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PROGRESS REPORT ON ENVIRONMENT STATISTICS

Report of the Secretary-General

SUMMARY

The present document reports on progress in environment statistics since the nineteenth session of the Statistical Commission. It discusses the current work of the United Nations Statistical Office in the development of environment statistics, focusing attention on the results of a survey carried out recently on country practices and plans. The document outlines ongoing work on the development of a process dictionary for use in the context of materials/energy balances, including the initiation of a pilot country study to test its feasibility. It discusses some problems and issues that are being encountered in the development of the programme of environment statistics. The report also summarizes the proposed next steps in the work programme of environment statistics.

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INTRODUCTION

1. At the nineteenth session, the Statistical Commission discussed a report of the Secretary-General entitled "Draft guidelines for statistics on materials/energy balances" (E/CN.3/492). While noting that the report was well developed and incorporated a good approach for the long term, the Commission stressed "the need for the step-by-step approach outlined in the programme of environment statistics approved at its eighteenth session, concentrating initially on the inventory of needs and availability, and the development of concepts, classifications and tabulations". 1/

2. The present progress report on activities in the field of environment statistics since the nineteenth session summarizes the status of current work, provides an indication of some of the problems that have been encountered and points out some issues to be addressed as work progresses in this field (sect. II below). It presents some preliminary results of a survey of practices of countries, other than members of the Economic Commission for Europe (ECE), in the field of environment statistics (sect. III). The report outlines further work towards the development of a process dictionary for use with materials/energy balances (sect. IV) and summarizes the next steps in the programme of work (sect. V).

3. In order to implement the programme of environment statistics as envisaged by the Commission, it was necessary to secure additional resources. With the acquisition of financial assistance from the United Nations Environment Programme (UNEP) at the end of 1977, several posts have been established and recruiting is now under way. As these posts are filled and the staff gain experience, it is expected that substantial progress will be made in the implementation of the programme of environment statistics.

4. A considerable amount of work has, however, taken place since the nineteenth session of the Commission (see below). It is expected during the next three years to lay the foundation for a continuing programme of use to countries in developing their statistics of the environment and for international reporting and dissemination using existing data whenever possible. During this period, work on inventories and studies of national practices and plans will continue, selective compilation and analysis of available information will be initiated and work, including country pilot studies, on guidelines for integrated concepts, definitions, classifications, methodologies and tabulations, for use by countries in further developing and organizing environment statistics and for international reporting, will be undertaken. The work programme, outlined in detail in section V below, is being carried out in collaboration with UNEP and the regional commissions and in co-operation with the interested specialized agencies and other international bodies.

1/ Official Records of the Economic and Social Council, Sixty-second Session, Supplement No. 2 (E/5910), para. 112.

I. ACTION BY THE COMMISSION

5. The Commission may wish to comment on the progress report and to endorse the next steps in the programme of work proposed in section V. The Commission may also wish to place the topic of environment statistics on the agenda for its twenty-first session.

II. SOME PROBLEMS AND ISSUES

6. Recent experience in the United Nations Statistical Office, including the survey of country practices in the field of environment statistics described in section III below, has highlighted several problems and issues. Among them is the fact that the further development of the programme and its systematic implementation on a step-by-step basis would benefit greatly from a structuring of the field. Identifying an appropriate structure has proven elusive, although the survey of country practices helps to indicate some principal areas of concern in this regard. An approach to the development of a framework for organizing the subject-matter to be included under statistics of environment was considered at a recent joint meeting on environment statistics held by the Senior Advisers to ECE Governments on Environmental Problems and the Conference of European Statisticians, on the basis of a country paper. ^{2/} No one framework has yet been devised, however, that meets all the requirements involved in structuring the field of environment statistics. An important part of the continuing work will be the examination of the suitability and adaptability of various frameworks for use in structuring of the field at the global level.

7. A necessary part of this endeavour will be the development of guidelines concerning the concepts, definitions and methodologies to be adopted. At the present time, there is no integrated or unified way to bring together the concepts, definitions and methodologies that may already be in use within particular component subject areas of the field. Without developing some way to structure the areas to be covered, it will be difficult to examine the relationship between existing types of statistics and environment statistics per se. Thus, the purpose of a structure or an organization of the field is to provide an overview of the range, scope and interrelationships of environment statistics, as well as to indicate the links between these statistics and other types of statistics.

8. Five specific lines of work appear to be necessary. Although each line of work is a goal in itself, all of them are felt to contribute to a step-by-step approach towards clarifying problems of structure and methodology. They are:

(a) The identification of core areas within the over-all field of environment statistics;

^{2/} See "Frameworks for environmental statistics: recent experience of Statistics Canada" (CES/AC.40/14 - ENV/AC.6/R.6).

- (b) The development of specific statistical concepts, definitions, classifications and methodologies;
- (c) The systematic identification of gaps in the current data base;
- (d) The specification of the relationships between environment statistics and other, more traditional fields of statistical activity;
- (e) The outlining of a basis for ordering priorities for long-term developmental work on environment statistics.

As a practical way of developing this work, it would appear that the most feasible approach would be to focus on the yearbooks, bulletins or other materials published by countries. This would build both upon work in progress within the ECE region ^{3/} and elsewhere and on the information derived from the survey of country practices. In effect, a detailed review of national publications would provide a concrete guideline as to the decisions that countries themselves have already taken, in addition to ensuring that no national work would be overlooked. Thus, by using national publications or studies as the vehicle of analysis, the step-by-step approach recommended by the Commission could be based on the experience gained in the countries.

9. Adding to the complexity of the work outlined above is the problem that the field of environment includes two radically different types of information. On the one hand are data describing human activities that influence or are influenced by environmental change, such as traditional statistics on production, consumption or population. On the other hand are those data that describe the state of the environment, largely comprising scientific monitoring records or samples. Accordingly, one objective of work in this area is to determine methodologies and levels of aggregation that will allow the integration of monitoring data on the state of the environment with existing statistics tailored to environmental purposes. The problem of including monitoring data in the current state of work is difficult to resolve. It can be argued that monitoring data concern objectives or problems that are very narrowly restricted in time and space; thus, the significance of the data is restricted to a small area at the site of measurement and to the point in time at which they were obtained (e.g. daily SO_x emission from a thermal power station chimney). But, concern for the environment implies a widely recognized need to provide information about general environmental phenomena and trends (e.g., in the above case, concerning air pollution). The problem, therefore, focuses upon the feasibility or usefulness of aggregating large volumes of site/time specific data obtained by monitoring or sampling into useful composite or aggregate series. A further difficulty stems from differences in the technical equipment and the methods of measurement used in monitoring, to say nothing of the fact that standard techniques may be inappropriate to the original purpose of the monitoring. Another issue in this regard is that the use of technical monitoring

^{3/} See CES/396, annex I, project number 12.5.1. (environment statistics), subpara. (a).

equipment and laboratories is not usually included in the traditional activities of statistical offices. Thus, if monitoring data are to be part of environment statistics, new activities will be necessary in national statistical offices with implications for organization, staffing and training.

10. The above problems and issues lead into an additional question, namely that of the need to organize and present environmental data in an appropriate spatial form that is useful for decision-making and analysis. Virtually no environmental problems cover all of a country, nor do they coincide in extent with administrative boundaries; in fact, a characteristic of environment statistics is that they address the spatial variability of human activities or conditions, or of the state of the environment. This spatial requirement means that, in addition to the conventional administrative areas, new geographical identifiers may be required in the development of environment statistics, which may not conform to traditional administrative boundaries and indeed frequently may be trans-frontier in scope. Some examples of these geographical identifiers are watersheds, airsheds, ecoregions and habitats.

11. It is obvious that at the present time the field of environment statistics, lacking an over-all structure, does not lend itself to a real categorization of its component subject areas. While the survey of country practices and future analysis of national publications undoubtedly will help to specify these subject areas, for the present two approaches appear to offer the most feasible way of dealing with this problem: first, to make use of a list of broad terms such as that developed in conjunction with the International Referral System of UNEP, which is intended to embrace all aspects of the environmental issues for which statistics will be needed; and secondly, to define core areas of concern for statistical treatment, given present knowledge and priorities. On this latter basis, three primary areas have been specified, namely, human settlements and land use, natural resources and pollution. It is anticipated that these three areas will be subdivided in the near future and new core areas identified as they become necessary. Although grey areas will exist for some time between these core subjects, it is felt to be preferable to begin with a few tangible elements rather than to attempt a complete subcategorization before determining the content of each area.

12. The problem of classification is another element that has posed some difficulties in work to date. It is perceived as a threefold issue. First, the existing statistical classifications (International Standard Industrial Classification, Standard International Trade Classification, International Classification of All Goods and Services, International Classification of Diseases, etc.) will have to be examined to determine whether recommendations for revisions or adjustments are necessary to render them useful for environmental purposes. Secondly, the existing non-statistical classifications (e.g. of soils, land use, pollutants) will have to be incorporated into future work as a basis for establishing those criteria for which statistical classifications will be needed. Thirdly, a thematic classification of the whole field of environment statistics will ultimately be necessary, to show the nature of the field, its component subject areas, the linkages and relationships between areas and to integrate other

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classification work affecting parts of the field. This thematic classification in effect would establish the criteria for defining the statistical elements to be covered in this field.

13. A final problem relates to the question of environmental quality and, in particular, to the environmental quality of human settlements. Quality measures are in practice represented by quantity indicators, based upon the presumption that more or less of some physical quantity represents an improvement in quality, and/or by measures of achievements in relation to specified standards or constraints, and/or by measures of perceived quality. Indeed, developmental work in this area can be viewed as the environmental dimension to efforts in establishing social indicators of the quality of life.

14. A modest beginning has been made to develop environmental statistics related to human settlements. In 1977, as an exploratory measure, a new section was added to the United Nations Statistical Office housing questionnaire sent to countries to test the availability of selected data for urban agglomerations. The new questions referred to homeless population, population living in squatter settlements, availability of basic facilities in living quarters, estimated housing needs and levels of dwelling construction, urban land area and land use and the availability of urban data on air, water and noise pollution. On the whole, the response was disappointing. While in many countries data of the type requested are not collected, in some cases data are known to be available but have not been reported, suggesting that co-ordination between city administrations and central statistical offices may be one factor responsible for the disappointing response.

15. Although many problems remain to be faced in this field, section III below highlights the fact that many countries already have achieved a substantial programme. The steps outlined in section V have been tailored both to the types of problems enumerated here and to the experience with the survey of country practices.

III. SURVEY ON COUNTRY PRACTICES

16. Since the nineteenth session of the Commission, a major project has been a survey of practices and plans of countries, other than members of ECE, which had been covered by a separate survey carried out under the work programme of the Conference of European Statisticians. The present section summarizes the purposes, content and results of the survey. Detailed descriptions will be found in annexes I and II to the present report.

17. The survey had four basic purposes: first, to provide the initial elements of a concrete foundation for the development of a practical international programme of environment statistics; secondly, to avoid duplication of existing work to the extent possible; thirdly, to identify the major lacunae in statistics of environment, as well as the areas in which countries are experiencing the most difficulty in developing statistics; and, fourthly, to provide a context for the definition of future work on environment statistics and for the organization of the conceptual, methodological and classification work that will be a necessary underpinning for specific series of statistics reflecting environmental priorities.

18. The questionnaire was sent to 122 national statistical offices in July 1977 and, as of 30 June 1978, 69 replies had been received. Of these replies, approximately one third provided comprehensive and detailed information, and it is on those responses that the following analysis is largely based. Owing to the complex and diffuse nature of the field of environment statistics as a whole, national statistical offices were invited to forward a copy of the questionnaire to other appropriate national agencies for comment, in order to ensure as complete a coverage as possible of current activities and plans and priorities for future work. One of the characteristics of the field of environment statistics at the present time is that, in many countries, agencies other than the central statistical body have been responsible for elaborating the information needed for planning and policy making. Thus, at the national level, as specific statistical series are developed under the rubric of environment, one of the major tasks will be to ensure that the work of national statistical offices is closely co-ordinated with that of other agencies (usually departments of natural resources, ministries of health, ministries of planning and so on).

19. Considerable assistance was provided by the Statistical Division of ECE in the design of the questionnaire, in the light of their experience with a similar questionnaire circulated among the Member States of the region under the work programme of the Conference of European Statisticians. In addition, copies of the pilot version of the Statistical Office questionnaire were circulated to the relevant specialized agencies, regional commissions etc. for comment and advice. ^{4/}

^{4/} Copies of the questionnaire were sent to the following: Economic Commission for Europe (ECE), Economic and Social Commission for Asia and the Pacific (ESCAP), Economic Commission for Latin America (ECLA), Economic Commission for Africa (ECA), Economic Commission for Western Asia (ECWA), United Nations Environment Programme (UNEP), International Labour Office (ILO), Food and Agriculture Organization of the United Nations (FAO), United Nations Educational, Scientific and Cultural Organization (UNESCO), International Civil Aviation Organization (ICAO), World Health Organization (WHO), World Meteorological Organization (WMO), Inter-Governmental Maritime Consultative Organization (IMCO) and International Atomic Energy Agency (IAEA). /...

Valuable and instructive inputs on the organization, content and scope of the questionnaire were received from these bodies. The advice of the Statistical Division of ECE was particularly useful in the adaptation of the questionnaire to the assessment of country practices in the developing regions, especially from the point of view of perceived deficiencies in the earlier ECE questionnaire. The Statistical Office questionnaire, incorporating many of the comments received, was broader in range and scope than the ECE questionnaire; separate questions on the organization of environment statistics were introduced, for example, as well as questions on legislation in the field of environment, which affects the way in which environment statistics are collected to meet the needs of policy makers. The question of organization of environment statistics appeared to be the most important of all, because without knowing what is done, by whom, where and for what purpose, it would be virtually impossible to identify a broad enough structure within which to classify and define the component elements of the field of environment statistics as a whole.

20. In the attempt to define the meaning and content of the field of environment statistics for the purposes of international definition and collection of data, it was requested that countries devote particular attention to the provision of information on what precisely is understood by the term "environment statistics". It is obvious that environment statistics not only include new types of data but also many types of existing statistics rearranged in different ways. They cover a wide range of natural phenomena and human activities, many of which reflect a high degree of interdependence. Accordingly, countries were asked to indicate how statistics on environment were viewed at the practical working level.

21. Following an initial section dealing with the definition and purpose of environment statistics, three main areas of specific interest were included in the questionnaire, namely (a) natural resources; (b) human settlements and land use; and (c) pollution. These three areas of interest were developed following the experience with the ECE questionnaire and following a preliminary appraisal of the kinds of statistics on environment included in national publications, either of specific application to the field of environment or as part of a more general statistical yearbook. A final section of the questionnaire concentrated on plans and priorities at the national level for the development of statistical data on environment, in addition to eliciting information on what is perceived to be the most useful area in which the international organizations, and in particular the Statistical Office of the United Nations, could focus their work. 5/

22. The results of the ECE survey have not been reproduced in the present analysis; the responses to the questionnaire were presented at the joint meeting of the Conference of European Statisticians and the Senior Advisers to ECE Governments on Environmental Problems held at Geneva in January 1973. 6/ While the

5/ See annex I, table 13, to the present report.

6/ See "National work on environmental statistics" (CES/AC.40/9-ENV/AC.6/R.1), "Summarized country reports on air pollution and the management of solid waste" (CES/AC.40/10-ENV/AC.6/R.2) and "Scope and contents of environmental statistics" (CES/AC.40/11-ENV/AC.6/R.3).

present report does not include the ECE materials due to constraints of space and in order not to duplicate the documents before the joint meeting, it is intended to use the ECE summaries and analyses in the work of the Statistical Office as work progresses on the examination of country practices. At the present time, the results of the Statistical Office survey appear to underscore most of the conclusions of the ECE survey, particularly as pertains to the following points:

(a) Environmental data were initially collected in response to isolated problems, mainly in the field of detrimental effects of pollution on human health;

(b) More recently, the number of environmental concerns or problems for which data are collected has increased, although the data remain geared to specific individual requirements;

(c) While a considerable amount of data are available in most ECE countries, in other regions fewer data appear to be available. However, most countries stress the need for co-ordination of existing and future data collection, given the range of agencies involved in such work; and

(d) The nature of a comprehensive structure of environmental statistics is not easily identified, especially in regard to the individual component fields and the variables to be covered.

23. A question-by-question analysis of the replies to the questionnaire is given below and in the tables 7/ of annex I to the present report; a copy of the questionnaire appears in annex II. Part I of the questionnaire contained two sections: A. General questions and B. Specific questions. The first question in section A attempted to ascertain how each national statistical office, or the central authority responsible for the subject matter, defines the field of "environmental statistics". A general definition was requested, in addition to a list of the component elements under that general rubric. Over-all, it was easier for countries to list the component elements than to furnish a general definition. However, the following important conceptual points emerged that are of use in the over-all definition of environment statistics and that can in effect serve as the criteria for such a definition:

(a) Both quantitative and qualitative aspects are involved;

(b) Both natural phenomena and human activities are involved;

(c) It is necessary to identify the core areas or key characteristics of the component subject areas of the field of environment in order to organize statistics effectively;

(d) In terms of the utility and purpose of environment statistics, the outstanding characteristic is that they provide a synthesis of data on disparate

7/ The tables contain several acronyms; in the next stage of the survey, they will be fully identified.

elements of the natural and human environment, for formulation of policies on protection, management and planning; and

(e) Environmental statistics include many different types of information, data or conventional statistics, which are often indicator or surrogate measures.

24. Some definitions of environment statistics were restricted thematically or spatially, for example, to range management or to particular local problems, but the majority of them were wide-ranging and emphasized the impact of human activities on the natural environment. It is useful to list a representative sample of the definitions reported by countries to illustrate the variety of concepts and subject matter involved. According to the replies to question 1, environment statistics include the following characteristics:

(a) "The conjuncture of quantitative factors, including all physical, biological and socio-cultural aspects of environment, which affect the quality of life of human communities and the protection, preservation and rational use of natural ecosystems";

(b) "Any fact, whether general or specific, which may have an influence in explaining phenomena and/or be a policy parameter in the field of environment and/or physical planning and/or land use";

(c) "The figures indicated quantitatively about matters on environment for formulating and implementing policies on environment protection";

(d) "Quantitative information which has a direct or indirect effect on the physical quality of life";

(e) "All parameters connected directly or indirectly with the environment and their impact on plant, animal and human life as far as environmental trends and changes are concerned";

(f) "Information on environmental elements, indicators, processes or properties";

(g) "Quantification of phenomena or facts which affect or modify in any way the relationships between man and his environment";

(h) "Data and relevant information pertaining to man's surroundings, inclusive of all physical, biological, economic, historical, institutional and social conditions existing within the area"; and

(i) "That branch of statistics which describes numerically the state of the environment".

25. While not exhaustive, 8/ the above sample of definitions suggests that what is generally meant by the term "environment statistics" is that body of statistics

8/ A complete list is given in annex I, table 1, by country.

that expresses the quantitative and qualitative aspects of the interrelationships among population, resources and the natural environment. This is, however, a very broad and general appraisal and needs to be broken down into component elements for operational purposes.

26. The component elements as reported on the questionnaire are of two broad types: natural phenomena and human activities and conditions. Under the first category, natural phenomena, the respondents identified the following broad subject areas:

- (a) Meteorological/climatic conditions - precipitation, temperature, sunshine, humidity;
- (b) Geological and geomorphological conditions - major types and juxtaposition;
- (c) Water resources - ground and surface water, types and occurrence;
- (d) Soil resources - types and condition;
- (e) Vegetation - native and introduced flora, forest types;
- (f) Animals - wild animal population, types, range;
- (g) Fisheries - fresh and salt water;
- (h) Non-renewable natural resources - mineral and energy commodities; and
- (i) Natural disasters - earthquakes, floods, droughts, tsunamis, tropical storms.

Each of these subject areas reflects the fact that "natural environment" differs from "ecology" (the study of the relationships of living organisms with each other and with their environment; the study of the structure and function of nature) and from "ecosystem" (self-sustaining and self-regulating community of organisms considered in relationship with each other and their environment). Natural environment statistics reflect the conditions and natural phenomena that provide the setting and the raw materials for human activities.

27. The second category of environment statistics, concerning human activities and conditions, describes the processes, activities and effects of the human use and organization of the natural environment. A particular difficulty arises from the fact that these types of statistics cover both human activities and human conditions and thereby include both the effects of human activities and related states of the environment. Under this category, the respondents identified the following broad subject areas:

<u>Subject area</u>	<u>Effects of human activities/states of environment</u>
(a) Land use	Types/changing patterns
(b) Supply of potable, irrigation and industrial water	Domestic water supply Water pollution Marine pollution Industrial liquid wastes
(c) Agriculture	Soil use/changes Soil erosion/depletion Use of pesticides
(d) Food-stuffs	Hygiene/contamination
(e) Transport	Air pollution Noise pollution Energy use
(f) Industry	Air and noise pollution Energy use Site/production/safety characteristics of working environment Solid/liquid industrial wastes Discharge of toxic materials, base metals, petrochemicals, radioactive isotopes
(g) Settlements	Housing types/amount/quality Urbanization Population structure/density Solid/liquid household wastes Air/water/noise pollution
(h) Health	Diseases Medical facilities Accidents
(i) Recreation	Facilities
(j) Conservation	Wildlife National parks/monuments/protected sites

28. These groups of statistics reflect the range of man's activities and their effects, from the settlement of land to the use of land and of resources, to the conditions that reflect the quality of life and the effects of human activity, notably in the form of pollution and the creation of wastes and residuals. They include efforts towards the protection and preservation of both natural and cultural phenomena, whether in the form of wildlife, geological features, monuments or protected cultural sites. They also include coverage of the causes of environmental damage, assessment of the status of environmental quality, impacts on human health and measures for environmental conservation.

29. Among other things, the questionnaire served a useful purpose in identifying the principal areas of concern and interest in the field of environment statistics or, in effect, a broad list of themes for which statistics might be compiled or developed. However, the above categories would need elaborate subdivision before specific statistical series could be identified for each subcomponent. Obviously, many of these types of statistics already exist in many countries, either in general yearbooks or in specific thematic publications (e.g. demographic yearbooks or bulletins). Much of the process of definition of environment statistics involves the identification of a new ordering of existing statistics from a particular point of view. It will be necessary to examine existing statistics to determine the environmental significance shown by particular series of statistics as compared with other series. For example, density of population compared with area of cultivable land would reveal more salient environmental information than total population compared with total area.

30. The second general question in part I of the questionnaire attempted to ascertain the nature of any relevant national legislation concerning the environment. Such legislation represents a direct mandate for the formulation of standards and policies, for which in turn environment statistics represent an underpinning or foundation. The variety and range of coverage of the responses to this question on existing legislation reflect the fact that, in most countries, the field of environment is being approached on a piecemeal basis, as the need arises or is perceived. Very few countries have over-all environmental legislation, but rather individual ministries or departments include environment and environmental data development within a wider series of responsibilities.

31. The principal areas of existing environment legislation in countries are:

- (a) Health - disease/sanitation/certification of cause of death/morbidity indexes;
- (b) Pollution - air/water/noise standards;
- (c) Natural resources - conservation/rational use;
- (d) Marine pollution;
- (e) Land use, town and country planning;
- (f) Wildlife and conservation areas;

- (g) Water resources development and use;
- (h) Forest resources development and use;
- (i) Industrial activity/standards/location;
- (j) Food-stuffs - contamination/quality;
- (k) Fisheries - development/conservation.

Only five countries reported either integrated national legislation on environmental matters or the existence of a central agency focusing on environmental activities (see annex I, table 2).

32. Concerning assessments of the general status and condition of the environment made by central government authorities (Question 3), the majority of countries reported that such assessments had been made for particular sectors, while few over-all evaluations had integrated sectoral assessments. The assessments were of three basic types: (a) problems of pollution, (b) analysis of land use patterns and (c) analysis of natural resources (see annex I, table 3). In addition several countries mentioned work in the fields of health, urban development, water resource development and use and ecological surveys. One of the points of note with reference to the responses to this question is that, in most cases, agencies other than national statistical offices have undertaken such assessments of the general status and condition of the environment. Another salient feature of the assessments is that, owing to the lack of appropriate data, most evaluations or surveys have been qualitative in nature. Also, in most cases the data used in such assessments are being derived independently of statistical offices, due to the characteristic mixture of the types of information needed for environmental analysis and to the methods of monitoring and sampling employed for such work. It appears that existing statistics have not been particularly useful in such assessments, except in the few cases where individual sectors have developed statistics in tandem with other work of a policy and planning nature.

33. In the general section of the questionnaire, it was felt to be very important to ascertain whether any governmental authority collected statistics on the general status and condition of the environment (Question 4), for such statistics would be a prerequisite for assessments of the type carried out under Question 3, and the lack of such statistics would indicate one of the lacunae in this field. Most countries undertake some form of collection of statistics on a thematic basis (i.e. subject by subject, such as resource assessment, air/water pollution, land use), but only in a few countries are statistics collected on spatial lines (i.e. in addition to the country as a whole, on a regional (subnational) and local basis) (see annex I, table 4). It would appear that, to date, such statistics as have been collected have been compiled as occasion has demanded, most often at the national level. Specific thematic studies have generated a data base for particular sectors in particular countries. These points are important because a framework for environment statistics of necessity must be wide enough to embrace the gamut of concerns on both a thematic and a spatial basis. Few countries will see the need to collect data on everything, but rather should be in a position to select a mix of items appropriate to their needs and priorities from an established list of environment statistics.

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34. Question 5 represented a follow-up to Question 4 in attempting to ascertain whether any national agencies supplied environment statistics to a central government authority and, if so, the nature of the statistics and their periodicity. The responses (see annex I, table 5) show that three main streams of reporting occur: (a) in most countries, specialized agencies supply data and related information to a department or ministry with jurisdiction over a broad group of thematic topics, such as health or natural resources; (b) in relatively few countries is the central statistical office the focal point for the collection of environment statistics; and (c) most statistical reporting is long term rather than short term, either on an annual, five-yearly or 10-yearly basis, and predicated on specific needs as the occasion arises. Question 6 followed directly upon this theme by requesting a listing of any statistical publications on environment issued in the country, together with their general subject matter and periodicity (see annex I, table 6). Most countries reported no publications issued, while only one country reported issuing a directory, or equivalent publication, of environment statistics. In this regard, the availability of statistical publications on environment outside the ECE member countries is substantially less than the yearbooks and bulletins published in the ECE region. ^{9/} However, several countries reported that some specific thematic statistics of use for environment or some specific environmental statistics are published in annual or periodic reports of various state agencies, for example in health bulletins, resource studies etc. It is clear that environment statistics exist in many countries as subsets of statistics collected for other purposes (e.g., housing, forestry) or as parts of ad hoc publications on a thematic topic published by agencies.

35. Question 7 attempted to elucidate whether a governmental authority in each country had taken part in any international study or survey relating to problems of environment (see annex I, table 7). This question was felt to be important for ensuring co-ordination of the development of environment statistics at the international level. Many countries had participated in such surveys or studies, for which the most frequently mentioned agencies were:

- (a) Food and Agriculture Organization of the United Nations (FAO) - agriculture/soils/fisheries/resource legislation;
- (b) Regional commissions - assessment of environmental problems;
- (c) United Nations - desertification;
- (d) United Nations - Habitat;
- (e) United Nations Environment Programme (UNEP) - Global Environmental Monitoring System (GEMS)/International Referral System (IRS)/International Register of Potentially Toxic Chemicals (IRPTC);

^{9/} See "Scope and contents of environmental statistics" (CES/AC.40/11 - ENV/AO.6/R.3).

- (f) UNEP - studies/projects;
- (g) United Nations Educational, Scientific and Cultural Organization (UNESCO) - education/culture;
- (h) International Union for Conservation of Nature and Natural Resources (IUCN) - nature conservation/conferences;
- (i) United Nations Development Programme (UNDP) - seminars/projects;
- (j) United Nations - World Meteorological Organization (WMO) projects relating to the Water Conference;

It is obvious that many different types of international studies, surveys and projects are under way, of which those of UNEP, FAO and IUCN were the most frequently highlighted. Such projects and surveys should be included in the assessment of needs and a review of potential sources for environment statistics, since they represent a repository of a great deal of valuable information, much of which may be of a statistical nature.

36. Just as national participation in international projects was felt to reflect the degree of development of environment statistics, so it was felt to be useful to ascertain whether any national survey of user needs for statistics on environment had been carried out by any central governmental authority (see annex I, table 7). Ninety per cent of the countries responding had not conducted such a survey of user needs. A few countries had surveyed the needs of users in specific thematic areas, such as the need for hydrological data for planning of water development projects, inventories of mineral resources or criteria for standards of air or water pollution prevention. Most data on user needs appear to have been generated in specific departments or ministries, which are themselves the direct users of the data they generate. In other words, to date environment statistics have been originator-specific rather than user-specific, probably because of the lack of over-all classification and delineation of structure of the field as a whole.

37. In summary of the general questions in part I, section A of the questionnaire, most countries have some apparatus, legislation, agencies, assessments, studies and data in the field of environment. However, they are disparate and they developed as the need arose, resulting in a patchwork coverage. The quantity, type and origin of environment statistics varies widely from country to country; in some countries no work has been undertaken, while in others an over-all agency has been created, work integrated under one unifying rubric and data collection apparatus established according to national, regional (subnational) and thematic criteria.

38. The specific questions in part I, section B of the questionnaire on country practices dealt in detail with three component subject areas that were more readily identifiable, namely, natural resources, human settlements and land use and pollution. Concerning natural resources (Question 9), countries were asked to briefly list statistics reported to the United Nations and other international

agencies, as well as other statistics collected but not so reported (see annex I, table 8). Almost all countries collect statistics on some aspects of natural resources, and most countries report data to the United Nations system. Only seven countries had no statistical data on natural resources. The principal topics covered under statistics of natural resources were water, forests, minerals, soils, land use, national parks and reserves, climate, fisheries, agriculture, meteorology, hydrology and energy. The principal international agencies receiving such statistics were FAO, WMO, UNEP, IUCN and UNESCO. Countries were also asked whether statistical data were collected on natural catastrophic phenomena; the most frequently reported data concerned seismic data (particularly earthquakes), floods, droughts, fires, hurricanes/typhoons/cyclones, tsunamis, explosions, volcanic eruptions, major accidents, disruption of vital services, release of toxic gases, epidemics and diseases and atomic radiation problems. Thus, with reference to natural resources, most countries collect some data, many reporting them to international agencies. The same situation applies with respect to catastrophic phenomena.

39. Question 10 concerning human settlements and land use was divided into two parts, namely, statistics currently reported to the United Nations or to other international agencies and data collected for national purposes (see annex I, table 9). With respect to data for international reporting, the principal areas of collection, often derived from census activity, were population, housing, land use, construction, water supply and sewage disposal. Other data reported include the size, distribution, future patterns and growth of human settlements, as well as data on wildlife and data for use in rural and physical planning. The responses to the question indicate that more countries collect information on human settlements and land use for national purposes than for international reporting. The topic for which data are most frequently collected for national purposes is land use. In addition, information is collected by many countries for urban and rural planning and on other topics related to land use, such as the preservation and management of wildlife, forests and protected areas. Industrial dispersion, land settlement, flood control, erosion, drought, deforestation, irrigation and resource management were also the subject of data collection in some countries.

40. With respect to human settlements, an important concern appears to be the quality and quantity of water supply and methods of sewage disposal. Health, population, housing, tourism development, social services and transportation were also mentioned as areas for which data are collected. The level of response to the question on human settlements and land use, particularly with respect to data on human settlements reported to the United Nations or to other international agencies, indicates that there may be a problem of definition concerning the topics encompassed under this heading and that more information may be available and reported than would appear from the responses. For example, it could be assumed that housing, and especially the extent to which living quarters are provided with piped water and toilet facilities, would be considered an important topic in connexion with human settlements. Many countries collect data of this kind and report them to the United Nations Statistical Office, yet there was little indication of this in the responses received. For Asia alone, such data have been received from 25 countries but only five of these responded that information on human settlements was reported to the United Nations or other international agencies.

41. With regard to the specific subject area of pollution (Question 11), the majority of countries do not yet compile comprehensive statistics or report them to international agencies. In those cases in which statistics on pollution are collected and reported, WMO appears to occupy a leading role among the international agencies in connexion with air quality and air pollution data, with UNEP, FAO and World Health Organization (WHO) also participating in such international reporting. At the national level, however, many countries have developed statistical series on pollution, including parameters of air, water and soil/land quality; problems of wastes, residuals and hazardous substances; noise; pesticides, bacteria and food-stuff contamination. In the majority of cases the agency responsible for collecting such statistics has been the thematic agency in the field rather than the statistical office (see annex I, table 10). It can be concluded that such series have been developed to meet specific legislative requirements for particular pollution monitoring or abatement exercises, rather than as comprehensive statistical programmes covering all aspects of pollution problems. Only in a few countries do classifications of pollutants already exist. Such classifications have been developed for measurement of air quality standards and for monitoring of toxic or hazardous wastes rather than as comprehensive emission parameters covering all aspects of pollution.

42. Question 12, the final one in part I, section B of the questionnaire, was designed to ascertain the nature of any specific statistical activities in the field of environment, in addition to statistics on natural resources, human settlements and land use and pollution. The countries responding to this question (see annex I, table 11) indicated that existing activities attempted to deal with the problem of integration across a variety of subjects, such as for baseline ecosystem data, ecological studies, environment impact studies or the health effects of wastes and pollutants in air and water.

43. In summary, part I, section B of the questionnaire revealed that in the three specific areas of natural resources, human settlements and land use and pollution, an extensive range of work is under way. However, such work differs widely from country to country in scope and coverage and, in many cases, national statistical offices do not appear to have been the agencies to have initiated data collection. Such statistics and data as already exist appear in most cases to be user-specific, having been derived in connexion with analytical or monitoring projects in a range of thematic agencies.

44. Part II of the questionnaire dealt with plans and priorities for future statistical data on environment. It was felt to be as important to ascertain the priorities of countries as to review their current activities. In particular, the role of the international agencies would have to be closely integrated with such priorities and plans. The first two questions in part II of the questionnaire attempted to ascertain the most important unmet needs for statistics on environment, as well as plans to meet these needs and the priority assigned to such plans (see annex I, table 12). The priorities in filling unmet needs were of two types: (a) to create as detailed a base of information as possible on those thematic subjects included in the concept of environment, i.e., a base for a national overview of the environment. Such a compilation would necessitate definition of relevant conceptual values and attributes in the field of environment; the

identification of principal characteristics and parameters; the design of methodologies for the collection, analysis and dissemination of data; and the integration of the work of various thematic agencies into a comprehensive framework. Several countries indicated that a high priority was assigned to the creation of a central agency or information body in order to integrate the work of all agencies concerned with problems of environment; (b) to meet the needs for specific data on such subjects as pollution emissions, hazardous substances, ecological systems, wastes and residuals, catalogues of natural resources, changing land use patterns (especially with reference to urbanization and creation of arid zones), wildlife and fisheries populations, ground water resources and toxicity levels for dangerous substances. A few countries indicated that the publication of a yearbook, bulletin, or ad hoc statistical survey was a priority.

45. Most countries indicated that their plans to fill unmet needs included the establishment of a central agency for purposes of integration of work in progress, the definition of specific elements of the environment, elaboration of concepts and definitions and the compilation of a preliminary data set for publication either as a new study or as extensions of existing studies. Specific plans also included the development of air and water pollution surveys, inventories of resources and land use and baseline ecological data. Countries were roughly divided on the question of incorporating statistics on environment into either a comprehensive publication and framework or on an ad hoc subject-by-subject basis. Other plans and priorities included the development of national frameworks to gather, synthesize and present environment data, which in some cases involved the creation of a special group for the purpose of integrating work in progress into a comprehensive body of information (see annex I, table 12).

46. The final question in part II addressed the priorities attached by countries to international recommendations on concepts, definitions and classifications. This question was intended to provide guidance for the Statistical Office programme and to show the areas where work is most urgently needed (see annex I, table 13). In response to this question, several countries confirmed the view of the Commission that a useful starting point was an analysis of existing national practices in data collection, including a comparison of existing legislation for data collection and a comparison of standards and control approaches for air, water, soil, food and noise pollution. Some countries emphasized the need for clear, simple statements of concepts and of the structure of the field of environment, of the criteria for classifications, of methodologies, of the definition of specific components and of the interdependent elements to be integrated into statistical series. Other countries indicated a preference for work on specific topics, such as pollution of environmental media and food-stuffs, natural resources, health problems, drought phenomena, energy, land use, protection of environment, toxic substances and social aspects of environment. Over-all, most countries expressed the need for guidelines and the exchange of information on national practices as the first priority, with concepts, definitions, frameworks and classifications being a necessary first stage for international work.

47. At the end of annex I, there is a list of the agencies that responded to the questionnaire (table 14).

IV. DEVELOPMENT OF A PROCESS DICTIONARY FOR USE
WITH MATERIALS/ENERGY BALANCES

48. In earlier documents before the Commission, a materials/energy balance statistical module (MEBS) was outlined. ^{10/} Although it was felt that such an approach was useful for the long-term, the Commission emphasized the need for a step-by-step approach, concentrating on short-term objectives. ^{11/} Accordingly, work has been reorganized to focus on the over-all assessment of existing national practices and on the delineation of some initial steps whereby existing socio-economic statistics can be adapted to the priorities and purposes of environmental analysis.

49. At the same time, work on statistics of materials/energy balances had focused on the development of a process dictionary for use with such balances. In earlier work it was recognized that a new type of classification is needed for many areas of environment statistics. With regard to MEBS this entails the breakdown of industrial activities to the level of "economic process". The industries for which such a breakdown appears to be necessary at this juncture are those primarily concerned with the extraction, refining, reduction and synthesis of basic materials, including fuels and electricity. A consultant has been recruited by the Statistical Office to assist in the preparation of general definitions of economic processes, a rationale for identification, mapping and classification of processes, a preliminary catalogue of process definitions and a preliminary cross-classification of commodities in terms of process origin.

50. Recent work in these areas has included the examination of the criteria for a definition of a process, including the ways in which relationships can be established between processes and commodities. Following examination of criteria for process differentiation, an initial assessment of materials flows and transformations has been made, using flow charts to trace successive stages of extraction, refining, conversion, processing and use. At least two possible approaches to the problem of classification have been identified; one is based on physical/chemical transformations, using such categories as food, chemical or metallurgical processes, classified in terms of internal characteristics peculiar to each cluster of processes. On the other hand, most other materials transformation industries cover a broad spectrum of activities that does not easily lend itself to such "internal" classification. For such industries - and perhaps for all - the most appropriate classification principle would seem to be an explicit link between commodities and processes, using existing commodity classifications. For some commodities several distinct processes should be distinguished, although in many cases a commodity can be identified with a single process.

^{10/} See "Statistics of the environment" (E/CN.3/452) and "Draft guidelines for statistics on materials/energy balances" (E/CN.3/492).

^{11/} Official Records of the Economic and Social Council, Sixty-second Session, Supplement No. 2 (E/5910), paras. 112 and 114.

51. Following the completion of preliminary draft guidelines for a process classification for the industrial materials sector, it was felt that, prior to the presentation of a comprehensive document on the subject to the Commission at its twenty-first session, it would be useful to conduct a pilot study to test, with national data, the approach, methodology and suitability of the draft guidelines. Accordingly, given the expression of interest by the representative of Canada at the nineteenth session of the Commission to work closely with the Secretariat in this area, ^{12/} a pilot study has been established in co-operation with Statistics Canada for this purpose. It is anticipated that the results of the pilot study will help to define the next steps in the development of work in this area, as well as to provide a basis for additional pilot studies in other countries and a test of the feasibility of the conceptual approach.

V. THE NEXT STEPS IN THE WORK ON ENVIRONMENT STATISTICS

52. The next steps proposed in the work programme of environment statistics may be summarized as follows:

(a) To complete the Statistical Office survey on country practices and plans and the further analysis of the results, in conjunction with those of the survey carried out by ECE, with a view to identifying the component elements to be included in the programme of environment statistics and as an aid to approaching a structuring of the field, in accordance with country usage and needs;

(b) To carry out further studies on country practices and plans, including uses, with a view to transferring knowledge and experience between countries in the further development of the field of environment statistics;

(c) To examine and evaluate data relevant to environmental studies that are now being reported to the United Nations and other international bodies with a view to enhancing co-ordination, and to prepare background materials for eventual publication in an international compendium of environment statistics or elsewhere;

(d) To identify, evaluate and, where appropriate, publish national data relevant to environmental studies that are not currently being reported to the United Nations or to other international bodies;

(e) To work on guidelines on concepts, definitions, classifications and methodologies and, as one element of these, to continue work on the process dictionary;

(f) To explore the feasibility of developing an over-all structure or framework for the organization of environment statistics; and

(g) To organize pilot country studies to gain basic experience and to test the suitability and feasibility of the various elements of the programme, particularly items (e) and (f) above.

^{12/} Ibid., para. 114.

Annex I

SUMMARY OF RESPONSES TO THE UNITED NATIONS QUESTIONNAIRE FOR THE COLLECTION
OF INFORMATION ON COUNTRY PRACTICES IN THE FIELD OF
STATISTICS ON ENVIRONMENT^{a/}

- Table 1. Definition of environment statistics and component elements
- Table 2. National legislation
- Table 3. Assessments of the general status and condition of the environment
- Table 4. Collection of statistics on the general status and condition of the environment
- Table 5. National environment statistics: type, periodicity and responsible agencies
- Table 6. National statistical publications: subject matter and periodicity
- Table 7. Participation in international study or survey, and survey of user needs for statistics
- Table 8. Natural resources
- Table 9. Human settlements and land use
- Table 10. Pollution
- Table 11. Other specific statistical activities in the field of environment
- Table 12. Unmet needs for environment statistics
- Table 13. Priorities for international recommendations on concepts, definitions and classifications in environment statistics
- Table 14. Agencies responding to the questionnaire

^{a/} See annex II below.

Table 1. Definition of environment statistics and component elements
(N/A signifies "not available" or "none exists")

Country or area	Definition	Component elements		
Argentina	All quantifiable data concerning man and his interrelationships with the natural environment.	a) Man b) Flora	c) Fauna d) Water	e) Air f) Soils
Australia	No general definition in use: to be developed by the Department of Environment, Housing and Community Development.	a) Underlying factors - population, economic development, urbanization b) Resources - supply and demand of renewable and non-renewable resources, land, food, solid waste and recycling, energy, animal population c) Ecological factors - climate, natural disasters, wildlife, erosion d) Pollution - air, water, radiation, pesticides, noise, toxic substances e) Man-made environment - housing, transportation, aesthetics, occupational environment, recreation and tourism		
Bahamas	N/A	N/A		
Bhutan	Data on land use, construction, industries, transport, agriculture, air and water pollution	a) Land use b) Agriculture, livestock, forest	c) Industries + trade d) Education	e) Construction f) Transport g) Air and Water
Bolivia	N/A	N/A		
Botswana	Items of information concerned with the state of the environment	a) Climatic data, esp. rainfall, temperature b) Edaphic data, esp. soil condition + erosion c) Biotic data on wildlife d) Biotic data on domestic stock		e) Biotic data on vegetation-range monitoring f) Sociological data on human population g) Financial data on income distribution
Brazil	The dynamic and interrelated complex of mutually dependent, natural resources sustaining life for which statistics are the quantitative and qualitative registers of phenomena	a) Atmosphere b) Hydrosphere c) Biosphere d) Lithosphere	e) Wildlife f) Pollutants and contaminants g) Effects of natural catastrophes h) Elements of ecological systems	
Burma	N/A	a) Air and water pollution b) Land use		
Burundi	N/A	N/A		
Cameroon, United Rep. of	N/A	N/A		
Chile	The conjuncture of quantitative factors, including all physical, biological and socio-cultural aspects of environment, which affect the quality of life of human communities and the protection, preservation and rational use of natural ecosystems	a) Water resources b) Supply of drinking water c) House water supply d) Industrial liquid wastes e) Irrigation f) Pollution of air, coastal and inland waters, soils, foodstuffs g) Solid household wastes	h) Solid industrial waste i) Soils - potential, use, deterioration (erosion, salinity and desertification) j) Native flora + fauna k) Hygiene and control of foodstuffs l) Industrial activity - site, production, characteristics, safety, health	m) Non-renewable natural resources n) Pesticides, base metals, petroleum products and radioactive isotopes o) Health, medicine, accidents p) Human needs-housing q) Energy r) Basic quality of life
Cook Islands	N/A	N/A		
Costa Rica	N/A	N/A		
Cyprus	N/A	N/A		
Ecuador	Regulation, control and prohibition of the direct and indirect causes of environmental pollution and degradation of ecological systems	a) Environment b) Ecosystems	c) Pollutants d) Pollution	
El Salvador	Quantification of variables affecting the physical and biological environment, particularly concerning soil, water, forest and climatic resources	a) Soils b) Water	c) Forests d) Climate	
Gambia	N/A	N/A		
Guatemala	The conjuncture of data on environmental parameters of physical, chemical and biological types	a) Soils b) Water c) Air	d) Housing e) Foodstuffs	f) Clothing g) Vectors and other biota
Guinea-Bissau	N/A	N/A		
India	Stocks and flows of the natural elements, man-made elements and certain aspects of natural and man-made processes of transforming materials and energy into different forms	a) Water b) Air c) Land	b) Forests and wildlife c) Energy	e) Minerals f) Human settlements

Table 1 (continued).

Country or area	Definition	Component elements		
Iran	Any quantitatively or qualitatively oriented report concerning the environment	a) Air pollution b) Water pollution c) Soil pollution	d) Wildlife conservation e) Noise pollution	f) Protected areas and national parks g) Fisheries
Iraq	N/A	N/A		
Israel	Any fact, whether general or specific, which may have an influence in explaining phenomena and/or be a policy parameter in the field of environment and/or physical planning and/or land use	a) Environment b) Demography	c) Natural phenomena d) Economics	e) Social
Japan	The figures indicated quantitatively about matters on environment for formulating and implementing policies on environment protection	a) Causes of environmental damage (e.g. emissions and unit loads of pollutants) b) Environmental quality (e.g. results of pollution) c) Damage to human health (e.g. surveys of damage) d) Environmental conservation measures (e.g. laws, costs of conservation, research)		
Jordan	Quantitative information which has a direct or indirect effect on the physical quality of life	a) Pollution of ground and surface water b) Pollution emission of cars and factories c) Desertification		
Kenya	All parameters connected directly or indirectly with the environment and their impact on plant, animal and human life as far as environmental trends and changes are concerned	a) Climate b) Man's activities	c) Land resources d) Animals (wild + domestic)	
Korea, Republic of	N/A	N/A		
Kuwait	N/A	N/A		
Lesotho	N/A	N/A		
Malawi	N/A	N/A		
Malaysia: Peninsular Malaysia	Information on environmental elements, indicators, processes or properties	a) Physical - geology, soil, water, biota, energy, climate, air b) Special features - sanitary landfills, mine dumps, shorelines c) Social - services, safety, physiological and psychological well-being, historical values		
Sabah	N/A	N/A		
Sarawak	N/A	N/A		
Maldives	N/A	N/A		
Mauritius	N/A	a) Air b) Fresh water c) Salt water d) Flora, fauna, forests, fisheries	e) Land use planning, human settlements and housing f) Industrial development g) Population policy	
Mexico	Data for assessments, analyses, inventories concerning a large number of elements, resources, phenomena, processes and activities which contribute to the situation or state of human communities through time	a) Natural resources: atmosphere, lithosphere, hydrosphere, land surface b) Pollution/contamination of environment: atmosphere; hydrosphere, soils, noise c) Human settlements d) Natural disasters		
Nepal	N/A	N/A		
New Zealand	N/A	N/A		
Oman	N/A	N/A		
Panama	N/A	N/A		
Papua New Guinea	N/A	N/A		
Paraguay	Quantification of phenomena or facts which affect or modify in any way the relationships between man and his environment	a) Water, water supplies h) Human wastes, sewage c) Wastes and residuals d) Dwellings	e) Conditions of local industrial environment f) Conditions of working environment	g) Foodstuffs h) Air + soil pollution i) Conservation of natural resources - flora, fauna and minerals
Philippines	Data and relevant information pertaining to man's surroundings, inclusive of all physical, biological, economic, historical, institutional and social conditions existing within the area	a) Air b) Water c) Land	d) Forests e) Waste	f) Flora g) Fauna
Samoa	Data on various features of the environment that are closely related to mankind whether or not for its benefit (health only)	a) Water supply b) Food sanitation c) Sewage disposal	d) Vector control e) Housing f) Anthropoid + disease control in animals	g) Recreation facilities h) Geographical and meteorological information
Sao Tome and Principe	N/A	N/A		

Table 1 (continued)

Country or area	Definition	Component elements
Saudi Arabia	N/A	N/A
Seychelles	N/A	N/A
Singapore	All statistics relevant to vector biology and control and vector-borne diseases	a) Bionomics and ecology of all vector species b) Vector resistance to insecticides c) Notifiable cases of all vector-borne diseases d) Infectious diseases
Southern Rhodesia	That branch of statistics which describes numerically the state of the environment	a) Population by area b) Land use c) Climate d) Resources: water, land, minerals, livestock, wildlife e) Physical development: dwellings, factories, roads, railways, mines, farms, afforestation f) Cultural, educational and medical facilities g) Pollution h) Control of diseases and pests (affecting animals and humans)
Sri Lanka	Statistics on phenomena and activities relating to the assessment, development and conservation of the country's natural resources	a) Soil b) Water c) Energy d) Forests e) Fauna and flora f) Living aquatic resources g) Minerals h) Human settlements and land use
Sudan	N/A	N/A
Syrian Arab Republic	N/A	N/A
Swaziland	N/A	N/A
Thailand	N/A	N/A
Trinidad and Tobago	N/A	N/A
Uruguay	N/A	N/A
Venezuela	N/A	N/A

Table 2. National legislation

(N/A signifies "not available" or "none exists")

Country or area	Type of legislation	Principal areas covered
Argentina	Extensive range of national laws and decrees; also provincial. Three new laws planned on fauna, soils and ecology.	Water purity; disposal of sewage and industrial wastes; contamination of water; supply of drinking water; industrial development; mineral resources; air resources; national parks and reserves; monuments; forest resources; food hygiene, working conditions; accidents/health of workplace; fluorination/defluorination of water; electricity plants; road vehicles; chemical discharge; policy and preservation for environment.
Australia	States carry major responsibility. National Acts cover extensive range of topics.	Environment protection (impact); national parks and wildlife conservation; national heritage; states grants (soil and nature conservation); urban and regional development; pollution of waters; air quality monitoring; water resources assessment.
Bahamas	N/A	N/A
Bhutan	N/A	N/A
Bolivia	N/A	N/A
Botswana	National Acts, mainly covering land use and biota.	National tribal grazing land policy; agricultural resources conservation; noxious weeds; water; tribal land; national parks; herbage preservation.
Brazil	National decrees establishing agencies.	Special secretariat for environment, in Ministry of Interior; industrial pollution control; planning secretariat, in Office of the Presidency.
Burma	N/A	N/A
Burundi	N/A	N/A
Cameroon, United Republic of	N/A	N/A

Table 2 (continued)

Country or area	Type of legislation	Principal areas covered
Chile	Many legal instruments cover environmental problems: health code, water code, forest laws, urban codes.	Health; conservation of renewable resources (water, forests); rational use of non-renewable resources; well-being of communities; storage, transport and sale of food products.
Cook Islands	Conservation Act established Directorate responsible for policy: departmental legislation.	Land use; water quality; air quality of stationary and mobile sources; solid wastes; coastal zones; national parks; toxic substances; cultural features.
Costa Rica	N/A	N/A
Cyprus	N/A	N/A
Ecuador	Law for Prevention and Control of Environmental Pollution.	Air; water; land.
El Salvador	No over-all national legislation: departmental mandates.	Public health; forestry; fauna; principle of multiple use of forest resources.
Gambia	N/A	N/A
Guatemala	Range of codes, laws, decrees and regulations. Commission for Conservation and Improvement of the Environment created by governmental accord.	Health; minerals; municipalities; forests; agriculture; noise; fisheries; pesticides; forest fires.
Guinea-Bissau	N/A	N/A
India	Range of Acts and regulatory instruments.	Water resources and use; coastal zones; atomic energy; factories; food contamination; insecticides; wildlife; forests.

Table 2 (continued)

Country or area	Type of legislation	Principal areas covered
Iran	Range of laws and regulations: further regulations being prepared.	Wildlife; fisheries; natural environment; air pollution abatement; control of water pollution; environmental protection and enhancement.
Iraq	N/A	N/A
Israel	No over-all instrument: national legislation on specific problems.	Air and noise pollution; preservation of water resources; planning of physical environment; pollution of the sea by oil; handling of chemicals.
Japan	Pollution laws for control and quality standards.	Basic law for pollution control; air/water pollution control laws include quality standards on emissions and effluents.
Jordan	Pollution legislation.	Ground and surface water; car/factory emissions.
Kenya	Acts for conservation and management of land use, resources and wildlife.	Land planning; agriculture; grass fires; fertilizers and animal foodstuffs; water; forests; wildlife protection, conservation and development.
Korea, Republic of	Law on prevention of public nuisance.	Environmental protection.
Kuwait	Range of laws and decrees at national and local levels, e.g. Shuaiba Area Authority.	Oil pollution; industry; preservation of oil resources; municipalities; Shuaiba Area Authority codes of practice and environmental guidelines (air/water pollution).
Lesotho	N/A	N/A
Malawi	N/A	N/A

Table 2 (continued)

Country or area	Type of legislation	Principal areas covered
<p>Malaysia: Peninsular Malaysia</p>	<p>Extensive range of Acts at national level, as well as ordinances and enactments.</p>	<p>Factories and machinery; environmental quality; geological survey; land conservation; water; local government; streets, drainage and buildings; pesticides; town and country planning; forests; radiation protection; antiquities; drainage works; mining; irrigation areas.</p>
<p>Sabah</p>	<p>N/A</p>	<p>N/A</p>
<p>Sarawak</p>	<p>N/A</p>	<p>N/A</p>
<p>Maldives</p>	<p>N/A</p>	<p>N/A</p>
<p>Mauritius</p>	<p>Existing legislation to be reviewed; new legislation anticipated. Present statutes for a variety of subjects and problems.</p>	<p>Protection of wildlife; contagious diseases; health; dangerous substances; safety in factories and workplaces; fisheries; food and drugs; noise; pesticides; sewerage.</p>
<p>Mexico</p>	<p>Laws concerning specific areas and subjects. Economic and social development has necessitated national management of natural resources.</p>	<p>Fisheries; foodstuffs; urban development; studies on resource management, for example, demography, social planning, husbandry, forestry, monitoring.</p>
<p>Nepal</p>	<p>N/A</p>	<p>N/A</p>
<p>New Zealand</p>	<p>N/A</p>	<p>N/A</p>
<p>Oman</p>	<p>N/A</p>	<p>N/A</p>
<p>Panama</p>	<p>N/A</p>	<p>N/A</p>

Table 2 (continued)

Country or area	Type of legislation	Principal areas covered
Papua New Guinea	Legislation being drafted.	N/A
Paraguay	National codes include environment.	Rural; diet and nutrition; civil; penal.
Philippines	Extensive range of decrees; including the formulation of an Environmental Code and Policy and the creation of the Environment Protection Council.	Control of water, air, land pollution; prevention of marine pollution; conservation of resources; waste disposal; human settlements (Commission created to incorporate environmental planning/assessment in organization of human communities); radioactive pollution control; pesticides control.
Samoa	Main legislation in health and public works.	Health; villages; food and drugs; water.
Sao Tome and Principe	N/A	N/A
Saudi Arabia	N/A	N/A
Seychelles	N/A	N/A
Singapore	Health sector.	Control of disease-bearing insects; public health; infectious diseases.
Southern Rhodesia	No over-all legislation; many specific facets covered.	Town and country planning; fish conservation; quelea control.
Sri Lanka	Range of sectoral acts and ordinances; over-all problems.	Soil; pollution and management; land use and water resources; fisheries; forests; mineral resources; agriculture and irrigation.

Table 2 (continued)

Country or area	Type of legislation	Principal areas covered
Sudan	N/A	N/A
Swaziland	Series of laws relevant to environment.	Tree planting; fauna and flora control and protection; locusts; mining; national trust; resources; fisheries; wildlife.
Syrian Arab Republic	N/A	N/A
Thailand	N/A	N/A
Trinidad and Tobago	N/A	N/A
Uruguay	N/A	N/A
Venezuela	N/A	N/A

Table 3. Assessments of the general status and condition of the environment
(N/A signifies "not available" or "none exists")

Country or area	Agency	Type of assessment	
Argentina	Dirección Nacional de Fauna Silvestre	Surveys of threatened species; development of wildlife reserves; biological stations	
	Sector Suelos, Secretaría de Estado de Agricultura y Ganadería	Evaluation of quantity of water and uses	
	Dirección Nacional de Saneamiento Ambiental	Influence of environment on health	
	Instituto de Economía, Legislación y Administración del Agua (INELA)	Study of industrial pollution of water in Mendoza area; study of type of pollution of watercourses in metropolitan area	
Australia	National Estate Committee	Inquiry and report on the nature and condition of the national estate	
	Federal Parliamentary Committees (various)	Water pollution; air pollution; wildlife conservation	
	Department of Environment, Housing and Community Development	Soil conservation study	
	Department of Science	Biological resources study	
	Heritage Commission	National estate studies	
	National Parks and Wildlife Service	Natural environment investigations	
	Commonwealth Scientific and Industrial Research Organization	Ecological survey feasibility study	
	States' bodies	Various	
Bahamas	N/A	N/A	
Bhutan	N/A	N/A	

Table 3 (continued)

Country or area	Agency	Type of assessment
Bolivia	N/A	N/A
Botswana	Land Utilization Division N/A	Range monitoring Tribal grazing land policy
Brazil	Presidency of the Republic, planning secretariat	Planning
Burma	N/A	N/A
Burundi	N/A	N/A
Cameroon, United Rep. of	N/A	N/A
Chile	Instituto de Investigación de Recursos Nacionales, Corporación de Fomento de la Producción (IREN-CORFO) Ministerio de Salud, Servicio Nacional de Salud (SNS) Ministerio de Agricultura, Servicio Agrícola y Ganadero, Corporación Nacional Forestal (SAG-CONAF) Universities Instituto de Investigaciones Tecnológicas (INTEC)	Natural resources Health Agriculture; forestry Various Various
Cook Islands	Directorate of Conservation	Policy

Table 3 (continued)

Country or area	Agency	Type of assessment
Costa Rica	N/A	N/A
Cyprus	N/A	N/A
Ecuador	Ministry of Public Health, Institute of Health	Health
El Salvador	Dirección General de Recursos Naturales Renovables	Evaluation and development of water resources: inventory and analysis of water uses
Gambia	N/A	N/A
Guatemala	Ministry of Public Health National Council for Economic Planning	Health Study of drinking water supply, industrial supply
Guinea-Bissau	N/A	N/A
India	National Committee on Environmental Planning and Co-ordination Central Board for Prevention and Control of Water Pollution Department of Forests, Ministry of Agriculture All-India Land Use and Soil Survey Organization Geological Survey, Bureau of Mines	All aspects of environment, country-wide Water pollution Wildlife; forests Soils Minerals

Table 3 (continued)

Country or area	Agency	Type of assessment
India (continued)	National Sample Survey Organization, Town and Country Planning Organization, State Town Planning Boards, National Buildings Organization Meteorological Department	Human settlements Rainfall and other meteorological parameters
Iran	Department of the Environment Ministry of Agriculture Ministry of Energy Municipal Corporations Teheran Municipality Ministry of Housing & Urban Development	Control of air, water, soil, noise pollution; protection of wildlife, fisheries, nature, resorts Natural resources Water resources Urban solid waste and land use Environment Land use
Iraq	N/A	N/A
Israel	Environment Protection Service, Ministry of the Interior Ministries	Over-all national assessment Sectoral assessment
Japan	Environment Agency, Prime Minister's Office	Comprehensive administration of environmental protection by pollution control, natural conservation and other protection standards
Jordan	N/A	N/A
Kenya	Rangeland Ecological Monitoring Unit	Census of animal life; vegetation types and changes; advice on land use based on data collected

Table 3 (continued)

Country or area	Agency	Type of assessment
Korea, Republic of	N/A	N/A
Kuwait	Air and Water Pollution Control Centre, Shuaiba Area Authority Ministry of Public Health Institute for Scientific Research	Protection of environment of Shuaiba Industrial Area Protection of working environment Research
Lesotho	N/A	N/A
Malawi	N/A	N/A
Malaysia; Peninsular Malaysia	Economic Planning Unit Division of Environment Meteorological Services National Electricity Board Socio-Economic & General Planning Unit	Natural resources evaluation Environmental quality monitoring Climate and air quality monitoring Energy supply Social aspects
Sabah	Division of Environment, Ministry of Science, Technology and Environment	General assessment and development of environmental components
Sarawak	N/A	N/A

Table 3 (continued)

Country or area	Agency	Type of assessment
Maldives	N/A	N/A
Mauritius	N/A	N/A
Mexico	Dirección General de Estudios del Territorio Nacional (DETENAL)	Land use surveys and inventory of natural resources
Nepal	N/A	N/A
New Zealand	Commission for the Environment	Environmental impact reporting
Oman	N/A	N/A
Panama	N/A	N/A
Papua New Guinea	N/A	N/A

Table 3 (continued)

Country or area	Agency	Type of assessment
Paraguay	<p>Dirección General de Estadística y Censos</p> <p>Servicio Nacional de Saneamiento Ambiental (SENASA)</p> <p>Dirección de Hidrografía y Navegación</p> <p>Dirección General de Meteorología</p> <p>Ministerio de Agricultura y Ganadería</p> <p>Ministerio de Obras Públicas y Comunicaciones, Dirección de Recursos Minerales</p> <p>Consejo Nacional de Progreso Social</p> <p>Comisión Nacional de la Cuenca del Plata</p>	<p>Census of population and housing</p> <p>Housing, localities, foods, industries: aspects of health conditions</p> <p>Surface waters</p> <p>Precipitation, temperature, wind, humidity, cloudiness, sun days</p> <p>Forest and other resources</p> <p>Mineral resources</p> <p>Habitat - human settlements</p> <p>Water</p>
Philippines	<p>Human Settlements Commission</p> <p>National Environmental Protection Council</p> <p>National Pollution Control Commission</p> <p>Coast Guard</p> <p>Laguna Lake Development Authority</p> <p>Department of Natural Resources</p>	<p>Environmental management; human settlements; land use planning</p> <p>Co-ordination of environmental protection</p> <p>Air and water pollution control</p> <p>Marine pollution control</p> <p>Protection/preservation of Laguna Lake</p> <p>Protection/conservation of natural resources</p>

Table 3 (continued)

Country or area	Agency	Type of assessment
Samoa	N/A	N/A
Sao Tome and Principe	N/A	N/A
Saudi Arabia	N/A	N/A
Seychelles	N/A	N/A
Singapore	N/A	N/A
Southern Rhodesia	Agricultural Development Authority Sabi Limpopo Authority Whitsur Foundation	N/A N/A N/A
Sri Lanka	National Science Council Water Resources Board Ministry of Irrigation, Power and Highways	Problems of environmental management and pollution Pollution; land use; water management Water situation
Sudan	N/A	N/A

Table 3 (continued)

Country or area	Agency	Type of assessment
Swaziland	N/A	N/A
Syrian Arab Republic	N/A	N/A
Thailand	National Environment Board Ministry of Industry Ministry of Agriculture	Environmental quality: study, controls, management Industrial pollution control; mineral resources preservation Forestry; wildlife
Trinidad and Tobago	N/A	N/A
Uruguay	N/A	N/A
Venezuela	N/A	N/A

Table 4. Collection of statistics on the
 general status and condition of the environment
 (X indicates type of statistics collected)

Country or area	National level	Regions or local areas	Thematic basis	Other
Argentina		X	X	
Australia		X	X	Mostly state
Bahamas				
Bhutan				
Bolivia				
Botswana	X	X	X	
Brazil	X	X	X	
Burma				
Burundi				
Cameroon, United Rep. of				
Chile			X	Some classification work
Cook Islands				Ad hoc
Costa Rica				
Cyprus			X	
Ecuador	X	X	X	
El Salvador	X		X	
Gambia				
Guatemala	X	X	X	
Guinea-Bissau				
India	X	X	X	
Iran	X	X	X	
Iraq				
Israel	X		X	Creating national index of assessment
Japan	X	X	X	Mostly ad hoc - no over-all collection
Jordan			X	
Kenya	X	X	X	

Table 4 (continued)

Country or area	National level	Regions or local areas	Thematic basis	Other
Korea, Republic of				
Kuwait	X	X	X	
Lesotho				
Malawi				
Malaysia :				
Peninsular Malaysia	X	X	X	
Sabah	X	X	X	
Sarawak				
Maldives				
Mauritius	X	X		
Mexico	X	X		
Nepal				
New Zealand			X	
Oman				
Panama				
Papua New Guinea				
Paraguay			X	
Philippines	X	X	X	
Samoa				
Sao Tome and Principe				
Saudi Arabia			X	
Seychelles				
Singapore			X	Health
Southern Rhodesia	X		X	Components only
Sri Lanka	X	X	X	

Table 4 (continued)

Country or area	National level	Regions or local areas	Thematic basis	Other
Sudan				
Swaziland			X	Ad hoc
Syrian Arab Republic				
Thailand	X	X	X	
Trinidad and Tobago				
Uruguay				
Venezuela				

Table 5. National environment statistics:
type, periodicity and responsible agencies

(N/A signifies "not available" or "none exists")

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Argentina	air pollution	monthly	Regional Departments of Health	Ministry of Public Health
Australia	air quality	variable	State environmental protection agencies	DEHCD National Air Quality Data Centre
	nature conservation	variable	State nature conservation agencies	ANPWS
	production data	mostly annual	State resource management agencies	ABS
	land degradation	ad hoc	State soil conservation agencies	DEHCD
Bahamas	N/A	N/A	N/A	N/A
Bhutan	general data	annual semi-annual	Government departments	Directorate of Manpower and Statistics
Bolivia	N/A	N/A	N/A	N/A
Botswana	range condition	annual	Division of Land Utilization; Ministry of Agriculture	Ministry of Agriculture
	climate	daily/weekly	N/A	Weather Bureau
	livestock	annual	N/A	Veterinary Dept.
Brazil	pollution: noise, air and water	N/A	CETESB-SP	SEMA/IBGE
	pollution: noise, air and water	N/A	FEEMA-RJ	SEMA/IBGE
	pollution: air and water	N/A	CEPED-BA	SEMA/IBGE
	pollution: air and water	N/A	CESB-RS	SEMA/IBGE
	pollution: noise and water	N/A	COSANDA-PA	SEMA/IBGE
	pollution: noise, air and water	N/A	FUNDAÇÃO JOÃO PINHEIRO-MB	SEMA/IBGE
	pollution: noise, air and water	N/A	CEPA-PE	SEMA/IBGE

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Burma	radioactivity	N/A	Central Research Organization	Ministry of Industry
	water pollution	N/A	National Health Laboratory	Rangoon Municipal Corporation
Burundi	N/A	N/A	N/A	N/A
Cameroon, United Republic of	N/A	N/A	N/A	N/A
Chile	soils	annual	SAG-IREN-ODEPA	Ministry of Agriculture
	food hygiene	irregular	SAG-SNS	Ministry of Agriculture
	grain hygiene	irregular	SOCOAGRO	Ministry of Agriculture
	forests	annual	Instituto Forestal	Ministry of Agriculture
	meteorology	annual	Meteorological Office	INE
	housing, population, livestock	10 yearly	INE	Ministries
	mineral production	monthly	Ministry of Mines	INE
	crops	annual	INE	Ministries
	fertilizers	annual	INE	Ministries
	construction	annual	municipalities	INE
	livestock inventory	monthly	municipalities	INE
air pollution	annual	SNS	Ministries	
Cook Islands	N/A	N/A	N/A	N/A
Costa Rica	N/A	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A	N/A
Ecuador	hydrology, meteorology	annual	Ministry of Natural Resources; INERHI; INAMHI	Instituto Nacional de Estadística y Censos
	planning of water and land resources	ad hoc	INERHI	Instituto Nacional de Estadística y Censos

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Ecuador (continued)	climate	monthly	Ministry of Natural Resources	Instituto Nacional de Estadística y Censos
	health	annual	IEOS	Instituto Nacional de Estadística y Censos
El Salvador	N/A	N/A	N/A	N/A
Gambia	N/A	N/A	N/A	N/A
Guatemala	water	annual	municipalities	Dir. Saneamiento Ambiental
	drinking water, sewage	annual	municipalities	Dir. Saneamiento Ambiental
Guinea-Bissau	N/A	N/A	N/A	N/A
India	minerals	annual	Mines Revenue Departments and State Directorates of Economics and Statistics	Bureau of Mines
	land use	annual	State Directorates of Economics and Statistics	Directorate of Economics and Statistics; Ministry of Agriculture
	forestry	annual	State Departments of Forests	Department of Forests, Ministry of Agriculture
	soils	annual	State Agriculture Departments	All-India Land Use and Soil Survey Organization
	wildlife	ad hoc	State Departments of Forests	Department of Forests, Ministry of Agriculture
	human settlements	ad hoc	State Town Planning Boards	Town and Country Planning Organization
	human settlements	10 yearly	Office of Registrar General	National Buildings Organization
	human settlements	annual	local bodies	National Buildings Organization
	meteorology	synoptic hours	observatories	Deputy Director General, Forecasting
Iran	N/A	N/A	N/A	N/A
Iraq	N/A	N/A	N/A	N/A

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Israel	air and noise pollution; sewage effluents; solid waste; sea and beaches; energy; land use	annual	EPS	Government
Japan	selected aspects	ad hoc	various	Environment Agency
Jordan	groundwater	N/A	Natural Resources Authority	National Planning Council
	water	N/A	Ministry of Municipal and Rural Affairs; Municipality of Amman	National Planning Council
Kenya	land use; forest resources, vegetation; soil condition	to start soon	National Environment Secretariat	Central Bureau of Statistics
Korea, Republic of	N/A	N/A	N/A	N/A
Kuwait	air and water pollution control	monthly	Shuaiba Area Authority	Ministries of Planning and Oil
Lesotho	N/A	N/A	N/A	N/A
Malawi	N/A	N/A	N/A	N/A
Malaysia; Peninsular Malaysia	agriculture	annual; 5 yearly	Agriculture Department	EPU
	mineral resources	5 yearly	Geological Survey	EPU
	forest resources	5 yearly	Forest Department	EPU
	water resources	annual; 5 yearly	Drainage and Irrigation Department	EPU
	air pollution (around thermal power stations)	monthly	NEB	DOE
	air quality monitoring	ad hoc	MMS	DOE
Sabah	N/A	N/A	N/A	N/A
Sarawak	N/A	N/A	N/A	N/A

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Maldives	N/A	N/A	N/A	N/A
Mauritius	N/A	N/A	N/A	N/A
Mexico	monitoring	daily	SMA	SSA
	monitoring	seasonal	DGOACC	SARH
Nepal	N/A	N/A	N/A	N/A
New Zealand	earthquakes	ad hoc; annual	DSIR	Dept. of Statistics
	meteorology	monthly	MOT	Dept. of Statistics
	forestry; land classification; national parks	annual	N/A	Dept. of Statistics
	minerals mining	annual	Mines Department	Dept. of Statistics
	flood control; soil conservation; irrigation; rural water supply	ad hoc	MOWD	Dept. of Statistics
	hydrology	6 monthly	MOWD	Dept. of Statistics
	national parks	annual	National Parks Authority	Dept. of Statistics
	small rural properties	ad hoc 1974/1975	MOWD	Dept. of Statistics
	public water supply; solid waste disposal	5 yearly	Dept. of Health	Dept. of Statistics
	plastic waste survey; industrial waste surveys	ad hoc 1976/1977	Trade and industry	Dept. of Statistics
census of popula- tion and dwellings	5 yearly	Dept. of Statistics	Dept. of Statistics	
farming	annual	Dept. of Statistics	Dept. of Statistics	

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Oman	N/A	N/A	N/A	N/A
Panama	N/A	N/A	N/A	N/A
Papua New Guinea	N/A	N/A	N/A	N/A
Paraguay	meteorology climate	daily/monthly	Dirección de Meteorología	Dirección General de Estadística y Censos
	water	daily/monthly	Dirección de Hidrografía y Navegación	Dirección General de Estadística y Censos
Philippines	fisheries; fleets, resources, areas available, employment	annual	Bureau of Fisheries and Aquatic Resources	Dept. of Natural Resources
	forestry: areas, production, reforestation	annual	Bureau of Forest Development	Department of Natural Resources
	cadastral surveys; roads, bridges; irrigation	annual	Bureau of Lands	Department of Natural Resources
	mineral reserves, production, exports	annual	Bureau of Mines	Department of Natural Resources
	meteorology	annual	Atmospheric, Geophysical and Astronomical Services	NEPC
	water resources, quality and requirements	annual	National Pollution Control Commission	NEPC
	natural resources, inventory and assessment	annual	Natural Resources Management Centre	DNR
	situation report of the environment	annual	NEPC	Office of the President
Samoa	health	annual	Department of Health	Parliament
	public works and water	annual	Dept. of Public Works	Parliament
	stream flows	annual	Dept. of Agriculture	Parliament
Sao Tome and Principe	N/A	N/A	N/A	N/A

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Saudi Arabia	N/A	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A	N/A
Singapore	N/A	N/A	N/A	N/A
Southern Rhodesia	N/A	N/A	N/A	N/A
Sri Lanka	fisheries	annual	Fisheries Department	Department of Census and Statistics
	forestry, reafforestation, timber harvesting	annual	Forest Department	Department of Census and Statistics
	mineral exploration	annual	Geological Survey Department	Department of Census and Statistics
	industrial effluents	annual	Department of Industries	Water Resources Board
	land use	annual	Departments of Agriculture and Irrigation	DCS
	meteorology	annual	Department of Meteorology	DCS
	land settlement and colonization	annual	Land Commissioner's Department	DCS
Sudan	N/A	N/A	N/A	N/A
Swaziland	N/A	N/A	N/A	N/A
Syrian Arab Republic	N/A	N/A	N/A	N/A

Table 5 (continued)

Country or area	Type	Periodicity	Supplying agency	Receiving agency
Thailand	land use	annual	Department of Land Development	CSO
	forests	annual	Department of Forestry	CSO
	resources	annual	Department of Mineral Resources	CSO
Trinidad and Tobago	N/A	N/A	N/A	N/A
Uruguay	N/A	N/A	N/A	N/A
Venezuela	N/A	N/A	N/A	N/A

Table 6. National statistical publications:
subject matter and periodicity
(N/A signifies "not available" or "none exists")

Country or area	Publication	Subject matter	Periodicity
Argentina	N/A	N/A	N/A
Australia	Stream Gauging Information, Australia, 1974 Forest Fire Losses in Australia, 1970-1971 No general compendium published - some thematic topics included in annual and periodic reports of the state conservation and environment protection agencies.	stream flows and quality areas of commercial forest burnt	annual latest 1970-1971
Bahamas	N/A	N/A	N/A
Bhutan	N/A	N/A	N/A
Bolivia	N/A	N/A	N/A
Botswana	Range Monitoring Report, 1973-1977 Rural Income Survey	N/A N/A	N/A N/A
Brazil	N/A	N/A	N/A
Burma	N/A	N/A	N/A
Burundi	N/A	N/A	N/A
Cameroon, United Republic of	N/A	N/A	N/A
Chile	Anuario Estadístico Incendios Forestales Decomiso Alimentos Contaminados Superficie Forestal Censo Vivienda Censo Población Censo Agropecuario Anuario Pesca y Caza Informe Contaminación Atmosférica Boletín de Estadísticas Forestales Anuario Minería	miscellaneous forest fires food stuff contamination forests housing population livestock/crops fisheries air pollution forestry minerals	annual annual annual annual 10 yearly 10 yearly 10 yearly annual annual annual annual

Table 6 (continued)

Country or area	Publication	Subject matter	Periodicity
Cook Islands	N/A	N/A	N/A
Costa Rica	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A
Ecuador	Anuario Hidrológico	water	annual
	Anuario Meteorológico	meteorology	annual
	Boletín Climatológico	climate	annual
	Estadísticas sobre Riego y Ley de Aguas	soils, water law	ad hoc
	Estudio Preliminar de los Principales Problemas Ambientales del Ecuador	environmental assessment	ad hoc
El Salvador	N/A	N/A	N/A
Gambia	N/A	N/A	N/A
Guatemala	N/A	N/A	N/A
Guinea-Bissau	Boletim Trimestrial de Estatística	metecrology	quarterly
India	no publication devoted entirely to environment		
	Statistical Abstract of the Indian Union	miscellaneous	annual
	Minerals Yearbook	minerals	annual
	Indian Agricultural Statistics	land use, soil	annual
	Forestry Statistics	forestry	annual
	Housing Tables and Report	housing	10 yearly
	Monthly Weather Report	climate	monthly
Iran	N/A	N/A	N/A
Iraq	N/A	N/A	N/A
Israel	N/A	N/A	N/A
Japan	Directory of Environmental Statistics	environmental protection, reference data, related environment matters	annual

Table 6 (continued)

Country or area	Publication	Subject matter	Periodicity
Japan (continued)	Situation of Air Quality in Japan	air quality monitored by national stations	annual
	Yearbook of Water Quality in National Public Water	water quality	annual
	Quality of the Environment in Japan	pollution situation	annual
Jordan	N/A	N/A	N/A
Kenya	N/A	N/A	N/A
Korea, Republic of	N/A	N/A	N/A
Kuwait	Monthly Report, Shuaiba Area Authority Air and Water Pollution Control Centre	air and water pollution control	monthly
Lesotho	N/A	N/A	N/A
Malawi	N/A	N/A	N/A
Malaysia:			
Peninsular Malaysia	Land Capability Classification	natural resources evaluation	5 yearly
	Meteorological Summary	meteorology	annual
	Agriculture Statistics	crop acreage and yield	annual
	Hydrological Data	rainfall, stream flows, water quality	5 yearly
	Production Statistics on Crushing Works	production of sand, gravel, clay	annual
	Annual Report NEB	energy supply and consumption	annual
Sabah	N/A	N/A	N/A
Sarawak	N/A	N/A	N/A

Table 6 (continued)

Country or area	Publication	Subject matter	Periodicity
Maldives	N/A	N/A	N/A
Mauritius	Bi-Annual Digest of Statistics	miscellaneous	2 yearly
Mexico	Carta Topográfica	population, hydrography, topography, transport, routes	6 yearly
	Carta Geológica	geology, resources, soils	6 yearly
	Carta Uso del Suelo	vegetation, agriculture	6 yearly
	Carta Edafológica	soils	6 yearly
	Carta de Uso Potencial	agricultural capacity of soils	6 yearly
	Carta Urbana	population centres	6 yearly
	Carta Climática	rainfall, temperature, climatic isoclines	6 yearly
Nepal	N/A	N/A	N/A
New Zealand	N/A	See items in table 5	N/A
Oman	N/A	NA/	NA/
Panama	N/A	N/A	N/A
Papua New Guinea	N/A	N/A	N/A
Paraguay	Anuario Estadístico del Paraguay	miscellaneous	annual
Philippines	statistics in annual reports of specific agencies		
Samoa	N/A	N/A	N/A
Sao Tome and Principe	N/A	N/A	N/A
Saudi Arabia	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A
Singapore	Bulletin of Infectious Diseases	communicable diseases	weekly
	Epidemiological News Bulletin	communicable diseases	monthly

Table 6 (continued)

Country or area	Publication	Subject matter	Periodicity
Southern Rhodesia	N/A	N/A	N/A
Sri Lanka	Environmental Management in Sri Lanka	environmental management	1973
	Water Resources of Sri Lanka	rainfall, water in reservoirs	quarterly
	Report of the Colombo Observatory	meteorology	annual
	Uhana Colony Village	communication flow in selected villages	1976
	Forest Inventory of Ceylon	forestry	1961
	Ceylon Forester	forestry	annual
	Bulletin of the Fisheries Department	fisheries research	2 yearly
Sudan	N/A	N/A	N/A
Swaziland	N/A	N/A	N/A
Syrian Arab Republic	N/A	N/A	N/A
Thailand	N/A	N/A	N/A
Trinidad and Tobago	N/A	N/A	N/A
Uruguay	N/A	N/A	N/A
Venezuela	N/A	N/A	N/A

Table 7. Participation in international study or survey and survey of user needs for statistics (N/A signifies "not available" or "none exists")

Country or area	Participation in international study or survey		Survey of user needs for statistics	
	International study or survey	Type	User survey	Results
Argentina	Development of water resources in Salto Grande	Bilateral (with Uruguay)	N/A	N/A
Australia	OECD UNEP	Eutrophication; photochemical oxidant air pollution; waste management; survey of mercury use and of PCB use Review of environmental activities; marine pollution/conservation and protection of marine living resources; health of people and environment; ecosystems, sites and samples (national parks and reserves); genetic resources; desertification.	no national survey, but users consulted before creating specific data collection systems	planned integration sectoral survey into national system
Bahamas	N/A	N/A	N/A	N/A
Bhutan	N/A	N/A	N/A	N/A
Bolivia	N/A	N/A	N/A	N/A
Botswana	N/A	N/A	N/A	N/A
Brazil	UNEP/ECLA IBGE/SUPREN	Inventory of Brazilian environmental problems Seminar on environmental problems of Rio de Janeiro: pollutants and other environmental elements	yes	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Type	Survey of user needs for statistics	
	International study or survey	International study or survey		User survey	Results
Burma	N/A	N/A	N/A	N/A	N/A
Burundi	N/A	N/A	N/A	N/A	N/A
Cameroon, United Republic of	N/A	N/A	N/A	N/A	N/A
Chile	UNDP/BID regional project	Centre for study of development of arid and semi-arid zones	N/A	N/A	N/A
	UNTCED	Water resources			
	FAO	Forestry			
	FAO	Agrarian reform			
	FAO	Soil conservation			
	FAO	Fisheries			
	IAEA	Exploration for uranium			
	FAO	Resources catalogue			
	UNESCO	Environmental education			
	PNAN/PIA	Food and nutrition			
	UNEP/ECLA	Inventory of environmental problems			
	Seminars/studies	Desertification, environmental problems, legislation, national parks			
Cook Islands	N/A	N/A	N/A	N/A	N/A
Costa Rica	N/A	N/A	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A	N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Survey of user needs for statistics	
	International study or survey	Type	User survey	Results
Ecuador	UNEP/WHO/WMO/ UNESCO REDPANAIRE	1978 programme of global monitoring of water quality Five stations for observations	N/A	N/A
El Salvador	N/A	N/A	N/A	N/A
Gambia	N/A	N/A	N/A	N/A
Guatemala	ICATTI	Industrial technology	N/A	N/A
Guinea-Bissau	N/A	N/A	N/A	N/A
India	United Nations conferences Regional project MONEX 1979	Conference on human environment, Stockholm; Habitat, Vancouver; desertification, Nairobi; mangrove ecology (planned) Seismicity and seismotectonics - Zagros, Hindukush, Karakoram, Himalayan, Arakan ranges, Anatolia Monsoon experiment 1979	N/A	N/A
Iran	Conferences	1970 Ramsar, IUCN; 1975 Persepolis, IUCN	N/A	N/A
Iraq	N/A	N/A	N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Survey of user needs for statistics	
	International study or survey	Type	User survey	Results
Israel	Exchange of information, research projects, conferences UNEP IUCN	Habitat, pollution of Mediterranean, desertification, water, environmental education IFS Native conservation	N/A	N/A
Japan	OECD, Environment Committee UNDP seminar on earth monitoring and selected industries	Review of environment policy: standards, compensation for damages, development, influence on economy Monitoring on resources, pollution and natural disasters	N/A	N/A
Jordan	N/A	N/A	N/A	N/A
Kenya	N/A	N/A	N/A	N/A
Korea, Republic of	N/A	N/A	N/A	N/A
Kuwait	UNEP	GEMS	N/A	N/A
Lesotho	N/A	N/A	N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Survey of user needs for statistics	
	International study or survey	Type	User survey	Results
Malawi	N/A	N/A	N/A	N/A
Malaysia Peninsular Malaysia	UNEP UNESCO	GEMS MABS Hydrology/Biology	Survey of hydrological data for water resources development projects	Upgrading of data bank creation of data bank in Dept. of Drainage and Irrigation
Sebah	N/A	N/A	N/A	N/A
Sarawak	N/A	N/A	N/A	N/A
Mauritius	Seminar on environment, 1977	Organized by ENDA (Environment Development Action) and Ministry of Agriculture, Natural Resources and Environment	ad hoc surveys by various bodies, e.g. Central Water Author.	N/A
Mexico	UNEP	Development projects	N/A	N/A
Maldives	N/A	N/A	N/A	N/A
Nepal	N/A	N/A	N/A	N/A
New Zealand	N/A	N/A	N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Type	Survey of user needs for statistics	
	International study or survey			User survey	Results
Oman	N/A	N/A		N/A	N/A
Panama	REDPANAIRE/CEPIS WMO	Air quality Water resources		N/A	N/A
Papua New Guinea	N/A	N/A		N/A	N/A
Paraguay	UNEP/ECLA/SENASA United Nations conferences	Seminar on environmental problems in Paraguay Habitat, Asunción and Vancouver 1976; Water, Lima and Mar del Plata 1977		N/A	N/A
Philippines	UNEP	IRPTC		Inventory of natural resources	Aim to consolidate data on resources and make available in form required by decision makers, resource managers and development planners
Samoa	United Nations conference	Water Conference		N/A	N/A
Sao Tome and Principe	N/A	N/A		N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Survey of user needs for statistics	
	International study or survey	Type	User survey	Results
Saudi Arabia	N/A	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A	N/A
Singapore	N/A	N/A	N/A	N/A
Southern Rhodesia	N/A	N/A	N/A	N/A
Sri Lanka	UNDP/UN/ESCAP UN/ESCAP UNDP	Task Force on Human Environment Water Conference Agricultural meteorological project 20 agro-climatic stations	N/A	N/A
Sudan	N/A	N/A	N/A	N/A
Swaziland	N/A	N/A	N/A	N/A
Syrian Arab Republic	N/A	N/A	N/A	N/A

Table 7 (continued)

Country or area	Participation in international study or survey		Type	Survey of user needs for statistics	
	International study or survey			User survey	Results
Thailand	N/A	N/A		N/A	N/A
Trinidad and Tobago	N/A	N/A		N/A	N/A
Uruguay	N/A	N/A		N/A	N/A
Venezuela	N/A	N/A		N/A	N/A

Table 8. Natural resources
(N/A signifies "not available" or "none exists")

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Argentina	hydrology	WMO	water: meteorological data, e.g. snowfall, water, solids in suspension and solution	Agua y Energía Eléctrica	aid for disasters
	forestry	FAO	forests	Instituto Forestal Nacional	services for emergencies and disasters
Argentina	minerals	UNCTAD, ITAL-MINIÈRE, US Bureau of Metal Statistics, Inc	minerals	Secretaría de Estado de Minería	social services
	Fisheries, catches, species production etc.	FAO	coal	Yacimientos Carboníferos Fiscales	losses and damages by fires and storms
Australia	water: flows and use	WMO, ESCAP	petroleum and gas	Yacimientos Carboníferos Fiscales	
			water: use, pollution	Instituto de Economía, Legislación y Administración del Agua	
Australia	water: flows and use	WMO, ESCAP	storm damage	Comisión Nacional de Investigaciones Espaciales	
			water pollution	Administración General des Obras Sanitarias	
Australia	water: flows and use	WMO, ESCAP	rural industries	ABS	earthquakes

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Australia (continued)	forests: areas, re- movals, fires	FAO	agriculture: struc- ture, rural land use	ABS	floods
	minerals: explora- tion, mining	UN, OECD, FAO, ESCAP	livestock and live- stock products	ABS	droughts
	land, soils: agri- cultural production	FAO	crops	ABS	fires (forest)
	National Parks	IUCN	agricultural improve- ments and practices	ABS	cyclones
	fauna and flora: endangered species	United Nations Convention on International Trade in Endan- gered Species of Wild Fauna and Flora	value of agricultural production and fin- ancial statistics	ABS	
			forestry and fishing	ABS	
			general industry	ABS	
			mining	ABS	
			internal trade	ABS	
Bahamas	N/A	N/A	N/A	N/A	N/A
Bhutan	N/A	N/A	N/A	N/A	N/A
Bolivia	N/A	N/A	N/A	N/A	N/A
Botswana	N/A	N/A	N/A	N/A	fires(1975-1976)

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Brazil	N/A	N/A	minerals: reserves and production vegetation fisheries	Ministério das Minas e Energia Instituto Brasileiro de Desenvolvimento Florestal SUDEPE	Ministry of Interior - special group for assistance in public disasters displaced population epidemics, damage from catastrophes
Burma	mineral resources forest products water reserves soil types	United Nations FAO FAO FAO	radioactive minerals soil types, land use forests water use minerals	Central Research Organisation Land Use Dept. Forest Dept. Irrigation Depts. Ministry of Mines	natural catastrophic phenomena fires
Burundi	N/A	N/A	N/A	N/A	N/A
Cameroon, United Republic of	N/A	N/A	N/A	N/A	N/A
Chile	land use national parks fisheries	FAO FAO FAO	land use forestry climatology water	SAG-IREN CONAF Of. Meteorológica Dir. Aguas, MOP, ENDESA	forest fires droughts earthquakes tsunamis

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Chile (continued)			fisheries climatology	IFOP Estaciones Agro-met., SAG	fires, explosions floods major accidents interruptions of services toxic gases epidemics vulcanism atomic radiation
Cook Islands	N/A	N/A	land use, protected lagoons	N/A	N/A
Costa Rica	N/A	N/A	N/A	N/A	N/A
Cyprus	soils water resources land use agriculture and livestock natural resources and environment	FAO FAO, UNEP, UNESCO FAO FAO FAO, Council of Europe	soil surveys, land capability classification fresh water: supply, irrigation, hydro-geological data sea water	Dept. of Agriculture Depts. of Agriculture, Water Development and Geological Surveys, Fisheries Dept. Fisheries Dept.	earthquakes, seismic data droughts, hail, frost, floods, wind, storms forest fires

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Cyprus (continued)	forest resources	FAO, ECE	metallic minerals	Dept. of Geological Surveys	
	fish production	FAO			
Ecuador	water/air monitoring	REDPANAIRE	petroleum minerals	Min. de Recursos Naturales Min. de Recursos Naturales	emergencies, civil defence
El Salvador	climatology, meteorology	United Nations, WMO, OAS	water	Dirección General de Recursos Naturales Renovables	droughts
	hydrological data	FAO	land, soils - including agricultural classifications forestry fisheries		
Gambia	land use	FAO	N/A	N/A	droughts
	fish catches	FAO			
Guatemala	N/A	N/A	natural resources	DIRENARE	emergencies
			meteorology, hydrology, seismology, vulcanism	INSIVUMEH	
			forestry	INAFOR	

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Guinea-Bissau	N/A	N/A	N/A	N/A	N/A
India	minerals	ESCAP	soil: classification etc.	All-India Land Use and Soil Survey Organization	cyclones
	rainfall	UNESCO, ESCAP, WHO, GTS	precipitation	Meteorological Dept.	floods
	endangered species, flora and fauna	UNESCO			earthquakes
	land use, forests	FAO			droughts
Iran	waterfowl	IWRB	water pollution	DOE	N/A
			air pollution	DOE	N/A
			noise level	DOE	N/A
			wildlife refuges	DOE	N/A
			national parks	DOE	N/A
			protected areas	DOE	N/A
			soil, pesticides	DOE	N/A
Iraq	N/A	N/A	N/A	N/A	N/A
Israel	N/A	N/A	N/A	N/A	N/A
Japan	industry	United Nations	minerals	MITI	N/A
	commodities	United Nations			

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Jordan	N/A	N/A	N/A	N/A	N/A
Kenya	environment	UNEP	N/A	N/A	N/A
	agriculture	FAO			
	mining	United Nations			
	fuel and power	United Nations			
Korea, Republic of	N/A	N/A	N/A	N/A	N/A
Kuwait	N/A	N/A	N/A	N/A	N/A
Lesotho	N/A	N/A	N/A	N/A	N/A
Malawi	N/A	N/A	N/A	N/A	N/A
Malaysia; Peninsular Malaysia	forestry	FAO, UNDP	minerals	Mines Dept.	fires
	meteorology	WMO	petroleum and natural gas		earthquakes
	agriculture	FAO	water supply	Public Works Dep	tsunamis
	hydrology	UNESCO	irrigation	DID	floods droughts

Table (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Malaysia (continued): Sabah	N/A	N/A	fisheries agriculture forestry soils and minerals N/A	Fisheries Dept. Agriculture Dept. Forestry Dept. Geological Dept. N/A	meteorological data N/A
Sarawak	N/A	N/A	N/A	N/A	N/A
Maldives	N/A	N/A	N/A	N/A	N/A
Mauritius	general	United Nations	N/A	N/A	N/A
Mexico	N/A	N/A	water vegetation land use, soils minerals	DETENAL DETENAL DETENAL DETENAL	disaster relief
Nepal	N/A	N/A	N/A	N/A	N/A
New Zealand	N/A	N/A	N/A	N/A	N/A
Oman	N/A	N/A	N/A	N/A	N/A
Panama	N/A	N/A	N/A	N/A	N/A
Papua New Guinea	N/A	N/A	N/A	N/A	N/A

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Paraguay	N/A	N/A	water meteorology	Dirección General de Estadística y Censos Dirección General de Estadística y Censos	droughts floods damage to agriculture from storms
Philippines	N/A	N/A	minerals, inventories, resource degradation forestry resources	DNR, Bureau of Mines, Natural Resources Management Centre Bureau of Forest Development	storms earthquakes typhoons weather modification
Samoa	ground water meteorology minerals	UNTCO UNTCO UNTCO, ESCAP	minerals water	Bureau of Fisheries and Aquatic Resources CCOP/SOPAC, New Zealand DSIR New Zealand DSIR, Government	hurricanes fires
	fisheries forests	FAO FAO			

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Sao Tome and Principe	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	N/A	N/A	N/A	N/A	droughts, fires
Seychelles	N/A	N/A	N/A	N/A	N/A
Singapore	agriculture; land use fisheries fertilizers	FAO FAO SEAFDEC, FAO	N/A	N/A	N/A
Southern Rhodesia	minerals	United Nations	forests soils water minerals hydroelectricity	Forestry Commission Ministry of Lands and Natural Resources Min. of Lands and Natural Resources Ministry of Water Development Ministry of Mines Ministry of Transport and Power	rainfall drought

Table 8 (continued)

Country or area	Statistics reported to international agencies		Type of natural resources statistics collected	Agency	Type of statistics collected on natural catastrophic phenomena
	Type	Agency			
Sri Lanka	minerals, energy	United Nations	water: rainfall, irrigation	Dept. of Meteorology and Irrigation	meteorology
	fisheries	FAO	forestry	Forest Dept.	earthquakes
	forestry	FAO	human settlements and land use	Dept. of Agriculture	droughts
	water	World Water Conference	energy	Electricity Board	floods
Sudan	N/A	N/A	minerals	Geological Survey Dept.	cyclones
	forestry	FAO	fisheries	Dept. of Fisheries	
Swaziland	agriculture	FAO	minerals	N/A	N/A
		FAO	rainfall	CSO	N/A
			livestock	Ministry of Works, Power and Communication	
			farm products	Ministry of Agriculture	
Syrian Arab Republic	N/A	N/A		CSO	
Thailand	N/A	N/A		N/A	N/A
Trinidad and Tobago	N/A	N/A		N/A	N/A
Uruguay	N/A	N/A		N/A	N/A
Venezuela	N/A	N/A		N/A	N/A

Table 9. Human settlements and land use
(N/A signifies "not available" or none exists")

Country or area	Statistics reported to international agencies		Other statistical data collected		
	Type	Agency	Topic	Type of data	Agency responsible
Argentina	N/A	N/A	Wildlife	Statistics on exportation of wildlife products and geographic distribution of <u>immigrant species</u>	Dirección Nacional de Fauna Silvestre
Australia	Census information on population, housing and the area of urbanized land	United Nations, FAO	National land use patterns	Activity locations	Commonwealth Scientific, and Industrial Research Organization; Dept. of Environment, Housing and Community Development
Bahamas	N/A	N/A	Waste disposal Protected sites	Quantities Site descriptions	INACD Australian Heritage Commission, Dept. of Administrative Services
Bhutan	N/A	N/A	Wildlife management	Species counts	Australian National Parks and Wildlife Service, CSIRO.
Bolivia	N/A	N/A	N/A	N/A	N/A
Botswana	N/A	N/A	Land use	Under Tribal Grazing Land Policy, a comprehensive survey of all factors affecting the land use has been carried out since 1970.	N/A
Brazil	Demographic, economic and social census information (decennial and quinquennial) and annual current statistics	United Nations, FAO, WHO	Land use	Farming operation	IBGE - Instituto Nacional de Geografia e Reform Agraria
Burma	N/A	N/A	Population	Population and housing characteristics	IBGE - Banco Nacional de Habitação
Burundi	N/A	N/A	N/A	N/A	N/A
Cameroon, United Republic of	N/A	N/A	N/A	N/A	N/A
Chile	Census information on population, housing and agriculture, coverage of potable water supply and sewerage systems	United Nations	Forestry plantations National parks Land use	Species, location, area Areas, protection installations, visitors Encroachment of urban areas on agricultural land Study at the national level of land available for human settlements Plans to limit and regulate urban areas (approximately 500 localities)	CONAF (Corporación Nacional Forestal) CONAF (Corporación Nacional Forestal) SAG (Servicio Agrícola y Ganadero)
Cook Islands	N/A	N/A	Urban planning Health	Human, notifiable, transmissible diseases	MINVI (Ministerio de la Vivienda y Urbanismo) MINVI (Ministerio de la Vivienda y Urbanismo) SNS (Ministerio de Salud, Servicio Nacional de salud)
Costa Rica	N/A	N/A	N/A	N/A	N/A
Cyprus	National report on human settlements Future patterns and forms of human settlements (Cyprus monograph)	United Nations, Habitat ECE	N/A	N/A	N/A

Table 9 (continued)

Country or area	Statistics reported to international agencies		Other statistical data collected		
	Type	Agency	Topic	Type of data	Agency responsible
Ecuador	N/A	N/A	N/A	N/A	N/A
El Salvador	N/A	N/A	Actual and potential use of soil	Loss of soil, in kilograms, by utilizing stacks for harvested produce Gross and net water erosion, in metric tons Uses: hedges, borders, banked terraces, irrigation ditches, individual terraces by hectares cultivated, determining in some regions, the income by type of crop cultivated Quantification of forest resources by species and hectares for the elaboration of management plans	Dirección General de Recursos Naturales Renovables Dirección General de Recursos Naturales Renovables Dirección General de Recursos Naturales Renovables
Gambia	Housing	N/A	Water supply Wildlife Protected sites	Water supply to urban and suburban areas Wildlife management Forest reserves	Dirección General de Recursos Naturales Renovables
Guatemala	N/A	N/A	Potable water Sewage and excreta disposal	Population covered Capital investment	Gambia Utilities Corp. Forestry Department Forestry Department
Guinea-Bissau	N/A	N/A	N/A	N/A	División de Saneamiento Ambiental División de Saneamiento Ambiental
India	Housing stock and housing conditions Size and distribution of human settlements Current house building activity	United Nations United Nations United Nations	Land Water Protected sites Wildlife	Land use patterns Water supply N/A N/A	Ministry of Agriculture Local authorities Archaeological Survey of India Zoological Survey of India, Department of Forests
Iran	N/A	N/A	Land use, national Water supply Waste disposal Wildlife Protected areas	Number of houses, area of land use Water consumption and water supply Volume of waste Wildlife management, number of wildlife and area where living Identification of areas protected	Ministry of Housing and Urban Development Ministry of Energy Municipalities Department of the Environment Department of the Environment
Iraq	N/A	N/A	N/A	N/A	N/A
Israel	N/A	N/A	N/A	N/A	N/A
Japan	Data on construction	United Nations	Land use, national Water	National land use, land transactions Supply and demand	National land agency National land agency
Jordan	N/A	N/A	N/A	N/A	N/A
Kenya	N/A	N/A	Land use Water Wildlife Protected sites	Population pressure (density) Deforestation - area Soil erosion - area Drought - area Settlements - area Water supply Wildlife management N/A	Central Bureau of Statistics National Environment Secretariat Central Bureau of Statistics KIPRO
Korea, Republic of	N/A	N/A	N/A	N/A	N/A
Kuwait	N/A	N/A	N/A	N/A	N/A
Lesotho	N/A	N/A	N/A	N/A	N/A
Malawi	N/A	N/A	N/A	N/A	N/A

Table 9 (continued)

Country or area	Statistics reported to international agencies		Other statistical data collected	
	Type	Agency	Topic	Type of data
Malaysia: Peninsular Malaysia	Census data on population and housing sewerage, water supply and environmental sanitation WILDLIFE statistics	United Nations WHO	Historical sites Land use Land settlement schemes	Historical data National land use patterns Human settlement
		IUCN (International Union for Conservation of Nature and Natural Resources)	Human settlement	General
		N/A	Rural Centre Planning	Rural development
		N/A	Land use patterns	Distribution of population density
		N/A	N/A	N/A
Sabah	N/A	N/A	N/A	N/A
Sarawak	N/A	N/A	N/A	N/A
Maldives	N/A	N/A	N/A	N/A
Mauritius	N/A	N/A	N/A	N/A
Mexico	Urban growth Number of persons per dwelling, number of persons per room, dwellings with water supply, dwellings with drainage, construction materials of dwellings	N/A	Urban mapping(1:5000)	Urban cadastral surveys
		N/A	Studies of the suitability of land for urban use	Planned area, services and infrastructure
		N/A	Topographic mapping (1:50000)	Highways linking populated centres, establishments and systems for the supply of water, services, communication and transport
		N/A	Land use mapping (1:50000)	Agricultural activities and their distribution
		N/A	Land use	Actual use
		N/A	Modification of use	Supply
		N/A	Quality	Quality
		N/A	Treatment	Treatment
		N/A	N/A	N/A
		N/A	N/A	N/A
Hopal New Zealand	N/A	N/A	Forest Water supply	Land classifications, forest scenic reserves national parks Rural water supply Analysis of type of public water supply and size of community serviced
		N/A	Rural properties	Survey of distribution and uses, farming statistics Human settlement data
Papua New Guinea Paraguay	N/A	N/A	Census of population and dwellings	Soil conservation schemes
		N/A	Flood control	Cost benefit analysis
		N/A	Land improvement schemes	N/A
		N/A	Irrigation schemes	N/A
		N/A	N/A	N/A
		N/A	Urban development planning	Land use, socio-economic structure, urban/rural interrelationship
		N/A	Sanitation	Supply of water, disposal of excreta and garbage, hygienic quality of food
		N/A	N/A	Hygienic quality of food
		N/A	N/A	N/A
		N/A	N/A	N/A

Table 9 (continued)

Country or area	Statistics reported to international agencies		Other statistical data collected		
	Type	Agency	Topic	Type of data	Agency responsible
Philippines	Ad hoc, on request	N/A	Land use plan Resource management Growth centres policy Tourism development Industrial dispersal programme Social services programmes Infrastructure and support services Regional plans Hierarchy of settlements Forestry model Transportation model Industrial location model Agricultural model	Secondary	Human Settlements Commission Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm. Human Settlements Comm.
Somoe	Statistics on land use	FAO	Waste disposal Water supply	Sanitary facilities Individual	Sanitation, Health Dept. Public Works Dept.
Sao Tome and Principe	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	N/A	N/A	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A	N/A	N/A
Singapore	N/A	N/A	N/A	N/A	N/A
Southern Rhodesia	Population (main urban areas and rural areas)	United Nations	Wildlife management	Annual reports	Department of National Parks and Wildlife Management
Sri Lanka	Land acreage under tea, rubber, coconuts, rice, subsidiary food crops and forest Statistics related to irrigation planning, farm planning, rural and physical planning	FAO UNDP	Water supply	Annual reports	Ministry of Water Development
			Land use patterns	Annual reports	Ministry of Lands and Natural Resources
Sudan	Land acreage under tea, rubber, coconuts, rice, subsidiary food crops and forest Statistics related to irrigation planning, farm planning, rural and physical planning	FAO UNDP	Land use	Acreage under cultivation, forests, settlements, arable land, youth settlement schemes, highland colonization schemes, distribution of land to peasants under village expansion projects	Department of Agriculture, Land Development Department, and the Mahaveli Development Board
			Water supply	Irrigation (capacities)	Irrigation Department, Water Supply and Drainage Board
Swaziland	Data on area under cereals	N/A FAO	Wildlife Population distribution Land use Terracing, fencing etc. in rural development areas	Varieties and number N/A Decennial census Statistics by region Data for rural development areas	Department of Wildlife N/A Central Statistical Office Central Statistical Off. Ministry of Agriculture, RDA programme

Table 9 (continued)

Country or area	Statistics reported to international agencies		Other statistical data collected		
	T Y P E S	A G E N C Y	T O P I C	Type of data	Agency responsible
Syrian Arab Republic	N/A	N/A	Land use Water supply Waste disposal Protected sites	National land use patterns N/A N/A N/A	Central Bureau of Statistics Cent. Bur. of Statistics Cent. Bur. of Statistics Cent. Bur. of Statistics
Tuvalu	Human settlements	United Nations	N/A	N/A	National Economic and Social Development Board
Trinidad and Tobago	N/A	N/A	N/A	N/A	N/A
Uruguay	N/A	N/A	N/A	N/A	N/A
Venezuela	N/A	N/A	N/A	N/A	N/A

Table 10. Pollution
 (N/A significa "not available" or "none exists")

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Argentina	air pollution particulates SO ₂ in suspension	WMO, OSP WMO, OSP WMO	air pollutants liquid effluents: industrial, sewage	Dirección Nacional de Saneamiento Ambiental Admin. General de Obras Sanitarias	N/A
Australia	ad hoc	OECD, UNEP	water: quality and treatment radiation air concentrations visual noise, airports hazardous substances land waste marine waste, dumping	DEHCD, AWRC ARL DEHCD, CSIRO, DOT DEHCD, AHC DOT DEHCD, DOH CSIRO, DEHCD DEHCD	State standards NHMRC Poisons Schedule Uniform Standard Reporting of Atmospheric Data, for air quality
Bahamas	N/A	N/A	N/A	N/A	N/A
Bhutan	N/A	N/A	N/A	N/A	N/A
Bolivia	N/A	N/A	N/A	N/A	N/A
Botswana	N/A	N/A	nitrate levels in water pollution from mining operations	Geological Survey Department Geological Survey Department	N/A
Brazil	N/A	N/A	air, water, noise	FEEMA-SJ, CETESB-SP, CEPED-BA, F.J.P.-MG	Air quality standards, for suspended particulates, SO ₂ , CO, photochemicals

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Burma	N/A	N/A	N/A	N/A	N/A
Burundi	N/A	N/A	N/A	N/A	N/A
Cameroon, United Rep. of	N/A	N/A	N/A	N/A	N/A
Chile	medical air pollution	Org. Panamericana de Salud REDPANAIRE	bacteria in water bacteria in food air pollution	Min. Salud Min. Salud SNS	N/A
Cook Islands	N/A	N/A	N/A	N/A	N/A
Costa Rica	N/A	N/A	N/A	N/A	N/A
Cyprus	pollutants from land-based sources beach pollution heavy metals pollution sources in industries, municipalities	ECE WHO, UNEP FAO, UNEP UNEP, ECE, WHO	water pollution: chemical, biological, microbiological industrial pollution in work environment	Water Development Dept., Ministry of Health Ministry of Labour and Social Insurance	Dangerous Substances List
Ecuador	pollutants	REDPANAIRE	N/A	N/A	feasibility project of reference levels for air quality
El Salvador	air/rainfall, pollutants, turbidity	WMO	use of pesticides, concentrations in air and water	Dirección General de Recursos Naturales Renovables	N/A
Gambia	N/A	N/A	N/A	N/A	N/A
Guatemala	air pollution sewage drainage	WMO WMO WMO	N/A	N/A	WMO and ICATTI standards

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Guinea-Bissau	N/A	N/A	general	N/A	N/A
India	N/A	N/A	water pollution	Central and State Boards for Prevention and Control of Water Pollution	N/A
Iran	N/A	N/A	air pollution, dust, CO, HC, NO _x , SO ₂ water pollution, HM, BOD, COD, microbio., NO ₃ , NO ₂ pesticides, DDT, DDE	DOE DOE DOE	N/A
Iraq	N/A	N/A	N/A	N/A	N/A
Israel	N/A	N/A	toxic residues solid wastes water quality air quality, noise, soiling, airports, SO _x , NO _x	Agriculture and Health Ministries Interior and Health Ministries Water Authorities, Health Ministry EFS, local municipalities, Health Ministry	N/A
Japan	N/A	N/A	wastes: industrial and domestic water quality, toxic substances, BOD, COD coriformus etc.	Environment Agency MITI	wastes, water quality, air pollution control law for factories and establishments and for automobile exhausts

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Japan (continued)			air pollution, photochemicals, particulates, SO ₂ , NO ₂ , CO	Ministry of Agriculture and Forestry	
Jordan	N/A	N/A	water contaminants sewage, toxicity	Natural Resources Authority Municipality of Amman	N/A
Kenya	N/A	N/A	N/A	N/A	N/A
Korea, Republic of	N/A	N/A	air pollution in major cities: CO, HC, SO ₂ , NO _x , O _x water pollution in 4 major rivers: PH, DO, BOD	cities and provinces cities and provinces	air pollutants, water pollutants
Kuwait	air and water pollution control	UNEP/GEMS	air/water pollution abatement procedures, engineering methods	Shuaiba Area Authority Shuaiba Area Authority	codes of practice and environmental guidelines
Lesotho	N/A	N/A	N/A	N/A	N/A
Malawi	N/A	N/A	N/A	N/A	N/A
Malaysia: Peninsular Malaysia	meteorological data	National Climatic Centre, USA	air and water quality, discharge water, microbiological	DOE universities	N/A
Sabah	N/A	N/A	water, soil, air pollution, biological and chemical	Ministry of Manpower and Environment Development	N/A
Sarawak	N/A	N/A	N/A	N/A	N/A

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Maldives	N/A	N/A	N/A	N/A	N/A
Mauritius	general	N/A	N/A	N/A	under way
Mexico	monitoring data	OSP	waste discharges soil degradation	SARH DEFENAL	N/A
Nepal	N/A	N/A	N/A	N/A	N/A
New Zealand	N/A	N/A	N/A	N/A	N/A
Oman	N/A	N/A	N/A	N/A	N/A
Panama	N/A	N/A	N/A	N/A	N/A
Papua New Guinea	N/A	N/A	N/A	N/A	N/A
Paraguay	N/A	N/A	air pollution concentrations/intensities water, industrial discharges water, industrial discharges	municipalities Servicio Nacional de Saneamiento Ambiental Universidad Nacional de Asunción	N/A
Philippines	air pollution concentrations, Manila	WHO	water pollution: industrial discharges, pesticide concentrations air pollution: emissions, volumes, concentrations	National Pollution Control Commission NPCC, Atmospheric Geophysical and Astronomical Services	Classification of industries by pollutive/hazardous categories

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Philippines (continued)			solid waste: volumes, pesticides activities noise pollution, levels in urban areas air/water pollution, quality, noise pollution, solid waste collection/disposal system and recycling	Metro. Manila Commission, NPCC FPIA NPCC NPCC Human Settlements Commission	
Samoa	N/A	N/A	N/A	N/A	planned for future development projects
Sao Tome and Principe	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	N/A	N/A	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A	N/A	N/A
Singapore	ambient air monitoring data	UNEP, WHO	air monitoring	Anti-Pollution Unit	N/A
Southern Rhodesia	N/A	N/A	N/A	N/A	Atmospheric pollution prevention, code of noxious gases

Table 10 (continued)

Country or area	Statistics reported to international agencies		Types of pollution statistics collected	Agency	Classification of pollutants, type and content
	Type	Agency			
Sri Lanka	water	World Water Conference	discharge of toxic wastes, industrial effluents	Dept. of Industries	N/A
			water pollution abatement	Water Resources Board, Irrigation Dept.	
			air and water pollution	Labour Dept., Inst. of Scientific and Industrial Research	
			air borne particulates	Health Department	
Sudan	N/A	N/A	N/A	N/A	N/A
Swaziland	N/A	N/A	N/A	N/A	N/A
Syrian Arab Republic	N/A	N/A	N/A	N/A	N/A
Thailand	N/A	N/A	air and water pollution, industrial waste discharges	Ministry of Industry	N/A
			toxic wastes	Applied Science Research Centre	
Trinidad and Tobago	N/A	N/A	N/A	N/A	N/A
Uruguay	N/A	N/A	N/A	N/A	N/A
Venezuela	N/A	N/A	N/A	N/A	N/A

Table 11. Other specific statistical activities in the field of environment^{a/}

Country or area	Activity
Argentina	Standards/modelling
Australia	Integration of states' activities into national programme
Chile	National study of disposal of wastes and residues Studies of pollution by industrial wastes - selected sites Study of water discharges and health effects Study of pesticides accumulation in food chains Study of coastal pollution
Ecuador	First stage of programme for prevention and control of air, water, soil pollution National health study 1978-1979
Guatemala	Rural health programme for physical environment, re water quality, sewage disposal, improvement of housing
Israel	Interactions between population dispersion policies and impact on environment Environment impact studies
Malaysia, Peninsular	Population Industries Crop-cutting tests Agriculture census Motor vehicles Development activities (Third Malaysia Plan)
Paraguay	Ecological studies on impact of hydroelectric projects Study of subterranean water Establishment of national parks and reserves
Philippines	Baseline ecosystem data

Table 11 (continued)

country or area	Activity
Southern Rhodesia	Health and educational facilities Dwellings

a/ Specific responses to question 12 of the United Nations questionnaire (see annex II below).

Table 12. Unmet needs for environment statistics
 (N/A signifies "not available" or "none exists")

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
Argentina	<p>1) Initiate as detailed as possible a base of information on those thematic subjects included in concept of environment, including definitions and classifications, which do not duplicate existing statistics, i.e. areas of information which until now were not provided.</p> <p>2) Specific data and background references on pollution.</p> <p>3) Co-ordination of available data to highlight existing deficiencies in data for environmental study, especially in reference to levels of spatial disaggregation and periodicity.</p>	<p>Comisión Nacional de Investigaciones Especiales in 1978 beginning study of effects of pollution on ozone depletion.</p>	<p>As per column 1.</p>
Australia	<p>1) Statistical base to help gain national overview of the state of the environment</p> <p>2) Specific needs: emission inventories economic statistics on pollution control and damage costs data on environmentally hazardous chemicals</p>	<p>No comprehensive plan but study of environmental statistics in Australia to be conducted by DEHCD; aims to compile and comment on available statistics not yet collated on national basis. First step towards development of comprehensive statistical base.</p> <p>Several projects to improve the statistical base for specific environmental components: (a) GEMS - plans for atmospheric baseline station in Tasmania; (b) Hazardous chemicals - national register proposed; (c) ecological survey-pilot study on South Australia completed (d) National Air Quality Data Centre (e) National Data Base of Marine Pollutants (f) LANDSAT: receiving station to be set up</p>	<p>Legislation proposed re marine management and uranium mining includes statistics: suggests need for national framework to gather, collect and synthesize environment statistics</p>

Table 12 (continued)

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
Bahamas	N/A	N/A	N/A
Bhutan	no specific effort yet made to collect and use statistics; establishment of agency to do this is under consideration in view of growth of townships and industries	new agency being considered	N/A
Bolivia	N/A	N/A	N/A
Botswana	no central organization to focus numerous data gathered in usable form.	establish central agency	N/A
Brazil	<p>definition of relevant conceptual values and attributes of natural resources and environment in order to fully understand statistical needs for development study.</p> <p>organize for natural resources and environment principal characteristics (quantities, qualities, absolute and relative values), definitions, classifications, indicators of abundance, scarcity, rates of use and exhaustion of resources.</p> <p>identify and define priorities and influences of natural resources on environment.</p> <p>organize information for ecological analysis and development of ecological statistics.</p> <p>publish yearbook of statistics on natural potential, including occurrence, distribution, frequency, numerical data, supply/demand, rates of use and waste of natural resources and influence of environment.</p>	<p>preliminary definition of specific elements (quantity, quality) of basic needs.</p> <p>priorities</p> <p>(a) conceptual framework and definitions</p> <p>(b) basic understanding of needs for statistics on ecological aspects</p> <p>(c) prepare, organize and publish data in preliminary form on natural wealth</p> <p>(d) present environmental aspects in yearbook, extension towards systematic coverage</p>	<p>at IBGE create and develop a special unit on the structuring, collection and presentation of statistics on natural resources and environment, to be gradually expanded as priorities emerge</p>
Burma	systematic studies not yet carried out	N/A	N/A
Burundi	N/A	N/A	N/A
Cameroon, United Rep. of	N/A	N/A	N/A
Chile	<p>water pollution</p> <p>domestic and industrial wastes</p> <p>use of pesticides and effects</p> <p>drinking water supply, disposal of sewage and solid wastes</p> <p>catalogue of renewable natural resources</p> <p>inventory of pollution of resources, quantities and impacts</p> <p>work-related illness</p>	<p>Working Group of INE and related bodies in process of elaborating a programme of environment statistics. Statistics on aspects of environment and related problems to be incorporated in present publications.</p>	<p>Working Group to continue to conduct meetings on development of environment statistics</p>

Table 12 (continued)

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
Chile (continued)	<p>creation and growth of arid zones and deserts</p> <p>intensity of solar radiation in relation to air pollution</p> <p>willingness of urban populations to help control pollution, by taxes, change of dwelling etc.</p> <p>levels of pollution emissions from fixed/mobile sources in major industrial cities</p> <p>loss of agricultural lands because of pollution and lack of urban planning</p>		
Cook Is.	N/A	N/A	N/A
Costa Rica	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A
Ecuador	<p>meteorology</p> <p>national health survey</p>	<p>statistics of environment part of programme 1978-1982 of statistical development of INEC: project will result in publications on environment statistics</p> <p>national health survey</p> <p>inventory of emissions and pollutants</p>	<p>basic data to be developed under continued programmes in this field</p>
El Salvador	<p>publication and distribution of bulletins</p>	<p>quarterly bulletin on air/rain pollution quantities</p>	N/A
Gambia	<p>data need to be gathered on:</p> <p>(a) fluctuation of ground water levels (seasonal and pumping)</p> <p>(b) fish population levels - migration and breeding</p> <p>(c) wildlife population levels</p> <p>(d) pesticide residue levels</p>	<p>data on ground water levels and fish population to be collected first</p> <p>no over-all programme envisaged</p>	<p>long-range planning of the Gambia River Basin, data being collected on rainfall, tides, river flow, salinity etc.</p>
Guatemala	<p>coverage of drinking water supply, drainage, sewage, foodstuffs, solid wastes</p> <p>environmental pollution</p> <p>human resources, health</p>	<p>Ministry of Public Health has project under way on environmental health</p>	N/A
Guinea-Bissau	<p>estimation of ground water resources</p> <p>studies of enlargement of Sahel dry zones</p> <p>pollution areas</p>	<p>no specific plans; under general statistics</p>	N/A

Table 12 (continued)

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
India	<p>establishment of air pollution monitoring network</p> <p>strengthening of networks for water quality monitoring, stream discharge gauging, upper air meteorology, flood forecasting, surface meteorological observation in remote areas, seismology</p> <p>special studies: soil nutrients and census of non-human primates</p> <p>co-ordination between agencies collecting statistics on human settlements</p>	<p>air quality assessment in major cities under way; Water Pollution Act in force, Air Pollution Act planned</p> <p>networks for water quality stream gauging, meteorology and seismology being strengthened</p> <p>under MAB programme, eco-ethological studies in South India</p> <p>co-ordination between agencies collecting information on human settlements</p>	<p>no plan for comprehensive publication on environment statistics: information system proposed in over-all framework of National Information System in Science and Technology</p>
Iran	<p>measurement of air pollutant emission from industries, motor vehicles, domestic and commercial sources, urban sources, noise pollution levels and sources, land use patterns, environmental impact study</p>	<p>priorities are: air pollution statistics, water pollution statistics, solid waste disposal, noise pollution levels, land use</p>	<p>annual statistical reports on all aspects of environment issued by DOE</p>
Iraq	N/A	N/A	N/A
Israel	<p>set of definitions, creation of data base, design of methodology, collection, analysis and dissemination of data</p> <p>internationally agreed framework for environment statistics</p>	<p>comprehensive data base</p>	N/A
Japan	<p>amount of generation of pollutants</p>	<p>surveys on generation of pollutants and national water quality</p>	N/A
Jordan	<p>air pollution</p> <p>classification of pollutants</p> <p>permissible industrial discharges</p>	N/A	N/A
Kenya	<p>coherent statistics system, especially for pollution, effects of human activities on plant and animal life</p> <p>inventory of land resources</p>	<p>inventory of available environmental resources</p> <p>changes to environment from "development" and cultural activities</p> <p>pollution</p>	N/A

Table 12 (continued)

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
Korea, Republic of	N/A	N/A	N/A
Kuwait	establish central agency for environment statistics establish scientific methods of data collection avoid duplication	Central Environment Protection Authority being set up	N/A
Lesotho	N/A	N/A	N/A
Malawi	N/A	N/A	N/A
Malaysia:			
Peninsular Malaysia	environment quality social aspects services physiological and psychological well-being safety	assessments of air, water, land quality and physiological, psychological well-being by DOE data on social aspects, safety, services being collected by various departments co-ordination of these efforts by DOE and the Dept. of Statistics	environmental impact assessment, especially physical data DOE feasibility study of environment data bank
Sabah	N/A	N/A	N/A
Sarawak	N/A	N/A	N/A
Maldives	N/A	N/A	N/A
Mauritius	to be assessed by central environment unit: surveys of various bodies to be integrated into a comprehensive framework	define unmet needs	N/A
Mexico	integrated data bank air, water, land pollution and endangered species data thematic mapping	national information system to integrate thematic data description of conceptual structure and technical parameters for environment statistics system: inventory of existing statistics	N/A
Nepal	N/A	N/A	N/A
New Zealand	N/A	N/A	N/A

Table 12 (continued)

Country or area	Priorities to fill unmet needs	Plans	Other plans and priorities
Oman	N/A	N/A	N/A
Panama	no over-all study of needs available	N/A	N/A
Papua New Guinea	extent of existing pollution use of toxic substances, pesticides etc.	N/A	N/A
Paraguay	central information body systematic data reviews for all agencies concerned with problems of environment	N/A	N/A
Philippines	storage/retrieval of epidemiological and toxicity data standards for toxicity chemical/physical conditions of toxicity/deficiency environmental problem perceptions and indicators of perceptions disutilities continuous data for measurement of environmental quality	statistics on pollution control of radioactivity on natural ecosystems (baseline data), toxic chemicals, materials balance survey comprehensive publication planned. NEPC report on environmental quality includes basic facts and statistics, diagnoses causes and effects of problems, projections and future trends	use of environment statistics in planning and formulation of environmental quality standards design of information system and storage/retrieval bank
Samoa	not yet examined	N/A	adviser need to assess requirements
Sao Tome and Principe	N/A	N/A	N/A
Saudi Arabia	N/A	N/A	N/A
Seychelles	N/A	N/A	N/A
Singapore	control of use of pesticides	pesticide types, amount used	N/A
Southern Rhodesia	data collected ad hoc to continue	N/A	N/A

Table 12 (continued)

Country or	Priorities to fill unmet needs	Plans	Other plans and priorities
Sri Lanka	statistics restricted especially to industrial pollutants no single unit to monitor environment statistics countrywide	National Water Resources Board plans compilation of statistics on water resources and environment UN task force on human environment to aid with priorities for collection of statistical information	N/A
Sudan	N/A	N/A	N/A
Swaziland	identification of statistics needed	N/A	N/A
Syrian Arab Republic	N/A	N/A	N/A
Thailand	N/A	N/A	N/A
Trinidad and Tobago	N/A	N/A	N/A
Uruguay	N/A	N/A	N/A
Venezuela	N/A	N/A	N/A

Table 13. Priorities for international recommendations on concepts, definitions and classifications in environment statistics (N/A signifies "not available" or "none exists")

Country or area	Priorities
Argentina	N/A
Australia	<p>analysis of existing national practices in data collection and environment control, to include:</p> <p>(a) comparison of existing national environmental data collection legislation;</p> <p>(b) comparison of standards or other control approaches for air, water and noise pollution.</p> <p>when national data collection systems become more firmly established, agreed formats and methods for data collection, to ensure as far as is practicable comparability between countries; to include:</p> <p>(a) identification of the broad subject area to be covered by any system of environment statistics;</p> <p>(b) classification schemes for these broad subject areas.</p>
Bahamas	N/A
Bhutan	recommendations on concepts, definitions and classification of statistics, and guide book on established standards
Bolivia	N/A
Botswana	standardization of terms
Brazil	<p>clear, simple statements of content and concepts</p> <p>classifications, criteria for development, priorities</p> <p>definition, factor by factor, of specific components</p> <p>interdependent set of concepts, definitions and classifications to be derived</p>
Burma	N/A
Burundi	N/A
Cameroon, United Rep. of	N/A
Chile	<p>pollution of air, water, soils, foodstuffs, water supply</p> <p>preservation and conservation of renewable natural resources</p>
Cook Is.	N/A

Table 13 (continued)

Country or area	Priorities
Costa Rica	N/A
Cyprus	N/A
Ecuador	<p>all aspects, including data collection, development of indicators to allow evaluation of measures against pollution etc.</p> <p>assistance in national development of appropriate statistics, especially methodological guidelines</p>
El Salvador	assistance on integration of statistics and methodologies
Gambia	more information on existing recommendations
Guatemala	clarification of definitions of statistics, especially with reference to health aspects
Guinea-Bissau	<p>study of drought phenomena</p> <p>study of ground water occurrence</p> <p>study of malaria</p>
India	<p>international recommendations on concepts, definitions and classifications relating to human settlements are generally available, similar recommendations are urgently needed with respect to pollution in relation to human activities and welfare, pollution related to production/processing of energy and non-energy minerals and quality of environmental reservoirs</p> <p>specific priority areas include: (a) pollution of natural resources - water, air, soil; (b) conservation of natural resources - forests, wildlife and marine life; (c) energy balances</p>
Iran	any general statistical report format would aid in co-ordination efforts of Department of the Environment
Iraq	N/A
Israel	<p>analysis of interrelationships between elements to derive indicators/parameters for use in environmental management</p> <p>incorporation of existing models and techniques of analysis (economic/social)</p>
Japan	N/A

Table 13 (continued)

Country or area	Priorities
Jordan	water, air, classification of pollutants
Kenya	<p>pollution: tolerable levels for air and water pollution and techniques/ standards for measuring pollution levels</p> <p>land use policies: human settlements compared with soil erosion and deforestation; new sources of energy; preservation policies in view of increasing need for new settlements, food and energy</p>
Korea, Republic of	N/A
Kuwait	<p>research in environmental protection, methods, national efforts, scientific bases of control</p> <p>environmental guidelines</p>
Lesotho	N/A
Malawi	N/A
Malaysia: Peninsular Malaysia Sabah Sarawak	<p>concepts, definitions, guidelines for classification of components and for establishment of a data bank</p> <p>N/A</p> <p>N/A</p>
Maldives	N/A
Mauritius	N/A
Mexico	to serve as a guideline, past work of the United Nations should be reformulated clearly and comprehensively to provide concepts, definitions, classifications and their interrelationships
Nepal	N/A
New Zealand	N/A
Oman	N/A
Panama	priorities for concepts, definitions and classifications, as well as conceptual framework and specification of each component element

Table 13 (continued)

Country or area	Priorities
Papua New Guinea	use and manufacture of toxic substances, pesticides etc. extent of air and water deterioration in other countries costs of pollution control, various technologies
Paraguay	N/A
Philippines	new technology on proper collection, storage, retrieval and analysis of statistics
Samoa	water supply, pollution food sewage disposal
Sao Tome and Principe	N/A
Saudi Arabia	N/A
Seychelles	N/A
Singapore	N/A
Southern Rhodesia	agreed definition of the environment and of the scope of environment statistics definition and agreed set of measures for pollution
Sri Lanka	soil water forests energy
Sudan	N/A
Swaziland	N/A

Table 13 (continued)

Country or area	Priorities
Syrian Arab Republic	social statistics
Thailand	N/A
Trinidad and Tobago	N/A
Uruguay	N/A
Venezuela	N/A

Table 14. Agencies responding to the questionnaire

Country or area	Reporting agency
Argentina	Instituto Nacional de Estadística y Censos
Australia	Department of Environment, Housing and Community Development
Bahamas	Department of Statistics
Bhutan	Directorate of Manpower and Statistics
Bolivia	Instituto Nacional de Estadística
Botswana	Department of Agricultural Field Services, Ministry of Agriculture
Brazil	Fundação Instituto Brasileiro de Geografia e Estatística, Diretoria de Formação e Aperfeiçoamento de Pessoal
Brunei	British High Commission ^{a/}
Burma	Central Statistical Organization
Burundi	Département des Etudes et Statistiques
Cameroon, United Republic of	Direction de la Statistique et de la Comptabilité Nationale
Cape Verde	Serviço Nacional de Estatística ^{a/}
Chile	Instituto Nacional de Estadísticas (and 17 other agencies)
Colombia	Departamento Administrativo Nacional de Estadística and Instituto de Recursos Naturales ^{a/}
Cook Islands	Central Planning Bureau
Costa Rica	Dirección General de Estadística y Censos
Cyprus	Ministry of Agriculture and Natural Resources
Ecuador	Instituto Nacional de Estadística y Censos and Instituto Ecuatoriano de Obras Sanitarias
El Salvador	Dirección General de Recursos Naturales Renovables
Fiji	Bureau of Statistics and Government Environmental Advisor ^{a/}
Gambia	Ministry of Economic Planning and Industry
Ghana	Central Bureau of Statistics and Environmental Protection Council ^{a/}
Guatemala	División de Saneamiento Ambiental, Ministerio de Salud Pública y Asistencia Social
Guinea-Bissau	Direcção-Geral de Estatística, Comissariado de Estado do Desenvolvimento Económico e Planificação
India	Department of Science and Technology and Central Statistical Organisation
Iran	Department of the Environment
Iraq	Central Statistical Organization, Ministry of Planning
Israel	Environment Protection Service
Jamaica	Department of Statistics
Japan	Office of Statistical Standards, Administrative Management Agency
Jordan	National Planning Council
Kenya	Central Bureau of Statistics

Table 14 (continued)

Country or area	Reporting agency
Korea, Republic of	Ministry of Health and Social Affairs
Kuwait	Shuaiba Area Authority
Lesotho	Bureau of Statistics
Malawi	National Statistical Office
Malaysia:	
Peninsular	Department of Statistics and Division of Environment, Ministry of Science, Technology and Environment
Sabah	Ministry of Manpower and Environment Development
Sarawak	Department of Statistics
Maldáves	Department of Information Broadcasting and Tourism
Mauritius	Central Statistical Office and Ministry of Agriculture, Natural Resources and Environment
Mexico	Dirección General de Ecología Urbana and Dirección General de Estudios del Territorio Nacional
Nepal	Central Bureau of Statistics
New Zealand	Department of Statistics
Oman	Directorate General of National Statistics
Pakistan	Statistics Division, Ministry of Finance and Planning and Environment and Urban Affairs Division, Ministry of Housing and Works ^{a/}
Panama	Dirección de Estadística y Censo, Contraloría General de la República
Papua New Guinea	Office of Environment and Department of Natural Resources
Paraguay	Dirección General de Estadística y Censos
Philippines	National Census and Statistics Office
Qatar	Ministry of Information ^{a/}
Rwanda	Division de Documentation et Information, Ministère du Plan ^{a/}
Samoa	Department of Statistics
Sao Tome and Principe	Repartição dos Serviços de Estatística
Saudi Arabia	Central Department of Statistics
Seychelles	Statistical Commissioner's Office
Singapore	Department of Statistics
Southern Rhodesia	Central Statistical Office
Sri Lanka	Department of Census and Statistics
Sudan	Department of Statistics, Ministry of National Planning
Swaziland	Central Statistical Office
Syrian Arab Rep.	Central Bureau of Statistics
Thailand	National Environment Board

Table 14 (continued)

Country or area	Reporting agency
Trinidad and Tobago	Central Statistical Office
Uruguay	Dirección General de Estadística y Censos
Venezuela	Dirección General de Estadística y Censos Nacionales

a/ Questionnaire to be forwarded at a later date.

Annex II

QUESTIONNAIRE FOR THE COLLECTION OF INFORMATION
ON COUNTRY PRACTICES IN THE FIELD OF
STATISTICS ON ENVIRONMENT

Note:

This questionnaire has been prepared in response to the request of the Statistical Commission that the Statistical Office of the United Nations initiate "an inventory of the requirements for statistics of the environment and a survey of their availability." ^{1/} The information received will serve as a basis for the formulation of the Commission's further work on environmental statistics. It will be submitted to the twentieth Session of the Commission, as a basis for further conceptual, definitional and classification work in the field of environmental statistics. Respondents are requested to ensure that the reply reaches the Statistical Office by the 15th of October 1977. Separate sheets should be attached if the space provided is not sufficient.

The questionnaire attempts to cover a wide-ranging field which is loosely described as "environmental statistics": in the attempt to define further the meaning and content of this field for the purposes of collection of international statistics, it would be useful if countries would devote particular attention to providing information on what precisely is understood by this term. Statistics on environment not only include new types of data, but also incorporate existing types of statistics in different ways. They include a wide range of natural phenomena and of human activities, many of which reflect a high degree of interdependence. Thus, it would also be of help if countries would indicate how statistics on environment are viewed in practice.

Concerning questions 9, 10, 11 and 12 in Part I, in order to avoid duplication of effort, it is not necessary that countries provide detailed descriptions of statistics already reported to the United Nations or to other international agencies: however, it would be useful if countries could list the items currently reported to the United Nations or to other international agencies under the appropriate questions.

Although this questionnaire is addressed primarily to national statistical offices, such offices may wish to forward a copy of the questionnaire to other appropriate agencies for comment. An additional copy of the questionnaire is enclosed for this purpose.

.....

Agency responsible for completing this questionnaire _____

Name and address of official who can provide the United Nations
Statistical Office with any needed clarification _____

^{1/} Statistical Commission, Report on the Nineteenth Session, E/5910, paragraph 106.

PART I. NATIONAL PRACTICES AND EXPERIENCE IN THE FIELD OF STATISTICS
OF ENVIRONMENT

A. GENERAL QUESTIONS

1. How does your office or the central government authority responsible for the subject matter define the field of "environmental statistics"? Please indicate a general definition, as well as any component elements belonging under that general rubric.

General definition:
.
.
.

Component elements:

- a)
- b)
- c)
- d)
- e)
- f)
- g)

2. Describe briefly any relevant national LEGISLATION treating the subject of environment, including the component elements indicated above.

3. Has any central government authority made ASSESSMENTS of the general status and condition of the environment?

YES

NO

if yes, please give the name of the agency or agencies and the responsibilities in their mandate.

agency

responsibility

4. Does any government authority collect STATISTICS on the general status and condition of the environment?

(a) in the country as a whole

YES

NO

(b) by regions or other local areas

YES

NO

(c) on a thematic basis (e.g. resource assessment, air/water pollution, land use classification, etc.)

YES

NO

5. List any government or other national agencies supplying statistics on environment to a central government authority, specifying the type and periodicity of the data supplied.

supplying
agency

receiving
agency

type of
information

periodicity

e.g. Dept. of
Environment

e.g. Central
Statistical
Office

e.g. Land Use

e.g. Annual

6. List any statistical publications on environment issued in the country, together with their general subject matter and periodicity.

publication

subject matter

periodicity

Please attach a copy of each publication, if available.

7. Has any government authority taken part in any international study or survey relating to problems of environment?

YES

NO

if yes, please indicate the title and the content of the study or survey, and please attach a copy if available.

8. Has any survey of user needs for statistics on environment been carried out by any central government authority?

YES

NO

if yes, please indicate briefly the results of the user survey, and, if available, please attach a copy.

B. SPECIFIC QUESTIONS

9. NATURAL RESOURCES:

- a) Please list briefly the type of statistics on natural resources currently reported to the United Nations or to other international agencies.

<u>type of</u> <u>statistics</u>	<u>receiving</u> <u>agency</u>
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- b) In addition to statistics reported to the United Nations or other international agencies, are other statistical data collected on the assessment, development and utilization of renewable and non-renewable resources?

YES

NO

if yes, please list the categories of natural resources for which statistics are collected (e.g. minerals, forests, soils, water) and the agency responsible for that data collection.

<u>resource</u>	<u>type of data</u>	<u>agency responsible</u>
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- c) Are statistical data collected on natural catastrophic phenomena, such as drought, tsunamis, earthquakes, fire, etc.?

YES

NO

if yes, please indicate the type of statistics collected.

10. HUMAN SETTLEMENTS AND LAND USE:

- a) Please list briefly the type of statistics on human settlements and land use currently reported to the United Nations or to other international agencies.

type of
statistics

receiving
agency

- b) In addition to statistics reported to the United Nations or other international agencies, are other statistical data collected on various aspects of human settlements and land use?

YES

NO

if yes, please list the items on which statistics are collected (e.g. national land use patterns, landscape modification, water supply, waste disposal, wildlife management, protected sites, etc.) and the agency responsible for that data collection.

item

type of data

agency responsible

11. POLLUTION:

- a) Please list briefly the type of statistics on pollution currently reported to the United Nations or to other international agencies.

<u>type of statistics</u>	<u>receiving agency</u>
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- b) In addition to statistics reported to the United Nations or other international agencies, are other statistical data collected on various aspects of pollution of the environment?

YES

NO

if yes, please list the type of data collected (e.g. discharge of toxic wastes, air pollution, contaminants, water pollution abatement procedures, etc.) and the agency responsible for that data collection.

<u>type of pollution</u>	<u>type of data</u>	<u>agency responsible</u>
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- c) Do classifications of "pollutants" (e.g. toxic substances, industrial wastes, airborne particulate matter) exist?

YES

NO

if yes, please attach copies, if available.

12. Indicate any other specific statistical activities in the field of environment not covered by questions 9, 10 and 11.

PART II. PLANS AND PRIORITIES FOR FUTURE STATISTICAL DATA ON ENVIRONMENT

1. What are the most important ~~unmet~~ needs for statistics on environment in your country?

2. Are there plans to meet these needs? If so, in what order of priority will these needs be met?

3. Are there plans for the incorporation of available statistics on environment into either a comprehensive publication or a comprehensive statistical framework? Please attach outlines, if available.

4. Indicate any other plans and priorities in the field of statistics on environment not covered by the above questions.

5. In what aspects of statistics on environment do you consider that international recommendations on concepts, definitions and classifications are most urgently needed? Please list in order of priority.