the particular environment as well as on the cultural and/or educational attitudes of the people involved. Environmental NGOs in developing countries are most heavily concerned with basic health and well-being. Consequently, water pollution as it relates to communicable and non-communicable diseases, and environmental methods of disease control especially in relation to hygiene, are crucial at this time for developing country NGOs.

These basic environmental problems are to some extent solved in the developed world; as such, NGOs active in those countries, though interested in the above problems, tend also to focus interest on industrial and chemical pollution of air, water, soil and food, as well as on the consequent health related effects. These organisations are also developing a great concern about physical pollutants such as radiation and noise. In addition, developed countries have relatively vast information networks and extensive medical coverage which enables research to be conducted on both the subtler and the longer term health effects of chemical pollutants, physical pollutants, etc.

* UNEP's and WHO's definition of health and environmental health (UNEP report No. 2) will be used: health is a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity; environmental health is a discipline and an activity concerned with the suitability of environmental conditions for the protection and promotion of human health.

1.3 Types of NGOs involved

NGOs involved in human and environmental health work at three main geographical and organisational levels local, national and international. At each of these levels, many NGOs are concerned exclusively with environmental health or some specific aspect of it; other NGOs are concerned with these issues as one component of a larger concern.

Within any of the above categories of NGOs, there are four major types of action undertaken (with, of course, substantial overlap between the types); scientific research; information/education; direct action (including demonstration projects); and political action. Examples of each will be found throughout this chapter.

2. WHAT NGOs ARE DOING - ACTIVITIES RELATED TO UNEP STRATEGY AND OBJECTIVES

In all other chapters of this document, any discussion of NGO programmes of information dissemination and/or political action is separated from discussion of other NGO activities (i.e. research, direct action, demonstration projects, etc.). However, due to the wide range of topics within the field of human and environmental health, in this chapter the discussion of information and political programmes is integrated with discussion of other types of NGO activity, on a subject by subject basis. The specific subject areas in question (identified as part of UNEP's strategy and objectives) are:-

- 2.1 Water Pollution - Chemical and Biological
- 2.2 Pollution of the Air
- 2.3 Pollution of the Working Environment
- 2.4 Food and Feed Contaminants
- 2.5 Physical Pollutants
- 2.6 Environmentally Related Communicable and Non-Communicable Disease

These will be discussed in turn below. However, in addition to activities that readily fall into one of the above categories, NGOs undertake a variety of activities with relevance to the field of environmental health in general, rather than with relevance to only one aspect of it. The following examples illustrate the range of these less specific activities:-

- The International Council of Scientific Unions' Scientific Committee on Problems of the Environment (SCOPE) is completing a project entitled "Environmental Toxicology" which has identified principles for the assessment of the full range of environmental effects (including health effects) of noxious agents in the environment. The results is a scientific system for developing criteria, setting standards, designing monitoring programmes, and determining research priorities. This is one among several programmes it has on environmental health.
- The League of Red Cross Societies and its member societies engage in a host of well known activities to promote the health and well-being of individuals and communities. Environmental considerations are an explicit and important element of these actions.

- The International Council of Nurses has, as part of its environmental programme, issued guidelines to all its member associations, outlining in detail the role of the individual nurse in dealing with environmental health.
- The International Association of Environmental Mutagen Societies encourages the study of environmental mutagens, particularly in relation to public health.
- The International Geographical Union has a working group on the geography of health, the main purpose of which is to trace the spatial distribution of disease patterns in various parts of the world - thereby enabling correlation with environmental factors.
- The Commonwealth Human Ecology Council, headquartered in London, has published an annotated bibliography of publications linking various forms of pollution with mental stress and personality.
- The International Research Centre on Environment and Development (CIRED) has published various materials on health and pollution, including an analysis of the two-way linkage between poverty (with its health impact) and pollution.

2.1 Water Pollution - Chemical and Biological

Probably the first form of pollution to be perceived as detrimental to human health was water pollution. Consequently, this was also one of the first areas of NGO environmental concern - a concern which continues today.

Since there are important differences between the actions of NGOs in the developed and the developing world, the discussion below is divided along these lines. Though water pollution issues probably command more NGO interest than the other issues to be considered in this chapter, the discussion below is abbreviated in view of the more extensive treatment to be found in Chapter 5.

a) Developing Countries

In the field of water pollution, most NGO action in developing countries concerns access to safe drinking water - i.e. water that is safe from both chemical and (most importantly to the NGOs) biological pollution. The following examples illustrate the type of activity:

- Many NGOs in developing countries start their water programmes with basic sanitation education and facilities. For instance, Banwasi Seva Ashram, India, is promoting sanitation amongst villagers. Also in India, Gram Seva Samiti Taronda Nitaya has gained general acceptance of the use of water seal latrines. Many such projects result in a gratifying reduction of infant mortality. For instance, the Danfa Family Planning Programme in rural Ghana, which deals in part with the sanitation problem, claims an observable reduction in infant mortality.
- The Indian Association for Water Pollution Control has sponsored conferences and produces a monthly newsletter to advance knowledge on the collection, treatment and disposal of sewage and industrial waste.

- As industrialization spreads, NGOs in developing countries are becoming increasingly concerned about the effects of chemical pollutants in water on the lives and life-styles of citizens. The Consumers' Association of Penang (CAP), Malaysia, for example, is currently assisting the village fishermen of Kuala Juru to combat the factories which have discharged high levels of toxic chemicals (such as mercury) into the river, thereby creating a health hazard to those who may drink the water or eat the fish.

b) Developed Countries

Developed country NGOs are also concentrating their efforts on both chemical and biological pollutants. Regarding drinking water, NGOs have focussed attention on chemical and trace metals contamination. This is becoming an increasing problem with the heavy concentration of industry and the wide-use of technologies which (intentionally and unintentionally) release large amounts of these contaminants into the water environment. It is with food, fisheries and water recreation areas, that developed country NGOs are concerned about biological pollution - waste from human faeces and from food processing plants (slaughterhouses), as well as with chemical pollution. The following examples illustrate the range of activities:

- Japanese NGOs, including Jishu Koza, in co-operation with the Native Peoples' Grand Council Treaty organisation in Canada, initiated an exchange of Minamata disease victims between Canada and Japan for information and education purposes. The disease arises from consumption of fish contaminated by mercury.
- In many countries, Cottager's Associations are most concerned that their lakes and rivers remain or become sufficiently pollution-free for safe swimming and boating. To this end there is frequent monitoring of water quality as well as information/action campaigns.
- The International Institute of Applied Systems Analysis is developing improved hydrophysical and ecological models as tools for the analysis of water quality problems arising from waste discharges.
- Inter-environment a.s.b.l. (Belgium) has undertaken a critical study of the government's General Regulations concerning discharge of wastewater.

2.2 Pollution of the Air

Air pollution is a prime concern of NGOs. In fact that concern is, if anything, on the increase as more is learned about the causes of respiratory diseases and cancers and their relationship to air-borne contaminants. Since the largest proportion of air pollution is directly related to industrialisation and mechanisation, NGOs in developed countries are the most active in this area. However, as industrialisation spreads to developing countries, so does NGO activity.

NGO programmes can be divided into two main categories: research and information/action, both of which are illustrated below with examples.

a) Research

NGOs are involved in research on the nature and extent of air pollution, as well as on the effects of this pollution on human health. Examples include the following:

- The International Union of Air Pollution Prevention Associations encourages research and exchange of information amongst its member associations in 27 countries.
- The International Union of Pure and Applied Chemistry has a commission on air quality which is involved in such areas as the reliability of air quality data, chemicals with long-term effects, metals in the air, and so on.
- The Zurich Research Group for Investigation and Prevention of Silicosis (Switzerland) works to prevent lung diseases caused by air pollution. They are undertaking a study of dust deposit, and their possible destructive effects on the lungs of the normal population.
- Environmental Protection Society, Selangor, Malaysia, plans an air pollution study of vehicular traffic in the Klang Valley for 1978/79.

b) Information/Action

NGOs have pushed for improved policies, standards, and legislation in the field of air quality. They have also encouraged individuals to reduce their personal contribution to pollution of the air. The following is a sampling of NGO actions to improve human health by combatting air pollution:

- The Natural Resources Defence Council (USA) has been involved in various legal cases concerning air pollution. They have just published a book entitled "Respirable Particles: Impact of Air-borne Fine Particulates on Health and the Environment".
- The World YWCA publishes a citizen responsibility kit which includes air pollution and health information as well as ideas for citizen action.
- The International Council of Women reports that many of their National Councils have brought pressure to bear on their governments with respect to air pollution regulations.
- The National Society for Clean Air in England has conferences, meetings, etc., and makes recommendations to the government and local authorities.
- The Association for the Ecological Defence of Galicia in Spain has opposed establishment of five cellulose factories with partial success, since it now seems the factories will be built but to environmental specifications.
- The Group Against Smoking Pollution - GASP (Canada) has pressed for governmental control of smoking in public places. They have also publicized the health effects on non-smokers exposed to cigarette smoke, in an effort to make smokers more considerate.

- The Girl Guides in Mexico carried out a campaign during which they tried to persuade motorists to use their cars less frequently, thereby reducing exhaust emissions (as well as achieving other beneficial results).
- Members of Maskersaf! (Netherlands) draw attention to the effects of air pollution on human health by wearing gas masks while cycling in heavily polluted areas.

2.3 Pollution of the Working Environment

NGOs, including labour/trade unions, are expressing deep concern over the pollution of the working environment. At the moment this concern is particularly strong in developed countries - the more industrialised a country the greater the NGO activity (as related to the work place) seems to be. The following examples illustrate this activity, which is most readily divided into two categories: research and information/action. Further relevant examples may be found in Chapter 1 - Potentially Toxic Chemicals.

a) Research

- The Public Interest Research Centre (United Kingdom) has been developing the idea of social audits of companies - research and reports on the social impact of manufacturing enterprises. Three audits have so far been done, each examining actions taken by the companies to safeguard employees from toxic hazards at work.
- The Argentinian Association Against Contamination of the Air has carried out studies on the levels of lead in the blood of petroleum sellers and on the numbers of chronic bronchial lesions in workers.
- The Public Citizen Health Research Group (USA) has done analyses of medical records and workers compensation records for various industries to determine prevalent hazards. They have furthermore been involved in literature searches and petitions to government concerning regulation of a wide variety of hazardous chemicals present in the workplace.

b) Information/Action

- A great many NGOs in many countries have actively publicized the health hazards for workers associated with nuclear power, from the mining of uranium through to disposal of the waste. This concern has been an important component in the large and growing NGO opposition to nuclear energy (see section 2.5 below).
- The Nordic Council of Trade Unions has prepared an "Action Programme for a Better Work Environment" which includes measures to control substances which create health hazards.
- The Icelandic Federation of Labour has been instrumental in legislative reforms and the establishment of optimum health and safety standards for workers in Iceland.
- A representative of the Oil, Chemical and Atomic Workers International Union was deeply involved in the development of the

Occupational Safety and Health Act (OSHA) in the United States.

- A large number of unions have negotiated with manufacturers to win better health protection, health education classes, more health-related research, provision of monitoring equipment to workers, and so on.
- The Consumers Association of Penang, Malaysia, has submitted a memorandum on asbestos to the Malaysian Ministry of Health, including recommendations to protect workers in asbestos industries. They have also called for a Health Education Programme for all workers subject to occupational hazards.

2.4 Food and Feed Contaminants

As the effects on human health of various food and feed contaminants become better understood, NGO concern increases. NGOs in developed countries, because of the extensive use of chemicals by the food and agriculture industries, are particularly active. In the developing countries, the concern is also definitely present. With escalating imports of Western processed foods and food technology, and with growing awareness of the role of biologically based food contamination, developing country NGOs are showing every sign of further increasing their efforts to combat this health hazard.

NGO activities again fall into two broad categories - research and information/action. These are illustrated below with examples. Further relevant examples may be found in Chapter 1 - Potentially Toxic Chemicals, and Chapter 2B - Pest Management.

a) Research

- The International Union of Pure and Applied Chemistry has a Commission on Food Additives and a Commission on Food Contaminants. The wide range of topics considered include nitrosamines, urethane in beverages, aflatoxins, heavy metals, and contamination from food packaging.
- The Bermuda Biological Station for Research has made a preliminary study of coliform content of shellfish (which is eaten locally) and because of the higher than normal levels is continuing to monitor the levels of contamination.
- The Latin American Association of Higher Agricultural Education has been involved in the determination of pesticide residues in milk and fodder.

b) Information/Action

- The National Consumer Council (India) uses its various publications to inform the public of such issues as artificial ripening of fruits by carbide gas and the use of adulterants in food and drugs.
- The Grupo Ecologico, Universidad del Tolima (Colombia) has studied the extent of usage of food additives by food processors in Colombia. Based on this, they launched a strong public information campaign, and have called for strict standards limiting the

maximum dosages of a great number of food additives and flavourings.

- Consumer Protection groups like the Public Interest Research Groups (PIRGs), started by Ralph Nader in various universities across the US and Canada have been active in the field of environmental health. Using student funds and student volunteer help, the PIRGS operate autonomously in their local region, and focus on legal activities, and on researching and publishing reports for the public on environmental health hazards.
- Many NGOs involved in agricultural development are also involved in such projects as improved grain storage. Apart from reducing post-harvest losses, such projects are frequently intended to prevent possible health hazards associated with mould, rodents, etc.
- The International Union of Nutritional Sciences distributes information on the relationship between food contamination and disease to its member societies.
- De Kleine Aarde (Netherlands) uses courses, demonstrations, and publications to promote agriculture that is not dependent on chemical fertilizers and pesticides - thereby producing food that is free from the possible health hazards associated with these chemicals.
- Miljocentrum (Sweden) is an activist organisation devoting substantial attention to health effects of unnecessary food additives.
- The YWCA of Australia has collected information on additives in food production for distribution.

2.5 Physical Pollutants

Physical pollutants, as listed by UNEP's Overview "Health of People and of the Environment" (Report No. 2), include ionising radiation, ultra-violet radiation, noise, climatic factors, light and heat, micro-waves and vibration. These physical pollutants will be treated under separate headings:

(a) Ionizing Radiation

Ionizing radiation is currently receiving intensive NGO attention by some who oppose nuclear power and by some who don't but who are concerned for the application of radiation safety in the appropriate application of nuclear power.

Research

- The Union of Concerned Scientists (USA) have been involved in a thorough study of the US Nuclear Programme, a detailed review of the Atomic Energy Commission's reactor safety study, and other related investigations.
- The International Radiation Protection Association is a scientific NGO involved in the protection against ionizing, as well as non-ionizing, radiations.

- The International Commission on Radiological Protection (ICRP) prepares and publishes recommendations and dose limits for radiation protection. These are used throughout the world as a basis for regulations or advice. ICRP's revised recommendations were published in 1977, with support from WHO and UNEP.

Information/Action

- Large demonstrations organised by NGOs opposing nuclear power have become common, particularly in Europe, by new ad hoc groups and coalitions of existing groups.
- The Australian Council of Trade Unions passed a resolution in 1975 calling on unions to ban the mining, handling and export of uranium. Though since partially relaxed, the ban remains influential.
- The Natural Resources Defense Council (USA) employs reports, petitions, and legal proceedings to combat the threat to health from nuclear power development.

(b) Ultra-violet radiation

There has been recent concern over possible reduction of the ozone layer. This would result in an increase of skin cancer due to an increase in ultra-violet radiation reaching the earth's surface. Fluorocarbons (especially in aerosol cans), and nitrogen (chemical fertilizers) are all suspected causes of the reduction of the ozone layer.

NGOs are naturally concerned about the possible resulting increase in skin cancer. Developed country NGOs in particular mounted country-wide campaigns against the use of fluorocarbons in aerosol cans with the result that in most countries their use has been reduced and some countries are now taking steps towards a ban.

NGOs have been less successful in their political opposition to supersonic aircraft, but nevertheless continue to promote the use of alternative modes of transport. Similarly, many NGOs are promoting alternative agricultural practices which aim to reduce agricultural dependence on chemical fertilizers. (This reduced dependence is seen to be beneficial for several reasons, not only for its role in protecting the ozone layer.)

(c) Noise

Though NGO activities in the field of noise are not as extensive as in many other fields, the following examples demonstrate its importance:

- The Luxembourg Noise Abating Society, helped frame a law against noise (1976).
- The Swedish Association of Local Authorities has been involved with planning models for traffic noise reduction.
- The German Workers Unit for Noise Pollution (Federal Republic of Germany) has been concerned about noise in the workplace.

- The National Consumer Council (India) helped in obtaining a ban on loudspeakers after 10.00 p.m.
- The International Council of Women's Committee on the Environment asked the National Councils to endeavour to act to control excessive noise with its harmful effects on both hearing and health.

(d) Other

Though some NGOs are concerned with man's impact on the climate (through deforestation, energy projects, etc.), the survey revealed no programmes relating this impact to health effects. Similarly, the survey did not identify any significant NGO environmental health programmes concerning heat, light, microwaves or vibration.

2.6 Environmentally Related Communicable and Non-Communicable Diseases

The discussion in sections 2.1 through 2.5 outlines NGO activity relating to the vast majority of environmentally related communicable and non-communicable diseases (since most of these diseases are related to air or water quality, the work environment, food/feed contamination, or physical pollutants). However, two significant omissions are apparent. The first is communicable diseases spread by means of vectors such as the mosquito; NGO activities in this field are outlined in Chapter 2B - Pest Management. The second is the health effects of direct exposure to a disease-inducing agent (for instance subjection to aerial spraying of pesticides); NGO activities relevant to this topic are outlined in Chapter 1 - Potentially Toxic Chemicals - and in Chapter 2B - Pest Management.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT

Though they were not explicitly asked to evaluate current international efforts, it is evident that a majority of the NGOs concerned with human and environmental health feel that this effort is insufficient. However, the following general NGO recommendations for UNEP action would, in part, overcome the inadequacies perceived by NGOs. The recommendations fall into five general areas - information/communication, standards, political, financial and miscellaneous.

3.1 Information/Communication

UNEP and its Division of Information should improve their activities in the area of environmentally-related health by:

- (a) compiling and generating reliable information of both a general and a specific nature, including information of direct use to the individual consumer. This recommendation is directly in line with UNEP goal 5 for 1982 "*to provide concrete advice to governments on priority pollutants*" as well as with such decisions as GC 85 (v) or WHA 30.47.
- (b) using field technicians and other experts for direct personal contact;

- (c) sponsoring seminars/conferences for scientists, field workers and others involved in the field.

3.2 Standards

UNEP should work towards developing:

- (a) safe international standards and levels for all pollutants, based on comprehensive information concerning risks and dangers;
- (b) universal monitoring devices.

3.3 Political

UNEP should:

- (a) encourage governments to comply with the international standards, and encourage them to eventually adopt their own standards.
- (b) encourage governments to spend a larger portion of their budgets on environmental health and health research.
- (c) continue and increase its support to NGOs, including maintaining its "open-door" policy of allowing broad NGO participation in UNEP policy-making activities, and facilitating the flow of environmental and health information among NGOs and inter-governmental agencies.

3.4 Financial

UNEP should make financial support for research projects more readily available.

3.5 Miscellaneous

Specific recommendations for UNEP action, made by one or more NGOs, include the following:

- (a) encourage filtration and disinfection of surface water supplies;
- (b) encourage safe construction of well supplies;
- (c) collaborate with WHO and support research in biological and other non-polluting methods of schistosomiasis control;
- (d) encourage greater co-operation between relevant national and international organisations.

CHAPTER 2 - PART B

Role of NGOs in the field of Pest Management

INTRODUCTION

1.1 Scope of the Chapter

This Chapter deals with the attempts of non-governmental organisations to reduce the use of harmful chemicals and increasing use of non-chemical, biologically sound methods in the field of pest management.

1.2 Level of Activity

NGOs are extensively involved in activities in the field of non-chemical pest management, though frequently these activities are not explicitly categorized as such. Thus, activities such as those included in the following list represent indirect NGO involvement in integrated pest control:

- NGO activities aimed at ensuring stronger controlling regulations in the use of pesticides are indirectly promoting the use of non-chemical methods of pest control (see Chapter 1).
- Many development oriented NGOs, agricultural co-operatives, etc. are promoting traditional or improved traditional agriculture methods in various parts of the developing world. Traditional methods of pest control are frequently very effective and invariably non-chemical.
- Food co-operatives in many countries frequently sell organically grown food, thereby ensuring a market and demand for produce grown without pesticides.
- Various other NGO actions, such as provision of safe water supply or hygienic waste disposal systems, result in non-chemical control of certain pests.

In spite of the importance of such activities, the major focus of this chapter will be NGO programmes oriented directly towards development and implementation of biological/integrated pest management systems. In the developed countries, where chemical pest management is currently the norm, NGO activity focusses on developing alternatives to replace current ineffective and/or damaging practices; in the developing world where chemical pest control is currently much less prevalent, (though growing and often unregulated), NGO activities centre on integrated pest control as a practice which will obviate the need for further introduction of chemical methods (as well, of course, as a method to replace existing chemical usage).

Though the survey did reveal significant and focussed NGO activity concerning non-chemical pest management, the level of activity appeared to be substantially less than in other disciplines (excluding for the moment related activities such as those noted in the first paragraph of this section). Nevertheless, there are a number of very important and significant NGO initiatives.

1.3 Types of NGOs involved

The types of NGOs involved directly in biological/integrated pest control can be broadly broken down into three categories. These are the scientific NGOs; those organisations involved in implementation, such as agricultural organisations; and those organisations involved in information and/or political activities. In addition, of course, many NGOs fall into more than one of these categories.

2. WHAT NGOs ARE DOING

2.1 NGO activity related to UNEP Strategy and Objectives

2.1.1 Programmes in non-chemical methods of pest management for schistosomiasis, malaria and cotton pests

Though the survey revealed much in the way of pest management activities by NGOs, only a small portion of this was directed towards schistosomiasis (bilharzia), malaria and cotton pests. As the survey sample was limited, this does not necessarily imply NGO disinterest. It is, however, true that these particular pests do not enjoy the same relative importance in the NGO world as they do within UNEP. Examples follow for each of UNEP's designated pests.

In the case of malaria, the International Centre of Insect Physiology and Ecology in Kenya is investigating the practical possibility of genetic engineering as a mechanism for species-specific pest control. A technique known as translocation homozygote release has induced a considerable amount of sterility in mosquitos. Though not yet extended to the mosquito vector of malaria, there is clear potential for this technique. In addition, it is worth mentioning that ICIPE has an explicitly defined objective of training post-doctoral scientists and senior technical staff through participation in ICIPE programmes, including the one just described.

In the case of schistosomiasis control, the most extensive programme with the best results was undertaken in China. This programme was highly dependent upon intensive and organised public participation. The organisations responsible for implementation of the programme (such as production brigades and production teams), though integrated into the governmental structure, in fact fill a role somewhat analogous to that of non-governmental organisations in many other parts of the world.

In addition to such active implementation of anti-schistosomiasis programmes, a number of non-governmental organisations in other parts of the world are engaged in research activities. For instance, the International Foundation for Science is supporting a research project in Ghana to examine the fruit and bark of a particular tree species for its ability to kill the snails which act as intermediary hosts to bilharzia, without harmful effects on humans, wildlife, or vegetation. Another approach has been taken by the Department of Zoology in the University of Dar es Salaam, which is investigating the predation activity of a South and Central American snail against the above-mentioned vector snail.

In Columbia, in response to a request from cotton-growers, a member of the Grupo Ecologico Universidad del Tolima prepared for the Ministry of Agriculture, in co-operation with the Federation Nacional de Algodoneros (National Federation of Cotton Growers), an elaborate

plan for integrated control of cotton pests in the area around Tolima.

Apart from the research and/or implementation activities undertaken by NGOs in each of the fields of malaria, schistosomiasis, and cotton pests, NGOs are involved in informational activities. Thus, for example, a great many NGOs involved in rural development projects in developing countries undertake information/education activities aimed at improving hygiene - a form of schistosomiasis control. In the case of agricultural pests, many farmers' organisations supply routine information to their members on pest control measures. Thus, the Kenya National Farmers Union in its magazine 'Farmers Voice', features a regular column "Know your pests". While focussing primarily on chemical methods of control, biological alternatives are indicated. Their recent column on cotton pests, for instance, stated that a pest known as "the stainer" could be controlled by caging chickens in the cotton plot - 15 birds will keep a quarter of an acre free of stainers.

2.1.2 Programmes in Non-chemical Methods of Management of other pests

The NGO activities in the field of non-chemical pest management which do not focus on the three pests discussed above (i.e. the majority of NGO activities) are outlined in three sub-sections:

- a) Research
- b) Implementation
- c) Training, education, information, public involvement

a) Research

Non-governmental organisations undertake extensive programmes of research in the non-chemical management of pests. The following examples indicate both the diversity and extent of this activity:

- Various entomological societies throughout the world are involved in research relevant to non-chemical pest control.
- International Organisation for Biological Control of Noxious Animals and Plants (IOBC) is a Commission of the International Union of Biological Sciences. Its objective is global stimulation of scientific activity directed towards the development of effective and harmless methods of controlling pests of any kind, and in particular to promote specific research in the use of biological control agents. Among other activities, the IOBC publishes a scientific journal entitled 'Entomophaga'.
- The International Union of Forestry Research Organisations (IUFRO) has established a number of research groups dealing with such topics as genetic resistance of particular species of trees to insects and diseases; integrated control of various pests; and biological control in general.
- The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is investigating the entomological implications of inter-cropping as practised on small farms in many parts of the world.
- The International Centre of Insect Physiology and Ecology (ICIPE) has as one of its objectives long-term and low impact control of

certain 'international' pests, namely the migratory African Army worm, the Sorghum Shootfly, and the higher termites.

- The International Foundation for Science is supporting genetic research by a number of developing country scientists. Among the objectives of this work will be improved disease resistance among food crops.
- The International Institute for Applied Systems Analysis is carrying out research on methodologies and alternative policies for forest/pest management, optimally with minimum or no use of insecticides.
- Studies on the epidemiology of human diseases being carried out by a variety of organisations provide data fundamental to any non-chemical control methods.

In addition to such formal research in the field of biological/integrated pest management, a great deal of less formal experimentation is undertaken by the agriculturalists themselves. They rely heavily on local knowledge and experience, drawing at the same time wherever possible from published sources and from broader experience. Though such experimentation takes place throughout the world, it is institutionalised primarily in the developed countries where a large and growing number of organisations are actively trying to re-introduce organic agricultural practices (see (b) below).

Within this broad category, activities range from the trial and error approach of numerous local cooperatives or collectives, through to the very sophisticated but practical research being undertaken by such groups as the New Alchemy Institute (USA and Canada) and the Henry Doubleday Research Association (UK). Given that biological/integrated pest management intrinsically implies locally adapted implementation (even if based on uniform principles), the importance of this type of NGO research cannot be overstated.

(b) Implementation

Apart from the activities mentioned in 1.2 above, the most obvious NGO activity in the implementation of non-chemical pest management is found in organisations, largely in the developed countries, involved explicitly in organic agriculture. Such organisations range from very local groups (such as Farmer's Co-operatives), through national organisations (such as the Organic Farming and Gardening Society, Australia), to international coalitions (such as the International Federation of Organic Agricultural Movements). In addition, many of the research activities described above have pilot projects and/or extension services associated with them. Thus, for instance, the IOBC works to fill the need for international assistance and cooperation in the application of research results.

In spite of such commendable activities, however, the degree of involvement of NGOs in the actual practice of non-chemical methods of pest control is extremely varied. Important opportunities for action exist with the agricultural movements and organisations throughout the world, and indeed several are very actively involved in various possibilities for biological/integrated control. In spite of this, most such organisations (excluding those oriented specifically towards organic agriculture) concentrate on the use of chemical pesticides.

Similarly, though many NGOs have been involved with biological control of disease vectors such as the mosquito, the activities of other NGOs have on occasion created at least a short-term need for chemical pesticides. Thus, for instance, while the drainage of small ponds/swamps results in a measure of biological control of pests such as the mosquito construction by NGOs of small dams or irrigation projects may under some circumstances supply a breeding habitat necessitating new pest control activities.

In spite of the mixed approach which NGOs take to the question of non-chemical pest management, it appears that biological/integrated control activities by NGOs are on the increase, and that furthermore, NGO activity in this field is proportionately greater than that of most other institutional sectors of society.

(c) Training, education, information, public involvement

NGOs supply information to a variety of audiences on non-chemical pest control. For the purposes of this paper the audiences are broken down into two categories: Scientific and General Public. Examples of each follow:

Scientific Audience

- The International Biological Programme (IBP, one of the major international research programmes of the International Council of Scientific Unions) is in the process of publishing a major 31-volume synthesis of the scientific literature generated during the 10-year programme, including a volume on biological control of insect pests.
- One of the major functions of the IOBC is the dissemination of information to scientists at large by the mechanism of publications, meetings, symposia, and so on.
- The Entomological Society of America has contributed a scientific overview publication entitled 'Integrated Pest Management: Rationale, Potential, Needs and Implementation'.
- The International Institute for Applied Systems Analysis has been involved in the establishment of a "systems analysis pest management" network, linking individuals and centres in a number of countries. The network will not only disseminate key preprint and conference proceedings, but will also organise conferences itself.

General Public Audience

The informational activities of NGOs directed at the general public (including farmers) aim to create an awareness of the need for non-chemical methods of pest control and to encourage the use of such methods whenever possible.

- The Consumers Association of Penang (Malaysia) in their publication Utusan Konsumer have outlined biological alternatives to the use of an insecticide called 'Abate', which is being advocated for home use in drinking water tanks, flower vases, etc., in order to control the mosquito vector of dengue fever. A recent issue of the Conservation Foundation Letter (United States) was given over entirely to biological control. A variety of other environmental organisations have included information on non-chemical pest management in their regular publications.

- A large number of NGOs have published "how-to" manuals for the "home gardener" outlining such practices as non-chemical pest control and composting.
- Nature et Progrès (France - the European Association for Organic Agriculture and Health) has held Workshops and Congresses for farmers and others. They have also acted as a placement office to organise apprenticeships on organic farms.
- The Soil Association of the UK has organised a series of short courses on organic agriculture.
- The International Federation of Organic Agriculture Movements has organised a study tour of Europe, visiting organic farms and other relevant points of interest.
- Other agricultural organisations, though not explicitly involved in organic farming, often supply information to their members on non-chemical pest management. For instance, the Agricultural Development Agencies of Bangladesh newsletter (ADAB News) has carried information on non-chemical pest control, as well as on cultivation of various crops with resistance to pests.

2.2 NGO activities concerning the application of chemical pesticides

NGO activities in the field of chemical pesticides have been of two major kinds. The first type has been widespread opposition to the use of such products because of their negative or potentially negative effects. These activities are outlined in the chapter on Potentially Toxic Chemicals.

The second type of NGO activity has reflected a clear acceptance of the use of chemical pesticides (see section 2.1.2 b above). In most such cases, the NGOs are proponents of carefully managed useage and consequently undertake activities such as research into more appropriate chemicals, training courses, etc. Though these actions are important in-depth discussion is beyond the scope of this chapter.

2.3 Other activities - political and legal action

As in all disciplines, a certain number of NGOs are politically active, pressing for political change. The processes by which they achieve these results vary tremendously. First and foremost, of course, the public concern and involvement which NGO activities generate is intrinsically a force leading frequently to changes in governmental policy.

More direct NGO action is also common. Thus, various organisations (including but not limited to organic agriculture groups) pass resolutions, submit position papers, meet governmental officials, and so on - all with the aim of influencing governmental policy. The impacts of such activism can be and have been substantial. For instance, an organisation in Canada called Cape Breton Land Owners Against the Spray actively opposed spruce bud-worm spraying. Their work included a report entitled 'Alternatives to Spraying' which was distributed to the press and to provincial politicians. Apart from proving the spraying to be unnecessary, they showed that an intelligent forest management programme would create an additional thousand jobs or more. The government voted not to spray.

NGOs also act through legal channels. As would be expected, the

survey revealed no such measures designed to eliminate chemical pesticides altogether, thereby forcing the use of non-chemical methods. Instead, a number of organisations such as the Environmental Defense Fund in the United States have taken legal action against a number of specific pesticides, thereby implicitly favouring biological/integrated methods of control.

A final and important mode of NGO political action in this field is through actual integration of NGO activities with governmental activities. For instance, a recent symposium on pest control strategies was organised in the United States by Cornell University, the Environmental Defense Fund and the Center for Science in the Public Interest (all NGOs) and sponsored by the Council for Environmental Quality and the Environmental Protection Agency (governmental). In other circumstances, NGOs advise governments, co-operate in research programmes, and even include government officials among their members. Clearly, political action by NGOs is frequently co-operative rather than confrontational.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT IN ENVIRONMENTAL SOUND PEST MANAGEMENT

The questionnaire circulated to NGOs did not request an NGO evaluation of current international action in the field of pest management. Nevertheless, a number of NGOs indicated that awareness of the need for integrated control is growing on the part of many governments, and that initiatives are being taken on a number of levels. As expected, however, NGOs recommended a number of additional activities which need to be initiated, including the following:

3.1 Research

UNEP should make further funds available to support programmes with research components. In addition to the development of non-chemical methodologies, emphasis should be placed on the development of policies using existing techniques. UNEP should also place greater emphasis on attempts to prepare comprehensive forecasts of all the effects that might result from pest management programmes. Finally, one NGO suggested that major pesticide manufacturers be required to initiate a research and development programme on integrated control as a pre-requisite to future use of their products.

3.2 Training

UNEP should support training programmes which provide experience to both researchers and field workers. Senior researchers should also be sent on short study tours, to see pesticide problems in the field.

3.3 Expertise

UNEP should make expertise available to promote the idea of integrated pest management to farmers and governments, as well as to train local people.

3.4 Regulation

As outlined in the paper On Toxic Chemicals, many NGOs recommend

a variety of measures to strengthen international control on the use of dangerous pesticides. National governments should also be encouraged to limit unjustifiable use of pesticides.

3.5 Information

UNEP should produce information for wide dissemination on the techniques and the advantages of ecological control. In addition, exchange of information and scientists between various countries and institutions should be encouraged in order to ensure wide awareness of pest management techniques and needs.

CHAPTER 3

Role of NGOs in the Field of Arid Lands

INTRODUCTION

1.1 Scope of the Chapter

This chapter deals with the activity of non-governmental organisations from all parts of the world, in the field of arid and semi-arid lands.

1.2 Level of Activity

NGO activities in the field of arid lands and desertification are extensive and have been so for a number of years, though the Sahelian drought and the consequent United Nations Conference on Desertification gave further impetus to this interest. For obvious reasons, activity is greatest in countries affected by desertification (most frequently developing countries) - though components of this complex issue (soil loss, vegetation cover, land use, etc.) are of interest elsewhere. In fact, a great many NGOs view desertification as a symptom resulting from a particular set of causal factors. The same general causes give rise to different symptoms under other environmental conditions, meaning that there is a tremendous commonality between NGOs working on arid land/desertification issues and NGOs working on, for instance, the degradation of tropical rain forests. As such, NGO activity concerning the problems of arid lands is greater than the extensive activity of direct relevance outlined below.

1.3 Types of NGOs Involved

NGOs of all types are interested in arid lands, including those from any of the following categories:

- Local, national, regional, international
- Scientific, information/education, action
- Exclusively concerned with arid lands; exclusively concerned with environmental issues including arid lands; exclusively concerned with other particular issues (human settlements, forestry, etc.), including application to arid lands; interested and concerned with a wide range of issues including arid lands.

Particularly noteworthy is the involvement of a large number of "development assistance" NGOs in desertification issues - not surprising since a majority of the land subject to desertification is located in the developing countries, and since the most critical of the resulting problems have also been in the developing countries. Such involvement implies a rapidly growing acceptance of the concept of "eco-development" - an evolution of thinking which many environmental NGOs welcome and are encouraging.

2.1 NGO Activities Related to UNEP Strategy and Objectives

Given the extensive and complex range of NGO activities in arid lands, any categorisation is bound to be somewhat arbitrary. This section is divided into two broad topics:

2.1.1 Combatting Desertification

2.1.2 Information, Education, Training, Public Participation

2.1.1 Combatting Desertification

NGO activities to "combat desertification" range from programmes to assist the socio-economic development of affected regions to programmes aimed specifically at halting desert encroachment. The full range of this activity is discussed below under each of the two headings:

- a) Research
- b) Action

a) Research

The extent and intensity of NGO arid lands related research activity is best illustrated by the following series of examples*:

- Two committees of the International Council of Scientific Unions (ICSU), namely Scientific Committee on Problems of the Environment (SCOPE), and Scientific Committee on Water Research (COWAR), sponsored with UNESCO the preparation of a review entitled "Arid Lands Irrigation in Developing Countries: Environmental Effects". The assessment includes inventories of irrigated lands; assessment of recent trends, including land abandoned due to water logging or salinization; effects of irrigation on human populations and on hydrological processes; an analysis of the efficiency of irrigation compared with alternate means for increasing agricultural productivity; and so on.
- The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is doing research on approaches, principles and methodologies which will allow optimum utilisation and conservation of the soil and water resources. This information will form a basis allowing individual nations to develop farming systems suitable to their specific area of the semi-arid tropics. ICRISAT believes that the expected increase in yield per hectare will reduce the need to crop marginal lands.
- A wide variety of NGO research activities are undertaken to improve socio-economic well-being of the peoples in arid and semi-arid regions, even though the problems studied do not necessarily relate only to such regions. Most obvious in this category is the wide

* Note, however, that further discussion of activities relating to water supply and quality is given in Chapter 5. Additional discussion on soils, afforestation, waterlogging, etc., is found in Chapter 4.

range of medical research activities currently being undertaken.

- The International Development Research Centre is supporting a variety of research projects aimed at combatting desertification. These include silvicultural studies to improve afforestation methods on severely eroded and biologically degraded land; species and yield trials for irrigated forest plantations to satisfy the timber and fuel needs of rural populations; studies on the design and effectiveness of shelterbelts; tests of the applicability of Landsat imagery to the study of desertification; and so on. IDRC has also played a leading role in the establishment of the international council for Research in Agro-Forestry, which (amongst other things) seeks to encourage, support, and co-ordinate research and extension projects in agroforestry.
- The International Union of Forestry Research Organisations has a research group dealing with afforestation problems in arid and sub-arid regions.
- Six non-governmental science associations sponsored the "Nairobi Seminar on Desertification" immediately before UNCOD. The seminar developed a draft set of critical desertification indicators, which should ultimately serve as a basis for monitoring local progress of desertification, and thereby assist in the planning of the comprehensive programmes to combat it. The draft indicators will be tested and refined in the field.
- The Bureau of Resource Assessment and Land Use Planning (Tanzania) is involved in studies of semi-arid areas in Tanzania.
- The International Federation of Institutes for Advanced Study has commissioned a study to assess the political, economic, social and environmental implications of a credible and long-range weather forecast. The West African Sahel was chosen as a case study.

In addition to formal research activities, such as the examples above, a great deal of informal, local experimentation is undertaken by NGOs with the aim of adapting technologies and systems to local requirements. From all of this, it is clear that the output of NGO research activities is substantial.

b) Action

Even more extensive than NGO efforts in the field of research are NGO actions to combat desertification and its effects. These actions include: measures to promote socio-economic development; advocacy or implementation of wise land use; afforestation programmes (for sand dune stabilization, for shelter belts, for maintenance of soil cover, etc.); and provision of alternatives, which enable people in areas subject to desertification to reduce their impact on the environment (the alternatives include everything from simple forest plantations providing sustained firewood through to more complex agricultural or domestic technologies).

It is important to note that a comprehensive anti-desertification programme for any sizeable region is beyond the means and responsibility of any NGO. Nevertheless, NGOs can and do make a sizeable contribution to such programmes, as the examples which follow indicate*

* Additional discussion and examples of afforestation programmes, erosion control, and work on salinization/waterlogging will be found in Chapter 4. Additional discussion and examples on water supply and quality will be found in Chapter 5.

- The extensive activities in the field of socio-economic development by religious organisations and by the Red Cross are well-known and are to be found in most parts of the world subject to desertification. Also active in this general field is the International Association for Rural Development and a host of similar international organisations.
- The Serowe Brigades Development Trust, Botswana, is engaged in integrated rural development through the combination of education and agricultural production.
- Sadvichar Parivar, located in an area of India seriously threatened by desertification, has sponsored sapling nurseries in schools; grown, on a pilot basis, a fruit orchard/tree plantation in a village grazeland; and is even experimenting with a more efficient cremation furnace to save on firewood.
- The International Development Research Centre is supporting a project which seeks to establish 160 hectares of experimental woodlot near 70 villages in Niger to produce firewood and timber.
- The International Federation of Agricultural Producers (IFAP), representing farmers from many areas subject to desertification, is advocating (amongst other things) a re-examination of mixed cropping systems and traditional livestock management methods in the arid areas.
- The International Union for the Conservation of Nature and Natural Resources (IUCN) is preparing guidelines for the development of arid and semi-arid lands. They have also done surveys of East, Central and West Africa to identify eco-systems which should be safeguarded; worked on the indigenous desert fauna of the Sahel, the addax and the oryx, with a view to rehabilitating their habitat and their populations; worked with UNEP and FAO on the establishment of a national park in the Gobi in the Peoples Republic of Mongolia; and so on.
- The International Commission on Irrigation and Drainage, based in India, aims to stimulate and promote the development and application of irrigation (though recognising that irrigation schemes are not always appropriate).
- The International Foundation for Game and Wildlife Conservation has been advocating scientifically managed use of game animals for food in the arid and semi-arid areas (in recognition of their adaptation to their environment).
- In Upper Volta, SPONG (Permanent Secretariat of Non-Government Organisations) groups together NGOs to co-ordinate policy, exchange ideas and information, and foster co-operation in projects aimed at long-term socio-economic development. In Niger, GAP (Association of Non-Governmental Assistance) fills a similar role.

2.1.2 Information, Education, Training, Public Participation

As in most disciplines, NGOs concerned with Desertification, are particularly strong in the general field of information, training, and public participation. These activities, of course, are generally directed to communities which are affected by desertification. In addition, however, many NGOs orient their informational activities towards unaffected

communities. Their reasons for doing so include the following:

- Many of the features of desertification are common with other environmental problems. In a sense, presentation of desertification issues represents a warning to other communities, demonstrating possible effects of unwise use of the environment.
- Presentation of desertification issues highlights the need for international actions on a number of levels, including a restructuring of the international economic order to help remove economic pressure on peoples living in marginal lands.

One of the very important aspects of NGO information/training/education activities is the effect they can have on decision-makers - either directly, or indirectly as a response to shifting public opinion. This and other aspects of NGO information programmes are treated more thoroughly in Chapter 7; the following examples give an indication of their scale and scope:

- Ongoing NGO informational activities have been given added impetus by the UN Water Conference and the UN Conference on Desertification. Some of the notable recent efforts have included special publications relevant to desertification by the Worldwatch Institute, The International Institute for Environment and Development, The International Institute for Food Policy Research, and many others. Other NGOs have produced special issues of their regular periodicals - examples include the IUCN Bulletin; Ekistics, the journal of the World Society for Ekistics; and Ambio, the journal of the Royal Swedish Academy of Sciences.
- Earthscan, a project of the International Institute for Environment and Development (supported by UNEP), circulated a number of features on desertification to the worldwide media and then prepared an important briefing document for representatives covering UNCOD. The benefits of such activities were obvious in the quantity and quality of UNCOD press coverage.
- Tranet, the trans-national network for appropriate/alternative technologies, provides appropriate technology centres in all parts of the world, references to researchers working in arid land technologies, including "Climax Agriculture". Similarly, the Committee on Science and Technology in the Developing Countries (COSTED), a committee of ICSU, is establishing an appropriate technology information system.
- The American Association for the Advancement of Science has compiled a directory of North American arid lands scientists; the Association of Geoscientists for International Development maintains a "Personnel Data Bank" including geoscientists interested in arid lands.
- Training is a specialised form of information provision. The International Crops Research Institute for the Semi-Arid Tropics operates short-term training courses (2-5 days), six-month training programmes for junior scientists and extension personnel, and a graduate programme for individual students.
- The Kweneng Rural Development Association (Botswana) sends members of its staff to foreign countries for training. The organisation's

School Tree Programme enhances public awareness by providing technical advice, trees, and fertilizers to primary schools.

- Most NGOs believe that public participation is an essential component of any effective anti-desertification action. As has been indicated, a number of the NGO programmes referred to elsewhere in this chapter have achieved significant public participation in their action programmes.
- Some NGOs work to ensure involvement of particular sectors of the public. Thus, International Youth and Student Movement for the United Nations is particularly concerned with the role of youth in combatting desertification; the Women's International League for Peace and Freedom is similarly concerned with the role of women.

2.2 Other Action

2.2.1 Political and Legal Action

As in most disciplines, the NGOs active in desertification issues frequently endeavour to influence political decisions. The general process of public involvement and public information is, of course, important to this role, but many NGOs are also more direct. Though the survey revealed little in the way of overt political action, such as demonstrations and the like, a wide range of other contributions to the political process are evident. The following are examples of the type of activity:

- Many NGOs participated in the UN Conference on Desertification (see 2.2.2 below).
- The International Union for the Conservation of Nature and Natural Resources sees its role as that of a strategist in certain fields including efforts to combat desertification. As such, they survey the problems, set priorities, and develop projects and programmes to be requested by countries concerned.
- Many participants in the Science Associations Seminar prior to UNCOD were members of government delegations at the Conference.
- The Natural Resources Defence Council (United States) was active in persuading the US Congress to authorise the financing of environmental projects such as afforestation, erosion control, desalinization etc. in the developing countries.

Much of this activity, while on the one hand a logical outgrowth of public participation, is focussed on advocating and ensuring further public participation in efforts to combat desertification problems.

2.2.2 United Nations Conference on Desertification

The United Nations Conference on Desertification was attended by some 45 NGOs. In addition, a great many others participated in or followed developments leading up to the Conference, and will continue to follow progress under the Plan of Action. During the process of the Conference, three joint NGO Statements were released. In addition, a number of NGOs made individual statements. Though the impact of these activities is difficult to quantify, most of the issues of concern to NGOs were discussed by the Conference proper (frequently at the instigation of the NGOs).

In addition to participation on the Conference proper, many NGOs took part in parallel or related activities. A number of examples follow:

- A number of NGOs submitted comments on earlier versions of the Plan of Action to the UNCOD Secretariat.
- The Worldwatch Institute prepared the document entitled "Spreading Deserts - the Hand of Man" at the request of the UNCOD Secretariat.
- As has been mentioned, the "Science Association Seminar" on Desertification, sponsored by six non-governmental science associations, discussed in depth the Plan of Action and presented a detailed series of recommendations to the conference.
- A number of NGOs released material to the media through Press Conferences, distribution of documents, and personal contacts.
- The Environment Liaison Centre held a reception for delegates and NGOs providing an opportunity for informal exchange of thoughts and ideas on Conference proceedings.
- The organisation Men of the Trees organised a series of lunch-time seminars on issues before the conference, while the Baha'i Community of Kenya ran a separate series of public activities.
- The Sierra Club of the United States arranged a visit for delegates and NGOs to a wildlife ranching scheme near Nairobi.
- The National Council of Women, Kenya, organised a tree-planting campaign and ceremony which was attended by many government delegates.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT

The questionnaire component of this survey revealed little in the way of information on NGO evaluation of current efforts to combat desertification. However, the documentation produced by NGOs at UNCOD reveals broad NGO support and encouragement for the commitment represented by the Conference. Furthermore, the Plan of Action was generally welcomed, though there was deep concern that many of its recommendations would frequently not be acted upon. The following collection of recommendations, based in part upon the survey questionnaire and in part upon NGO statements to UNCOD, indicate particular areas in which NGO concern has been expressed:

3.1 Public participation

The implementation of the plan should place particular emphasis on the role of local people in dealing with the problems, respecting both their values and their opinions.

3.2 Alternative strategies

There is need for careful evaluation of specific proposals to combat desertification, since the human and economic costs of such measures, if not wisely chosen, could equal or exceed those associated with the problem of desertification itself.

3.3 Economic relationships

Certain changes must be made in the present international economic relations to allow the most seriously affected countries with the most vulnerable peoples to participate more fully and equitably in national and international economies.

3.4 Food and Fuel

A number of NGOs emphasise the need for integrated local plans to ensure vegetation restoration. Elements suggested include extensive afforestation programmes, controlled utilisation of game, social actions to release human pressure on land, and more. Without understating the need for widespread action, the importance of pilot projects as experimental situations and as demonstrations was emphasised.

Emphasis was placed on the re-examination of mixed cropping systems and traditional livestock management methods. It was further stressed that sound agricultural development and expanded food production is dependent upon long-term stability of the farming industry, which is in turn dependent upon adequate policies for the control of food pricing and marketing.

One NGO questioned whether indigenous methods in traditional technology can improve rapidly enough to cope with the problem of increased demand for food. They recommended a greatly increased emphasis on research and investment to develop programmes based mainly on approved technologies adapted from research programmes.

3.5 UNEP

A variety of activities were suggested for UNEP. These include the following:

- Development and demonstration of alternate management practices.
- Support to both short and long term research projects on arid land improvement.
- Provision of field expertise, particularly in the field of monitoring.
- Assisting in the creation of national parks.
- Assisting programmes to supply alternative food, fuel and water sources.
- Assisting with programmes of irrigation.

CHAPTER 4

Role of NGOs in the Field of Soils

INTRODUCTION

1.1 Scope of the Chapter

This chapter deals with the activities of non-governmental organisations from all parts of the world in the field of soil loss.*

1.2 Level of Activity

NGOs are active in the area of soil loss and soil degradation in both developing and developed countries. NGOs concerned about "soil loss" are concerned about the loss of arable land to urbanization, road building, airport expansion, etc. Those concerned about "soil degradation" are concerned about chemical, biological and mechanical actions on arable land and other productive soils, reducing their ability to produce vegetation.

With regard to the level of attention devoted to the various causes of soil degradation (erosion, salinization, over-exploitation, mining, pollution, sand dunes, etc.), both developing and developed country NGOs showed most interest in erosion and in loss of fertility due to over-exploitation. In addition, salinization/water logging of soils enjoyed substantial interest. Soil loss due to competing land uses is of major importance to NGOs (see 2.2.3). However, it is not a topic which is included in UNEP's soils programme and therefore is not reported on in depth in this document.

1.3 Types of NGOs involved

In both the developed and the developing world, international, national and local NGOs are active on soil issues. The approaches taken include straight provision of information; research projects; demonstration projects; political or legal action; and promotion/practise of organic agriculture. In addition, many of the international NGOs involved in soil issues are "development assistance" NGOs which, on occasion, fund programmes undertaken by developing country organisations.

2. WHAT NGOs ARE DOING

2.1 NGO Activities related to UNEP Strategy and Objectives

As man interacts with his environment, many of his actions can have adverse effects either on the quality or quantity of the soil.

* Note that many of the activities discussed in Chapter 3 (Arid and Semi-Arid Lands) are of relevance to this chapter.

NGOs have been and are increasingly active in the field of soil degradation. This paper will discuss soil degradation under four general headings:

- (a) Soil degradation - by wind and water
- (b) Soil degradation - by salinization, water-logging, etc.
- (c) Soil degradation - by over-exploitation
- (d) Soil degradation - by mining, pollution, and sand dunes.

2.1.1 Soil Erosion - by wind and water

Topsoil blowing in the wind or washing away by floods is unquestionably obvious. Man has long attempted to deal with this environmental problem and NGOs are adding their energies to the battle.

(a) Developing Countries

Soil erosion knows no boundaries; however, because so many people in developing countries must live on marginal land, and because agricultural technology is often less developed, soil erosion is most serious in the Third World. Consequently, because the need is so great, NGOs in developing countries are very active on this issue. Their activities can be divided into two main groupings: research and action, both of which are listed below, with examples:

Research:

- The Bureau of Resource Assessment and Land Use Planning, associated with the University of Dar es Salaam, Tanzania, carries out research for the Tanzanian Government and other institutions. One of its major reports is on soil erosion in Tanzania.
- The Philippine Association for Permanent Forests helps prevent erosion by coordinating and supporting research in such areas as afforestation and silviculture.
- The International Crops Research Institute for the Semi-arid Tropics (ICRISAT - India) is also very involved in soil-related research and training activities. The objectives of their Farming Systems programme is to do research on approaches, principles, and methodologies related to the optimum utilisation and conservation of soil.
- The Environmental Protection Society, Selangor, Malaysia, monitored recent excessive silting in the Klang River. Their findings were used as a base for a press statement containing recommendations to alleviate the situation.

Action:

- The Kenya Jaycees are involved in the fight against soil erosion by means of a mass tree planting campaign in regions of the country affected by deforestation.
- The Kweneng Rural Development Association in Botswana has plans to plant Kgaligadi sandveld for erosion control and as a source of wood for scattered villages and cattleposts.

- The International Union for the Conservation of Nature and Natural Resources (IUCN) has prepared and published guidelines for the development of tropical rain forests - fragile ecosystems subject to irreversible soil erosion if unwisely managed.
- Member Associations of the World Association of Girl Guides and Girl Scouts are undertaking tree planting campaigns in Pakistan, Mexico, El Salvador, India, Bangladesh, Cyprus and Botswana.
- The African Wildlife Leadership Foundation is supporting attempts in Kenya to produce a domesticated breeding stock of certain species of African herbivores. Such animals, being naturally adapted to their environment, would place less grazing pressure on the land than a comparable herd of cattle. Any reduction in overgrazing will result in a reduction of erosion.

(b) Developed Countries

Soil degradation through erosion is a major problem in developed nations, though not as serious as in the developing nations. Nevertheless, erosion does exist and so do the NGOs who attempt to alleviate it. Again these activities fall into two major categories (research and action) as listed below with illustrative examples:

Research:

- The International Commission of Agricultural Engineering promotes the science of, and research in, agricultural engineering in both developing and developed countries. They have published scientific papers on soil improvement, and are interested in erosion control.
- The Polish Forest Society is studying the prevention of soil erosion through the proper distribution of woodlands in the mountains and on the sea coast.
- Kananaskis, the Environmental Sciences Centre at the University of Calgary in Canada, is active in monitoring one cause of erosion - over-grazing in the Canadian prairies - by LANDSAT imagery. Approximately 10% of this NGO's annual budget goes for such monitoring and closely related activities.

Action:

Apart from political activities (see section 2.2.2 below) aimed at encouraging strong government policies, forest conservation programmes are the most visible attempts by NGOs to actively prevent soil erosion (though of course such programmes have other aims as well). Thus, for instance, the extensive paper recycling activities initiated and operated by many NGOs have as a direct and conscious consequence the conservation of forests - and hence erosion control.* Similarly, some NGOs such as National Audubon

* Pulpwood harvesting can result in minimal soil erosion if properly managed. Unfortunately, this is frequently not the case.

in the United States actually own a number of sanctuaries, in which they are able to control usage. By conserving what is often commercially valuable forest, they are preserving soil cover.

2.1.2 Soil Degradation by Salinization, water-logging, etc.

The survey indicated that soil degradation by water-logging and/or salinization was lower on the NGO priority list than soil erosion and loss of soil fertility by over-exploitation. However, there is important NGO involvement, concentrating on two main approaches: preventive and curative. Many NGOs attempt to prevent the occurrence of salinization and water-logging by influencing the planning and construction of dams and/or irrigation projects. Once a problem exists, however, efforts are then concentrated on curative measures to rejuvenate the soil.

The following are examples of various NGO activities in both the developing and developed countries:

- The International Foundation for Science provides financial and other support for developing country scientists. One such project in Egypt has investigated the Juncus rigidus plant which can accumulate excess salt absorbed from the soil, providing a possible way of reclaiming saline soils.
- One of the major areas of research undertaken by the Department of Water and Land Resources, Universidad Nacional Agraria "La Molina" (Peru) has been in the field of drainage and reclamation of saline soils.
- A number of NGOs in the United States, including Friends of the Earth, are opposing certain developments on the Colorado River, in part because they likely will cause salinization. These developments include new irrigation schemes and diversion of the river for oil shale and coal exploitation. These projects will raise the salt content of the water returned to the river, causing salinization of soils in existing irrigation projects downstream.
- Two committees of the International Council of Scientific Unions, namely Scientific Committee on Problems of the Environment (SCOPE), and Scientific Committee on Water Research (COWAR) joined with MAB/UNESCO in the preparation of a review of the environmental effects (including water-logging/salinization) of arid lands irrigation in developing countries.
- The International Commission on Irrigation and Drainage, sponsors congresses to pool world knowledge on inter alia specific current problems in irrigation, drainage, and flood control engineering.
- The International Institute of Applied Systems Analysis (IIASA) is studying the interrelations between all water-related problems in agriculture, including salinization and water-logging.

2.1.3 Soil Degradation by over-exploitation

The survey indicated that there exists a high level of NGO involvement in preventing the degradation of soil fertility by over-exploitation.

The following examples illustrate NGO activity with respect to research and action in both developing and developed countries.

(a) Developing Countries

Research

- In India an International Foundation for Science sponsored project is being conducted to identify legumes and grasses which when grown together will improve the nitrogen content of the soil.
- The International Development Research Centre (IDRC), Canada, is funding a number of projects aimed at improving crop production without detriment to the soil in such countries as Sri Lanka, Senegal and Tanzania.
- The International Society of Soil Science, in cooperation with UNEP, FAO and UNESCO, is assessing soil degradation in a study to end in November 1978, with publication of a map of soil degradation areas in Africa, north of the Equator, and in Western Asia.

Action

- Sri Aurobindo Society in India has improved soil production by the cultivation of algae on urine for the production of organic fertilizer. Also in India, Mitraniketan has had success in reclaiming barren hillsides for agriculture.
- International Voluntary Services are operating an agricultural extension project in Sylhet District, Bangladesh. The programme emphasises improved use of local resources, including the composting of human and garden wastes as fertilizer.
- The Mochudi Farmers Brigade (Botswana) has developed, and is making available, an all-purpose tool which enables the small-scale farmer to adopt minimum tillage techniques. Apart from reducing soil erosion, such techniques in such a climatic zone are believed to enhance soil fertility (by eliminating the ploughing under of crop residues). The same organisation is also experimenting with different patterns of crop rotation, to assess impact on soil fertility.

(b) Developed Countries

Research

- Many studies dealing with soil degradation concentrate on nitrogen. Recently, the Royal Swedish Academy of Sciences published a special edition of their journal, Ambio, devoted to their symposium on "Nitrogen - an Essential Life Factor and a Growing Environmental Hazard".
- SCOPE (Scientific Committee on Problems of the Environment) is preparing a project concerning soil degradation and the phenomena which cause it (of relevance to both developed and developing countries.)
- The Henry Doubleday Research Association (U.K.) carries out research on the practical aspects of soil fertility through organic farming/gardening.

- One of the concerns of organic agriculture organisations is possible loss of soil fertility by either unwise or excessive utilization. For instance, in France, Nature et Progrès (most of whose members are organic gardeners or farmers) undertake various tasks, including researching, testing and promoting techniques and practices aimed at biological improvement of farmlands. Also in France, many regional associations or organic farmers have been formed.
- The International Institute of Biological Husbandry and the International Federation of Organic Agricultural Movements try to advance the practice of biological husbandry/organic agriculture by establishing communication networks amongst active individuals and organisations.
- A great many environmental organisations publish information on composting and other soil enriching practices both for their members and for the public at large.

2.1.4 Soil Degradation - by mining, pollution and sand dunes

Generally, the survey indicated that currently NGO activity in soil degradation from mining, pollution and sand dunes is not as high as activity in the areas of soil erosion or loss of fertility due to over-exploitation (though many NGOs added loss of soil by urbanisation to the list of "other causes". For a discussion of land use see section 2.2.3).

In developed countries, NGOs are quite active in combatting soil degradation from mining; this activity is most often of a political or legal nature. Three examples of NGO activity in this area follow:

- The Natural Resources Defence Council (USA) has been involved in legal actions aimed at lessening the impact of massive strip-mining in the rural, largely agricultural, area of the Northern U.S. Plains.
- The Soil Association (UK) plans assistance to the National Coal Board in the restoration of open-cast mining sites to quality farm land.
- The Environmental Defence Fund (EDF) and the Colorado Open Space Council (COSC) - both also USA based - were instrumental in revealing the violation of Colorado's reclamation law by a coal strip-mining company and the consequential shut-down of a mine.

The Survey did not reveal similar NGO activities in the developing countries.

NGO concern over soil degradation due to pollution is focussed primarily on the effects of chemical fertilizers, and is well represented by the examples cited in section 2.1.3 above. NGOs are also concerned with the effects of pesticides (see Chapter 2B) and industrial effluents (particularly those deposited via atmospheric transport) on the soil. However, these concerns focus less on the soil-related effects, and more on full ecosystem effects; as such they are not discussed here.

Finally, the survey did not reveal any substantial NGO interest in questions of sand dune shift, except as a component of the larger question of desertification (See Chapter 3).

2.2 Other Activities

2.2.1 Information, Education, Training, Public Participation

On the NGOs concerned with soil degradation and loss, a large majority are involved in some form(s) of education/information. Using their own material and/or that prepared by others, NGOs direct their resources at both the general public and at specialised audiences. These sorts of activities are covered in depth in Chapter 7; what follows is a sampling of NGO activity in the field of information/education with relation to soil loss and to soil degradation:

- The Kenya National Farmers Union journal, Farmer's Voice, has published material on soil loss/desertification due to erosion and to over-exploitation.
- Members of Grupo Ecologico Universidad del Tolima, Colombia, carried information on soil conservation to all the townships of Tolima by the "door to door" system.
- Tranet, the Transnational Network for Appropriate/Alternative Technologies is promoting various soil-saving technologies, including Biodynamic Agriculture and Non-tilling techniques.
- The International Crops Research Institute for the Semi-Arid Tropics has several training courses including short term courses (2-5 days) for groups of soil conservation officers from developing countries.
- The Organic Farming and Gardening Society, Australia, encourages people to employ organic gardening techniques. Amongst other activities, they organise meetings and competitions and operate a postal lending library.
- The Agricultural Development Agencies in Bangladesh hold monthly forums and publish a monthly newsletter with articles on (amongst other similar topics) organic farming, nitrogen deficiency, etc.
- The Soil Conservation Society of Sri Lanka is planning rural demonstration projects on soil conservation, to increase public awareness.
- Member associations of the Canadian Forestry Association carry out information/education programmes that reach over 300,000 Canadians (and policy-makers) annually.

In addition to this set of examples, most of the NGO programmes cited in earlier sections of this paper also contain an information component.

2.2.2 Legal and Political Action

In the field of soil loss/degradation, as in all the other subject areas of this report, NGOs in both developed and developing countries are affecting change through both legal and political action. This action may take the form of testifying at hearings (as did EDF and COSC in the USA - see section 2.1.4); drafting proposed legislation on soil conservation (as did the National Association of Conservation Districts of America in conjunction with other NGOs); or

any of dozens of other forms. Undoubtedly the most important form, however, is NGO information programmes which ensure widespread public awareness of soil issues. Such public awareness is frequently a strong political force.

Many NGOs in developing countries have the resources for sustained legal and political activity. This factor, plus a tradition of such input, is conducive to developed country NGO activity in the legal/political field. This is not to imply, however, that developing country NGOs are inactive. A particularly interesting example is the Chipko, or Hug a Tree Movement in India. Launched by Dasholi Gram Swarajya with the subsequent involvement of many other Indian NGOs, the movement was successful in preventing the auction and felling of trees in certain areas where loss of tree cover would mean serious erosion. The movement involved villagers, who placed themselves in the path of developers by hugging a tree in order to prevent its destruction.

2.2.3 Soil Loss - Competition for Land Use

NGOs are becoming increasingly concerned about questions of competing land use, and the loss of fertile and residential land to urban expansion. When prime agricultural land or residential areas, or valuable wilderness is threatened by urbanisation, road construction, flooding for hydro-power, etc. - NGOs become involved. Activities are diverse, ranging from the direct programmes of the Trust for Public Land (USA) which acquires and ensures the preservation of threatened open space; through to political action such as the national march against the commercial development of the Belgian countryside in which Les Amis de la Terre Belgique participated.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORTS

NGO comments, in relation to soil degradation were directed at UNEP in the discussion of international effort. They felt that UNEP could help reduce soil degradation in the following ways:

3.1 Information

UNEP should work to create awareness of soil degradation problems and solutions among administrators and government officials.

UNEP should also aid concerned groups in the dissemination of information on appropriate/alternative technologies relevant to soil conservation. Finally UNEP itself should make available to a wide variety of audiences reliable and comprehensive information on soil issues.

3.2 Financing

UNEP should increase and facilitate financing for:

- internationally cooperative soil conservation programmes
- composting education programmes
- small farm technologies
- research on soil ecology

3.3 Training

UNEP should develop training programmes for the use of LANDSAT imagery in soil management.

3.4 Assessment

Simple methodologies should be developed in order to assess - on a localized basis - the extent of soil degradation and loss of soil fertility. These should then be made widely available through simple instructional material, rather than through an individualized training programme.

3.5 Regional Action

UNEP should, on a regional basis

- develop detailed studies on soil loss problems
- recommend specific actions
- provide funds

3.6 Criteria

UNEP should continue advocating the evaluation of natural characteristics of soil/land as a criteria for determining the nature and intensity of its usage.

CHAPTER 5

Role of NGOs in the field of Water

INTRODUCTION

1.1 Scope of the Chapter

This Chapter deals with the activity of non-governmental organisations, from all parts of the world, in the field of water.* Particular emphasis is placed on questions of water supply and water quality.

1.2 Level of Activity

Of all the environmental issues of concern to NGOs, those relating to water have generated more NGO activity than most.

In the developing countries, the major NGO emphasis is placed on water supply, which necessarily implies concern with issues of water quality. This latter concern is, in turn, primarily (though not exclusively) oriented to questions of water related disease.

In the developed countries, water supply per se is less of a critical issue, and consequently most interest by NGOs relates to water quality. Though there is broad concern with the contamination of water and consequent impacts on human health, great attention is also paid to ecosystem conservation (for its own sake as well as for the long-term benefit of man), fisheries, aesthetic values, recreational needs, etc.

1.3 Types of NGOs Involved

As is the case with most environmental issues, a tremendous variety of organisations are involved. Though NGOs are not readily categorized, three distinct types of organisation are evident (with examples of each to be found throughout this chapter):

- those dealing with water as but one aspect of their activities
- those dealing exclusively with water
- those dealing exclusively with but one aspect of water (e.g. limnology, hydrology, fisheries, etc.)

Within each of these categories NGOs are active at the local, national, and international levels. Also within each of these categories are to be found all types of NGO action - scientific/research; information/education; direct action/implementation (e.g. digging wells); political action; and so on.

* More specifically, this Chapter deals only with freshwater. Chapter 6 deals with Regional seas, i.e. with saltwater seas and oceans.

2.1 NGO Activities Related to UNEP Strategy and Objectives

2.1.1 Water Supply

In the field of water supply there are significant differences between the actions of NGOs in developed versus developing countries. As such, this section considers these actions separately.

a) Water Supply - Developing Countries

In the developing countries, a large number of NGOs are involved in water supply, including indigenous organisations as well as non-indigenous ones (e.g. development assistance NGOs, religious organisations, and various voluntary agencies). Their activities fall into two major categories:

Development of Water Resources: Many NGOs are engaged in the development of new supplies of water. Though the scale of this activity is such that a short listing does not do it justice, some of the types of activities (with examples) include:

- Sinking Wells: Christian Agricultural Youth, Chad
- Protection of Existing Wells: Environmental Health Officers Association of Zambia
- Improvement of Water Points at Water Fronts: Central Young Mizo Association, India
- Dam Construction: Kweneng Rural Development Association, Botswana
- Water tanks: Agrarian Centre, India
- Desalinization: Brace Research Institute, Canada, is active in a number of developing countries, working in part on desalination of salt water by means of a simple solar still.
- Pump technology: The International Development Research Centre is supporting studies on the development of appropriate hand pump technologies.

Water Conservation: Many NGOs are involved in projects of water conservation and efficient use of existing sources. This, of course, has much the same effect as the provision of new water supplies. Examples include:

- International Crops Research Institute for the Semi-Arid Tropics: involved in research to maximise efficient use of rainfall in agricultural production
- Institute for Development Studies at the University of Nairobi: involved in a series of studies in water conservation
- Gokhale Education Society's Agricultural Institute, India: teaching farmers short-term conservation of water by sinking shallow wells to catch run-off rainwater to be utilised during dry times.
- International Institute for Applied Systems Analysis: involved in forecasting and modelling water use to enable integrated management of water resources (or relevance in developed as well as developing countries).
- Many NGOs are involved in wastewater treatment (see 2.1.2 below) allowing for re-use of water supplies.

- The Polish Forest Society is studying the influence of forests and forest management methods on the water balance of the country.
- Many NGOs are involved in afforestation and related projects. These are seen to be long term water conservation/water development projects in that they reduce siltation of water bodies, increase the moisture retention of soils, possibly affect micro-climate, and so on. Such activities by NGOs are outlined in Chapter 4.

(b) Water Supply - Developed Countries

In most developed countries, issues relating to domestic water supply are tackled from two principal perspectives. First, many NGOs are concerned about the environmental impacts of major water development projects. Their activities are discussed in section 2.1.3 below. Secondly, where NGOs are directly concerned with questions of domestic water supply, their interest relates primarily to the quality of that supply. Their activities are dealt with in section 2.1.2 below.

2.1.2 Water Quality

In the field of water quality, there is substantial similarity between NGO activities in developing and developed countries. Consequently, the discussion below is not divided along developing/developed country lines (though where differences do occur these are noted), but instead three types of NGO activity are considered:

- a) Water Quality - Monitoring
- b) Water Quality - Domestic Water Supply
- c) Water Quality - Bodies of Water (lakes, rivers, etc.)

a) Water Quality - Monitoring

As the examples below illustrate, NGOs have been involved in both the direct monitoring of water quality, and in the development of water monitoring capabilities. The survey indicated that these activities, though widespread, are concentrated in the developed countries.

SCOPE (Scientific Committee on Problems of the Environment, a committee of the International Council of Scientific Unions) has established a Monitoring and Assessment Research Centre (MARC). This active research institute is oriented to the process of monitoring in order to not only sample the current state, but to detect likely changes and check on the efficacy of any control actions. Though the activities of MARC are very broadly based, a portion of their activities related to the fresh-water environment.

Though SCOPE is widely considered the pre-eminent NGO involved in monitoring/research, there is a great deal of activity elsewhere. For instance:

- The Department of Water and Land Resources, Universidad Nacional Agraria "La Molina" (Peru) carried out various monitoring activities in support of research programmes in water quality.
- The National Sanitation Foundation in the United States has developed a "Water Quality Index" which utilises measurements for nine parameters to arrive at a single number for water quality.

- The Anglers Co-operative Association in the UK on occasion employs biologists and chemists for monitoring programmes when contemplating legal action against polluters.
- Watch (also in the UK) undertook a monitoring survey, implemented by children using simple analytical techniques. A principal aim of the project was educational.
- The Water Quality Institute (Denmark) carried out (on a non-profit basis) water quality surveys of various kinds on behalf of counties, municipalities, industries, etc.

b) Water Quality - Domestic Water Supply

As outlined in 2.1.1 above, NGOs undertake extensive activities in the field of domestic water supply, particularly in the developing world. Implicit in these activities is the necessity of ensuring water quality. Apart from proper practices in the process of water development (such as proper siting and protection of wells) NGOs undertake various types of activity to improve domestic water quality. Most important among these are (with examples):

Purification of contaminated supplies -

- CARE (United States) is engaged in water projects in Tunisia which include the operation of a mobile well disinfection/handpump repair team
- The International Development Research Centre is supporting studies on low cost, low maintenance water treatment (clarification, filtration, disinfection) processes designed for larger villages and rural towns

Prevention of Contamination -

- The Indian Association for Water Pollution Control is involved in research to develop practical know-how concerning the collection, treatment and disposal of sewage and industrial waste.
- The International Association on Water Pollution Research, together with the Asian Institute of Technology and others, is sponsoring an international conference on "Water Pollution Control in Developing Countries" early in 1978 in Thailand.
- Tranet (Transnational Network for Appropriate/Alternative Technologies) is promoting the use of waterless sewage and waste systems.
- The International Council of Nurses has adopted a policy statement on the role of the nurse in safeguarding the human environment. Among other things, national nurses associations are encouraged to assist communities in their action on environmental health problems, including those relating to water, water contamination, and general hygiene.

The examples just cited relate primarily to biological contamination of domestic water supplies. Less interest (particularly in the developing countries) has been focussed on chemical contamination though there has been some activity. For instance, the Consumers Council of India has become interested in the side effects on human beings from use of chlorinated water; the Swiss based Forum for Responsible Application of Science has been engaged in analytical work on water fluoridation; the Environmental Defense Fund in the USA has published a report on cancer-causing substances in drinking water drawn

from the Mississippi River, and so on. The extent of this type of activity is increasing, and will likely continue to do so as long as the extent of chemical contamination of water supplies also increases.

c) Water Quality - Bodies of Water (lakes, rivers, etc.)

Environmental NGOs interested in water issues in the developed world have most often focussed their attention on the quality of water in lakes, rivers, streams, etc. rather than on the quality of domestic water supply (though clearly this interest has implications relating to domestic water supply). As has been discussed, this emphasis is reversed in the case of NGOs from the developing world, but frequently their interest in the quality of water bodies is nevertheless substantial.

Different NGOs adopt different action strategies and focus on different causes of water degradation (industrial pollution, municipal/ domestic sewage, agricultural run-off, recreational use, etc.). The following examples indicate some of the diversity of this NGO activity:

Direct action - National Audubon Society in the United States owns a series of Sanctuaries. As owners of the land, they are thereby able to protect it and the water bodies it contains from destructive usage.

Public Information - Jishu Koza Citizens Movement in Japan has been very concerned about mercury contamination of waters. Among their activities has been involvement in an exchange of victims of Minemata disease (mercury poisoning) between Japan and Canada to focus attention on the problem. Also concerned with Mercury, the Grupo Ecologico de la Universidad del Tolima in Columbia has published a booklet entitled (translation from the Spanish) "Mercury in the Environment".

Legal Action - The Natural Resources Defence Council (United States) actively and successfully supported the US Environmental Protection Agency (EPA) in a court challenge to EPA's right to set industry-wide standards controlling industrial discharge of toxic substances.

Research - The Freshwater Biological Association (United Kingdom) carries out basic research on eutrophication and waste discharge into water bodies.

Technical - Many NGOs, such as those cited under the heading "Prevention of Contamination" in 2.1.2 above, are also active in the technical aspects of pollution control.

Transnational - Other NGOs are concerned with transnational pollution issues. Given that pollution of particular lakes or rivers is frequently the responsibility of more than one nation, it is not surprising that international co-operation develops. Thus, for instance, the International Working Society of Danube Research is interested in pollution issues and the Canada/US Environment Council has been concerned with pollution of bodies of water shared by the two countries.

2.1.3 Lake and River Basin Development Programme

NGOs have been extensively involved in questions of lake and river basin development projects. Though this concern has perhaps been most focused in the developed countries, NGO activity has taken place in all

regions of the world. The following listing gives some indication of the types of NGO involvement:

- International Council of Scientific Unions has established a Scientific Committee on Water Research (COWAR). This committee has focused particular attention on man-made lakes and their environmental effects. Amongst other things, COWAR has undertaken preparation of a World Register of Man-Made Lakes in co-operation with the International Congress on Large Dams and UNESCO.
- World Wildlife Fund has financed the extension and consolidation of Lake Nakuru National Park, Kenya.
- The Papua New Guinea Institute of Medical Research is involved in monitoring health problems before, during, and after construction of hydro-electric dams in Papua New Guinea.
- The International Union for the Conservation of Nature and Natural Resources intervenes with governments concerning water management proposals that are likely to have adverse effects.
- The Instituto Para La Conservacion del Lago de Valencia in Venezuela is concerned with the origin of pollution in Lake Valencia and provides support for lake protection programmes.
- In Canada, a number of NGOs, in particular the Canadian Wildlife Federation, worked primarily through government regulatory bodies to successfully oppose construction of a natural gas pipeline down the Mackenzie River Valley.
- In Sweden, the River Conservation Cooperative Organisation works to ensure that no water power stations are built without community approval.
- The World Society of Ekistics held a symposium on the "Great Lakes Megalopolis", the growing urban conglomerate around the Great Lakes of North America.

In short, NGOs have been concerned with questions of lake and river basin development from two points of view: at times in opposition to unwise development projects; at other times in support of sound development proposals.

2.1.4 Training/Education/Information/Public Participation

One of the major strengths of NGOs is their ability to involve broad sectors of the community in issues with which they are concerned. Such activities of NGOs are the subject of Chapter 7, and as such will not be covered in any depth here. The following few examples will indicate the scope of this activity in the field of water:

- The Austrian Water Resources Association endeavours to promote communication between professionals of diverse backgrounds working on all kinds of water problems. Their activities include symposia, seminars, training courses, and so on.
- The Environmental Protection Society Selangor (Malaysia) is developing public information pamphlets and slide programmes, particularly for school children.

- The Caribbean Conservation Association includes water in its environmental education programme. In Barbados, it has arranged for showing of the UNEP film "Water" on television and in mobile cinemas.
- The Institute for Environmental Education in the Netherlands has sent model lessons on water to all levels of schools.
- The International Commission on Irrigation and Drainage exchanges information among its 70 National Committees, holds symposia and seminars, publishes an Annual Bibliography, etc.
- The Association Francaise pour la Protection des Eaux produces a series of publications on water, including a periodical "L'Eau Pure".
- The Agricultural Development Agencies in Bangladesh publish "ADAB News", largely for those involved in Agricultural Development. It carries information on water related issues.

2.1.5 United Nations Water Conference

a) Pre-conference

A major pre-Water Conference initiative by NGOs was taken at the Habitat Conference, where the International Institute for Environment and Development organised a seminar on water. In conjunction with the seminar, a widely publicized "Walk for Water" was held in the streets of Vancouver. These activities were instrumental in the adoption of the Habitat Conference's Water resolution. NGOs were also instrumental in ensuring the re-affirmation of this resolution by the Water Conference.

In addition to this highly visible preparation, a number of NGOs participated in the regional and other preparatory meetings; some NGOs participated in the preparation of conference background documents and certain national documents; and others produced special publications such as "Water - Life or Death" prepared by the International Institute for Environment and Development and "Water - the Essential Resource" prepared by National Audubon in the United States.

b) Conference

NGO participation in the UN Water Conference itself was most visible in the form of fifty-eight national and international NGOs represented in Argentina. Their activities included a number of statements to the conference by individual NGOs, as well as a major joint statement at the conference closing. In addition, a number of delegations included NGO representatives. The NGO Hot Line International was present at the conference, providing rapid computer contact between Argentina and other parts of the world. This enabled a number of NGOs not present in Argentina to be involved in the conference - for instance two meetings were held at New York Headquarters of the United Nations, attended by about twenty NGOs.

c) Post-conference

It is difficult if not impossible to evaluate the likely extent of the NGO contribution to achieving the goals of the Habitat Conference water resolution. Section 2.1.1 outlines some of the current activities; many NGOs indicated that their commitments are increasing. The American Council of Voluntary Agencies for Foreign Service Inc., has identified (conservatively) 70 US non-profit organisations with water projects in 42 countries.* Two of these organisations (CARE and Catholic Relief Services) each channel between \$500,000 and \$1 million annually to water development projects. The present survey did not produce comparable figures for other countries, but it is evident that such NGO activities are an extensive and valuable contribution to the Habitat and Water Conferences' goal of clean water for all.

2.2 Other Activities - Political

Because many NGOs enjoy relative freedom of action compared to governmental bodies, they are frequently politically active.

The most common and probably most important mechanism used by NGOs to exert political pressure is provision of information. This leads individuals to develop an awareness of water issues. As public opinion shifts on these issues, political decisions are inevitably influenced.

Political actions by NGOs also take a number of other more direct forms. In many of the western nations, NGOs actively lobby politicians and on occasion operate lobbying offices. In these and other countries, NGO representatives are often well integrated into the political hierarchy of the country, and as such exercise political persuasion "from within". Environmental organisations such as Les Amis de la Terre (France) have contested elections on an environmental platform. In still other cases, NGOs have been politically active through legal channels, such as the activities of the Natural Resources Defence Council in the United States which has brought a number of suits to ensure full implementation of the Federal Water Pollution Control Act Amendments. Finally, a large number of NGOs engage in direct, public political action such as demonstrations, petitions to governments, media campaigns, and so on. Perhaps the environmental organisation best known for this sort of action is Friends of the Earth International and its affiliated national organisations.

The survey revealed a far greater proportion of overtly political NGOs in the developed countries than in the developing countries. However, the survey also revealed a substantial number of joint projects between NGOs and government agencies in the developing countries as well as a measure of integration between governmental and non-governmental officials. Given these factors, it is apparent that developing country NGOs, though not normally perceived as being politically active, nonetheless influence considerable political influence.

* From "Water Resource Development - The Experience of U.S. Non-Profit Organisations: Programmes, Issues, and Recommendations" March, 1977.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT IN
THE FIELD OF WATER

The questionnaire component of the survey did not ask NGOs to evaluate current international efforts in the field of water. However, this topic was extensively covered at the United Nations Water Conference and at the United Nations Conference on Human Settlements. The NGO actions at those conferences make it obvious that many NGOs are frustrated by the weakness of international commitment to resolving water related problems, particularly in view of the excessive expenditures incurred annually on armaments, luxury goods, and so on. They are also, in many cases, frustrated by an international system which is perceived as allowing narrow economic interest to frequently dominate broader public interest.

At the same time, a great many NGOs are very gratified with the progress that has been made over the past few years. Similarly, most NGOs welcome the commitment and new initiative represented by resolutions adopted by the Habitat Conference and subsequently by the UN Water Conference.

General NGO recommendations for improved international effort in the field of water are contained in various statements made to the UN Water Conference, and in particular the joint NGO statement. In addition, the questionnaire component of this survey gave rise to a number of recommendations concerning UNEP's role, including the following:

3.1 Information

- 3.1.1 UNEP should encourage public information activities, in part by provision of materials for use by NGOs without resources to generate such material themselves. The "Water" film was commended as an example of what is needed, though notes with suggestions for follow-up activity would heighten its impact.
- 3.1 UNEP should move to ensure general freedom of information with respect to water quality in order to ensure awareness of impacts of proposed industrial developments, nuclear plants, etc.
- 3.1.3 UNEP should publish and make readily and regularly available statistical information of an overview nature on global environmental problems such as water.
- 3.1.4 UNEP should direct further informational activities at administrators and government officials in order to heighten awareness. Such information could include, amongst other things, case studies of relevance to the government in question.
- 3.1.5 UNEP could catalyse international action towards the standardization of methods of information handling, leading to international information systems on community water supplies and environmental sanitation.

3.2 Research

UNEP should support research in such fields as use of waste water, waterless sewage, environmental effects of irrigation and drainage, water conservation, and water pollution.

3.3 Promotion

UNEP should continue to promote the broad application of the principles of environmental assessment and management.

3.4 Expertise

UNEP should make available technical expertise and advice on water issues.

3.5 Financing

UNEP should assist NGOs by providing financial assistance for relevant projects including cooperative programmes with national governments.

3.6 Standards

UNEP could promote the development and use of uniform international standards for water quality.

3.7 Water Supply

One NGO suggested that with reference to water supply, UNEP focus primarily on safe construction of well supplies and on encouragement of filtration and disinfection of surface water supplies.

CHAPTER 6

Role of NGOs in the Field of Regional Seas

INTRODUCTION

1.1 Scope of the Chapter

This chapter deals with the activity of non-governmental organisations from all parts of the world, in the field of oceans and regional seas. Particular attention is given to environmental assessment; environmental management; and support activities such as training, education, information and public participation.

1.2 Level of Activity

Given that the oceans and seas of the world cover some seventy per cent of the planet's surface, that a majority of nations are in fact coastal states, and that the oceans have tremendous environmental and economic importance, it is not surprising that oceans and regional seas are among the topics most heavily considered by environmental NGOs. This interest is, however, unevenly distributed globally. For obvious reasons, NGOs in land-locked countries have minimal interest in marine environmental issues (though many may have great interest in the economic and political issues before the Law of the Sea Conference). Amongst the coastal nations, action dealing with environmental issues relating to the oceans and seas is concentrated primarily in the developed countries, though of course there is important action in many developing countries. This differential is due to a number of factors, including the following:

- Given the heavy dependence of the developed nations on the oceans for fisheries, transportation, oil, etc., there is an intrinsic interest in issues that relate to the oceans and seas.
- To a very substantial extent, the degradation of oceans and seas is ultimately attributable to the activities of the developed nations.
- In the developing countries there are many urgent priorities (water supply, health, etc.) seen to be more immediately pressing than ocean or sea issues.
- Many activities in this field, in particular oceanic research, are beyond the financial means of most developing country NGOs.

NGO activity on issues relating to the marine environment is on the increase, a trend that is likely to be sustained as the concept of the oceans as the common heritage of mankind gains more general recognition.

1.3 Types of NGOs Involved

As would be expected, the range of NGOs involved in the issues under discussion is extensive, including NGOs dealing with no other issue; NGOs dealing with environmental issues in general, of which ocean issues are a part; organisations dealing with other specialised subject areas (e.g. fisheries, tourism) of which ocean issues are a part; and the very generalised NGOs dealing with a whole range of problems, including environmental problems and/or ocean related problems.

Within each of these categories, of course, there is a large range of possible activities. The most visible categories are research/scientific work, action oriented programmes, and information/education activities. As in all disciplines, NGO action ranges from local community level groups through national and regional groups, to international groups.

1.4 Level of International Coordination/Cooperation

It is clearly essential, in dealing with issues such as the seas which are fundamentally international, that NGO action be coordinated at the international level. It is evident that this is the case. A large number of international organisations are involved, including regional organisations such as the Mediterranean Association for Marine Biology and Oceanology, the Gulf and Caribbean Fisheries Institute, and the Caribbean Conservation Association. In addition to such formal international cooperation, less formal activities also take place. For instance, the Environmental Coalition on the Law of the Sea (ECOLOS) is a mailing coalition of NGOs on matters relating to the protection of the marine environment; similarly, Jishu Koza (Japan) shares information on marine pollution (by Japanese industries) with NGOs in other parts of Asia.

More visible than any of these activities, are the various coordinated international NGO campaigns. Most visible of all has been the campaign to protect marine mammals, and particularly whales. Other less spectacular examples include a variety of concerned international actions aimed at controlling oil-related developments - an interesting example of which has been the cooperation between Japanese, American, Micronesian, and other NGOs to oppose the super port for Palau (see section 2.2.1).

Though the level of international cooperation is significant, it is important to stress that much of the NGO activity in the field of oceans/seas is highly localised or highly nation-specific. Throughout the world, NGOs are active on issues such as local pollution of marine waters, depletion of fisheries, and so on. Such actions, of course, contribute significantly to the international effort to protect the seas.

2. WHAT NGOs ARE DOING

2.1 NGO Activities related to UNEP Strategy and Objectives

UNEP's Regional Seas programme focuses extensive activity on particular regional seas. The nature of this survey did not permit a detailed analysis of NGO activities in each particular body of water;

instead, the discussion which follows outlines the range of NGO activities globally, while at the same time citing programmes of interest to particular regional seas. This section is sub-divided into three sub-sections:

- 2.1.1 Environmental Assessment
- 2.1.2 Environmental Management
- 2.1.3 Support Activities - Training, Education, Information, Participation

2.1.1 Environmental Assessment

NGO activities in the field of environmental assessment are significant. The discussion which follows will be broken down into two categories, namely global activities and regionally specific activities.

a) Assessment - Global Activities

Different components of the International Council of Scientific Unions (ICSU) family are extensively involved with environmental research, evaluation, and information sharing. Given the importance of their activities, the discussion here goes into some detail. The following are some of the important ICSU groupings:

- The Scientific Committee on Oceanic Research (SCOR) is a committee of ICSU established to further "international scientific activity in all branches of oceanic research".
- The International Association for Biological Oceanography (IABO) is a section of the International Union of Biological Sciences, which is in turn a member union of ICSU.
- The International Association of Physical Sciences of the Ocean (IAPSO) is an association of the International Union of Geodesy and Geophysics, which is in turn another member union of ICSU
- The International Geographical Union, another member union of ICSU, has established a commission dealing with research and training in questions relating to the coastal environment.
- Another important non-governmental body active in this area is Pacem in Maribus. Pacem in Maribus - and its associate research organisation, the International Ocean Institute in Malta - have held regular conferences and seminars on a range of marine policy-questions for a number of years. These have included many NGOs governments and agencies from all parts of the globe. Inter alia the meetings have considered in detail UNCLOS negotiation texts, the relationship of the UNCLOS with the new International Economic Order, the State of the Mediterranean Basins Environment and the control of over-exploitation of fishery and animal resources.

In addition, several other commissions/associations, etc. within the ICSU family have an interest in issues relating to the marine environment. However, the above groups are representative, and carry out a variety of activities alone or in cooperation with one another. Some of these activities have included:

- work on oceanographic methodology for zooplankton sampling, nutrient analysis, estimation of primary production, etc.

- studies of the oceanographic basis of ocean monitoring and prediction systems, including an examination of the problems of continuous monitoring in biological oceanography
- studies of the influence of oceans on climate
- studies of marine pollution and modification of the environment by man's activities
- monitoring shoreline changes in salt marches, in mangrove swamps, and on sandy shores.

In addition, of course, these ICSU bodies are actively engaged in information sharing through journals, conferences, etc.; they are also actively engaged in information evaluation as a component of their on-going work.

Many other scientific NGOs are also involved in assessment activities throughout the world. In addition, many of the activities described in the next section dealing with regionally specific assessment have more general application.

b) Assessment - Regionally Specific Activities

A large number of NGOs are engaged in assessment activities, relating to particular bodies of water. Though the survey did not identify this sort of activity for every regional sea, it would nevertheless be reasonable to conclude that NGOs are monitoring and evaluating the condition of virtually all marine bodies of water. The following examples illustrate the range of this activity:

- The Water Quality Institute (Denmark) has done studies on water quality in the Coastal waters of Greenland. They are currently investigating an 800 sq. km. coastal region off Denmark by undertaking biological and chemical surveys examining pollution sources, etc.
- The Biology Department of the Chinese University of Hong Kong has monitored an enclosed marine bay receiving sewage, and has influenced the government on monitoring of marine pollution.
- The Bermuda Biological Station has been operating a hydrographic station for almost twenty years. Among other things, they are also conducting a five-year base-line study of the basic parameters affecting marine life in the Bermuda inshore waters.
- The Conservation Foundation in the United States is examining the environmental and social effects of oil and gas drilling on the outer continental shelf.
- The Australian Littoral Society has studied a number of tidal wetland areas along the east Australian coast.
- The Sea Fisheries Institute in Poland has examined the effects of eutrication of the Baltic.
- The Marine Biological Association of the United Kingdom engages in routine sampling and analysis of sea water, and is examining the uptake of metals by marine animals and plants. In addition, they are the UK input centre and partner in the Aquatic Sciences and Fisheries Information System (ASFIS).

- The Hydrobiological Research Institute in Turkey has been involved in research on the composition of plankton, nekton, and benthos communities, monitoring of heavy metals and biological oxygen demand in coastal waters, and more
- The Institute for Oceanography and Fisheries in Yugoslavia has been involved in researching the effects of pollutants on marine organisms and the adaptation of such organisms to the pollutants

As in the case of section a) above, analysis and dissemination of this information is normally an integral component of these various research activities.

2.1.2 Environmental Management

A tremendous number of NGOs are indirectly involved in the process of management of marine resources. On a global scale, the most important actions are those currently being undertaken by the International Union for the Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF). Though acknowledging that no single programme can redress the plight of the seas, the two organisations have adopted strategies aimed at:

- safeguarding the most threatened species
- conserving the most important habitats
- stimulating governments and intergovernmental bodies to act on a wider scale and with greater urgency.
- generating public support for such action

The IUCN programme has three sectors. The two biggest sectors involve formulating and developing action priorities for funding respectively by WWF and the UN system. The third consists of IUCN activities that do not call for special funding: policy formulation; provision of scientific advice; development of guidelines for management; and interventions on key issues.

"The Seas Must Live" campaign of WWF (for which the Fund hopes to raise US \$10 million) is divided into sub-programmes consisting of action plans: for the conservation of cetaceans, sea and shore birds, turtles, molluscs, corals, mangroves, seagrasses, and more; for the establishment of international agreements; and for the development of new methods of management.

The IUCN/WWF programme is undoubtedly the most comprehensive NGO initiative in this field but it by no means stands alone. Many other NGOs are involved in important but smaller programmes, though activities open to NGOs are somewhat restricted by the complexities of jurisdiction over ocean waters. The following examples illustrate some of the NGO Management activities:

- The National Trust for Fiji was active in the process which led to Nukulau Island becoming Fiji's first marine park. They continue to be active in the establishment of other marine reserves, a research station, and an underwater trail.
- The Conservation Foundation in the United States is in the process of formulating measures to provide flood protection and preserve eco-systems in coastal areas.

- The Island Resources Foundation, in the US Virgin Islands, was involved in the preparation of the marine environment component for the island's coastal zone management plan. The same organisation undertook an environmental review of UNDP planning for the Eastern Caribbean.
- The New Zealand Marine Sciences Society was involved in the establishment of a marine reserve by the government.
- The Australian organisation, Camp Concern, is endeavouring to develop a strategy leading to creation of a pollution-free zone in the coastal and continental shelf waters off part of the Australian coast. They have requested the support of other NGOs around the world.

In addition to activities such as those just outlined, many NGOs are involved in activities relating to coastal land use practices, national water pollution emission standards, river basin management projects, and so on. Such programmes result in a lessening of man's negative impact on the oceans/seas, though frequently their immediate objectives are quite different. Thus, for instance, afforestation will have the beneficial result of cutting down silt discharge into the sea, though the main intention is more likely to be provision of firewood, prevention of soil loss, etc.; similarly, promotion of energy conservation and alternative energy sources will ultimately reduce oil pollution of the oceans below levels that would otherwise be expected (since a reduction in oil consumption means a reduction in oil shipping). In effect, such activities are indirectly a form of environmental management of oceans.

2.1.3 Support Activities - Training, Education, Information, Participation

As in most disciplines, NGOs have exceptional capability to inform, educate and involve the public (or indeed specialist audiences) about issues relating to the marine environment. A more extensive discussion of NGO information activities is to be found in Chapter 7; the following examples give a general indication:

- The Association Francaise pour la Protection des Eaux has held public meetings and study days on the marine environment
- The National Trust for Fiji sponsored an environment exhibition dealing in part with oceans and seas
- The Cousteau Society (United States) has prepared audio visual materials for television and other audiences
- The World Wildlife Fund will be producing audio-visual and other material directed at young people (part of their "The Seas Must Live Campaign").
- The Bermuda Biological Station periodically gives short courses on the marine environment and pollution to members of the government, college and secondary school teachers, and the general public.
- Earthscan, a project of the International Institute for Environment and Development, has arranged media briefings on Regional Seas
- The Friends of the Earth (United States) newspaper Not Man Apart has published detailed information on a number of marine issues,

including the shipping of petroleum and the environmental effects of a sea-level Panama Canal.

- IUCN has issued a marine information pack consisting of background articles on important marine conservation issues, some of which have been used by media in various parts of the world. Follow-up fact sheets are planned.
- After the sinking of a Liberian oil tanker in Columbian waters, the Grupo Ecologico Universidad del Tolima, though some five hundred kilometres from the ocean, initiated a campaign to inform and motivate professors, students and the general public about this shipwreck. In addition, numerous complaints and claims were sent to the companies owning the tanker and its cargo, as well as to the Liberia government and to the United Nations.

The results of such activities are, of course, difficult to quantify, but there is no doubt that NGOs are one of the main forces behind the increasing public awareness of marine issues. Such awareness in turn leads to increased public involvement, an important component of any long-term solution to current marine problems.

2.2 Other Activities

2.2.1 Political and Legal Action

The activities of NGOs are frequently political in nature in that they seek to generate a particular political decision or political consensus. In this sense, the information campaigns of NGOs are political, but frequently NGOs are also involved more directly in the political process. The following examples illustrate the range of some of these activities:

- The Scientific Committee on Oceanic Research (SCOR - see 2.1.1 above) provides scientific advice to UNESCO and UNESCO's Intergovernmental Oceanographic Commission. This provides an opportunity for scientists to influence programmes and policies.
- Several American NGOs have been actively lobbying to US government in opposition to a sea-level Panama Canal.
- The Canadian Scientific Pollution and Environmental Control Society (SPEC) launched a province-wide campaign against a proposed super tanker port and refinery on coastal British Columbia, Canada. SPEC helped create the Kitimat Oil Coalition with 21 member organisations, representing 80,000 members. In addition to conservation groups, the coalition included native, labour and church organisations. The coalition caused the federal government of Canada to hold a special inquiry into the proposed oil port which lasted three months.
- In a similar action, Mexican, Japanese, and Micronesian NGOs are working together against a super tanker port and storage terminal on the Palau Islands, a rich and diverse marine tropical ecosystem.
- The Caribbean Conservation Association is involved in a campaign to get Caribbean governments to accept the 1954 Convention for the Prevention of the Pollution of the Sea by Oil (and subsequent amendments); they are also attempting to get regional action to investigate the possibilities of patrolling the seas; and have developed recommendations for the setting up of local action committees

charged with the formulation of contingency plans.

- The Natural Resources Defence Council in the United States is undertaking a project (with WWF support) to monitor the implementation of the Coastal Zone Management Act on a state by state basis and to see that federal oil and gas leasing on the outer continental shelf incorporates adequate safeguards to protect the marine environment.
- IUCN has a survey and advice team to help governments establish marine parks and reserves. In general they hope to stimulate governments and inter-governmental bodies to act on marine issues; this task is facilitated by the membership of a number of governments in IUCN.

As is the case in most other environmental issues, many NGOs are routinely consulted by governments on issues of importance. In other cases, government officials are also members of one or more non-governmental organisations, which ensures NGO input into the decision-making process.

2.2.2 Whales

A major focus for NGOs interested in the marine environment is the conservation of whales. Though this activity is an integral part of the larger issue of oceans and seas, it is here treated separately in order to emphasise its importance to NGOs.

NGO interest in whales is largely focused in the developed world, and includes a good measure of international cooperation. Activities undertaken include all the various types outlined elsewhere in this chapter. Most remarkable, however, has been the level of public interest in the whale issue that the activist NGOs (such as Friends of the Earth, Project Jonah, and others) have been able to generate. A striking example has been the well-publicised actions of the Greenpeace organisation, which has hired vessels in order both to monitor and to physically interfere with the large whaling fleets.

2.2.3 UN Conference on the Law of the Sea (UNCLOS)

The UN Conference on the Law of the Sea covers a wide range of issues related to the world's oceans, and NGOs interested in the environmental issues have been active. Among the associated activities has been an NGO newspaper entitled "Neptune" produced on occasion during the conference sessions; a special publication by the Ocean Education Project (United States) entitled "Soundings" containing news and commentary on the Law of the Sea Conference; regular coverage/publications by a number of environmental organisations (such as Sierra Club in the United States); and so on.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT

Though the survey revealed little in the way of explicit reaction to current international efforts in the field of marine environment, a number of clear conclusions can be drawn from the nature of NGO programmes. In general, international controls on the use of and exploitation of the marine mammals, sensitive marine ecosystems, shipping (particularly oil), and finally mining and other resource-extraction activities. Progress

being made with regards to the Law of the Sea Conference and the Mediterranean Action Plan is certainly welcomed but is generally viewed as inadequate in a rapidly deteriorating situation.

From the questionnaires returned, a number of specific recommendations emerged. These include the following:

3.1 Regional Coordination

UNEP should increase its well-received activities in the coordination and implementation of regional programmes - particularly those dealing with difficult and expensive problems such as pollution and over-fishing. In addition, regional guidelines for protection and restoration of the marine environment (including fisheries) should be prepared and made available.

3.2 Marine Science

The UN and its specialised agencies should strengthen their assistance to coastal states for the interpretation and application of ocean research and for the training of marine scientists. UNEP should make advisors available in both a short-term and long-term basis.

3.3 Financial

Greater international (including UNEP) financial assistance should be made available to certain developing countries to enable them to establish marine parks or reserves, as well as to run environmental-awareness campaigns.

3.4 Marine Mammals

UNEP should respond positively to the recommendations that emerged from the Scientific Consultation on Marine Mammals (held by FAO with UNEP support in Bergen, Norway).

3.5 IUCN

IUCN believes that achievement of the aims of their marine programme requires full participation of many national and international bodies, including UNEP, UNESCO, and FAO. In addition, they hope that UNEP will undertake responsibility for programmes within the World Conservation Strategy (being prepared by IUCN with a large portion devoted to the seas).

3.6 Information

UNEP should supply pertinent literature and act as a clearing house for information on regional and global activities, thereby enabling improved communication between countries with similar concerns and resources.

CHAPTER 7

Role of NGOs in the field of Environmental Information

INTRODUCTION

1.1 Scope of the Chapter

This chapter deals with the activities of non-governmental organisations in the field of environmental information. The level of NGO activity in environmental information is so vast (see 1.2 below) that, in a brief chapter such as this, it is only possible to give a very qualitative overview with a minimum of examples. Further examples of NGO information activities can be found in each of chapters 1 to 6.

The examples that are cited in this chapter are not necessarily the most significant in a particular field - they are intended instead to illustrate the range of NGO activity.

1.2 Types of NGOs Involved and Level of Activity

Quite simply, every conceivable type of NGO is involved in the dissemination of environmental information - including organisations with only a very peripheral interest on environmental issues. Audiences range from highly specialized groups through to public-at-large. The net result is a vast and important means of communication, reaching hundreds of millions of people on a sustained basis. In fact, the survey confirmed that NGOs as a group are more involved and more successful in the field of information dissemination than in any other activity associated with environmental protection. The reasons for such effective and such extensive activity are many, including the following two points:

- NGOs normally enjoy a special relationship with the audience to which they direct their information activities. For instance, scientific NGOs are established by the scientists; community groups are established by the people of the community; rural development NGOs actively work with the rural population; and so on. As a result, NGO information programmes are highly responsive to the needs of the audience, and are furthermore readily accepted by that same audience. These two factors ensure the effectiveness of NGO information efforts.
- Environmental problems can frequently be overcome or avoided through the provision of information. For instance, scientific knowledge can influence development plans while public information campaigns can influence the actions of individuals; in both cases, negative environmental impacts can be reduced if the information is appropriate. As a result, NGOs believe that programmes of information dissemination are effective in efforts to deal with environmental problems; consequently they are actively involved in such programmes.

The survey did not reveal any significant difference between developing and developed country NGOs as far as the importance attached to information activities is concerned (though of course subject areas and modes of communication do differ, as outlined throughout the balance of this chapter).

1.3 Issue Orientation

The survey indicated that NGOs carry out informational activities relating to the full range of environmental problems. This is a consequence of two factors:

- There is an extraordinary variety of NGOs, with a tremendous diversity of interests and of constituencies.
- In many cases, NGOs are able to choose issues without political, economic or other constraints limiting their choices. This factor stands in sharp contrast to many other bodies involved in environmental information.

The focus of NGO information programmes ranges from specific technical topics through to a very general treatment of "environment". Within this spectrum the particular subjects which command most interest vary from region to region. In the more developed countries, the survey revealed that the issues most focused upon were energy (especially nuclear and conservation), lifestyle and its impact on the environment, nature conservation, various forms of pollution, and community-based issues such as neighbourhood protection. In the developing countries, environmental information activities focused most on water (particularly water supply), health and sanitation, soil conservation, agriculture, and population.

2. WHAT NGOs ARE DOING

2.1 NGO Activities relating to UNEP Strategy and Objectives

The discussion in this section is divided into 5 sub-sections:

- 2.1.1 Media-related activities
- 2.1.2 Seminars and related activities
- 2.1.3 Periodicals and other Printed Material
- 2.1.4 Miscellaneous
- 2.1.5 World Environment Day

2.1.1 Media-related activities

NGOs are extensively involved in work to provide material for the established media. In view of the relative freedom with which many NGOs can tackle issues, their material is frequently seen to be more news-worthy than environmental information issued by other sources. Because they are not normally attached to vested interests, NGOs are furthermore frequently seen as a credible source of information, albeit one with a particular point of view on most issues.

NGOs involved with the established media can be broadly divided into three categories. The first is a specialist category best

exemplified by Earthscan (United Kingdom based) and the WorldWatch Institute (USA). These are organisations endeavouring to generate effective international media coverage of environmental concerns. Earthscan produces (among other things) briefing documents to ensure well-informed journalistic coverage of various issues; WorldWatch produces feature articles for verbatim publication. Such organisations, though limited in number, are able to ensure widespread quality coverage of environmental issues by emphasizing their role as a media service.

Organisations involving journalists are the second type of NGO relevant to this discussion. The Association of Journalists and Writers for the Protection of Nature and the Environment (France), for instance, has about 300 members. Their activities include the publishing of a list of these members, thereby enabling other organisations to distribute environmental information to writers who are likely to make use of it. In addition, the Association itself carries out various campaigns and information programmes for the benefit of members. Though the number of such associations is not large, they do make an important contribution.

The final category of NGOs relevant to this discussion includes the large number of groups which undertake media-related activities as one component of their ongoing programmes. These activities can be of many types: newsreleases; news conferences; personal contact with individuals in the media; provision of resources in support of information or action campaigns; public appearances or events generating news coverage; provision of regular materials such as feature articles; occasional columns in established newspapers or magazines; radio programmes sponsored by the NGO; and so on. This entire range of activities may be focused on the print media, on radio, or (primarily in the more developed countries) on television. Particularly in the case of print media, with its high degree of specialisation, such information campaigns can be aimed at a very carefully chosen audience.

These various types of media-related action by NGOs are so widespread that it would be meaningless to identify a small number of examples. The results of such activities appear daily in the press or on radio/television in most parts of the world - this fact serves as the best documentation to NGO effectiveness.

2.1.2 Seminars and related activities

NGOs organise a very wide range of seminars, conferences, meetings and other such group gatherings. These fall into two categories.

The first is the specialist meeting in which the primary aim is to either improve the professional competence of individual participants or alternately to increase the level of cooperation and communication amongst individuals/organisations already highly competent in the field. The specific focus of such group meetings may include scientific methodology; administrative or management techniques; social sciences (including motivational techniques and environmental information); environmental topics per se; etc.

Secondly, NGOs are frequently involved in group meetings open to non-specialists or the public at large. Such activities include not only traditional seminars, conferences, etc., but also include such activities as environmental fairs, film shows, "soap-box" oration, ad hoc meetings, public rallies, etc. The intent is most frequently motivational - an attempt to provide information and ideas which influence

the attitudes of those in the audience towards a more environmentally sensible position. However, in other cases, the intent is purely informational - an attempt to provide individuals who are already motivated with the information they need to implement their ideas (for instance, information on proper sanitation practices and techniques; information on how to build a solar collector; etc.)

Again, the extent of this activity is such that a small number of examples here would be meaningless. However, the impact of these group meetings is undoubtedly strong - both because of their extent and because of the direct, personal contact that they create.

2.1.3 Periodicals and other printed material

A large number of NGOs publish periodicals dealing exclusively with environmental issues; other NGOs publish periodicals which include environmental information along with other material. There is, of course, tremendous variation amongst these publications - they range from mimeographed newsletters with a tiny circulation through to glossy magazines with a circulation in the hundreds of thousands. The target audience also varies - readers could be the general public, specialists in a given field, decision makers, other NGOs, etc.

Apart from periodicals, there is also heavy NGO involvement in the preparation of special publications, ranging from pamphlets to textbooks and appealing to as diverse a collection of audiences as the NGO periodicals.

Another example of environmental publications is "ECO" and other UN Conference newspapers produced by NGOs. For example, the Conference newspaper "PAN" was published during the UN Conference on Food, "JERICHO" was published during the UN Conference on Human Settlements. And, of course, "ECO" the first of these newspapers, was published during the UN Conference on the Human Environment.

The survey produced no concrete estimate of the number of NGO publications in the field of the environment, but it is evident that the annual total is (at least) in the tens of thousands. The examples cited in other chapters of this report give a very limited indication of the range of these publications.

2.1.4 Miscellaneous

With the large number of NGOs active in the field of environmental information, it is not surprising that many programmes are undertaken which do not fall readily into any of the above categories. Such "miscellaneous" NGO programmes are not as extensive as the activities outlined in 2.1.1 - 2.1.3 above; they are, however, important, and are best described by the following selection of examples:

- The Cousteau Society (USA) has produced filmstrips, audio cassettes, multi-media kits, a number of television specials, and a large number of films. The material deals primarily with environmental issues associated with the oceans and seas. Much of it is designed for use in the school system.
- Pollution Probe, Ottawa (Canada), produces a bi-weekly half hour radio programme, broadcast by a local station, on environmental

issues. The organisation also established and operated a Community Museum of Energy Conservation.

- The National Trust for Fiji organised an Environment Exhibition at the Fiji Museum. Lasting for 20 days, it was visited by about 8,000 people, including a large number of students. The exhibition will be used as the basis for a travelling version.
- The World Organization of the Scout Movement (with 13 million members in 112 countries) has a "World Conservation Badge" which boys can earn by, in part, passing environmental knowledge on to others - including both the youth and adult population.
- The Scientific Committee on Problems of the Environment (SCOPE, a committee of ICSU) is involved in a project examining both the communication of environmental information and the societal assessment and response to that information. The results will serve as a guide to governments, intergovernmental agencies, and NGOs on the effective use of information.
- The Committee on Science and Technology in the Developing Countries (COSTED, another committee of ICSU) is establishing an appropriate technology information system.
- The International Development Research Centre (IDRC) is partially supporting/assisting the development of a number of information systems/networks being investigated or established by different Intergovernmental Organisations. Topics include agriculture, population, and water supply. IDRC is also supporting a pilot project in Uruguay where pre-recorded cassette tapes are being tested as a means of communicating new ideas and knowledge to isolated communities.
- Many NGOs act as community resource centres. For instance, Stichting Natuur en Milieu (Netherlands) receives over 200 periodicals to which the public has access. EGIS - Environmental Information Service (United Kingdom) responds to specific postal information requests, as well as maintaining a library and files of newscuttings for public use. The Centre For International Environmental Information (USA) responds to enquiries from reporters, writers, and editors on international environmental issues (as well as publishing their newsletter World Environment Report).

2.1.5 World Environment Day

NGO involvement in World Environment Day has been actively stimulated in 1976 and 1977 through the distribution of 'Alert' posters to (in 1976) over 3,500 organisations. These posters, prepared jointly by the Environment Liaison Centre and UNEP, have generated a very substantial level of activity, particularly in the developing world. In fact, the Survey indicated that several hundred NGOs have actively participated in World Environment Day, with the number increasing each year. The organisations involved in such activity cover the entire range of NGOs, some with only peripheral interest in environmental issues at other times of the year. Actions have included public meetings, seminars, displays, demonstrations, political protests, NGO statements, festivals, bicycle rallies, and much, much more. The following examples outline a selection of the NGO programmes for World Environment Day 1977:

- The ELC/UNEP poster was displayed by NGOs in dozens of countries, including Austria, Cameroun, Canada, Costa Rica, Denmark, Egypt, Ecuador, France, Ivory Coast, Malaysia, Poland, Papua-New Guinea, Romania, Spain, Switzerland, Tanzania, Thailand, USSR, and Zambia.
- The United Nations Association of Australia (Queensland) co-ordinated a decentralized "Statewide Festival" over a period of three days. Other NGOs were encouraged to sponsor public meetings, workshops, displays, puppet shows, youth programmes, and dozens of other types of activity as part of the Festival.
- The Athens Society of the Friends of the Trees (Greece) presented a T.V. sketch dealing with the protection of green vegetation cover.
- The Indian Society of Naturalists displayed thousands of its specially prepared 'Alert Posters', printed in the regional language, Gujarati. In addition, they organised a seminar on environment in which people from various walks of life participated. Also in India, Dasoli Gram Swarajya Sangh organised a rugged but co-operative work camp where 50 young men worked on an afforestation scheme for 6 days, leading up to World Environment Day. The workers also participated in a discussion and appeal, calling for prevention of deforestation in the area.
- The Socialist Working Youth League of Mauritius organised a public forum on the environment.
- Amsterdam Fietst (Netherlands) organised a mass rally of cyclists, in recognition of the bicycle as an environmentally appropriate mode of transport.
- In the United Kingdom, Friends of the Earth, the British Cycling Bureau, and the British Heart Foundation organised a cycling cavalcade on June 5, which also served to launch the Heart Foundation's national cycling month.
- The Federation of Societies for the Protection of the Environment of Sri Lanka and its member NGOs organised a 10-mile bullock cart procession through the streets of Colombo, calling at schools on the route. Participants carried banners and hand-painted posters. The groups also organised a public meeting.
- Ia Ora te Natura (Tahiti) organised a photo competition in which candidates entered two photos each - one an old picture of a particular landscape/seascape; the other a contemporary photo of the same scene showing environmental degradation or environmental improvement.
- The Wildlife Clubs of Uganda organised a National Environmental Day Festival of plays, songs, tales, and paintings. Participants came from all parts of the country.
- In the Northeast United Kingdom, an ad hoc committee of local environmental groups, organised a 10-day Festival of the Environment culminating on June 5. Events included excursions to sites of environmental interest, competitions, exhibitions, demonstrations, etc.

2.2 Other Activities (unrelated to UNEP strategy and objectives)

NGOs are involved in a great deal of activity that is unrelated to UNEP's strategy and objectives. The following two functions are of particular significance:

- NGOs frequently experience difficulty in obtaining adequate information through official sources such as government or industry. In other cases, however, they are able to obtain sensitive information through "unofficial" sources - i.e. from concerned individuals who recognise the ability of NGOs to make effective use of any information supplied. Consequently, a valuable (though not extensive) NGO activity is the dissemination of important but sensitive information.
- NGOs, involving as they do a tremendously large number of individuals, can be assumed to be actively involved in environmental information in an informal sense: as individuals, each member is in fact a personal emissary of the environmental cause. Such activities can in no way be quantified, or categorized, but they represent one of the most significant impacts of the NGO environmental movement.

3. NGO EVALUATION OF AND RECOMMENDATIONS FOR INTERNATIONAL EFFORT IN THE FIELD OF INFORMATION

The questionnaire did not ask NGOs to evaluate current environmental information activities being carried out by international bodies. However, the recommendations the NGOs offered for UNEP's future information programme give a clear indication of the perceived weaknesses. In addition to the summarized recommendations which follow, chapters 1 - 6 contain other recommendations for informational activities relating to specific subject areas.

3.1 Information dissemination

A number of NGOs expressed specific informational needs:

- In the field of air pollution, comparative and up-to-date tables of air pollution statistics, standards, and regulations are needed on a country-by-country and subject-by-subject basis.
- Information on UNEP's activities in particular fields, in a format suitable for reprinting in NGO periodicals, would be valuable.
- In the field of toxic chemicals, up-to-date data on newly discovered toxic effects and new regulatory measures (in any part of the world) should be widely and rapidly disseminated.
- Information of direct use to the individual consumer should be provided.
- Material for the media should be specifically oriented to the geographical region in which it is being distributed. Similarly, one-day media seminars dealing with specific environmental issues should be organised on a regional basis.

One NGO recommended that UNEP delegate its issue-oriented public information activities to other organisations, since UN bodies have not been effective in this task. UNEP should, of course, retain responsibility for publicizing its own activities.

3.2 Information services

Two new informational services were proposed for UNEP:

- UNEP should maintain a data bank service, where adequate but brief information on standards, control systems, etc. could be obtained at short notice (ideally via telex).
- UNEP could establish a clearing-house for environmental information/education materials. Its function would be to collect films, photographs, selected printed matter, etc. from world-wide sources. These would then be redisseminated to government departments, NGOs or UNICs for release to the public.

Additional suggestions were made concerning existing information services:

- UNEP should make the IRS Directory more readily available to interested parties.
- The treatment of marine sciences by IRS should be upgraded. UNEP should support the Aquatic Sciences Information System (ASFIS).
- Further means of co-operation between IRPTC and the Environmental Chemicals Data and Information Network of the European Community (ECDIN) should be explored.

3.3 Finance

UNEP should continue to provide financial support to organisations capable of conveying, clearly and well, information on environmental issues to a wide variety of audiences.

3.4 Exchanges

UNEP should promote international exchanges of "working level people" (i.e. field workers actually involved in efforts to resolve environmental problems, not the "experts"). Such exchanges would ensure information flow through direct, personal, contact. Particular reference was made to exchanges of appropriate technology workers.