



United Nations
Environment
Programme



Distr.
GENERAL

UNEP/GC/24
UNEP/IG.1/4
21 February 1974

Original: ENGLISH

GOVERNING COUNCIL
Second Session
Nairobi, 11-22 March 1974
Item 8(b) of the provisional agenda

APPROVAL OF ACTIVITIES WITHIN THE ENVIRONMENT
PROGRAMME, IN THE LIGHT, INTER ALIA, OF THEIR
IMPLICATIONS FOR THE FUND PROGRAMME

Note by the Executive Director

The Intergovernmental Meeting on Monitoring, covered by the Executive Director in conformity with Governing Council decision 1(I), paragraph 28, was held at Nairobi from 11 to 20 February 1974. The Executive Director hereby transmits the report of the Intergovernmental Meeting to the Governing Council.

REPORT OF THE
INTERGOVERNMENTAL MEETING ON MONITORING
held at Nairobi
from 11 to 20 February 1974

CONTENTS

	<u>Paragraphs</u>
Introduction	1 - 20
I. Definition of objectives and principles (agenda item 4)	21 - 27
II. Priority pollutants and other related environmental factors to be monitored in various media on the basis of agreed criteria (agenda item 5)	28 - 37
III. Design and development of a global system for monitoring of priority pollutants and other related factors in the various media (agenda item 6)	38 - 53
IV. Other aspects of environmental monitoring (agenda item 7)	54 - 59
V. Programme of future work and institutional arrangements (agenda item 8)	60 - 66
VI. Training and other forms of assistance to developing countries to enable them to participate in executing the action plan (agenda item 9)	67 - 72
VII. Adoption of the report and recommendations to the Governing Council (agenda item 10)	73 - 74

INTRODUCTION

1. The Intergovernmental Meeting on Monitoring, convened by the Executive Director of the United Nations Environment Programme (UNEP) in conformity with decision 1(I) of the Governing Council, was held at UNEP Headquarters, Nairobi, from 11 to 20 February 1974.

Opening of the Meeting

2. The Meeting was opened by Mr. Robert A. Froesch, Assistant Executive Director.

3. In the absence of the Executive Director, the Deputy Executive Director, Mr. Mostafa Tolba, in an opening address acknowledged the generous gesture of the Government of Kenya, which had offered to act as host to the Meeting. He regarded the size of the attendance as evidence of the recognized importance of environmental monitoring. Indeed, it was axiomatic that a knowledge and understanding of the problems of the environment - i.e. monitoring - had to precede action for dealing with those problems. He referred to the report of the Intergovernmental Working Group of 1971 on the subject of monitoring and to the relevant recommendations of the United Nations Conference on the Human Environment held at Stockholm in 1972. He expressed the hope that the Intergovernmental Meeting would succeed in providing the Executive Director with directives that would clearly indicate the parameters to be monitored and would prepare a report that would be suitable for direct submission to the Governing Council at its second session in March 1974.

4. Mr. George Muhoko, UNEP Liaison Officer in the Ministry of Foreign Affairs, speaking for the Minister for Health, welcomed the participants on behalf of the Government and people of Kenya. Referring to the task entrusted to the Intergovernmental Meeting by decision 1(I) of the Governing Council, he said that monitoring involved a global system of standardized measurements of events affecting the human environment. It was evident from the documents and from common experience that the environment was very vulnerable to certain phenomena. He hoped that the Meeting would work out agreed recommendations for action that could be submitted to the Governing Council at its second session. He trusted that, in addition to indicating the priority pollutants, the Meeting would call on the Governing Council to initiate the monitoring of other obvious threats to the environment, of which he gave some examples.

Election of officers

5. The Intergovernmental Meeting elected by acclamation Miss Marie-Annic Martin-Sané (France) as its Chairman.

6. It elected Mr. Douglas Odhiambo (Kenya), as its Vice-Chairman, and Mr. E. Somers (Canada) as its Rapporteur.

Approval of the agenda and organization of work

7. During the discussion of the agenda, the representatives of the United States and Iran proposed that the agenda should be expanded to include other factors not related to pollution. The representative of the USSR considered that the provisional agenda proposed by the Executive Director (UNEP/IG.1/1) should be retained, in particular items 5 "Priority pollutants to be monitored in various media on the basis of agreed criteria", and 6 "Design and development of a global system for monitoring levels of the priority pollutants in various media".

8. After discussion, and after the representative of Canada had submitted a compromise proposal, the agenda was adopted in the following form (UNEP/IG.1/1/Rev.1):

1. Opening of the Meeting
2. Election of officers
3. Approval of the agenda and organization of work
4. Definition of objectives and principles
5. Priority pollutants and other related environmental factors to be monitored in various media on the basis of agreed criteria
6. Design and development of a global system for monitoring of priority pollutants and other related environmental factors in the various media
7. Other aspects of environmental monitoring
8. Programme of future work and institutional arrangements
9. Training and other forms of assistance to developing countries to enable them to participate in executing the action plan
10. Adoption of the report and recommendations to the Governing Council.

Attendance

9. The following countries were represented at the Meeting: Algeria, Argentina, Australia, Austria, Bahamas, Brazil, Burundi, Canada, Central African Republic, Congo, Cuba, Democratic People's Republic of Korea, Egypt, Finland, France, Gambia, German Democratic Republic, Federal Republic of Germany, Ghana, Greece, Holy See, India, Iran, Iraq, Israel, Italy, Ivory Coast, Japan, Kenya, Kuwait, Libyan Arab Republic, Madagascar, Mauritius, Netherlands, Nigeria, Norway, Oman, Pakistan, Peru, Poland, Portugal, Qatar, Republic of Korea, South Africa, Spain, Sweden, Switzerland, Uganda, Union of Soviet Socialist Republics, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Venezuela, Zaire.

10. The following United Nations bodies were represented: United Nations Children's Fund, United Nations Development Programme, United Nations Industrial Development Organization.
11. The following specialized agencies were represented: International Labour Organisation, Food and Agriculture Organization of the United Nations, United Nations Educational, Scientific and Cultural Organization, World Health Organization, World Meteorological Organization.
12. The following intergovernmental organizations were represented: African Development Bank, East African Community, European Communities, Intergovernmental Oceanographic Commission, International Council for the Exploration of the Sea, League of Arab States.
13. Observers for the Scientific Committee on problems of the Environment (SCOPE) and for the Smithsonian Institution attended the Meeting.

Introductory statement by the representative of the Executive Director

14. The representative of the Executive Director stated that the task before the Intergovernmental Meeting was to develop a global environmental monitoring programme as a step towards establishing a system for detecting environmental changes and assessing their effects on man. He emphasized that the development of a monitoring programme for measuring levels of priority pollutants in various media as proposed by the Governing Council at its first session should, if it was to be successful, be guided by clearly defined purposes and supported by complementary background and theoretical work. He considered therefore that the agreement by Governments on the objectives and principles was important.
15. A list of priority pollutants, which was expanded to include other related environmental factors, was the base from which to develop the proposed monitoring programme. He trusted that a consensus would be achieved by the Governments on the selection of such environmental parameters.
16. With regard to the design and development of the system and institutional arrangements necessary for managing such a system, he stated that it should be recognized that the Global Environmental Monitoring System (GEMS) was not simply a collection of sectoral monitoring programmes carried out by various United Nations agencies, but that it must have cross-media and inter-sectoral connexions to be indicative of changes occurring in the environment and their significance. He said that UNEP would not be an operational body but would be responsible for the overall view, co-ordinating monitoring programmes of various organizations.
17. He then proposed the design and development of the programme, with a director and a small staff supported by experts appointed by Governments and United Nations agencies concerned with environmental monitoring programmes. This would be an ad hoc arrangement, and the group would dissolve upon accomplishing the task.

18. The system, when set up, would be the responsibility of the director and his staff with assistance from an advisory committee composed of experts appointed by Governments participating in a personal capacity, and representatives of agencies. They would undertake the task of co-ordinating networks of various monitoring programmes, identify gaps, evaluate collected data and suggest possible meanings and develop research programmes, including intercalibration where necessary.

19. The proposed programme of monitoring should enable all countries to participate and understand and use the collected data. Training and other forms of assistance would be promoted with the assistance of international funding organizations and bilateral aid, and he expected that the use of the Fund of UNEP would be restricted to facilitating the development of monitoring programmes of global interest.

20. In conclusion, he expressed his hope that the Intergovernmental Meeting would succeed in making concrete recommendations to be submitted to the Governing Council at its second session for its decision.

I. DEFINITION OF OBJECTIVES AND PRINCIPLES
(agenda item 4)

21. On the basis of a draft prepared by a working group presided by the Vice-Chairman, Dr. Odhiambo (Kenya), the Intergovernmental Meeting, after considering certain amendments proposed to that draft, approved the objectives and principles set out below:

Objectives

22. The objectives of the Global Environmental Monitoring System (GEMS) are:

To provide information necessary to ensure, in conjunction with evaluation and research, the present and future protection of human health, well-being, safety and liberty and the wise management of the environment and its resources by:

- (a) (i) Increasing quantitative knowledge of natural and man-made changes in the environment and of the impact of these on man's health and well-being;
- (ii) Increasing understanding of the environment and, in particular, of how dynamic balance is maintained in ecosystems, as a basis for managing resources;
- (b) Providing early warning of significant environmental changes (including natural disasters) in order that protective measures may be organized;
- (c) Making it possible to check the effectiveness of established regulatory mechanisms and to plan optimal technological development.

Principles

23. The principles governing intergovernmental co-operation in monitoring are:

- (a) Intergovernmental co-operation in monitoring should build on the basis of existing national and international systems to the maximum possible extent, while making all useful arrangements for eliminating, as far as possible, the existing gaps;
- (b) Existing United Nations specialized agencies should be used to the maximum extent possible as the institutional base for co-ordinating and implementing monitoring programmes. It is essential to improve co-ordination mechanisms within the United Nations framework;
- (c) With regard to monitoring on an international basis, priority should be given to global and regional (multi-national) problems;

- (d) The exchange of information about local problems that are of wide occurrence, and about the methods used to monitor them, is of high importance;
- (e) Special emphasis should be given in global monitoring to the variables of most critical importance that are capable of adequate scientific measurement at the present time. Where the measurement techniques for variables of critical importance are deficient, special attention should be given to their development and to arrangements that make it possible to ensure the comparison and homogeneity of measurements;
- (f) Monitoring systems should be designed to meet clearly defined objectives, and arrangements for the evaluation of the data must be an integral part of the design of the system;
- (g) Nations that agree to participate in a system of global or regional monitoring incur an obligation to exchange promptly appropriate data or evaluations of data, especially in relation to the early warning of natural disasters or disasters occurring as a result of human activities affecting regional or subregional resources;
- (h) As international monitoring implies the participation of many nations without regard to their stage of economic development, assistance should be given, where necessary, especially in the field of training and equipment, to ensure effective involvement of the developing countries;
- (i) Nations should share the responsibility for implementing international monitoring systems in areas outside national jurisdiction, such as oceans and space. Activities carried out on national territories will be the responsibility of the nations concerned.

Programme goals

24. Programme goals provide the focus for a global environmental monitoring system so that it can be responsive to priority subject areas of the United Nations Environment Programme. Programme goals are intended to ensure effective co-ordination and integration of the component monitoring systems, adaptation of the global system to all levels of development, and utilization of monitoring results to facilitate action. These programme goals, not listed in priority order, include:

- (a) An expanded human health warning system;
- (b) An assessment of global atmospheric pollution and its impact on climate;

- (c) An assessment of the extent and distribution of contaminants in biological systems, particularly food chains;
- (d) An assessment of critical environmental problems relating to agriculture and land and water use;
- (e) An assessment of the response of terrestrial ecosystems to pressures exerted on the environment;
- (f) An assessment of the state of ocean pollution and its impact on marine ecosystems;
- (g) An improved international system allowing the monitoring of the factors necessary for the understanding and forecasting of disasters and the implementation of an efficient warning system.

General guidelines

25. There is a need to co-ordinate the development of national, international and sectoral guidelines for each of the programme goals listed above and for the overall objectives of GEMS. This is essential in order to elucidate pollutant pathways, sinks and impacts, to control existing pollution and its spread to hitherto clean areas and to optimize the use of natural resources.

26. These guidelines relate to:

- (a) The establishment of relevant national focal points required for co-ordinating, accessing and transmitting the results of monitoring;
- (b) The design and implementation of national, regional and global monitoring programmes including data collection, processing, reduction and assessment;
- (c) The improvement of data exchange and processing within and across sectors and at varying levels of detail;
- (d) The development of sound planning and an adequate scientific and technical basis before any new monitoring programme is established.

Recommendation

27. The Intergovernmental Meeting on Monitoring recommends that the Governing Council adopt the definition of objectives and principles, programme goals and general guidelines, as presented in paragraphs 22, 23, 24, 25 and 26 above.

II. PRIORITY POLLUTANTS AND OTHER RELATED ENVIRONMENTAL
FACTORS TO BE MEASURED IN VARIOUS MEDIA ON THE
BASIS OF AGREED CRITERIA
(agenda item 5)

28. This item was considered by the Meeting on the basis of a report prepared by a drafting group.

29. The representative of Peru was concerned that the draft report had not mentioned pollutants that were the result of atmospheric nuclear tests. He drew particular attention to the harmful effects of the fall-out from such explosions in the Pacific Ocean. He pointed out that the Stockholm Conference had condemned nuclear tests in the atmosphere. He added that the substances generated by such explosions should receive a high priority in the ranking of pollutants to be monitored, and should be monitored in all media.

30. The representative of France questioned the desirability of mentioning this subject among the other related environmental factors. He recalled that the question of radioactivity was already being considered by the appropriate United Nations agencies, and that duplication should be avoided. He also stressed that the conclusions of the United Nations Scientific Committee on the Effects of Atomic Radiation did not justify that proposal.

31. After considering a number of amendments, the Intergovernmental Meeting approved the following texts:

Identification of criteria

32. A priority of the first phase in the development of GEMS is to establish the capability for monitoring in the environment a selected group of pollutants and other related environmental factors of international significance which are considered to deserve priority. The criteria for assigning priorities include the following:

- (a) The severity of actual and potential effects on man's health and well-being, and on climate or on terrestrial or aquatic ecosystems, taking into account the stability of the systems involved;
- (b) The persistence and resistance to degradation in the environment and accumulation in man and the food chains;
- (c) The possibility of chemical transformation in physical and biological systems, resulting in secondary substances more toxic or more harmful than the parent compound;
- (d) Ubiquity or mobility;
- (e) Actual or projected concentration trends in the environment and/or in man;
- (f) The frequency and/or magnitude of exposure;
- (g) The feasibility of measurement at given levels in various media;

- (b) The potential value of the information for assessing the state of the environment;
- (i) Suitability, because of generalized distribution, for uniform measurements within a global regional or sub-regional programme within the framework of QEMS.

Identification of priority pollutants

33. The criteria listed above were applied to a selected group of pollutants, including those listed in annex I of document UNEP/IG.1/2, and were accordingly ranked in the priority order indicated in table I below.

Table I
List of Priority Pollutants^{a/}

Priority Order	Pollutant	Medium ^{b/}	Type of Programme ^{c/}
I	{ SO ₂ + suspended particulates Radio-nuclides (⁹⁰ Sr + ¹³⁷ Cs)	Air	I R B
		Food ^{d/}	I R
II	{ O ₃ ^{e/} DDT and other organo-chlorine compounds	Air	I
		Biota, man ^{e/}	I R
III	{ Cd and compounds Nitrates, nitrites ^{h/} (NO, NO ₂)	Food ^{d/} , man, water	I
		Drinking water, Food	I
		Air	I
IV	{ Hg and compounds Pb CO ₂	Food ^{d/} , water	I ₁ / R
		Air, food	I ₁ /
		Air	B
V	{ CO Petroleum Hydrocarbons	Air	I
		Sea	R B
VI	Fluorides	Freshwater	I
VII	{ Asbestos As	Air	I
		Drinking water	I
VIII	{ Mycotoxins Microbial contaminants Reactive hydrocarbons	Food ^{d/}	I R
		Food ^{d/}	I R
		Air	I

^{a/} This list should be reviewed periodically.

^{b/} Measurements in air should include measurements in precipitation where appropriate.

^{c/} I = impact; R = regional; B = baseline.

^{d/} Food includes animal feed.

^{e/} Global distribution high in the stratosphere, low in the troposphere.

^{f/} Concerns zone in the stratosphere.

^{g/} In designing the programme, consideration should be given to including feed monitoring.

^{h/} No adequate techniques available for multi-media analyses of nitrosamines.

^{i/} In designing the programme, consideration should be given to including regional stations.

Other related environmental factors

34. With respect to other related environmental factors it was recognized that many of them were related to pollutants and that they should be monitored in order to support a pollutant monitoring programme.

35. To assist those engaged in the design and development of pollutant monitoring programmes, other related environmental factors were examined and categorized as follows:

- (a) Those which serve as indicators of pollution when a pollutant itself is not easily measurable - indirect monitoring. Monitoring of these factors may, therefore, be desirable under certain conditions. These indicators can be grouped as follows:
 - (i) Indicators of water quality, such as coliform bacteria BOD/COD, DO and algal growth and primary productivity of algae;
 - (ii) Indicators of soil quality, such as soil salinity, soil acidity/alkalinity, nitrite, nitrates and organic nitrogen, and soil organic matter;
 - (iii) Indicators of health of man, animal and plants, such as disease incidence, drug resistance and genetic load;
 - (iv) Plant indicators of pollutants;
- (b) Those parameters the measurement of which is appropriate to enable the interpretation of pollutant monitoring data, including, as appropriate:
 - (i) Selected meteorological parameters;
 - (ii) Selected hydrological parameters;
 - (iii) Selected geophysical parameters (for example, atmospheric turbidity and solar radiation);
 - (iv) Dietary intake and composition;
 - (v) Resistance to pesticides;
 - (vi) Factors describing the state of the climate (for example, sea-ice cover, mass of glaciers, sea level, drought desertification, phytomass, and freshwater bodies);
 - (vii) Radioactive fall-out and its effects as a result of atmospheric nuclear explosions.

36. In addition there are a few physical factors which may be considered as pollutants by themselves, although clearly different from the list of priority pollutants. These are, in priority order:

Heat	water	IR
Noise	air	I
Non-ionizing, radiation ^{1/}	air	I

Recommendation

37. The Intergovernmental Meeting recommends that the Governing Council endorse:

- (a) The criteria, set out in paragraph 32 above, for the purpose of assigning priorities among the pollutants to be monitored;
- (b) The list of priority pollutants as contained in Table I above, it being understood that this list should be reviewed periodically; and
- (c) The grouping of other related environmental factors as given in paragraphs 35 and 36 above.

^{1/} It is felt that there is much less urgency for monitoring non-ionizing radiations.

III. DESIGN AND DEVELOPMENT OF A GLOBAL SYSTEM FOR MONITORING OF
PRIORITY POLLUTANTS AND OTHER RELATED ENVIRONMENTAL FACTORS
IN VARIOUS MEDIA
(agenda item 6)

38. This section follows from the criteria for priority pollutants and other environmental factors to be monitored (agenda item 5, section II above) and from the agreements reached on objectives and principles (agenda item 4, section I above).

General characteristics

39. A completely coherent and integrated approach for generating data on environmental pollution and related factors does not yet exist. Data are required to establish sources, pathways, levels of pollutants and their trends, as well as the exposures of targets. For this purpose, it is necessary to design monitoring networks at the global, regional and local levels. Regional and local networks are or should be largely designed by national agencies, bilateral agreement or regional bodies. During the first stage of GEMS, a global network of baseline stations should be built under UNEP auspices, incorporating existing capabilities and establishing new ones where needed, especially in the developing countries. Several countries have made concrete proposals for their participation in a network of baseline stations.

40. Networks are designed to monitor a wide variety of variables (priority pollutants and other related factors mentioned elsewhere in the report) on a routine, compatible basis in several media-air, water, soil/sediment, food or biota (including man) -as appropriate. International agencies, such as the World Meteorological Organization (WMO), the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO) and other bodies, already co-ordinate networks of monitoring stations and related activities in their specialized fields.

41. Notwithstanding recent developments in the field of remote sensing for environmental monitoring, a network of surface monitoring programmes will continue to be necessary to assess the full state of the environment.

42. In order to achieve both a proper geographical distribution and sensible deployment of resources, networks of baseline, regional and impact (local) stations should be established under UNEP auspices incorporating, as far as possible, existing networks and building new ones where necessary, especially in the developing countries, thus helping to make GEMS a truly global system.

Regional monitoring centres

43. The concept of regional monitoring centres applies equally to other parts of the environmental monitoring system treated elsewhere in this report. It is visualized that regional monitoring centres will be an important element in building up the expertise of the participating national programmes and in assisting the development of global systems. These centres are quite different from the regional stations mentioned in paragraph 39 above. The establishment of a centre and designation of

its area of responsibility should be decided by the agreement of the Governments of the region, where appropriate, under the auspices of UNEP, building on existing centres as far as possible, and building new ones where needed, especially in the developing countries.

44. A regional monitoring centre may be established in any area with a sufficient uniformity of environment and of environmental problems as well as a community of interests.

45. The responsibilities of a regional monitoring centre could include:

- (a) Relevant data collection, assembly, processing and storage;
- (b) Reporting from and within the region;
- (c) Education and training;
- (d) Provision of specialized analytical services, including intercalibration of equipment, development and introduction of new methods, and quality control of analytical results, as required;
- (e) Maintaining an environmental library in co-ordination with the International Referral System for Sources of Environmental Information and with world data centres;
- (f) Undertaking and/or guiding regional pilot projects;
- (g) Identifying standards for environmental quality where possible.

46. A regional monitoring centre should be provided, if needed, with the relevant technical competence and capabilities for dealing with problems of the region and also have sufficient space, staff and equipment for education and training.

47. UNEP support would be needed to co-ordinate existing programmes and to make suggestions for, and assist in, filling network gaps. UNEP should also help in the establishment of regional monitoring centres and provide other assistance, including that for pilot projects in developing countries. When possible, nations or groups of nations within the region should help to support their regional monitoring centres to the extent of ability.

Data and information management

48. A necessary step in developing CEIS is to establish, through appropriate channels, a network for information on existing monitoring. UNEP should encourage the establishment of the national (or regional) focal points referred to in the general guidelines.

49. It should thus be possible to build a sensible operational network on the basis of existing and planned national and sectoral monitoring activities, and move gradually towards harmonization of data collection and presentation as well as towards inter-comparability. In the course of these activities major deficiencies in monitoring and in the processing of monitoring data may become apparent.

50. Activities such as baseline monitoring implemented under UNEP should provide the possibility of total standardization of data collection, analysis and presentation. But many other sectoral monitoring activities have an existence of their own and will be less directly connected with UNEP. The best way to bring these potential partners into GEMS, at least at the start, is to ensure that the information or data gleaned from their programmes is presented in such a fashion that it can be drawn into a common framework for intersectoral analysis and assessment in this wider UNEP setting.

51. The data processing and analysis activities may be carried out according to environmental models developed to enable economy of measurements or to assist interpretation for specific goals. The assembly of all these activities constitutes GEMS as a system both for monitoring and for data exchange.

52. It is necessary to support a research activity in order to provide a sound scientific basis for monitoring.

Recommendation

53. The Intergovernmental Meeting on Monitoring recommends that the Governing Council authorize the Executive Director to establish at UNEP headquarters a Director for GEMS with supporting staff, whose task it will be to design and develop the global monitoring system, based upon the characteristics presented above, for priority pollutants and related environmental factors. The GEMS Director should work in accordance with the decisions of the Governing Council, taking into consideration the recommendations of the Intergovernmental Meeting on Monitoring, and receive advice from meetings of experts as appropriate to satisfy programme needs. (It is understood that other aspects of environmental monitoring covered elsewhere in this report must be co-ordinated within this effort on the part of the Executive Director.)^{2/}

^{2/} The Australian delegation reserved its position with regard to this paragraph as it did not believe that the paragraph provided adequate mechanism for Governments which are to provide substantial installations in support of GEMS as mentioned, for example, in paragraph 47 above, and which need to be involved in detail throughout the design and development of GEMS, which is obviously a long-term programme. The Australian delegation would have preferred to see a formal mechanism whereby Governments would regularly offer guidance to the GEMS system director.

IV. OTHER ASPECTS OF ENVIRONMENTAL MONITORING (agenda item 7)

54. The Chairman of the Interagency Working Group on Monitoring introduced Chapter III of the Report of the Group (UNEP/IG.1/2), which is concerned with the monitoring of environmental parameters other than priority pollutants.

55. In the ensuing discussion general support was given to this programme. However, the Intergovernmental Meeting recommended that the programme for the monitoring of environmental factors other than priority pollutants should start concurrently and should be limited initially to a small number of carefully selected factors.

56. Many representatives suggested that, in addition, natural disasters should be monitored, with particular emphasis on an early-warning system. The importance of forecasting and warning of such catastrophes as drought was stressed, as well as the need to determine the possible cyclical nature of drought.

57. The discussion emphasized the following components of the environmental monitoring programme: utilization and conservation of natural resources; preservation of wildlife, with particular reference to endangered species; biological and genetic resources; desertification ^{3/}, depletion and degradation of soils, forests and grasslands; epidemics; physical factors such as noise and heat.

58. The opinion was expressed that UNEP should approach monitoring in a multi-disciplinary or inter-sectoral fashion.

Recommendation

59. In the light of the debate and of the consideration of the issues involved, the Intergovernmental Meeting recommends that the Governing Council direct the Executive Director of UNEP to initiate the necessary steps to ensure a monitoring programme of environmental parameters in addition to priority pollutants, starting with the following global and regional priorities:

- (a) Monitoring of factors useful in predicting climatic changes and disasters, including natural disasters;
- (b) Monitoring of indicators of health status with particular emphasis on high-risk groups. Preparatory research will be necessary in this area before the initiation of the programme;
- (c) Monitoring of the desertification, degradation and depletion of soil and living resources such as forests, grasslands, wildlife and aquatic ecosystems. For certain aspects of this item some preparatory work may also be expected.

^{3/} The representative of Venezuela objected to the use of the term desertificaci^on in the Spanish text.

V. PROGRAMME OF FUTURE WORK AND
INSTITUTIONAL ARRANGEMENTS
(agenda item 8)

Programme of future work

60. The task of design and development of GEMS is described in agenda item 6. The general characteristics, regional centres, and data and information management concepts therein provide primary guidance in carrying out the programme of future work for the monitoring of priority pollutants, other related environmental factors in the various media and other aspects of environmental monitoring, and for the training and other forms of assistance to developing nations.

61. It is understood that Nations participating in GEMS will have sovereign responsibility for environmental monitoring activities and other related factors within their own territories, in accordance with international law ^{4/}.

62. The following documents could provide some additional sources of information to be considered by Governments and international agencies for specific monitoring actions:

- (a) The proposals concerning the nature of the GEMS (UNEP/IG.1/3), particularly paragraphs 16 and 17;
- (b) The report of the Inter-Agency Working Group on Monitoring on the Development of a Global Environmental Monitoring System (UNEP/IG.1/2);
- (c) SCOPE Report 3, which was provided as background information for this Meeting.

Institutional arrangements

63. It is recommended that the Governing Council approve the appointment of a director for monitoring activities. The primary responsibility of the director would be to initiate the implementation of monitoring programmes within the framework of GEMS, in consultation, where appropriate, with the international agencies concerned. In implementing these programmes, the director would give special attention to the co-ordination of existing and planned activities. The director would also undertake the planning of the regional monitoring centres described in paragraphs 43 to 47 above.

^{4/} The representatives of Venezuela and Peru objected to the words "in accordance with international law", for they considered that, in the absence of a definition of the meaning of the term "international law" as employed here, the sovereignty of countries participating in the monitoring programmes might not be sufficiently safeguarded.

64. In his work the director would be assisted by a small but adequate technical staff. He should seek periodic guidance from groups, organized on an ad hoc basis, of (a) experts serving in their personal capacity and appointed with the concurrence of their governments, and (b) representatives of the international agencies concerned.^{5/}

65. Many details about the functions of the director are outlined in document UNEP/IG.1/3 (where the director is referred to as the "manager") and these were noted by the Meeting.

Recommendation

66. The Intergovernmental Meeting recommends to the Governing Council that the above programme of future work and institutional arrangements be adopted.

5/ The representative of Australia had proposed that this sentence should be deleted and replaced by:

"He would receive regular guidance from a steering committee of Government representatives selected on a basis determined by the Governing Council. The director would also seek advice from ad hoc groups of experts and representatives of international agencies, as appropriate."

The proposed amendment, having been put to the vote, was rejected by 16 votes to 14, with 8 abstentions.

VI. TRAINING AND OTHER FORMS OF ASSISTANCE TO DEVELOPING COUNTRIES
TO ENABLE THEM TO PARTICIPATE IN EXECUTING THE ACTION PLAN
(agenda item 9)

67. The discussion on this item was introduced by the representative of the Executive Director, who outlined UNEP's approach to activities in this field. UNEP would be responsible for providing technical advisory services and helping the Governments of developing countries to obtain multilateral or bilateral aid. UNEP intends to provide assistance for the initiation and operation of global and regional monitoring programmes; appropriate portions of national programmes could be supported as components of such broader programmes. One of UNEP's important functions in this area would be to act as a catalyst to foster links among countries with common problems. UNEP would endeavour to promote co-operation between these countries and developed countries so as to help developing countries improve their technical capabilities required for their specific environmental problems.

68. Towards this objective, UNEP would propose the establishment of regional programme activity centres. The concept of "region" for the purpose of monitoring was defined as being a region possessing certain common characteristics or problems, rather than being synonymous with a political or geographical region. UNEP would endeavour to use, where possible, existing institutions which could become centres for monitoring in the particular region and which would carry out activities such as data analysis, research and training, and would also provide technical assistance.

69. The approach outlined by the representative of the Executive Director met with general approval. However in so far as the proposal by the representative of the Executive Director related to the general methods of operation of UNEP, the Intergovernmental Meeting expressed the view that this question should be reconsidered in the light of the decisions to be taken by the Governing Council.

70. It was stressed that care should be taken in the selection of experts, who should be familiar with the particular environment of the region. Furthermore, it was considered that financial and other resources should be used in such a way as to promote the training of local experts, and in this way strengthen the capabilities of the developing countries to operate their own monitoring systems.

71. The view was expressed that developing countries required, above all, assistance so as to participate in the global environmental monitoring system. Some form of regional arrangement was needed to provide facilities for analysis of the data from the national monitoring programmes, and to standardize measurement techniques and methodology. It was further suggested that training should be provided for the interpretation of data obtained from satellites.

Recommendation

72. The Intergovernmental Meeting recommends that the Governing Council should take note of the views reflected in the above paragraphs and of the suggestions mentioned therein and should take them into account in whatever action it may decide upon with respect to the subject of training and other forms of assistance to developing countries to enable them to participate in executing the GEMS action plan.

VII. ADOPTION OF THE REPORT AND RECOMMENDATIONS
TO THE GOVERNING COUNCIL
(agenda item 10)

73. On the conclusion of its deliberations, the Intergovernmental Meeting on Monitoring adopted this report on its proceedings and the recommendations which it contains in respect of the several agenda items.

74. Cost estimates for the recommendations for action and assistance contained in this report have not yet been made. The recommendations of the report can, therefore, be implemented only to the extent to which funds can be made available.