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PLANNING FOR ENVIRONMENTALLY SOUND DEVELOPMENT

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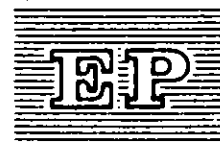
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ENVIRONMENT AND DEVELOPMENT INCLUDING IRRATIONAL AND WASTEFUL USE OF NATURAL RESOURCES AND ECODEVELOPMENT

Intergovernmental Expert Group on Environment and Development and on Environmental Impact Arising from Uses of Natural Resources

This report presents the Executive Director's comments on the report of the Intergovernmental Expert Group on Environment and Development and Environmental Impact Arising from Uses of Natural Resources, convened in response to Governing Council decision 79 (IV). The report of the meeting is annexed to it.

Report of the Executive Director

1. The origins of the Intergovernmental Expert Group on Environment and Development and on Environmental Impact Arising from Uses of Natural Resources are to be found in General Assembly resolution 3326 (XXIX) of 16 December 1974, and in Governing Council decision 21 (III) of 2 May 1975. The resolution inter alia requested the Executive Director "to prepare a report on the environmental impact resulting from the irrational and wasteful use of natural resources, as reflected in the current methods and forms of production and consumption, and to present it to the Governing Council of the United Nations Environment Programme at its fourth session". 1/ It also requested him to prepare "a study to include recommendations for putting into practice, at the earliest possible time, the concept of ecodevelopment as a planning method

1/ Resolution 3326 (XXIX), para. 4 (a).

enabling developing countries to achieve accelerated and self-sustained development". 2/ The Governing Council decision welcomed the work undertaken by UNEP towards arriving at a sound and comprehensive framework of environment-development relationships and decided to include the issue of the relationship between environment and development as a special item on the agenda of its fourth session. For this purpose the Executive Director was to prepare a report on environment and development. 3/

2. In response to the General Assembly request for a report on environmental impact resulting from irrational and wasteful use of natural resources, at the third session of the Governing Council the Executive Director suggested that the work should proceed in two stages: (a) identification of a few natural resources which should receive priority attention initially, and for this purpose proposed water, soil and energy; and (b) consultations and expert group meetings to establish criteria which could be used in judging "irrationality" and "wastefulness" in the use of natural resources. 4/

3. For the fourth session of the Governing Council, and in response to the decisions cited above, the Executive Director prepared three interim reports - on environment and development, 5/ on the environmental impact of the irrational and wasteful use of natural resources, 6/ and on ecodevelopment. 7/ During the debate, the Governing Council recognized the need for detailed examination of the interrelated issues analysed in the three interim reports, 8/ and, in its decision 79 (IV), authorized the Executive Director to convene an intergovernmental expert group meeting "to consider, in the light of the comments of Governments and the observations made during the consideration of the subject at the fourth session of the Governing Council, the subject

2/ Ibid., para. 4 (c).

3/ Decision 21 (III), para. 1.

4/ See UNEP/GC/51, para. 24 (a) (i) and (ii).

5/ UNEP/GC/76.

6/ UNEP/GC/79.

7/ UNEP/GC/80.

8/ For the summary of the debate see the report of the Governing Council on the work of its fourth session, Official Records of the General Assembly, Thirty-first Session, Supplement No. 25 (A/31/25), paras. 154-168.

matter of his reports". 9/ In particular, the expert group was to consider the "report on the environmental impact of the irrational and wasteful uses of natural resources, with a view to preparing agreed criteria for assessing that environmental impact". 9/ Furthermore the Governing Council requested the Executive Director to prepare for submission to its fifth session the report of the intergovernmental expert group meeting, together with his views and recommendations on how to implement the meeting's conclusions. 10/ The present report of the Executive Director is in response to this request of the Governing Council.

4. The expert group met in Nairobi from 24 to 28 January 1977 to consider the three reports mentioned above, and a working paper (UNEP/IG.4/3) prepared by the Executive Director, summarizing the principal themes of these reports. The working paper is annexed to the present report. Following its deliberations, the expert group adopted a report (UNEP/IG.4/4) which is also annexed to the present report.

5. The expert group noted the complementarity of environment and development objectives, and endorsed the approach to the subject taken by UNEP, since the United Nations Conference on the Human Environment.

6. The group felt that sound environmental management principles should be built into development planning and at all levels of decision-making. However, it recognized that solutions sought might differ from one society to another: in order to achieve better understanding of environment-development interactions, full account ought to be taken of the differences between developed and developing countries, and that differences in socio-economic systems should also be recognized. While the group reiterated the view that work at the conceptual level was of crucial importance and should continue, it also felt that the time had come for UNEP to devote more attention to questions of implementing various decisions and recommendations emerging from international forums.

7. The Executive Director is in agreement with the view of the expert group that more attention should be paid to the question of implementing and operationalizing measures and proposals for environmentally sound development (UNEP/IG.4/4, para. 6). As is apparent from the programme document presented to the fifth session of the Governing Council, 11/ much greater attention will be paid to practical actions. The Executive Director also intends to focus attention on developing tools.

9/ Decision 79 (IV), para. 4.

10/ *Ibid.*, para. 6 (a).

11/ UNEP/GC/90, chap. III, sect. C.

and methodologies for environmental management, and to promote their testing and dissemination, because they are the link between concepts and theory, on the one hand, and practical action, on the other.

8. The expert group recognized the importance of alternative patterns of development and life styles (UNEP/IG.4/4, para. 17). As stated in the programme document, the Executive Director plans in the period ahead to concentrate his attention on the preparation and holding of regional seminars on alternative patterns of development, ^{12/} which are expected to bring theoretical precepts closer to the level of practical action by examining them in the reality of various regional settings and presenting to Governments their operational meaning and implications. The seminars are expected to lay the foundation for longer-term action programmes in different regions, geared to the specific needs and problems of countries according to their levels of development, their socio-economic systems, and their special environmental characteristics.

9. The expert group's view that the concept of ecodevelopment should be further developed and refined through empirical studies and practical experiments (UNEP/IG.4/4, para. 13) is very much in line with the thinking of the Executive Director, who has been active in promoting one pilot project on ecodevelopment in each of the three developing continents. ^{13/} These pilot projects will make it possible to test various concepts and techniques of ecodevelopment, and develop approaches suitable to the local settings and based on the grassroots participation of local populations.

10. The group was also of the view that environmental considerations should receive adequate attention in the preparation of the international development strategy for the third United Nations development decade (UNEP/IG.4/4, para. 7). As indicated in the programme document, an important activity of UNEP in the forthcoming period, is to introduce the concept of environmentally sound development into the new international development strategy. ^{14/}

11. The group recognized that the use of natural resources was an important component within the larger complex of environment-development relationships, that it was closely related to the need for alternative production and consumption patterns, and that it should continue to receive attention from UNEP, other United Nations organizations, and Governments. It also noted the need for the management of natural resources in a spirit of international solidarity, in accordance with the Declaration and Programme of Action for a New International Economic Order, ^{15/} and by harmonizing development with long-term environmental goals to satisfy the basic human needs of all.

^{12/} *Ibid.*, paras. 400-401.

^{13/} *Ibid.*, para. 408.

12. After a discussion of the use of natural resources (see UNEP/IG.4/4, paras. 14-17), the group concluded that "it was not possible to formulate universally applicable criteria for defining irrationality and wastefulness in the use of natural resources". The group therefore felt that it would "be more fruitful to consider broad principles and guidelines which would be useful in the management of natural resources", and it agreed on a list of broad objectives to which criteria or guidelines should be directed, and which should be borne in mind by UNEP and other members of the system in their research and activities relating to natural resources (UNEP/IG.4/4, para. 19).

13. The Executive Director has studied the recommendations 16/ of the expert group on general principles/guidelines. He feels that they offer a sound basis for future work, and should be refined through research and empirical investigation. Particularly relevant to UNEP are the recommendations that, in view of the interdisciplinary nature of the problems involved, the Programme should vigorously pursue its role as a catalyst and co-ordinator on environmental issues, and that the results of continued research into guidelines for the utilization of natural resources should be communicated to it (UNEP/IG.4/4, paras. 32 and 33).

14. The Executive Director wishes to suggest that the Governing Council should transmit to the General Assembly the view of the expert group that although it would be impossible to draft an universally acceptable definition of irrationality and wastefulness in the use of natural resources, research and work in this area should be undertaken by Governments and International organizations, taking into account the broad objectives agreed to by the expert group. Communication of the results of such work to UNEP will enable it to fulfil more effectively its catalytic and co-ordinating role.

15. The Executive Director for his part intends to pursue the proposals of the expert group in the specific cases of water, soil and energy, as he informed the Governing Council at its fourth session. He intends to encourage activities in various countries aimed at promoting the rational use of natural resources, as called for by Governing Council decision 79 (IV). He will also explore the possibilities of collecting data on patterns of natural resource use (see UNEP/IG.4/4, para. 19) in the context of environmental assessment. 17/ He intends to cover further developments in this field in his reports on the environment programme to future sessions of the Governing Council.

16/ For the recommendations see UNEP/IG.4/4, paras. 20-33.

17/ See UNEP/GC/90, paras. 153-168, and particularly para. 159 (b).

16. The Governing Council may wish to call on Governments and international organizations to assist the Executive Director in carrying out the above tasks, to undertake independently work on guidelines for the environmentally sound utilization of natural resources, and to transmit the results of this work to the Executive Director, who plans to ensure appropriate dissemination of the information he receives.

Suggested action by the Governing Council

17. The Governing Council may wish to consider a decision along the following lines:

Noting the report of the Executive Director on the meeting of the Intergovernmental Expert Group on Environment and Development and on Environmental Impact Arising from Uses of Natural Resources, and the recommendations of the expert group with regard to environment and development, ecodevelopment, and environmental impact resulting from irrational and wasteful use of natural resources,

1. Recommends to the General Assembly that although it would be impossible to draft a universally acceptable definition of irrationality and wastefulness in the use of natural resources, research and work into broad principles and guidelines which would be useful in the management of natural resources should be undertaken by Governments and international organizations, taking into account the broad objectives agreed to by the expert group;

2. Calls on Governments and international organizations to assist the Executive Director in pursuing the proposals of the expert group, to undertake independently work on guidelines for the environmentally sound utilization of natural resources, and to transmit the results of this work to the Executive Director;

3. Requests the Executive Director to ensure appropriate dissemination of the information he receives;

4. Further requests the Executive Director to report on developments in this field, in response to the recommendations of the expert group, when he reports to the Council in detail on the activities in the areas of concentration within the priority subject area environment and development.



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WORKING PAPER PREPARED BY
THE UNEP SECRETARIAT

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1. INTRODUCTION: BACKGROUND AND AIMS OF THE PAPER

1. The concern of the international community with environmental-development relationships is a long-standing and continuing one. It goes back to the pre-Stockholm days, when the first major attempt was made at Founex to clarify the meaning of environment and its relationship to development. 1/ The basic definitions agreed on at Founex were adopted by the Stockholm Conference. 2/ They were later amplified and further elaborated in the Declaration adopted by the Cocoyoc Symposium on Patterns of Resource Use, Environment and Development Strategies, 3/ In a report of the Executive Director of UNEP on the environmental elements which should be included in the review and appraisal of the International Development Strategy, 4/ and in the report, partly financed by UNEP, 5/ of the Dag Hammarskjöld project on development and international co-operation prepared on the occasion of the seventh special session of the General Assembly.

2. During the discussion of the Executive Director's report on the International Development Strategy, the Governing Council recognized the need for a thorough discussion of the whole subject of environment-development relationships: it therefore decided to include this subject as a special item on the agenda for its fourth session. 6/ More or less simultaneously, the General Assembly at its twenty-ninth session requested the Executive Director to prepare a study on the practical application of

1/ See the report of a panel of experts convened by the Secretary-General of the United Nations Conference on the Human Environment at Founex, Switzerland 4-12 June 1971.

2/ Report of the United Nations Conference on the Human Environment, United Nations Publication, Sales No.: E.73.11.A.14, recommendations 102-109.

3/ A/C.2/292.

4/ UNEP/GC/33.

5/ See the report "What Now, Another Development", 1975.

6/ See Governing Council decision 21 (III), Official Records of the General Assembly, Thirtieth Session, Supplement No. 25(A/10025), pp.87-88.

the concept of ecodevelopment, and a report on the environmental impact of irrational and wasteful uses of natural resources as reflected in the current methods and forms of production and consumption. ^{7/} In response to these requests, the Executive Director submitted three reports to the Governing Council at its fourth session. ^{8/} During the debate, ^{9/} the Council recognized the need for a detailed examination of the related issues and decided that the Executive Director should convene an Intergovernmental expert group to consider "environment and development, ecodevelopment and environmental impact of the irrational and wasteful use of natural resources, with a view to preparing agreed criteria for assessing that environmental impact." ^{10/}

3. The present paper builds on these three documents and in particular expands on the theme common to all three, the need for an equitable and sustainable development, which can only be achieved if the physical environment is respected and social institutions are improved. This common underlying theme implies that:

(a) Environmental concerns should become an integral and institutionalized component of the development process in all countries, developing and developed;

(b) While many environmental problems appear to be national, they normally have significant international dimensions;

(c) Achieving the goals of the expanded concept of development will normally require structural changes, nationally and internationally, including modifications in patterns of development and life styles, which will make possible the satisfaction of basic human needs everywhere, and will recognize the outer limits of the biosphere's carrying and self-regenerating capacity and take account of the needs and well-being of future generations.

^{7/} See General Assembly resolution 3326 (XXIX) of 16 December 1974.

^{8/} See the Executive Director's reports on environment and development (UNEP/GC/76), environmental impact of irrational and wasteful use of natural resources (UNEP/GC/79) and ecodevelopment (UNEP/GC/80).

^{9/} For a summary of the debate see the report of the Governing Council on the work of its fourth session, Official Records of the General Assembly, Thirty-first Session, Supplement No.25(A/31/25), paras.154-168.

^{10/} Governing Council decision 79 (IV), ibid., p.149.

4. This report is intended as a contribution to the on-going discussion, and is in itself very much of an interim nature, as were the three reports presented to the Governing Council at its fourth session. Many of the matters that are overlooked or only touched upon in this working paper (e.g. gaps in knowledge and action, and suggestions for action), will be dealt with more fully in the overviews on environment and development and environmental management, which are being prepared for submission to the Governing Council at its sixth session. ^{11/} This report is also complementary to a series of interdisciplinary studies being undertaken by UNEP, which focus on various aspects of the relationship between environment and development. In particular, reference may be made to the on-going work on human settlements, environmentally sound and appropriate technology, industrial location, arid lands, environmental education and environmental management.

5. The purpose of this working paper is to assist the Intergovernmental expert group in the discussion of this complex and very important subject. It is expected that the comments and recommendations coming from this group will assist the Executive Director in preparing the overviews on environment and development and environmental management. The Executive Director also hopes that the experts will reach general agreement regarding the suggested guidelines for resource use. As already agreed by the Governing Council, the Executive Director will carry out detailed investigations of the use of soil, water and energy resources, and plans to employ in these investigations the guidelines recommended by the expert group.

II. ENVIRONMENT AND DEVELOPMENT - INTER-RELATIONSHIPS

A. INTRODUCTION

6. The concept of development is a multidimensional one; it encompasses the economic, social, cultural and political aspects of human society. One of the principal aims of the development process is to increase the well-being of the people by making optimum use of the available resources. The growth of Gross National Product (GNP) per capita, which until recently was considered as a central indicator and measure of "development", should be supplemented by considerations such as the fulfilment of the basic human needs especially of the poorest strata of the population (focussing on food, shelter, clothing, health, education and employment), the eradication of poverty, improvement of the quality of life in general, and widespread participation in the development process. Countries may vary widely in their value systems and patterns of development, their living standards and natural resource endowments, but they should agree on the central importance of these objectives. A growth process that benefits a small, wealthy minority and widens the gap between the rich and the poor can no longer be equated with development. Approaches to development such as those reflected in "poverty-focused planning", promoted by various international institutions in recent years, indicate that a shift away from a GNP-oriented concept of development is already under way. The "socio-economic indicator" approach is therefore gaining wider acceptance

^{11/} Governing Council decision 48 (IV). Ibid. p. 113

reflecting as it does measures such as the proportion of population below the poverty line, the proportion of population without work, a measure of inequality of income distribution, per capita food intake, nutritional status, educational status, index of housing conditions, incidence of sickness, etc.

7. No international strategy for development can ignore the wide differences which exist between the rich and poor countries of the world in terms of standards of living, command over resources, and political power. These inequalities are reflected, inter alia, in the global composition of trade, in the terms of trade in raw materials and finished manufactured goods, and in the influence and power of transnational corporations in the management of resources. An important objective of the New International Economic Order is to "correct inequalities, and redress existing injustices, make it possible to eliminate the widening gap between the developed and the developing countries and ensure steadily accelerating economic and social development and peace and justice for present and future generations ...". 12/

B. ENVIRONMENTAL EFFECTS OF HUMAN ACTIVITIES

8. Environment is a global concept which encompasses both the natural and the man-made resources available at a given time for the satisfaction of human needs. The natural environment consists of: (a) The atmosphere, comprising the ozone layer, oxygen, nitrogen, carbon dioxide, water vapour, etc.; (b) The hydrosphere, composed of rivers, lakes, underground water, and the oceans; (c) The lithosphere, the solid crust of the earth, including the soil cover and minerals; and (d) The biosphere that is the "living matter" of the earth, including plants and animals. The man-made environment consists of: (i) The physical infrastructure created by man; and (ii) The social and institutional framework within which he operates. Every human action makes an impact on the environment, large or small, direct or indirect, temporary or permanent, positive or negative, reversible or irreversible. Human actions range along a continuum from improving the environment to causing irreparable damage to it.

9. Man constitutes an important part of the biosphere. The recent "environment debate" has had the great merit of making man conscious of his relationships with nature, of the various consequences of his actions on the natural environment and eventually on himself, and of the need to adopt strategies and actions on the basis of a more comprehensive assessment of the risks involved.

10. Man's activities affect both his physical and his social environment, and may do so either positively or negatively. In addition any environmental degradation entails the risk that man's present and future welfare and opportunities may be seriously circumscribed. It is natural, therefore, that the negative physical and social environmental effects of man's activities should be of concern and should be judged in terms of man's well-being.

1. Physical aspects

11. The consequences of the degradation of the physical environment on man's welfare can be viewed as: (a) Encroachment effects which degrade his living environment; and (b) Depletion effects, which reduce the accessibility of resources he requires.

(a) Encroachment effects

12. One activity may affect others through the changes it introduces in the physical setting in which other activities take place. Such encroachment effects may impair the level of productivity or impinge on either mental, social or physical well-being. They stem from changes in the natural environment, such as air or water pollution, fouling of land surfaces, and the degradation of recreational facilities.

13. The earth's atmosphere, rivers, oceans and soil cover have assimilative and regenerative capacities, but these are by no means unlimited. When these capacities are exceeded, further encroachment will create serious environmental problems.

(b) Depletion effects

14. These effects occur when an activity reduces the future availability of resources. Obviously, even the most efficient and rational use of a resource in limited supply results in its depletion. Methods of production or patterns of resource use which are wasteful or irrational will accelerate the rate of depletion. The wasteful and irrational use of fossil fuels for energy, for example, has caused much concern, giving rise to fears that the world's proved reserves of this resource may last no more than a few decades.

15. However, the amount of known resources at a given time is a function of knowledge, technology and demand structure. Mineral resources are an example. The estimated reserve of most minerals are being continuously revised upwards as discoveries are made in new areas of exploration, or as knowledge of the existing reserves improves. Advances in technology may improve man's ability to discover further reserves. At the same time, they may also improve abilities to recover resources and to economize on their use.

16. The structure of demand influences resource use and the direction of technological research and development. It also influences the relative values of different resources and the way these change over time.

17. The problem of non-renewable natural resources is not so much that they may be limited in total supply, but that the extraction of lower grade and less accessible resources will require new technologies and larger amounts of capital, energy and labour inputs, with consequent problems of pollution and waste disposal. Actually the exhaustion of non-renewable natural resources manifests itself as a local problem related to the exploitation of particular deposits. In global terms, the technological

progress in geological surveying and extraction methods gives reason to believe that sufficient reserves of natural resources might be available for some time to come. The physical exhaustion of non-renewable resources is even less of a danger if the possibilities of technological developments in resource consumption and resource substitution are taken into account. As access to resources becomes more difficult, new technologies should be oriented toward saving resources. Such technologies may, however, have unforeseen negative effects. Indeed, the development of new technologies always entails such risks, and their introduction should be monitored with care.

18. The distinction between renewable and non-renewable resources is useful and its policy implication - more prudent use of the latter - is important. However, it is a major environmental concern whether or not the depletion of some of the so-called renewable resources, such as forests, fresh water, soil cover and some rare species of animals, can in fact be remedied with the passage of time. Left to nature, these resources have the ability to compensate for natural decay, or even for the damage inflicted by occasional disasters. However, the rapid encroachment of man's activities on nature is upsetting the fragile balance of natural ecosystems.

2. Socio-economic aspects

19. The social setting, including the economic and cultural institutions in the framework of which human activity takes place, is an integral part of the human environment. Socio-economic and cultural patterns generally have a significant bearing on the protection and enhancement of the natural environment. They are also important, in their own right, in determining the quality of human life.

20. The factors that determine the quality of the social environment are numerous, and need not themselves be social or institutional in nature. In fact, various social and institutional factors often determine the nature of the social environment through complex interactions with natural factors. For example, a high rate of population growth in a resource-scarce situation may cause considerable strain on the social fabric, just as it may contribute to rapid depletion of available natural resources. Yet legal and social constraints on international migration or the constraints imposed by international trade realities, for example, may limit the extent to which imbalances between population growth and availability of resources may be rectified.

21. A state of acute poverty or denial of basic human needs may drive people to such desperate actions for their survival that they may cause permanent damage to the natural environment in which they live. Depletion of soil nutrients through overgrazing of marginal land and widespread destruction of forest resources caused by a desperate search for fuel are examples of environmental damage caused by widespread poverty.

22. On the other hand, a state of widespread poverty may be caused, and in any case exacerbated, by degradation of the natural environment, for example, by desertification. The relationship between poverty and degradation of the natural environment is a two-way relationship which must be tackled with foresight by deliberate public policy. Environmental threats posed by manifestations of poverty such as open drains, absence of facilities for waste disposal, inadequate water supply and poverty-induced resource depletion suggest that development that eradicates acute poverty and promotes satisfaction of basic human needs for all should certainly contribute towards enhancing the human environment, including the natural environment.

23. Disparities among countries in standards of living skew the global patterns of resource use in favour of the rich. The rich countries currently consume a large proportion of the world's natural resources, while many of the countries of origin of those resources are left with little for their own domestic use and/or are paid very low prices for their exports. An even greater problem stems from the fact that present activities in the export field are leading to rapid exhaustion of the more easily accessible and cheap resources, and many developing countries may soon find their development handicapped by the need to put expensive additional capital and skills into the production of fuel and raw materials.

24. Similarly, extreme inequalities in the distribution of income and command over resources within a country may hinder optimal utilization of a country's natural resources from the standpoint of improving the well-being of its masses. Moreover, such inequalities may be injurious to the objective of protection and enhancement of the environment, through, for example, resource-wasteful and energy-wasteful consumption patterns of the privileged few.

25. With regard to the spatial dimension of development, it is apparent that large and widening differences in economic opportunities between the city and the countryside have been a major cause of large-scale rural-urban migrations. The resulting overcrowding in cities creates a whole range of environmental problems relating to water supply, sanitation, garbage disposal, public health, traffic congestion and housing shortages, and also social problems - poverty, unemployment and social and cultural alienation. So long as significant imbalances in development of rural and urban areas continue, improvements in the conditions of city life are likely to be negated, after a time, by the fresh inflow of migrants from the countryside. Lasting improvements in the quality of life in urban areas are therefore conditional on a balanced development of the hinterland, the two forming parts of an interdependent system.

26. While increased equity in the distribution of incomes and opportunities should promote broadly based participation in development and should also be conducive to achieving sustainable development, it is, of course, not a sufficient condition for achieving either of these goals. In practice, it is necessary to identify concrete alternatives, in production as well as consumption, that are environmentally prudent whatever the institutional organization of a society. In addition, among other things, research and information programmes are required to make politicians, officials and managers of enterprises aware of the long-term and indirect linkages between patterns of development, and the nature, extent and consequences of resource depletion and degradation.

27. All countries need to engage in the search for environmentally sound development approaches. Industrialized countries should be concerned not only about the extent and consequences of industrial pollution, but also about appropriate rates of renewable and non-renewable resource use. On the other hand, the developing countries, while contributing less overall to the world's industrial pollution load, have an especially important role to play in preserving and enhancing its renewable resource heritage. Furthermore, what takes place in one nation has repercussions for others. Thus national actions have repercussions on international trade and the international division of labour, as well as direct effects on the environment, for example, through the international dispersion of industrial pollutants, as well as through national policies for environmental enhancement. Moreover, such issues as depletion of the ozone layer, weather modification and use of the global commons affect the well-being of all mankind. Responsibility for protection and improvement of the environment must therefore be global in character.

28. Notwithstanding the scope for realizing in practice a symbiotic relationship between environment and development, two contrasting positions based essentially on the premise of an adversary relationship between environment and development have enjoyed wide currency in the discussion of this subject. One of these emphasizes the "encroachment" and "depletion" aspects of economic growth and argues in favour of a deliberate "zero-growth" approach so as to forestall a situation in which a combination of resource exhaustion and environmental pollution would dramatically damage the quality of human life. This approach, however, ignores the ability of a country with a growing income to pursue a vigorous policy of environmental management, as well as the possibility that policies addressed to pollution abatement and environmental enhancement may themselves stimulate growth of output, expand employment and improve levels of living.

29. The other extreme position argues that only the developed countries are in a position to be concerned about the environment, that given the industrial backwardness of the developing countries and the low levels of living of their populations, the developing countries should first concentrate on modernizing their economies and achieving high rates of economic growth, and that the time has not yet come for them to worry about the environment. This view is wrong if only because it sees immediate environmental consequences as limited to pollution, treats other effects as being distant in time and therefore of no significance today, and ignores the immediate dangers and costs to development of environmental neglect.

30. While representing extremes, the above standpoints have nonetheless made useful contributions to the discussion on environment and development. The former, for example, has helped underscore the possible wastefulness and short-sightedness of GNP-focussed development policies, and has also emphasized the need for a critical appraisal of prevailing patterns of consumption in developed countries. It has highlighted the divergence between "private costs" and "social costs" and the need for adding the environmental dimension in decision-making perspectives. Moreover, it has

stimulated interest of policy-makers in evolving alternative patterns of development that are environmentally prudent. The second has encouraged investigations into the relationship between environment and development and into how environmental considerations can be effectively integrated in development policies and programmes.

31. However, the relationships between environment and development must be seen as being both more complementary and more complex than the extreme positions would suggest. Environment-development priorities depend to a large extent on specific conditions prevailing in individual countries, on the acuteness with which various forms of environmental and developmental problems manifest themselves and on the availability of environmentally sound alternatives in particular choice contexts. In some countries major efforts may need to be directed towards improving semi-arid lands, in others, towards combating soil erosion or preserving forests, in some others, to the protection of marine life or wild life, and so on. Moreover, every country must decide how to allocate among competing environmental imperatives the resources it can make available for environmental improvement. The spelling out of alternatives and their long-term ramifications should be one of the major preoccupations in elaborating environment-development relationships.

C. THE CONCEPT OF ECODEVELOPMENT AND ITS IMPLICATIONS FOR PLANNING

32. There is a clear need to incorporate environmental considerations in development programmes. Traditionally, economists have generally treated the subject of environmental degradation in two alternative ways. One approach has been to treat it as a special problem of welfare economics where the social cost of a given industrial activity (for example, in terms of the familiar "smoke-chimney" case) exceeds private costs to its operator. The solution offered for correcting the divergence between private and social costs has usually been to make the offending firm pay for either the cost of prevention or the cost of the environmental damage inflicted upon others by the firm's operations. In practice, there are serious difficulties in making such solutions work satisfactorily. The task of assessing the extent of environmental damage from exposure to a given level of pollution is methodologically and statistically formidable. Very often the impact of pollution is widely diffused over time, and environmental damage in a particular area or on a particular object is the joint product of the emission of a number of pollutants. All these make it economically and administratively difficult to specify with precision either the offending firm or the extent of damage its operations have caused.

33. A second approach has been to treat "environment" as a commodity for which, like any other commodity, the consumer should be prepared to pay a price. Hence, the choice of a particular environmental standard would involve a certain degree of sacrifice of other goods which could be otherwise purchased with the money spent for improving the environment or preventing degradation. According to this approach, the consumer's choice for environment is "revealed" by his willingness to pay, which can

be ascertained in a variety of ways (e.g. through opinion polls or through the variation of charges over a period of time). Apart from numerous problems associated with the question of assessment of consumer's preferences (e.g. would this not give undue weighting to the preferences of those with purchasing power? Are the consumers aware of all the environmental implications of their decisions? How can underestimation of preferences be avoided?), this narrow, economic approach fails to grasp the very essence of the environmental problems resulting from human activities.

34. Evidently, these approaches - forcing the producer to pay for environmental damage, or asking the consumer to pay for a certain environmental standard grossly underestimate the complexity of the task of environmental management. The successful implementation of the task calls for a mix of economic and administrative instruments. Tax-subsidies or price-incentives can only work up to a certain point. It is exceedingly difficult, if not impossible, to internalize through the price and incentive system the macro-social and macro-ecological concerns and the long-term consequences.

35. A promising approach towards environmentally sound development is the application of the concept of "ecodevelopment", designed to help the people of a given eco-region realize the full development potential of the resource endowment and environmental conditions of the region, maximizing the use of their own human resources and skills to produce the kind and quality of life to which they aspire without destroying the resource base on which sustained development depends. Ecodevelopment thus stresses the need to look for concrete development strategies capable of making good and ecologically sound use of the specific resources of a given ecosystem in order to satisfy the basic needs of the local population. Ecodevelopment insists on the variety of ecological and cultural situations, and therefore on the diversity of proposed solutions, as well as on the importance of citizen participation in the identification of needs and resources, the search for appropriate techniques and the design and implementation of development schemes, and of structural changes when needed. It is not a mere set of ecotechniques, although redefinition of technological options is likely to play a major role.

36. Ecodevelopment was first thought of as a guideline for defining micro-regional or regional development strategies in predominantly rural tropical areas. Hence its interest in evaluating, through ethnobotanical and botanical surveys, the potential of local forest, field and water plants, in domesticating local animal species, in designing and testing mixed crops, fish and cattle breeding systems well adapted to local conditions, ecological farms producing their energy from waste, wind, small waterfalls etc., and in emphasizing to the maximum all the complementarities. Of course, there is always room left for the introduction of "exotic species", but preference is given in such cases to plants and animals from similar ecosystems.

37. Applied to housing - both rural and urban - the ecodevelopment approach stresses the need for ecologically sound designs both for human settlements and for individual dwellings. Such designs should be supplemented with some low-cost, soft technologies for water cooling and heating, climatization, etc. Local building materials are of course to be used, and trees and plants must play an important functional as well as an aesthetic role.
38. The argument in favour of development of industries based on bioconversion of solar energy may be interpreted as advocating the addition of an "Industrial floor" to ecodevelopment strategies, and in this way extending enormously their applicability in both third world and industrialized countries.
39. The concept of ecodevelopment is a fairly recent one, but it is starting to catch the imagination of people, scholars, and policy-makers in both developing and developed countries. In the following paragraphs an attempt will be made to explore the ecodevelopment approach to the formulation of development strategies and planning.
40. At the design and planning level, properly speaking, the ecodevelopment approach leads to an emphasis on using natural ecosystems as a paradigm for human-made systems, be they farms, industrial complexes, towns, or a combination of the three.
41. Ideally, production activities should be organized to simulate nature; that is, no waste is left, and all the materials are recycled. While such an ideal "zero pollution" situation is impossible to attain, it is possible to develop technologies and methods which augment the assimilative capacity of nature and minimize the throughput of material and the use of non-renewable resources. It is, for example, technically possible to recover a great deal of the solid wastes produced in urban settings by manual, mechanical and chemical methods of recycling, and by composting, which would produce a certain amount of soil nutrient. An important aid in the recycling of material could be the construction of material flow equations; identifying sources (e.g. production, consumption and "imports") of wastes, activities for their disposal (e.g. incineration, composting, land fill, recycling, and "exports"), and their incorporation in generalized input-output models. The development and widespread introduction of non-waste technology would require a much greater degree of environmental awareness than exists today, especially where choice is currently dictated by considerations of profit and cost.
42. While the transformation of polluting substances into non-polluting useful ones should be a long-term environmental goal forming part of a strategy inspired by the ecodevelopment approach, in the short run attempts must be made to adopt various pollution control measures for minimizing environmental damage. Some of the important principles of pollution control are: (a) Giving priority to prevention of pollution over pollution-abatement; (b) Arranging abatement at the source, given the diffused impact of pollution over time and space; and (c) Making the polluter and/or the consumer pay.

III. ENVIRONMENTAL IMPACT OF THE IRRATIONAL AND WASTEFUL USE OF NATURAL RESOURCES

A. INTRODUCTION

43. This chapter discusses a particular aspect of the environment-development issue, the environmental impact of the wasteful and irrational use of natural resources in the current methods and forms of production and consumption. ^{13/} It begins with concepts and definitions, advances to management considerations, and concludes with a set of tentative guidelines for the use of natural resources.

44. As regards the concept and definitions, the following, based on the previous report of the Executive Director, ^{14/} are tentatively proposed for the purpose of this working paper.

Natural resources

45. Natural resources are those elements and conditions of the physical environment which at a given time, place and state of technology have an economic value derived from their potential for enhancing present or future human welfare. The natural resources of a country - land, water, minerals, living organisms, etc. - must be so managed as to enable it to maintain a continuous flow of goods from them, taken as a whole and including their value in trade, for both present and future generations. At the global level, the world's resources must be managed for the benefit of mankind as a whole.

46. Like products, natural resources can serve as "final goods" (directly consumed water, plants or minerals); like "man-supplied" factors of production, they can serve as inputs. Judgements about the use of natural resources cannot however be made independently of judgements about the use of human and technological resources, as the overwhelming bulk of goods needed by mankind can only be produced if all of these are brought together in the right proportions. Natural resources can also be regarded as "renewable" or "non-renewable" a distinction defined earlier in this paper. It should be noted that these terms do not describe intrinsic characteristics of resources, renewability depending also on the manner of use and the setting in which use occurs.

Irrationality and rationality

47. The outcomes, in terms of policies, programmes or projects of decisions relating to the use of natural resources are "rational" if they make use of known resources in the best possible known ways to further the aims which a given society has set itself, taking account of all effects known to follow from the choice. A distinction should be made between "irrational use", in which existing knowledge is not acted upon, and "non-rational use", which is the result of defective or incomplete knowledge. Thus rationality implies the adjustment of behaviour to a perceived human

^{13/} General Assembly resolution 3326 (XXIX).

^{14/} UNEP/GC/79.

criteria of rationality (encompassing, as it must, moral or spiritual values), it includes the satisfaction of basic human needs and the handing down to successive generations of at least the same opportunities for fulfilment of their purposes as have been enjoyed by those which preceded them.

48. Rationality, as defined here, must not be confused with "commercial rationality" in the sense of maximum profitability in terms of market costs and prices: these may not reflect the "true" burdens and benefits accruing to society from the activities involved. At both the national and the international level, the aim should be to achieve broader social needs rather than the private demands of those who have the purchasing and political power to own and control resources. The rationality of actions must be tested in terms of socially meaningful prices, costs, and interest-rates which aim to take account of all effects, including the environmental effects which ordinary market criteria tend to neglect.

Wastefulness

49. "Wastefulness" is probably best regarded as the particular form of irrationality in which a given level of fulfilment of human purposes is achieved with the use of more resources than necessary. In any case, the composition of resources may entail "waste" in the sense that some resources are used to excess while others are underutilized. Finally, resources may be "wasted" in support of profligate life styles for some while others lack the resources for even basic subsistence. While all forms of irrationality waste resources, this last also wastes opportunities for human satisfaction.

B. MANAGEMENT OF RESOURCE USE

50. The question of control over resource use, which over the years has led to innumerable controversies and a number of wars, has now emerged as a major international issue whose many dimensions and full magnitude may not yet be fully appreciated. It reflects today a growing awareness of the nature and pervasiveness of global interdependence and the exhaustibility of global resources which has sharpened the competition for resource control.

51. The present pattern of control over resource use derives in large part from the structure of demand. Those with purchasing power have determined the composition of output, and those who have produced for that market have naturally attached a high value to the resources required for it. Thus resource control has followed in the path of final demand, reinforcing the existing patterns of income distribution and threatening through preemptive use the development options of others.

52. The geographical distribution of the world's natural resources is uneven. Human needs and known resources do not correspond one to one in any part of the world. Although the heavy concentration of oil resources in the Middle East has received a great deal of attention recently, such concentration of production in a few countries is typical of many other natural resources as well, such as bauxite, tin, copper, iron ore, manganese, coal, shale rock and tar-sand. Trade is therefore necessary if human needs are to be met throughout the world.

53. The distribution of known resources also does not accord with the global distribution of final output. Resources throughout the world have been drawn into production in order to satisfy the large final demand in the developed nations. The nature of the present control over resource use, crossing national boundaries as it must, is much less rational than it would be in an internally self-sufficient economic system.

54. The unequal distribution of resource location and production gives rise to various types of conflict of interest between countries, for example, over the right to use particular resources. Conflict over the use of rivers which pass through or between several countries, or over the territorial limits of a country for the purpose of defining the fishing rights in the sea or exploring the sea-bed, are quite common, and often lead to excessive utilization of resources to forestall competition. International agencies can and must play a vital role in resolving such conflicts, and in providing machineries for adjudication in cases of dispute regarding the interpretation and implementation of agreements.

55. A second type of conflict arises between the producers and the consumers of a particular resource. For example, whereas the rich Industrialized nations with a high propensity to consume would prefer an unrestricted flow of oil to the world market, the interests of many of the leading oil-producing countries may demand a conservationist approach in order both to maintain its prices and to limit the rate of depletion. Such conflicts of interest are not easy to resolve internationally through formal rules and procedures, given the sovereign right of Governments over the resources contained within their national boundaries. However, in the negotiations necessary to resolve such conflicts, the importance of global ecological considerations must be taken into account.

56. A third type of conflict arises over the prices at which resources are bought and sold. Whereas a large proportion of the world's natural resources are located in the developing countries, their production and use are controlled by demand in developed countries, and by the institutions through which world trade in most goods and services takes place. The existing structure of world trade leads to unequal exchange; on the whole the prices of resources sold by poor countries are low and declining compared with the prices of manufactured goods sold by the rich countries. While low resource prices encourage excessive use in rich countries, the countries of origin benefit little from the possession of resources, in terms either of revenues or of their use in the domestic economy.

C. INSTITUTIONS

57. The management of the world's natural resources is the result of a bargaining process at many levels in which the main actors, apart from the Governments and domestic enterprises of nations - often found in two groups, the rich (net users of resources) and the poor (net suppliers of resources), are:

(a) The transnational corporations, which often represent the interests of the developed nations, but are increasingly assuming an independent stance in resource negotiations;

(b) Multinational producer organizations of Governments, such as OPEC;

(c) Institutional arrangements for managing the "commons".

1. Transnational corporations

58. Transnational corporations control much of the world's trade in natural resources through a large network of subsidiaries, affiliates and associates. In a very real sense, they have been the institutions of resource management, responsible for fixing prices of both intermediate and final products at different levels of the production process, for determining how much to produce from and sell to which countries, and for research and development to find new and cheaper ways of producing goods and to develop new products and uses from a particular resource. Their size and vast financial resources enable them to maintain technological superiority over rivals and a superior bargaining position over many of the Governments of the countries in which they operate.

59. Because these firms are transnational, their activities often give rise to serious conflicts between their own global objectives and the national objectives of the host Governments. Given the vertically integrated nature of their operation, the prices charged and paid for in interaffiliate transactions, which constitute a very high share of world trade in many important commodities, are often no more than "book-keeping prices", fixed at a level which maximizes the overall profit of the firm from all its operations as a whole.

60. The transnational corporation, being typically interested in maximizing its total profits, may ignore environmental and other social costs that do not enter into its calculations of private profit. It may, therefore, deplete mineral resources rapidly in one country because they are high-grade, easily transportable or under threat of nationalization, while holding similar resources in another country as reserves; It may only extract resources at the source, exporting them (possibly at fictitious transfer prices) for further processing in its own plants abroad. The decisions about resource management which transnational corporations find natural must be tempered by other forces if the global interest is to be well served.

61. The most obvious counterbalancing force is the Governments of the producing and consuming nations in which transnational corporations operate. Unfortunately, the corporations can often play one Government against another, as a consumer against a producer or one resource source against another, or bargain technology and knowledge for access to resources, often on terms favourable to themselves. In these ways, the corporations may gain preferential tax treatment, duty rebates on imported goods, and relaxation of measures for pollution control and protection of the environment.

62. Governments, and particularly those of poor countries, may find themselves too weak to bargain effectively or to uphold principles which depend on co-ordinated and concerted intergovernmental efforts for their effectiveness. Thus higher tax rates, requirements for in-country processing of resources, and pollution controls imposed by one country alone may simply destroy its own hopes for immediate development as the corporation affected takes its business to less far-sighted nations.

2. Producers' organizations

63. A recent development of considerable significance is the foundation of organizations of Governments owning a particular resource (e.g. OPEC for oil, CIPEC for copper). These act as a counterbalance to the transnational firms in the world market, and have succeeded in negotiating better prices and improved conservationist measures, in enlarging the participation of the host Governments in the production process, and in ensuring better utilization of the country's natural resources within the national economy.

64. However, the degree of success achieved by these organizations varies with the natural resource. In the case of oil, which is exhaustible, and where the large exporting countries are geographically and culturally close, OPEC has succeeded over the past five years in displacing the transnational firms in control over production, distribution and prices and has been able to bring the development of the oil industry in individual countries close to their respective environmental and developmental needs. In contrast, in the case of copper, which can be recycled, and whose leading exporting countries are spread over the whole world, such a transformation of the production-ownership structure has not yet been accomplished.

65. Attempts have also been made in recent years to bring together major consumers of a particular resource, mainly in order to improve their bargaining position vis-a-vis the countries producing that resource. So far, for a variety of political and economic reasons, such attempts have not been successful. However, a useful objective for such organizations could be to find ways to regulate excessive consumption of diminishing resources and to narrow the gap in consumption standards between their members and the rest of the world.

3. Management of the commons

66. Finally, there are the problems of managing common property, the oceans, air space and outer space, in ways which will promote the common good. Mechanisms for management of the commons are still in their infancy, and further research and experimentation are matters of high priority. Present trends appear to lead in two quite different directions - the absorption of previously common property by nations, and the generation of international conventions and commissions to co-ordinate the uses of common property and to allocate costs when these arise.

67. The extension of ocean fishing limits is a current example of the expansion of national claims to space that was formerly regarded as common property. As these are extended from 3 to 12 and possibly to 200 miles, commons problems are transformed into confrontations and conflicts among nations, to the possible detriment of the weak and those who do not happen to border on oceans. This "solution" to commons problems may in the future be extended to drilling rights on ocean floors and the air-space above nations. Clearly a better solution is needed.

68. A more effective approach is to look for common solutions for commons problems through common management arrangements, such as existing international conventions dealing with whaling, endangered species, and the emplacement of nuclear weapons, international commissions guarding against pollution in rivers, and agreements for assessing liability for nuclear and oil pollution. Management mechanisms of these kinds will undoubtedly grow in number, coverage and complexity as additional commons problems are identified and as the dangers and shortcomings of national absorption as an approach reveal themselves.

4. Ownership and control of resources within a country

69. No less important than the international control of natural resources in relation to environment is the relationship between the two within a country. The issue of disparity among regions within a country in terms of resource use is analogous to the disparity among countries discussed above.

70. Where the developed regions also happen to be those with high resource endowments, this encourages wasteful consumption in them, and income inequalities between them and the other regions. Where the natural resources are produced in backward regions and consumption takes place in developed regions, the situation is not dissimilar to that existing between a rich oil-consuming country and a developing oil-producing country. A major policy issue in both cases is where to locate the processing industries, which create jobs and increase income but also pollute the environment.

D. GUIDELINES FOR RESOURCE USE

71. This chapter has focussed on the main causes of wasteful and irrational resource use as a basis for identifying guidelines for evaluating resource use in the future. These causes include, on the demand side, inequalities in income distribution, expenditure patterns and life styles that have been in favour of goods and services whose prices do not reflect in full the environmental costs incurred in producing and using them and biased against those that do. On the supply side, irrational resource use has been traced to resource-demand imbalances, methods of production adopted without comprehensive reference to environmental costs and the needs of future generations, technologies that have been developed and selected with similar biases, and institutionalized management arrangements which de-emphasize environmental considerations (e.g. the transnational corporation).

72. A very challenging task, one requiring significant research, is to define guidelines for the making of decisions on resource use which, if applied, should diminish the wasteful and irrational use of resources in the future. The tentative suggestions that follow are of this second type:

(i) Patterns of development should induce changes in the life styles of families, public and private enterprises and Governments such that they can be realized without endangering the environment or the development prospects of future generations;

(ii) More use should be made of renewable and recyclable resources;

(iii) Encroachment effects of resource use should be controlled, and liability and compensation systems should be promoted;

(iv) "Energy accounting" should be used wherever possible alongside conventional accounting practices, and preference should be given to activities with low energy requirements;

(v) Resource-conserving, low-waste, non-encroaching technologies should be preferred and made readily available;

(vi) Prices and costs, as well as the administrative regulations that govern public and private enterprise decisions, should as far as possible reflect the full environmental benefits and costs which can be ascribed to the activities of the enterprises;

(vii) The time horizons and discount rate on alternative techniques adopted for such decisions should take into account the needs of future generations; in particular, they should minimize risks of depletion of resources, which leads to rising costs of extraction and declining productivity;

(viii) National and global assessment of environmental damage should take into account the interrelatedness of various activities and the diffused nature of their impact over time and space;

(ix) Resources in the global commons should be used in the interests of the international community.



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REPORT OF THE INTERGOVERNMENTAL EXPERT GROUP ON ENVIRONMENT AND DEVELOPMENT AND ON ENVIRONMENTAL IMPACT ARISING FROM USES OF NATURAL RESOURCES

Rapporteur: Mr. W. Njoroge Mbote (Kenya)

I. INTRODUCTION

1. The Intergovernmental expert group on environment and development and environmental impact arising from uses of natural resources met at Nairobi from 24 to 28 January 1977. The meeting was held in response to Governing Council decision 79 (IV) to consider "environment and development, ecodevelopment and environmental impact of the irrational and wasteful use of natural resources with a view to preparing agreed criteria for assessing that environmental impact". 1/ Its task was to study the subject matter of the three interim reports which had been prepared by the Executive Director for the fourth session of the Governing Council, 2/ and which the Council itself felt needed a more detailed examination. 3/
2. The expert group had before it the three reports mentioned above, and the working paper 4/ prepared by the UNEP secretariat to facilitate discussion, which attempted to highlight in a single framework the main issues raised in the three reports.
3. The meeting was attended by representatives of the following countries: Argentina, Brazil, Canada, Central African Empire, China, Egypt, France, Gabon, Ghana, India, Indonesia, Italy, Japan, Kenya, Peru, Poland, Philippines,

1/ Official Records of the General Assembly, Thirty-first Session, Supplement No. 25 (A/31/25), p. 145.

2/ The reports on environment and development (UNEP/GC/76), environmental impact of irrational and wasteful use of natural resources (UNEP/GC/79), and ecodevelopment (UNEP/GC/80).

3/ See A/31/25, op. cit., paras. 154-168.

4/ UNEP/IG.4/3 and annexes.

Rwanda, Sudan, Sweden, Thailand, Uganda, Union of Soviet Socialist Republics, United Kingdom, United Republic of Tanzania, United States of America and Yugoslavia. Observers for the Food and Agriculture Organization of the United Nations, the United Nations Department of Economic and Social Affairs, the United Nations Conference on Trade and Development and the United Nations Industrial Development Organization were also present.

4. At its first meeting, the expert group elected Mr. M. A. Craviotto (Argentina) as Chairman, Mr. G. Bäckstrand (Sweden) as Vice-Chairman, and Mr. W. N. Mbote (Kenya) as Rapporteur.

5. In his introductory statement the Acting Deputy Executive Director, speaking on behalf of the Executive Director, said that in addition to considering the subject matter of the three reports jointly, he expected the participants, in particular, to help in arriving at an understanding of the terms "wastefulness" and "irrationality". Indeed, the special task of the group was to agree on criteria for judging wastefulness and irrationality in the use of natural resources. The UNEP secretariat had confined itself to indicating what kind of questions and guidelines might facilitate the process of minimizing the undesirable environmental impact of the use of natural resources. If the group could reach agreement on criteria, the next step for UNEP would be to promote application of those criteria in the use of natural resources, starting with soil, water and energy, as already indicated to the Governing Council. ^{5/} On the other hand, should the group find it difficult to reach agreement on criteria, it should clearly indicate the problems and issues involved, so that an appropriate report could be made to the General Assembly, express views regarding the usefulness of the guidelines indicated in the working paper for natural resources management, and suggest appropriate modifications to ensure their general applicability.

II. GENERAL CONSIDERATIONS

6. The expert group agreed that in view of the time constraints and the complexity of the issues before it, it would use as a framework for its discussions on the secretariat working paper, ^{6/} which constituted a good synthesis of the subjects dealt with in the three earlier reports; however, the group did not consider the annexes to the working paper. ^{7/}

^{5/} Documents UNEP/GC/51, para. 24 (a) (i) and (ii) and UNEP/GC/79, para. 4.

^{6/} In this connexion, one representative expressed regret that the expert group agreed not to consider in detail sections III B and C of the working paper.

^{7/} The two annexes, which were basically for information, were Annex I, a summary of comments received from Governments and international organizations on the three reports prepared for the fourth session of the Governing Council, and Annex II, an illustration of criteria for assessing environmental impact of irrational and wasteful use of natural resources derived from the guidelines mentioned in the working paper. For technical reasons, the annexes were distributed only on the first day of the meeting.

It was generally felt that the issues discussed and the recommendations made in a long series of meetings and conferences held both before and after the United Nations Conference on the Human Environment, relating to the influence of socio-economic inequalities between the various States of the international community and their effects on the genesis of environmental problems in general, should be recognized and reaffirmed, but that there was no need to go again over the ground that had been covered already. Rather, the group should look at the specific aspects of the problems and at the question of implementing and operationalizing the various measures and proposals.

7. It was nevertheless recognized that work on the general, conceptual and policy levels was of crucial importance, especially as so many aspects had not yet fully crystallized, and implementation was lagging behind the stated goals. Thus an important task of the group was to propose ways of further investigating the relationships between environment and development, which included efforts to combat the "irrational" use of natural resources. It was noted that the environmental topics under consideration were predominantly economic, social and political, and should not be narrowed down to technical aspects only. It was suggested that environmental issues should receive adequate attention in the preparation of the international development strategy for the third United Nations development decade, and in that connexion the on-going work of the United Nations system as a whole was recognized. The international acceptance of the need to achieve complementarity of development goals with environmental concerns; at the national, regional and global levels, should be regarded as one of the important prerequisites for the establishment of more just international economic relations. It was also noted that the issues applied to all countries, regardless of their level of development.

III. ENVIRONMENT-DEVELOPMENT RELATIONSHIPS

8. The expert group noted that environmental improvement and development were complementary. It was generally felt that sound environmental management principles should be built into development planning at all levels of decision-making, and that solutions appropriate to the socio-economic structures and local conditions of countries should be sought, with a view to bringing the objectives of environmental improvement in line with development objectives.

9. Environmental problems were universal, but they might differ in nature from one region or nation to another, and the solutions appropriate in one setting might differ from preferred solutions in another. Hence, specific and priority problems might vary depending upon a country's level of development, its development objectives, its resource endowment and its socio-economic structure. Similarly, the solutions sought, even to the same problems, might differ from one society to another, different emphasis being placed on structural change, including redistribution of income and wealth, the role of the market, and the extent to which planning could play a part.

10. It was also stated that in future analysis of interactions between environment and development, a distinction should be made between planned and unplanned development. Furthermore, and so as to permit a deeper and broader understanding of these interactions, full account should be taken of the distinction between developed and developing countries, and differences in socio-economic structures should also be recognized. The view was also expressed that comprehensive planning was essential to the harmonization of developmental and environmental objectives.

11. It was stated that the secretariat working paper did not give adequate attention to population issues. In ensuring harmonious environment and development relationships, population policies - which the group felt were an internal matter of countries - should take into account the recommendations of the World Population Conference.

12. It was also noted that in considering environment-development relationships, a distinction should be made between improvement of the environment, its rational exploitation, and restoration of the resources lost through past actions. Stress was also placed on the need to develop ways and means of ensuring inclusion of environmental factors in development plans and actions, including norms and indicators of the state of the environment.

IV. ECODEVELOPMENT

13. The view was expressed that "ecodevelopment" was the same as environmentally sound development, and that perhaps the term was now superfluous, although in the past it had served a useful purpose. Another view was that the concept had great value at the local level and in the context of popular participation in environmentally sound development; it was therefore felt that the concept of ecodevelopment should be developed further through empirical studies and experiments actively promoted by UNEP, and that techniques should be evolved for putting it into practice. However, it was generally agreed that "ecodevelopment" should not be seen as something separate from environmentally sound socio-economic development.

V. USE OF NATURAL RESOURCES

14. The group generally felt that the distinction between renewable and non-renewable resources could not in fact provide a sound basis for criteria or guidelines regarding rationality and irrationality of resource use. As possible alternatives, the notions of replaceable and non-replaceable resources, and of reversible and irreversible effects of their use, were advanced.

15. In view of the degree of importance of some resources and the dangers their deterioration would entail, it was suggested that natural resources could be divided into three types: basic components of the environment, such as soil, water and air, which were essential for existence and whose integrity had to be preserved and purposefully improved; products of soil and water, which should be exploited in a rational way to ensure their continuous regeneration and enrichment; and mineral resources, which should be exploited carefully to ensure that they lasted as long as possible. Regarding the third category, on-going research to discover renewable substitutes should be continued in readiness for the eventual exhaustion of such resources.

16. The view was expressed that natural resources should be defined in relation to their potential usability; and that the concept was a dynamic one, evolving with socio-economic change and technological development. Accordingly, the transformation effect should be carefully examined, because of the impact of such effects both on man and on the environment. The transformation effect was seen as a very important factor in examining the reversible or irreversible nature of the environmental impact caused by the use of natural resources. Utilization of natural resources was affected by the existence of other resources and by the interrelationships between them; an integrated approach to resource use was accordingly required. It was also stated that patterns of resource use, patterns of production and patterns of consumption should be studied jointly.

17. The view was expressed that "wastefulness" implied not only use of more resources than necessary, but also a different hierarchy of needs. The key question was how raw materials were used. A specific level of need-satisfaction might in itself constitute a waste if it meant that some groups used resources to provide for unnecessary wants. Accordingly, there was a need to change production and consumption patterns, so as not to waste resources needed elsewhere. Discussion of such issues inevitably encountered obstacles presented by established values and structures, but that did not preclude deeper examination of how wastefulness might be inherent in certain lifestyles. The management of resources in a spirit of international solidarity and the diffusion of advanced techniques capable of taking the fullest advantage of those resources should make it possible to reduce inequalities between countries in accordance with the demands for a New International Economic Order and, by harmonizing development with long-term environmental goals, to satisfy the basic human needs of all.

18. After considerable discussion of the issue of irrationality and wastefulness, the expert group concluded that it was not possible to formulate universally applicable criteria for defining irrationality and wastefulness in the use of natural resources. The group therefore decided that it would be more fruitful to consider broad principles and guidelines which would be useful in the management of natural resources, and which should be borne in mind by UNEP and other members of the United Nations system in their activities relating to natural resources.

VI. GUIDELINES FOR THE USE OF NATURAL RESOURCES

19. The group discussed at length the guidelines needed for environmentally sound use of natural resources. It was stressed that there was an urgent need to collect statistics and other relevant information relating to patterns of resource use, both nationally and internationally. There was also some discussion on the roles of various institutions, including transnational enterprises, in the exploitation and management of natural resources. With regard to guidelines aimed at minimizing adverse environmental impact arising from the use of natural resources, the group concluded after careful discussion that it was not yet possible in most cases to define criteria and guidelines which could be fully operationally meaningful. However, it was possible to list some of the main objectives to which criteria or guidelines must be directed.

A. General considerations

20. The present patterns of production and consumption in the world, and the lifestyles they engender, are frequently wasteful and/or destructive of natural resources. Future patterns of production and consumption, and the consequent lifestyles, should be so designed that they can be realized without seriously endangering the environment and the development prospects of future generations.

21. Clearly, methods of assessment designed to minimize the undesirable depletion and degradation of natural resources have to be further developed and implemented; such methods must include identification of the interaction of both economic and ecological factors. In general, it would be necessary to identify and examine the implications of alternative courses of action at various levels of decision-making to ensure that adverse environmental impacts arising from resource use are minimized.

B. Resource base

22. Wherever possible, increased use should be made of renewable and recyclable resources.

23. Encroachment effects of resource use should be controlled.

24. Resources in the global commons should be used in accordance with the interests of all members of the international community.

C. Technology

25. Resource-conserving, raw material-saving, low-energy, low-waste and non-encroaching technologies should be adopted wherever possible and made readily available.

D. Assessment/accounting systems

26. National and global assessments of environmental damage should take into account the interrelatedness of various activities and the diffuse nature of their impact, not only in space but also increasingly over time.

27. "Environmental accounting" should be developed and used wherever possible in the management of natural resources; a case in point is "energy accounting" which would facilitate giving preference to those activities with low energy requirements.

E. Implementation

28. Methods of implementation depend, to a very large degree, on the socio-economic situations existing in different countries. The relevant instruments cannot be uniform and must be adapted to specific conditions.

29. Prices and costs, as well as the decision-making processes and administrative regulations governing the activities of public and private enterprises, should as far as possible reflect the full environmental benefits and costs which can be ascribed to the activities of these enterprises; in addition, account must be taken of the non-quantifiable benefits or costs of such activities to the quality of life.

30. Due regard should be given to encouraging national and international public and private enterprises to adopt and promote environmentally sound practices. Liability and compensation procedures should be introduced wherever appropriate. Better use of resources may not always require technological change, but often economic, attitudinal and organizational changes.

31. A broad and imaginative approach to education should be taken, including not only increased attention to ecology and other environmental disciplines in formal education, but also appropriate training for decision-makers and professionals at all levels.

32. The interdisciplinary nature of the problems involved makes active participation by appropriate institutions and organizations within the United Nations system particularly desirable. UNEP should vigorously pursue its role as a catalyst and co-ordinator on environmental issues, and should encourage practical implementation of relevant activities by other United Nations organizations.

33. Research into guidelines for the utilization of natural resources should be continued by national and international scientific institutions, and the results of this research should be communicated to the UNEP secretariat.
