



United Nations Environment Programme



Distr.
GENERAL

UNEP/GC.16/17
15 May 1991

ORIGINAL: ENGLISH

GOVERNING COUNCIL
Sixteenth session
Nairobi, 20-31 May 1991
Item 4 of the provisional agenda

SECRETARY-GENERAL'S REPORT ON MONITORING, ASSESSMENT AND ANTICIPATION OF ENVIRONMENTAL EMERGENCIES

Note by the Executive Director

1. At its forty-fourth session, the General Assembly in its resolution 44/224 of 22 December 1989 requested the Secretary-General, assisted by the Executive Director of the United Nations Environment Programme, to prepare a report on possible ways and means to strengthen the capacity of the United Nations to, inter alia, monitor, assess and anticipate environmental threats, for submission to the Governing Council for consideration during the preparatory process for the United Nations Conference on Environment and Development. The General Assembly further invited the Governing Council to consider the report and to present its views thereon to the General Assembly at its forty-sixth session, through the Economic and Social Council.
2. The report of the Secretary-General is annexed to the present note.

Annex

REPORT OF THE SECRETARY-GENERAL ON FOLLOW UP OF
GENERAL ASSEMBLY RESOLUTION 44/224

I. BACKGROUND

General Assembly resolution 44/224

1. In December 1989, the United Nations General Assembly adopted resolution 44/224, entitled "International co-operation in the monitoring, assessment and anticipation of environmental threats and in assistance in cases of environmental emergencies". In this resolution, the General Assembly noted with appreciation the work undertaken by UNEP to develop criteria for the identification of environmental threats at the national, regional and global level. It also affirmed the need for closer co-operation between UNEP, the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the World Health Organization (WHO) and the World Meteorological Organization (WMO), as well as other competent organizations, programmes and agencies of the United Nations system, bearing in mind the co-ordinating role of UNEP in environmental matters in the United Nations system.
2. The resolution underlined the importance of broader participation in Earthwatch, established by the United Nations Conference on the Human Environment, which functions within UNEP, in order to strengthen its capacity to make authoritative assessments, to anticipate environmental degradation, and to issue early warnings to the international community.
3. Further, the resolution requested the Secretary-General, assisted by the Executive Director of UNEP to prepare a report, on the basis of the views of Member States and existing national and international legislation in this field, containing proposals and recommendations on possible ways and means to strengthen the capacity of the United Nations:
 - (a) To monitor, assess and anticipate environmental threats;
 - (b) To define criteria for determining when environmental degradation undermines health, well-being, development prospects and the very survival of life on the planet to such an extent that international co-operation may be required, if requested;
 - (c) To issue early warnings to the international community when such degradation becomes imminent;
 - (d) To facilitate intergovernmental co-operation in monitoring, assessing and anticipating environmental threats;
 - (e) To assist Governments facing environmental emergencies, at their request;
 - (f) To mobilize financial resources and technical co-operation to fulfil the above tasks, taking into account the needs of the countries concerned, particularly the developing countries.

Finally, the resolution also requested the Secretary-General to submit to the Governing Council of UNEP the above report for consideration during the preparatory process for the United Nations Conference on Environment and Development (UNCED).

Follow up to the resolution

4. To advance these aims, an exploratory meeting was convened by the Executive Director of UNEP from 18-19 July 1990 in Geneva. The meeting recognized that the heart of Earthwatch should be the establishment of a well-defined monitoring and assessment programme. It reiterated that no single agency could cope alone with this vast range of activities, and that the response to the resolution had to be system-wide, bringing together the work of all the United Nations bodies concerned. The meeting proposed that as a first step, a small consultant task team should visit the main United Nations bodies active in the environmental field to ascertain their relevant actions and potential roles and should prepare a report on how to develop Earthwatch further, paying particular attention to early warning and forecasting needs. The July meeting further proposed that a second meeting be held early in 1991 to consider the task team's report and to draft appropriate proposals for the future of Earthwatch. This second meeting was held in February 1991. A draft report was prepared, taking into consideration the findings of both meetings and the reports of associated consultants. The draft report was sent to the executive heads of those bodies for comments. The present report takes the comments of these executives into consideration. Decision 15/10 of the UNEP Governing Council addresses the need for the establishment of an international mechanism for urgent environmental assistance. Consequently, this report does not address this issue.

II. THE MANDATE OF EARTHWATCH SINCE 1972

5. The Stockholm Conference on the Human Environment in 1972 recommended that environmental assessment be one of the basic operational areas of the United Nations Environment Programme and named it "Earthwatch".

6. The General Assembly, in its resolution 2997 (XXIIV) entitled "Institutional and financial arrangements for international environmental co-operation", endorsed the Stockholm recommendations and established UNEP. Further it decided to establish a Governing Council of UNEP, which would have, inter alia, the following functions and responsibilities:

- Keep under review the world environmental situation in order to ensure that emerging environmental problems of wide international significance receive appropriate and adequate consideration by Governments;
- To promote the contribution of the relevant international scientific and other professional communities to the acquisition, assessment and exchange of environmental knowledge and information and, as appropriate, to the technical aspects of the formulation and implementation of environmental programmes within the United Nations system.

/...

7. Decision 1 (I) of 22 June 1973, adopted by the UNEP Governing Council at its first session, stated that one of the major functional tasks of the Programme consisted of the identification and assessment of the major environmental problems for which "Earthwatch" would become one of the important instruments.

8. Decision 8 (II) of 22 March 1974, adopted by the UNEP Governing Council at its second session, authorized the Executive Director to design, develop and begin to implement the Global Environment Monitoring System (GEMS) and the International Referral System (later to become INFOTERRA) within the Earthwatch cluster.

9. Decision 29 (III) of 2 May 1975, adopted by the UNEP Governing Council at its third session, requested the Executive Director to give high priority to the consolidated development and improvement of Earthwatch, consisting of research, evaluation, monitoring and information exchange activities and to treat all these components both functionally, in terms of an integrated system, and programmatically, as part of each priority subject area that they served. This decision also authorized the Executive Director to establish a programme activity centre for the International Register of Potentially Toxic Chemicals (IRPTC), to serve as an essential tool in optimizing the use of chemicals for human well-being while, at the same time, providing a global early warning system of undesirable environmental side-effects of potentially toxic chemicals.

10. "Earthwatch" was subsequently defined in document UNEP/GC.16, considered by the Governing Council At its fourth session as a "dynamic process of integrated environmental assessments by which relevant environmental issues are identified and necessary data are gathered and evaluated to provide a basis of information and understanding for effective environmental management".

11. Decision 63 (IV) of 13 April 1976, adopted by the UNEP Governing Council at its fourth session, recognized the major importance of Earthwatch to the achievement of the objectives of UNEP and requested the Executive Director to develop and initiate the implementation of an integrated evaluation programme and interdisciplinary research programme as interacting components of Earthwatch, along with the Global Environmental Monitoring System, the International Referral System and the International Register of Potentially Toxic Chemicals.

12. At its seventh session in 1979, the Governing Council of UNEP established an ad hoc Group of Government-designated Experts to "consult on the development of mechanisms and procedures for conducting environmental assessment within Earthwatch". In its report, this Group endorsed the general approach to Earthwatch that had existed since 1972 and formulated in detail the elements of comprehensive assessment of any selected environmental problem.

13. In 1981, the concept of the System-Wide Medium-Term Environment Programme (SWMTEP) was adopted as a process for joint planning of environmental activities within the United Nations system. The first SWMTEP report for the years 1984-1989 was adopted by the Governing Council in its decision 10/13 of 31 May 1982.

/...

14. At its 1982 Session of Special Character, the Governing Council reviewed the major achievements in the implementation of the Action Plan for the Human Environment adopted by the Stockholm Conference in 1972. In relation to the area of environmental assessment, the Council stated that:

- The Global Environment Monitoring System was operating and expanding, although important gaps in the development, co-ordination, user applications and integration of the system components persisted;
- The Global Atmospheric Research Programme had continued and international studies of climatic change and variability and of the applications of climate knowledge to human activity had been incorporated into the World Climate Programme;
- The International Referral System for sources of environmental information was functioning, but had not adequately realized its objectives, in particular because the growth of user demand had been slow;
- The International Register of Potentially Toxic Chemicals had started to prove itself as an important centre for information on toxic chemicals;
- The International Programme on Chemical Safety was providing toxicological assessments for an increasing number of substances, together with accelerated manpower development, guidelines for emerging response to chemical accidents, and technical co-operation relating to control of toxic chemicals;
- Assessments of the environmental impacts of various sources of energy had been published;
- A major report entitled The World Environment 1972-1982 had been published in conjunction with the Session of a Special Character.

15. The Council also decided that the basic orientation of the programme in the area of assessment for 1982-1992 would be:

- To improve early warning indicators of significant environmental changes;
- To improve the planning and co-ordination of monitoring at the global and regional levels;
- To produce concrete assessment statements for important environmental problems and their human health, social and economic implications;
- To establish better links between the Global Environment Monitoring System, the International Referral System for sources of environmental information, the International Register for Potentially Toxic Chemicals and national and international data centres;

/...

- To promote the establishment of reliable global, regional and national environmental statistics and state-of-the-environment reporting as a basis for evaluating major trends and deciding on any necessary action.

16. In its decision 14/13, the UNEP Governing Council adopted the Environmental Perspective to the Year 2000 and Beyond, which was subsequently adopted by the General Assembly in its resolution 42/186 of 11 December 1987. One of the instruments of environmental action of the Perspective is "Assessment", which would have the functions of co-ordinating the collection of reliable information, analyzing this environmental information and make it available to planners and managers in an usable form. The decision also reiterated that one of the major priority functions of UNEP should continue to be to monitor, assess and report regularly on the state-of-the-environment and natural resources and emerging environmental issues.

17. In 1988, the Governing Council at its first special session, adopted the system-wide medium-term environmental programme for the period 1990-1995, recognizing that SWMTEP continued to be a valuable mechanism for the co-ordination of environmental activities within the United Nations system. In the realm of Earthwatch, SWMTEP has two general objectives:

- To accumulate and improve reliable and comparable scientific and technical information about environmental issues and to develop and apply means of collecting, storing, retrieving and processing such information that will make it readily available to decision-makers and specialists;
- To provide comprehensive assessments of environmental issues on the basis of socio-economic data and data on the major components and processes of the global and regional environments, to monitor, in an appropriate way, the transition towards sustainable development.

In its resolution 45/253 of December 1990, the General Assembly adopted the Medium-term Plan of the United Nations for the period 1992-1997. The Plan stated that the global environment programme, Earthwatch, conceived in 1972 at Stockholm, was one of the main pillars of the Action Plan for the Human Environment.

III. CURRENT MONITORING, ASSESSMENT AND EARLY WARNING ACTIVITIES WITHIN AND OUTSIDE THE UNITED NATIONS SYSTEM

18. UNEP is currently compiling a list of activities of the United Nations agencies that at present contribute to Earthwatch; this list can be made available on request, when completed. Many agencies and other organizations contribute to the United Nations world-wide Earthwatch process in different ways, for example:

- Through monitoring and inventory activities often designed in co-operation with UNEP and the development of monitoring and assessment methodologies and guidelines;
- Through research activities and pilot projects;

/...

- Through strengthening national capabilities and infrastructure and technical co-operation programmes;
- Through technical and scientific assessments and through the issuing of early warning statements, for example in the fields of atmosphere-ocean interaction, occupational safety, radiation.

Many of the activities listed above are carried out in co-operation with UNEP. Within UNEP itself, in addition to the Programme Activity Centres within Earthwatch, namely IRPTC, INFOTERRA (the former International Referral System) and GEMS/GRID, other programmes, such as Soils, Desertification, the Industry and the Environment Office, and the Ocean and Coastal Areas Programme Activity Centre all provide data and information to the Earthwatch process.

IV. UNEP'S ROLE

19. The conceptual approach and operational sequences of environmental assessments have been outlined and the elements of comprehensive assessments of any selected environmental problem have been formulated by different expert groups convened by UNEP. It has been realized that comprehensive assessments at the international level can be obtained only in a selected number of cases for which sufficient information exists. Even at the national level, comprehensive assessments have been hampered by lack of information or the integration of available information. It was agreed that the Earthwatch process ought to be iterative, i.e., that assessments on a particular topic of importance should be made at regular intervals, depending upon monitoring data and research knowledge becoming available, as well as upon political circumstances. Thus it becomes possible to follow environmental change through time, establish the trends in such changes, and obtain an indication and understanding of the causes of these trends.

20. In order to study and develop further the activities involved with Earthwatch, UNEP, in co-operation with relevant United Nations agencies and organizations, in 1981 carried out an in-depth review of Earthwatch as a United Nations system-wide concept. The review refers to the original concept of Earthwatch from the Stockholm Conference and summarizes Earthwatch development up to 1981. Systematic methods for the identification and selection of topics and problem areas for assessment were considered and agreement was reached on a variety of activities to encourage performing assessments at national, regional and global levels, as well as to developing suitable assessments. Types of activities which have since been used in the Earthwatch process include:

- Surveys of monitoring network data and of information contained in the literature;
- Government-designated expert meetings and expert consultations;
- Consultancies at the request of national Governments;
- Support for national, regional and global monitoring and assessment projects;
- Development of monitoring and assessment methodologies;

/...

- Co-ordination of international quality assurance programmes;
- Collection, compilation, analysis, dissemination and exchange of information;
- Production of environmental data tables and summaries;
- National and regional training courses;
- Co-ordination of international monitoring networks, etc.;
- Establishment of global regional and national data centres;
- Production of topic-specific assessment reports.

21. Within the UNEP secretariat, all the above categories of Earthwatch activities are carried out to different degrees by those programmes activity centres that constitute the environmental assessment process: GEMS/GRID, INFOTERRA, and IRPTC, as well as by other UNEP units such as OCA/PAC, the Environmental Management division and the State-of-the-Environment unit.

22. As environmental issues have developed over the last 10 years, the need for environmental assessments has become even more prominent, especially in areas where environmental problems extend beyond national boundaries and environmental degradation has implications of a regional or global scale. Consequently, the Governing Council in 1989 endorsed a list of areas of concentration on which UNEP should focus its efforts. In the following paragraphs some of the major activities and assessments carried out by UNEP within the framework of Earthwatch as they relate to UNEP's major concentration areas are briefly summarized. INFOTERRA is playing a role in all these areas as a co-operative and decentralized network of national focal points and sources of information, thereby contributing to improvements in assessment activities.

Protection of the atmosphere by combating climate change and global warming, depletion of the ozone layer, and transboundary air pollution

Climate

23. With support from UNEP and WMO, the International Meteorological Institute in Stockholm, working under the Scientific Committee on Problems of the Environment of the International Council of Scientific Unions (ICSU/SCOPE), prepared an assessment of the state of knowledge of climate change due to the increase of greenhouse gases in the atmosphere. This report was considered by an international expert meeting in Villach, Austria in 1985. In continuing this scientific assessment, UNEP, in co-operation with the Stockholm Environment Institute, convened meetings in Villach and Bellagio in 1987 on the socio-economic and political implications of the increase in greenhouse gases. These meetings for the first time considered the political options for adapting to or limiting the greenhouse gas effects. In a further step, WMO and UNEP, in November 1988, established the Intergovernmental Panel

/...

on Climate Change (IPCC) in order to study further the scientific aspects of climate change, its impacts, both physical and socio-economic, and policy options. The IPCC report was published in August 1990. It was reviewed by the WMO/UNEP/Unesco/FAO/ICSU Second World Climate Conference in November and further by the General Assembly in December 1990.

24. As a follow-up to the IPCC report, the General Assembly decided to set in motion an intergovernmental negotiation process on a climate convention, which started in February 1991 in Washington DC. The Committee established two working groups to assist it in negotiating an international instrument to reduce global warming. A special secretariat for these convention negotiations is being established in Geneva. The effectiveness of a future climate convention will depend largely on the provisions made for developing countries. Their full involvement in the negotiating process must be facilitated. Therefore, the Committee adopted a decision that called for contributions to a voluntary fund set up by the General Assembly to support developing country participation in the negotiation process. Action to strengthen the capacity of developing countries to collect and analyze climate change data, assess impacts of climate change and identify response options is a necessary prerequisite for this.

25. The above process in the climate area, leading from assessments of an environmental issue, in the Earthwatch context to negotiations on a treaty that defines the basis for solving the problem, illustrates how an integrated assessment process, involving United Nations agencies, international scientific organizations and Governments should operate.

Depletion of the ozone layer

26. Upon the scientific disclosure in 1974-1975 that the chlorofluorocarbons emitted into the atmosphere could endanger the stratospheric ozone layer, UNEP convened in 1977 an international expert meeting to discuss which mitigating activities should be undertaken under Earthwatch. The decisions taken at this conference led to the creation of the Co-ordinating Committee on the Ozone Layer under the Chairmanship of the Director of Environment Assessment in UNEP. From 1979 to 1985, this Committee was in charge of a continuously progressing assessment process, during which an annual report on findings in the area was published. A comprehensive assessment report was issued in 1985. This assessment process led to a governmental negotiating process for a convention on the ozone layer, which was adopted in Vienna in 1985. As new evidence of the harmful effects of CFCs and related substances on the ozone layer became available, UNEP initiated governmental negotiations on a special protocol under the Vienna Convention to deal with the control of substances that depleted the ozone layer. This Protocol was adopted in Montreal in 1987. Activities for the strengthening of this protocol were co-ordinated by the Ozone Secretariat within UNEP. This led to a strengthening of the Protocol and the establishment of a special multilateral Fund to support the developing countries' needs so as to enable them to comply with the provisions of the Protocol. The Fund is controlled and administered by an Executive Committee and includes a clearing-house function to carry out necessary and relevant studies, facilitate technical co-operation and monitor other multilateral, bilateral and regional co-operation. The ozone depletion issue is another successful example of the development of Earthwatch.

/...

Transboundary air pollution

27. During the late 1970s, the European Monitoring and Evaluation Programme (EMEP), supported by the ECE, WMO and UNEP, set up a co-ordinated air pollution monitoring network in Europe. This network provided the basic data that served as the background for the development of the Convention on Long-range Transboundary Air Pollution, which came into force in March 1983.

28. In 1984, evidence of the declining forest health reported by many European countries led to the establishment of the International Co-operative Programme on the Assessment and Monitoring of Air Pollution on Forests. This programme was launched in 1985 under the Convention on Long-range Transboundary Air Pollution. The programme, supported by UNEP, has produced annual surveys since 1986 on the damage to forests in the ECE region.

Regional and background air pollution

29. A programme to monitor background air pollution, BAPMoN, was launched by WMO in the mid-1960s and has been supported by UNEP since 1974. The data generated by that programme are at present being reviewed and will be used for a global assessment of long-range transport of pollution and acid deposition. Regional assessments are already available for North America and for Europe. WMO's Executive Council decided in 1989 to augment and enhance BAPMoN activities within the newly established Global Atmospheric Watch.

Protection of the quality of freshwater resources

30. As part of UNEP's Environmentally Sound Management of Inland Waters (EMINWA) programme, devoted to sound management of international river or lake basins, diagnostic studies are carried out, summarizing existing knowledge on the quantity and quality of the freshwater resources under study. At present, two such diagnostic studies have been prepared (Zambezi River and Lake Chad), contributing to the negotiation process that led to action plans for the sound and sustainable management of these water bodies. Assessments of the Orinoco, the Aral Sea, the Amazon Basin and Lake Xolotlan are also planned.

31. An inventory of the environmental status of international watersheds in Africa is being compiled with a view to identifying potential areas for promoting integrated management plans.

32. The International Lake Environment Committee Foundation (ILEC), in co-operation with UNEP, carries out a survey on the state of world lakes to assist Governments in the environmentally sound management of lakes by providing them with basic data. At present, more than 120 lakes have been surveyed and two major reports summarizing the findings have been produced.

33. The Global Water Quality Monitoring and Assessment programme (GEMS/WATER), operated jointly by UNEP, WHO, WMO, and Unesco, has as its major objectives providing Governments, the scientific community and the public with timely assessments on the state of the water quality of the freshwater resources of the world and to develop or strengthen national water quality monitoring networks in developing countries. The programme determines long-term trends in the levels of critical water quality indicators pertinent to environmental degradation, as well as to agricultural and industrial practices, climate change and human health. Future assessments will focus on

/...

the causes of the changes observed in freshwater quality, the loadings of pollutants from major river basins to oceans, multi-media sampling and the use of geographic information and expert systems for pollutant modelling and policy options analysis. Different activities are undertaken within the GEMS/WATER programme to strengthen national monitoring capabilities, including the production of a handbook on field technologies for water quality monitoring, a regional assessment of key water quality problems, and a consultancy programme for countries wishing to strengthen/establish their monitoring networks.

Protection of ocean and coastal areas and resources

34. Under the auspices of the UNEP Oceans and Coastal Areas Programme Activity Centre (OCA/PAC) and in co-operation with many specialized agencies and organizations including FAO, IAEA, IMO, IUCN, WHO, WMO and IOC/Unesco, assessments of the environmental status of regional seas and coastal areas have been carried out in many parts of the world, starting with the Mediterranean in 1974. Numerous national and regional reports on the state of the marine and coastal environment have been published, and have provided the basis for regional seas action plans and management measures to control the problems identified. Regional marine pollution assessment and control programmes have been organized to identify and correct critical pollution problems, and national and regional contingency plans have been developed to respond to marine pollution emergencies. The effective implementation of these measures involves a painstaking process of capacity-building, so that all coastal States, particularly the developing countries, can achieve effective management and sustainable development of their coastal areas and resources. UNEP and IOC have also organized regional task teams to prepare assessments of the effects of predicted climatic changes and sea-level rise in coastal areas.

35. Global assessments of the state of the marine environment have been undertaken jointly by all the concerned bodies of the United Nations system, with the first report prepared by IOC/Unesco in 1976, and the second and third prepared by the IMO/FAO/Unesco/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) in 1982 and 1990. Plans are well advanced for the IOC/WMO Global Ocean Observing System, and for the UNEP/IOC/WMO Long-term Global Monitoring System of Coastal and Near-Shore Phenomena related to climate change. Plans are also being developed to begin assembling the regional marine pollution monitoring programmes into a system for integrated global ocean monitoring.

Protection of land resources by combating deforestation and desertification

Desertification

36. In the follow-up to the United Nations Conference on Desertification in 1977, GEMS/PAC and the Desertification Programme Activity Centre (DC/PAC), in co-operation with FAO, in 1982 organized the digitalizing of all available and relevant data concerning the desertification process for the African continent. This allowed the first analysis of the process within a Geographic Information System (GIS) context. Although the assessment produced

/...

was imperfect, largely because of the quality of both the data and the model rules applied, the approach was hailed as a breakthrough. The GIS approach continues to be applied today by GRID in conjunction with DC/PAC for producing a global assessment of desertification.

Deforestation

37. In 1981, UNEP and FAO produced within the framework of GEMS a global Tropical Forest Resources Assessment with a December 1980 baseline and subsequently calculated rates of deforestation and estimates projected until 1985. The assessment process is continuing, with another major assessment statement expected in 1992. It will involve the identification of areas under rapid deforestation. Plans for the future include the use of low-resolution satellite data on an annual basis and the archiving of global forest data within UNEP's GRID. This would imply a major step forward in the continuous process of monitoring change.

Conservation of biological diversity

38. The World Conservation Monitoring Centre (WCMC), jointly supported by IUCN, WWF and UNEP, is the major focal point for information on the world's biological diversity. It serves as a global repository of reliable scientific data to support international conservation and development programmes. WCMC prepares red data books containing information on endangered and rare species. Within the framework of a global strategy for conservation of biological diversity, WCMC is preparing a comprehensive report on the status of the world biological diversity. UNEP is supporting the preparation of country studies on biological diversity to assist Governments in their own assessments of the status of their countries' biological diversity and the benefits, costs and future requirements for biodiversity conservation.

Environmentally sound management of biotechnology

39. An informal UNEP/UNIDO/WHO/FAO Working Group on Biotechnology Safety keeps under review relevant developments in this field. Further UNEP supports the World Data Centre on Micro-organisms and the Microbial Strain Data Network, referral systems for information exchange and the diffusion of biotechnology. Together with Unesco, UNEP has established regional Microbiological resources centres and a global network of national centres. FAO has promoted co-operation networks among countries and institutions in the developing regions covering livestock and crops.

40. Codes of conduct on transfer of genetically modified organisms are also being developed by several United Nations organizations and are expected to be harmonized in due course. UNEP, in collaboration with other United Nations bodies, supports the establishment of an international data-base on the release of genetically modified organisms into the environment.

Environmentally sound management of hazardous wastes and toxic chemicals

41. At the request of the Governing Council, IRPTC regularly updates a list of environmentally harmful chemical substances, processes and phenomena of global significance to which attention should be paid by Governments in their short-term and long-term environmental policies. Data profiles on over 800 chemicals of international significance, as well as regulatory information

/...

on 8,000 chemicals, are available from the Register, both in the form of hard copy and for use on microcomputers. A register on chemicals currently being tested for toxic effects and of existing and planned critical reviews of chemicals has been jointly undertaken by IRPTC and the International Programme on Chemical Safety (IPCS). IRPTC operates a query-response service, providing information, data and advice on chemical hazard assessment and control to users world-wide. It publishes a regular bulletin with news on chemicals, on the control of chemical hazards, and on new legislation and regulations for the safe management of chemicals. It assists Governments by facilitating the exchange of information on chemicals in international trade and is playing an active role, with FAO, in the development and implementation of a prior informed consent procedure for trade in banned and severely restricted chemicals. The establishment of national registers of chemicals compatible with those of IRPTC is being promoted and data dissemination is taking place through interactive networking, on-line access to the central data-base, and by means of microcomputers. Training to familiarize National Correspondents and other network partners with the use of the Register is being intensified.

42. The Industry and Environment Office, in Paris, produces technical guidelines and issues specific reviews, as well as operating a query response system to promote the transfer of information and the exchange of expertise in the field of environmentally sound industrial processes.

43. IPCS, a joint programme of ILO, UNEP and WHO, carries out health and environmental risk evaluations for chemicals of concern in close co-operation with IRPTC and scientific institutions of participating countries. It works towards harmonizing and validating research methodology for testing chemicals, provides training for experts from developing countries and assists countries in developing the programmes and procedures to deal with chemical emergencies.

Protection of human health conditions and quality of life, especially the living and working environment of poor people, from degradation of the environment

44. The UNEP/WHO Urban Air Quality Monitoring and Assessment programme (GEMS/AIR) has as its major objectives the strengthening of air quality monitoring networks in participating countries, the collection of comparable data on air quality between different countries and the establishment of levels and trends of major air pollutants on a global scale. On the basis of the project, a preliminary assessment was made by WHO/UNEP in 1984, followed by a more comprehensive one in 1988. An assessment of air quality in megacities is currently being prepared. Continuous concern about the situation in big cities over the last 20 years has led to a gradual reduction of the concentration of many pollutants in the air of cities in developed countries. Unfortunately, the problem is growing rather than diminishing in many cities in the developing world.

45. The joint UNEP/FAO/WHO Food Contamination Monitoring Programme, GEMS/FOOD, was initiated in 1976. The major objective of the programme is to inform Governments, the Codex Alimentarius Commission, other relevant institutions, as well as the public on levels and trends of environmental contaminants in food, their effects on human health and their significance with regard to public health and international food trade. The programme also

/...

contributes to national and international efforts to provide assurance regarding a safe food supply and provides a basis, where appropriate, for remedial action and resource management and the promotion of international trade.

46. The joint UNEP/WHO/GEMS/Human Exposure Assessment Locations (HEALs) programme promotes the monitoring of human exposure to environmental pollutants through pilot field studies, methodology development, training, and information exchange in order to provide Governments with the necessary information to devise appropriate, cost-effective, pollution control strategies. An increasing number of countries are using direct human exposure monitoring as an essential element of a multidisciplinary approach to multiple sources of human exposure and accurate risk assessment. During its pilot phase, HEALs monitored three groups of chemicals (heavy metals, organic chemicals and nitrogen dioxide) in a number of countries world-wide. The current programme focuses on collaborative field studies for other groups of chemicals, as well as on information exchange, training and methodology development.

V. ISSUES TO BE ADDRESSED AS POTENTIAL THREATS

47. Assessments are particularly required in all the UNEP areas of concentration identified by the Governing Council and adopted by the General Assembly for consideration at UNCED. Some examples of relevant assessment topics in these areas are listed below. However, environmental problems rarely fall within the purview of one concentration area, since many arise from interaction among elements of the topics listed.

Protection of the atmosphere by combating climate change, depletion of the ozone layer and transboundary air pollution

- Production system changes;
- Sea level rise;
- Depletion of stratospheric ozone impact of UV-B;
- Acid deposition, etc.

Protection of the quality and supply of freshwater resources

- Pollution, including transboundary pollution;
- Supply;
- Hydrological cycle manipulation, etc.

Protection of oceans and all kinds of seas, including enclosed and semi-enclosed seas, and of coastal areas and the protection, rational use and development of their living resources

- Global marine pollution;
- Eutrophication and bacterial/chemical pollution of regional seas;

/...

- Impacts on coastal areas, etc.

Protection and management of land resources by, inter alia, combating deforestation, desertification and drought

- Soil loss;
- Desertification;
- Deforestation;
- Ecosystem modification;
- Impacts of irrigation, etc.

Conservation of biological diversity

- Loss of biological diversity;
- Loss of species and habitats;

Environmentally sound management of biotechnology

- Impacts on ecosystems.

Environmentally sound management of hazardous wastes, particularly hazardous wastes and of toxic chemicals, as well as prevention of illegal international traffic in toxic and dangerous products and wastes

- Practices and impact of waste disposal;
- Sources, distribution and impacts of chemical substances and processes, etc.

Protection of human health conditions and improvement of the quality of life

- Urban/rural habitats;
- Impacts of population growth;
- Health effects;
- Human welfare indicators, etc.

Clearly, the list is not exhaustive. An Earthwatch system should be able to accommodate not only many more existing issues, but also "surprises" and emerging issues that will undoubtedly arise in the future.

VI. THE VIEWS OF GOVERNMENTS

48. There seems to be a general agreement among Governments that it is necessary to strengthen the capacity of the United Nations system to advise on

/...

imbalances and provide advance warnings of threats to the environment. In this context, there is general agreement that the strengthening of Earthwatch within UNEP would be an important means to this goal.

49. Governments, particularly those of developing countries, emphasize the need for support to national activities to meet local and regional environmental threats. There is a need to strengthen the environmental monitoring capacity of developing countries to allow them to participate actively in the collection of data for national, regional and global assessments of environmental threats. In this context, several Governments of developing countries have expressed the need for strengthening regional infrastructures and networks, as well as for the establishment of a forum for exchange of information and transfer of technology. Several countries propose augmenting the Environment Fund to meet these requirements through a Technical Co-operation Programme. Other countries express the view that existing multilateral and bilateral funding mechanisms, should be used.

50. On the more general question of how to organize within the United Nations system a better co-ordination of activities to arrive at assessments of environmental issues and advanced warnings on global threats, there are basically two different views among Governments. Some hold that new institutional arrangements should be avoided and that existing mechanisms should be used. One country, for instance, has stated that in most cases, each United Nations specialized agency could handle environmental issues in its own fields of competence.

51. More Governments agree, however, that it is necessary to study and define carefully which type of environmental issues need to be addressed in a world-wide co-ordinated way and to consider the requirements for an improved system to achieve the goals originally assigned to the concept of Earthwatch. In this context, it has been suggested that the Environment Co-ordination Board should be revived and that UNEP should concentrate on activities that would serve a future Earthwatch. It is essential that co-operation among the United Nations specialized agencies and other parts of the United Nations system be improved in order to achieve better results and avoid duplication of effort. In respect of Government involvement in Earthwatch, the establishment of an Intergovernmental Steering Group for Earthwatch has been suggested.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

52. The Earthwatch System should be at the interface between environment and development at the global level, providing the bridge between science, policy and action. It should be the mechanism by which development can be determined to be sustainable or not. It should define the limits to certain kinds of human activity on this planet, and issue warnings when those limits are approached or exceeded.

53. A continuing process of assessment must lead to co-ordinated response actions. A change in some parameter becomes significant only if it threatens human welfare at any scale or the essential life support systems of the planet. Several different changes may not in themselves present a problem, but taken together they could present a major risk.

/...

54. The central role of an international system to provide advanced warning of environmental threats must therefore include:

- Compilation and analysis of data and information from many separate monitoring activities;
- Issuing of comprehensive assessments that include the identification of causal relations among observed trends and identification of risks to society and the planet at various scales in time and space;
- Relating those risks to the social and economic costs that may be involved;
- Determining the thresholds at which a problem seems sufficiently serious to require action; and
- Issuing advance warnings of threats and pointing to policy responses and management options as required.

55. It is thus possible to define the four principle outputs or reports that an Earthwatch monitoring and assessment system should provide:

(a) Reviews of basic monitoring/assessment requirements

Whenever there is a strong expert suspicion of environmental degradation, but inadequate basic data from ground and space-based monitoring to determine the extent of that degradation or its impact with confidence, the Earthwatch System should prepare reports that identify monitoring data needs. Such reports should assess data requirements and gaps and make concrete suggestions as to how to implement new monitoring and data quality control programmes or strengthen existing ones to both Governments and funding agencies.

(b) Assessment reports

Whenever data analysis and research results identify a nascent serious environmental threat, an assessment report should be prepared. Such a report should provide very early warning of a potential environmental threat, identify possible causes leading to those threats, and assess the need for the additional data and research (predictive modelling) necessary to confirm the threat and to increase the confidence of prediction.

(c) Warnings of environmental threats

Threshold values should be established and advanced warnings of serious environmental threats should be issued whenever data and research results lend confidence to assessments of both causes and impacts.

(d) Policy responses and management options

Policy responses and management options must be a major component of both (b) and (c) above, although the actions themselves have to be undertaken outside the realm of an Earthwatch system.

/...

B. Recommendations

Strengthening interagency co-operation

(a) Interagency Working Group on Earthwatch (IAWG)

56. The Interagency Working Group on Earthwatch should be reactivated under the Designated Officials for Environmental Matters (DOEM) to provide a working-level forum for exchange of views; updating of information on current and planned activities in fields related to environmental monitoring, assessment and research; outlining priority tasks for joint activities; identification of gaps in monitoring and assessment; identification of emerging issues; review of new proposals; providing guidelines and timetabling Earthwatch assessments; and jointly identifying suitable organizations or experts to assist in providing inputs for the management option sections of assessments. Thus, the Working Group should be the interagency forum to plan and co-ordinate activities of the United Nations system-wide Earthwatch. The Interagency Working Group should report yearly on its activities, through the DOEM, to the Administrative Committee on Co-ordination (ACC) or the Environment Co-ordination Board (ECB), if re-established. ECB would then report to the Governing Council of UNEP, recommending specific early warnings as and when needed, together with proposed responses. The Governing Council would then review and issue early warnings and responses when needed.

(b) Intergovernmental Steering Committee

57. The recommendations of IAWG on Earthwatch would be submitted to an Intergovernmental Steering Committee established in accordance with the principle of equitable geographic distribution and composed of some 14 government experts. This Group would analyze the IAWG recommendations, adding their own proposals and comments, and transmit all these to the UNEP Governing Council for decision.

(c) Earthwatch system secretariat

58. In order to support the system, carry out assessments and develop warnings as needed, an Earthwatch system secretariat should be formed within UNEP. Its general functions would be:

- To act as secretariat for the Interagency Working Group on Earthwatch;
- To co-ordinate the preparation of assessments and warnings;
- To assist in the formulation of response recommendations;
- To disseminate information.

The necessary support for the co-ordinating functions of the secretariat should be provided by the Fund of UNEP.

/...

Strengthening of monitoring and assessment

(a) At the agency level

59. Existing monitoring programmes and assessment and early warning elements within the United Nations system must not be replaced, but drawn upon and strengthened as required. Lead agencies should thus retain primary responsibility for the operation of their sectoral monitoring networks and assessment mechanisms. Examples are the Global Atmosphere Watch (WMO, etc.), the World Glacier Monitoring Service (Unesco, etc.), Environmental Pollution Networks (WHO), the Man and the Biosphere Programme (Unesco), the World Conservation Monitoring Centre (IUCN/UNEP/WWF), etc.

60. The Interagency Working Group on Earthwatch should also consider the establishment of new monitoring and assessment activities and allocation of agency responsibilities for them whenever major information gaps or important newly emerging issues are identified.

(b) At the national level

61. There is an urgent need for strengthening monitoring capabilities in developing countries. Direct involvement of the Intergovernmental Steering Committee, especially in cases involving advance warning of environmental threats would be desirable to ensure wider input and more effective implementation. It is recommended that this be done either through intergovernmental regional groups on an issue-by-issue basis; or, in cases of serious threats, by an intergovernmental panel, to review the draft report concerned. Either of these groups would be established at the request of the Intergovernmental Steering Committee upon the recommendation of the Interagency Working Group on Earthwatch.

Research and methodology considerations

62. It is essential that the needs for supportive research activities be considered within the Interagency Working Group on Earthwatch, which should have representation from the international science community. It is necessary that relevant research programmes be tailored to contribute directly to the Earthwatch process, so that they do not function in isolation from assessment requirements and socio-political realities.

63. The widespread and readily available use of advanced and appropriate environmental monitoring and assessment methodologies, such as geographic information systems, remote sensing, expert systems, simulation modelling and telecommunications, should be actively promoted within Earthwatch. This will ensure that information from all relevant sectors is integrated and brought to bear on understanding and solving environmental problems.

Financial considerations

64. It is clear that the United Nations specialized agencies, other United Nations organizations and non-governmental international bodies often do not have sufficient resources to carry out their basic monitoring and assessment responsibilities effectively. Thus, if Governments wish to develop

/...

the existing Earthwatch operated by UNEP into a strong and effective system along the lines proposed above, it is essential that additional resources be made available, to meet:

(a) The requirements of strengthening the relevant capacities of the involved members of the United Nations system;

(b) The catalytic and co-ordinating role of UNEP with respect to the United Nations Earthwatch system;

(c) The needs of developing countries in environmental monitoring, assessment, quality control and management of data; and

(d) Extending observation coverage much more effectively to regions outside national jurisdictions, i.e., the world's oceans.

Without a long-term mandate and commitment of resources to monitoring, the Earthwatch system cannot achieve the expected goals.

65. An estimate of the cost needed to achieve the above is in the order of US\$200 million per year. The majority of this funding (approximately US\$170 million) would be needed to assist developing countries in strengthening their national capabilities for monitoring, assessment and data management. The United Nations system would need approximately US\$30 million (to include item (d) above), of which US\$4 million would be required by the co-ordinating body of the Earthwatch system in UNEP.

/...

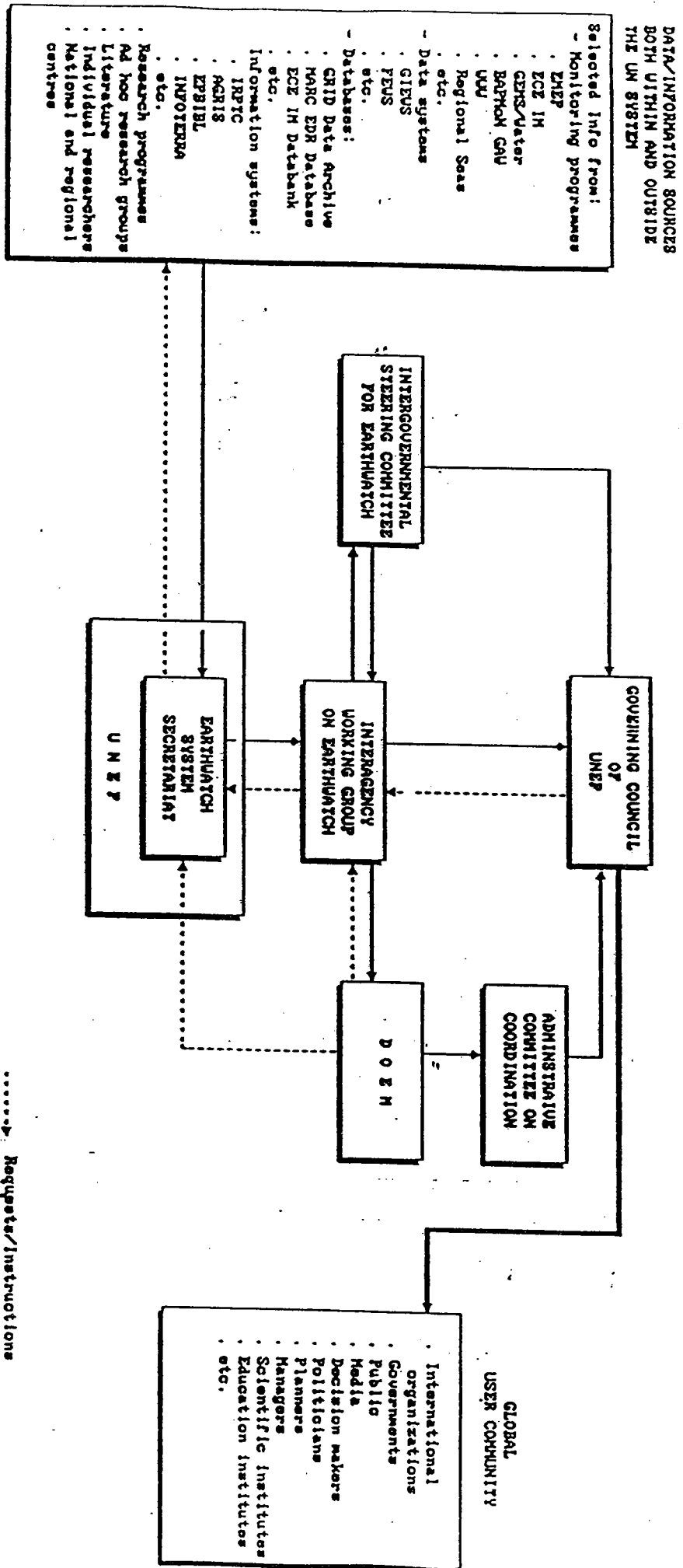


Fig. 1 - Information flow through Earthwatch