FOURNEX REPORT ON DEVELOPMENT & ENVIRONMENT

Overall Perspective

The current concern with the human environment has arisen at a time when the energies and efforts of the developing countries are being increasingly devoted to the goal of development. Indeed, the compelling urgency of the development objective has been widely recognized in the last two decades by the international community and has more recently been endorsed in the proposals set out by the United Nations for the Second Development Decade.

To a large extent, the current concern with environmental issues has emerged out of the problems experienced by the industrially advanced countries. These problems are themselves very largely the outcome of a high level of economic development. The creation of large productive capacities in industry and agriculture, the growth of complex systems of transportation and communication, and the evolution of massive urban conglomerations have all been accompanied in one way or another by damage and disruption to the human environment. Such disruptions have indeed attained such major proportions that in many communities they already constitute serious hazards to human health and well-being. In some ways, in fact, the dangers extend beyond national boundaries and threaten the world as a whole.

The developing countries are not, of course, unconcerned with these problems. They have an obvious and a vital stake in them to the extent of their impact on the global environment and on their economic relations with the developed countries. They also have an interest in them to the extent that they are problems that tend to accompany the process of development and are in fact already beginning to emerge, with increasing severity, in their own societies. The developing countries would clearly wish to avoid, as far as is feasible, the mistakes and distortions that have characterized the patterns of development of the industrialized societies.

However, the major environmental problems of developing countries are essentially of a different kind. They are predominantly problems that reflect the poverty and very lack of development of their societies. They are problems, in other words, of both rural urban poverty. In both the towns and in the countryside, not merely the "quality of life," but life itself is endangered by poor water, housing, sanitation and nutrition, by sickness and disease, and by natural disasters. These are problems, no less than those of industrial pollution, that clamour for attention in the context of the concern with human environment. They are problems which affect the greater mass of mankind.

It is evident that, in large measure, the kind of environmental problems that are of importance in developing countries are those that can be overcome by the process of development itself. In advanced countries, it is appropriate to view development as a cause of environmental problems. Badly planned and unregulated development can have a similar result in developing countries as well. But, for the greater part, developing countries must view the relationship between development and environment in a different perspective. In their context, development becomes essentially a cure for their major environmental problems. For these reasons, concern for environment must not and need not detract from the commitment of the world community—developing and more industrialized nations alike—to the overriding task of development of the developing regions of the world. Indeed it underscores the need not only for a maximum commitment to the goals and targets of the Second Development Decade, but also for their redefinition in order to attack that dire poverty which is the most important aspect of the problems which afflict the environment of the majority of mankind.

While the concern with human environment in developing countries can only reinforce the commitment to development, it should serve, however, to provide new dimensions to the development concept itself. In the past, there has been a tendency to equate the development goal with the more narrowly conceived objective of economic growth as measured by the rise in gross national product. It is usually recognized today that high rates of economic growth, necessary and essential as they are, do not by themselves guarantee the easing of urgent social and human problems.

*The Fournex Report on Development and Environment was one of the first comprehensive documents on the development and environment issue. It was prepared by a panel of Experts convened by the Secretary General of the United Nations Conference on the Human Environment in 1971. The members of the Panel were M. Adamovic, Martin Alexander, Samir Amin, S. Antoine, W. Beckerman, Belai Abbai, Mrs. N. Castaneda, **Gamani Corea**, F. Van Dam, Mahbub ul Haq, F. Herrera, J. Tinbergen, S. Tsuru, U. Himmelstrand, E. Iglesias, Cheikh Hamidou Kane, W. Kapp, J. Kulig, H. Landsberg, J. Mayobre, H.M.A. Onitiri, M. Ozorio de Almeida, P. Pant, I. Sachs, M.Z. Shafei, H. Singer and Puey Ungphakorn.*

We are reproducing the report in full as we think that the points contained are as valid today as they were in 1971 and should be included in the agenda on any international gathering on environment.

Indeed in many countries high growth rates have been accompanied by increasing unemployment, rising disparities in incomes both between groups and between regions, and the deterioration of social and cultural conditions. A new emphasis is thus being placed on the attainment of social and cultural goals as part of the development process. The recognition of environmental issues in developing countries is an aspect of this widening of the development concept. It is part of a more integrated or unified approach to the development objective.

The incorporation of environmental issues and goals in the sense discussed here in the concept of development, raises–as does the incorporation of other social goals–important issues for planning and policy making. To the extent that these objectives support or reinforce economic growth – and it can be shown that some of them do – their place in the pattern of priorities would be more readily established. But where conflicts are involved, particularly in the short or medium run, more difficult choices would have to be made regarding the "trade off" between these and the narrower growth objectives. These choices can only be made by the countries themselves in the light of their own situations and development strategies and cannot be determined by any rules established a priori. Subsequent sections of this report attempt to identify and elaborate upon the specific environmental problems faced by developing countries and the ways in which these could be categorized as aids to planning. But the importance of distinguishing between measures or programs that are conducive to growth, or at any rate are not in conflict with it, and those that may involve some sacrifice in growth objectives is clear enough. It is similarly important to distinguish between measures or programs whose claims on financial resources are likely to be relatively modest from those which are likely to prove more costly. The employment-creating potential of environmental programs is yet another aspect that is of relevance to the planning process.

While the environmental problems of developing countries are in large measure those that have arisen from the lack of development, it is also true that problems arising out of the process of development are also in evidence in these countries to an extent that depends on their relative levels of development. Indeed as the process of development gets under way the latter type of problem is likely to assume increasing importance. The processes of agricultural growth and transformation, for example, will involve the construction of reservoirs and irrigation systems, the clearing of forests, the use of fertilizers and pesticides, and the establishment of new communities. These processes will certainly have environmental implications. Similarly, industrialization will result in the release of pollutants and react on the environment in a number of ways. Again, the growth of the entire economic infrastructure of transport and communications will have consequences for the ecological system. Urbanization is already a pressing problem for many developing countries and some of their cities are experiencing problems common to those of the industrialized countries. In addition, with the urgent need for the rural areas to sustain a growing population, the problems of rural environment assume a new significance.

The major environmental problems of developing countries are essentially a different kind. They are predominantly problems that reflect the poverty and very lack of development of their societies. They are problems, in other words, of both rural urban poverty.

The problems are already severe enough in developing countries. But in the absence of resolute action, they will tend to attain formidable dimensions in the decades ahead. The very growth of population, when not accompanied by adequate economic development, brings out the prospect of rising unemployment, further impoverishing the countryside and swelling the drift to the towns and creating human problems of the deepest intensity. They can only aggravate the serious social and political tensions that even now prevail in these societies. There can indeed be little doubt about the urgent need for corrective action.

These issues are elaborated upon in succeeding sections of this report. To the extent that some of the advanced environmental consequences of the process of development could be avoided by better planning and regulation, the developing countries have an opportunity to profit from the experience of the advanced countries. The importance of establishing adequate safeguards and standards in project planning and preparation is thus underlined. These standards must necessarily be those that are appropriate to the specific conditions of these countries and be capable of being observed within the resources available to them. All this reflects the vital importance of data and of research. It also raises the question of the instruments by which environmental policies could be implemented, particularly in situations where decisions are undertaken by private investors, whether domestic or foreign, in the context of market forces.

Environmental issues may come to exercise a growing influence on international economic relations. They are not only a formidable competitor for developed countries' resorces (which in some instances might have been channeled toward development assistance), but they are also a factor which, to an ever increasing degree, could influence the pattern of world trade, the international distribution of industry, the competitive position of different groups of countries, their comparative costs of production, etc. Environmental actions by developed countries may have a profound and manyfold impact on the growth and external economic relations of developing countries.

Some environmental actions by developed countries (restrictions on the importation and the use of certain commodities, imposition of environmental regulations, standards and other non-tariff barriers on imports as well as increased production costs reflected in higher export prices) are likely to have a negative effect on developing countries' export possibilities and their terms of trade. Recycling of raw materials may also tend to diminish the volume of primary commodities consumed and imported into developed countries.

In some fields, environment issues

open up new possibilities for developing countries. The structural changes in production and trade, as well as the geographical relocation of productive enterprises which might be necessitated by environmental considerations, should provide new opportunities for meeting some of the developmental needs of the developing nations. This relates first of all to the relationship between natural and synthetic products and the reopening of certain markets to exports of natural products. In some cases, developing countries might have a possibility of increasing the inflow of foreign capital and of creating new industries. If such opportunities are to be fully realized, they will require new and concerted measures on the part of developed and developing countries in the fields of international trade and investment, as well as in the control of private foreign enterprises.

The desire to retrieve some of the past damage to the environment and to minimize the environmental cost of future development will, in most cases, represent a new claim on productive resources and an additional element in the cost of production. Some of this burden may be reduced in the future as science and technology itself responds to the needs of environmental management. Still one of the major questions which would arise from the increased concern with the preservation of the environment is how the higher cost of future development would be shared between developed and developing nations. There are misgivings in the developing countries that, given their peripheral role in the international economy, arising not only from their present low economic capacity and bargaining power but also from a declining relative share in world trade and the increasing gap in per capita income, they might not be able to take full advantage of the fresh opportunities that may arise from environmental control, while at the same time they might have to bear part of the extra burden which such control would entail. The increased cost burden arising from greater attention to environmental problems should be accompanied by a greater willingness to provide additional assistance and induce a greater effort to reduce the inefficient allocation of productive resources arising from indiscriminate protection of agriculture and industry in both developed and developing countries. It certainly should not provide fresh argument for even greater protection.

The focusing of attention on environmental issues therefore has implications that go beyond national policies in developing countries. The international aspects of the present environmental concern are discussed in a subsequent section. But we would like to stress here that the extent to which developing countries pursue a style of development that is more responsive to social and environmental goals must be determined by the resources available to them. Clearly there is scope for a better allocation of the presently available resources, but the results that could be obtained within their present resource constraints must necessarily be limited. If the concern for human environment reinforces the commitment to development, it must also reinforce the commitment to international aid. It should provide a stimulus for augmenting the flow of resources from the advanced to the developing countries. Unless appropriate economic action is taken, there are a number of ways in which the developing countries could suffer rather than profit from the new emphasis on environment. The latter could have implications for aid, trade, and the transfer of technology. The developing countries are vitally concerned that these implications should be positive and beneficial rather than negative and harmful.

High rates of economic growth, necessary and essential as they are, do not themselves guarantee the easing of urgent social and human problems.

Environmental Issues in the Development Process

The preceding section has indicated that the environmental problem of developing countries fall broadly into two categories—the problems arising out of poverty or the inadequacy of development itself, and the problems that arise out of the very process of development. The problems in the first category are reflected in the poor social and economic conditions that previal in both the rural and urban areas. For most developing countries these are, by far, the problems of greatest importance. But as the process of development gets under way the problems in the second category also begin to emerge and to gain in significance.

The environmental policies of developing countries must naturally be concerned with both categories of problems. But, as the preceding chapter has indicated, the remedial approaches to the first set of problems are closely interwoven with policies for overall development. These policies should, of course, embrace wider dimensions than the growth of gross national product alone, and must include some of the major environmental problems that arise in the context of urban and rural poverty. As already mentioned, problems of poor water supplies, inadequate sewerage, sickness, nutritional deficiency, and bad housing need to be dealt with in the process of planning and policy making. Goals and objectives in these fields should be incorporated into development plans as much as targets for the growth of output.

The present Report will not attempt to elaborate upon the environmental issues of the kind referred to above or upon the manner in which they should be dealt with in the planning process. They are so much a part of social and economic conditions in developing countries that their treatment is but an aspect of the whole approach to social and economic development. Each country needs to identify the complementarities and conflicts that characterize the relationship between social and economic goals in the circumstances specific to itself, and to determine its own priorities concerning the allocation of resources. The present Report seeks to do no more than draw pointed attention to the compelling urgency of the environmental problems that arise out of poverty, to the need for a new awareness of the importance of remedial measures, and above all, to the

need for reinforcing the commitment, both nationally and internationally, to the development objective itself. It is to be hoped that the emphasis that is now being given to a more unified approach to development will result in a better recognition and treatment of the environmental problems that arise out of mass poverty.

The rest of the present section and, to a large extent, the succeeding section as well, is mainly devoted to the second category of environmental problems that was mentioned earlier - problems that arise out of the process of development itself. These problems, though possibly of lesser importance in the early stages of development, are clearly likely to gain in significance as the process of development gathers momentum. As mentioned before, the transformation of agriculture, the development of industry, the creation of networks of transportation and communication, and the growth of towns are all integral parts of the development process. They must, therefore, form part of the major goals of development policy and planning. But it needs to be recognized that the process of development and charge in each of these sectors can be accompanied by adverse side effects which could in many cases be avoided, or at least mitigated, by sound planning and policy. The experience of the developed countries has shown that these side effects could, if ignored, attain formidable dimensions and cause damage and disruption on a wide scale. The developing countries have an opportunity to avoid some of the mistakes or distortions that have characterized the development process in the past. By paying attention to these dangers they can, perhaps, attain a more satisfactory pattern of development than that achieved by the advanced countries.

The present chapter attempts, in a broad way, to identify some of the negative side effects that can arise out of the process of development in several sectors of the economy. The succeeding section discusses the ways in which these problems might be dealt with through better policies and planning methods. The main issue is how the benefits of development in each sector could be obtained with minimum adverse side effects. In presenting a selected catalogue of environmental consequences which can be, and have been, experienced in various sectors of the economy, our intenton is not to describe a long list of adverse repercussions so as to imply inaction, since every action may affect environment in some manner; our intention is merely to bring together some of the available knowledge on this subject so that the developing countries can draw their own conclusions in the context of their development policies. We would also like to point out that the existing knowledge on this subject is fairly thin and sketchy, and a lot more research work is needed to identify the nature and dimensions of environmental problems in various sectors of the economy.

The discussion that follows attempts to identify and describe some of the environmental side effects that have been known to accompany, in varying degrees, the process of development in agriculture, industry, transport, and human settlement. These side effects take several forms and may be grouped into a number of categories. These are:

1. Resource deterioration—the deterioration, for example, of mineral, soil, or forest resources;
2. Biological pollution—the pollution represented by agents of human disease, and by animal and plant pests;
3. Chemical pollution—arising out of air pollutants, industrial effluents, pesticides, metal, and detergent components and similar agents;
4. Physical disruption—as reflected, for example, by thermal pollution, silting, and noise; and
5. Social disruption—of which congestion and loss of a sense of community are examples.

These side effects manifest themselves in varying degrees depending on the sectors concerned, the particular geographical regions involved, and the stages of development attained by different countries. The first two categories are commonly experienced by most developing countries as are also silting and perhaps social disruption, while urban air pollution is becoming a problem of increasing importance in the larger cities of certain developing countries.

Although these side effects are likely to manifest themselves in the process of development, they need to be assessed within a framework which helps to establish their relative importance. A basic consideration would be the way in which a development activity relates to the carrying capacity of a country's natural, and even social, system. Such issues as the speed at which environmental degeneration is taking place, the degree of its severity, the area that it covers, whether the environmental impact is reversible or irreversible, and at what cost and over what period of time are all of relevance in this connection. The scale and pattern of a country's production and consumption structure are also of relevance in assessing the impact of environmental side effects. The use and disposal of materials and their environmental implications are, for example, influenced by the level of technology, since this is relevant to the nature of inputs and outputs in the production process. Similarly, consumption patterns are of importance. In societies where the levels of nondiscretionary expenditures, i.e. expenditures on basic necessities, are high, the process of consumption exerts adverse environmental effects of a lower order of magnitude. On the other hand, higher levels of discretionary consumption, particularly of more sophisticated manufactured goods, generally produce a greater environmental impact. The social structure of a society, and its pattern of income and wealth distribution, are thus factors which are also of relevance.

Within a framework appropriate to its situation, a country may ascertain the nature of its environmental problems and examine alternative forms of action in dealing with environmental policies. Environmental side effects which are encountered in the development of various sectors should receive selective treatment. They should first be evaluated in terms of the development priorities which guide the planning considerations of any country. Those side effects which directly frustrate the development objective should be given the most immediate attention for remedial action. Those of peripheral concern will inevitably receive less emphasis.

Agriculture

The process of agricultural development often involves the transformation

of low productivity systems of agriculture into systems where productivity is relatively high. In the course of this transformation, cultivation practices on existing lands are improved, the infrastructure of facilities and services for agricultural production is expanded, and new lands are brought under cultivation through extensive systems of irrigation and river basin development. These changes are crucial to the development process itself. But they may also generate environmental side effects of varying degrees of importance. Some of the more common of these side effects are described here.

Traditional Agriculture—Environmental side effects may manifest themselves even within the framework of traditional systems of agriculture under the pressure of rapid population growth. These systems have often persisted for centuries, sometimes successfully cultivating the same lands without irreversible damage. But a new situation may be created by the rapid growth of population that is now taking place. This may impose pressures that were perhaps not experienced before and which could give rise to environmental problems.

Traditional agriculture in many tropical regions is characterized, particularly under stress of expansion, by a range of environmental hazards. These include leaching—notably the rapid leaching of nutrients and degradation of planted farmland following the removal of a forest; rapid soil depletion resulting from permanent cultivation which the relative infertility of the soil cannot support without the addition of nutrients; soil erosion through variable and heavy rainfalls and prolonged droughts or flash floods; and indiscriminate loss of forest resources through slash and burn techniques. Although much of this kind of environmental deterioration can be corrected if unlimited funds are available, some are so costly to correct as to be effectively irreversible. The fragility of tropical ecosystems may cause environmental deterioration to proceed rapidly and their recovery to be slow. In one instance, the establishment of an agricultural colony failed when deforestation resulted in the hardening of lateritic fields within five years. Restoration on the other hand will take decades. In another case, previously ungrazed savanna was destroyed by overgrazing in two to three years, and will probably be lost to production for a very long period. There are opportunities for preventing some of these environmental hazards through proper planning and anticipatory action. For instance underemployed labour that frequently abounds in rural areas may be mobilized in terracing mountainsides and in reforestation programs. Many of Africa's current marginal lands, for example, have all the necessary elements for successful reclamation through new management techniques.

Modern Agriculture—The environmental hazards in the case of modern agriculture arise mainly from the chemical control of weeds and pests and from irrigation works. Fertilizers, on the other hand, would not appear to pose a threat at the present or even prospective level of their use in the developing countries. The side effects of insecticides and pesticides need to be watched fairly carefully. Their toxicity to fish and birds, as well as their persistence and mobility, make them a hazard beyond their target area. Irrigation projects, unless matched by drainage facilities, can result in salinization and waterlogging. In one country, modern canal irrigation serviced forty million acres in 1949, of which five million acres suffered from salinization and waterlogging by 1959. However, much of this land has since been reclaimed through appropriate management. Even the welcome emergence of the high-yielding varieties of wheat, rice, maize and other cereals can sometimes give rise to certain negative side effects, both because these varieties require larger quantities of chemicals such as pesticides and also since they replace hardy native species which, by natural selection, are often better suited to the adversities of local conditions and are valuable for interbreeding. Again, constant tillage which is facilitated by mechanization can also damage the soil structure. Let us reiterate that modern agriculture would be impossible without the use of chemical fertilizers and pesticides, high-yielding varieties of seeds and irrigation works, and a degree of mechanization, but it is important that their side effects should also be taken into account in planning the use of these inputs to expand agricultural production.

River Basin Development—River basin development projects are instruments of major importance for economic and social development, and are often an essential part of the development programs. However, many of the environmental problems which are commonly discussed have arisen in connection with the construction of these projects. This underlines the need for careful study and analysis in the design of large dams or dam sites, so that their negative side effects can be minimized through proper planning. Some of the environmental problems which are generally associated with the river basin development projects include the spawning of water-born diseases; the filling of reservoirs with sedimentation; the drying up of downstream fisheries; the spread of salinization and waterlogging in associated irrigation projects; the inundation of valuable agricultural and foresty land; the displacement of population; and the loss of mineral resources, wildlife areas, or valuable historical sites. The emergence of most of these adverse effects is generally gradual. Some of them can be readily corrected but others are practically irreversible because the capital investment is very large and fixed. Some of the consequences can be on a very large scale and may frustrate the very purpose of the development project or plan. However, many of them can be anticipated by preliminary analysis. For these reasons, environmental aspects of such projects clearly merit high priority for analysis, but it must be borne in mind that many of the associated environmental costs may have to be assumed in the pursuit of benefits offered by the project, or that remedial action could be taken to minimize these costs. It is often wrongly assumed that in the past all adverse side effects have come as surprises.

Industry

Pollution emanating from industrial development represents more of a potential than an actual threat at this time in many developing countries. However, there are a number of isolated instances of industrial pollution even in these countries. The developing countries have an advantage insofar as they can learn from the experience of the developed nations. By taking sensible

decisions on the location of industries and their waste disposal, and by instituting social controls under which the private sector must function, they can avoid some of the worst environmental problems that have arisen in connection with industrial pollution. Developing countries should give careful consideration to the question of location of industries and formulate concrete guidelines in the context of their own national situation, which would prevent the rise of major environmental problems. It would also be useful to identify cases where labour-intensive technologies may produce less environmental disruption. This seems to us a high-priority area for research.

Transport

A basic choice in the field of transport is between systems that provide mass transportation and the owner-operated vehicle. In the United States, and increasingly in Western Europe and Japan, the choice of the motor vehicle as the primary means of personal transportation is now resulting in critical environmental consequences; air pollution with damage to people, vegetation, and landscape; increased accidents; pressure on urban space; and distorted configuration of human settlements. Here there is a clear area of choice. In the transport policies adopted by the developing countries, some of these environmental problems can be avoided by providing means of mass transportation and by thereby reducing the need for owner-operated vehicles. This is, in any case, dictated by their own level of development and the need to reduce visible disparities among various income groups. Mass transit facilities represent the obvious alternative in urban areas to the kind of environmental problems that have already arisen as a result of emphasis on owner-operated motor vehicles in more developed societies.

Human Settlements

Rural Areas—The development process will have its inevitable impact on human settlements. The predominant part of the population in most developing countries still live in the rural areas. Often, these communities suffer from an inadequacy of services of one kind or another. Problems of health, nutrition, potable water supplies, and drainage are often severely felt in rural areas no less than in the towns. An inadequate infrastructure of agricultural and credit service is also a familiar feature of the rural scene, contributing to the persistence of low levels of production and hence of incomes. The stress of rapid population growth can, in certain situations, aggravate these problems and impose further strains on rural resources.

In such situations, there is often a drift of population to the towns, which causes a further worsening of urban conditions. A preoccupation with growing urban problems could, in turn, result in a further neglect of rural areas. Modern social, cultural and economic activities capable of attracting educated youth may not exist in the rural areas and this could itself be a contributory factor to growing urban concentration and unemployment. Moreover, the process of rural-urban interaction can result in the disruption of traditional systems of social security, such as that of extended families, without the provision of suitable substitutes.

It is important that the planning process take account of these problems. With the rapid growth of population, developing countries are likely to face an increasingly urgent problem of employment creation. It is, however, unlikely that the expansion of economic activities in the urban areas alone through industrialization and related developments will suffice to provide employment opportunities for the full increase in the work force. A substantial part of the increment to population and the work force will need to remain in the countryside, and it is therefore vital not only that employment opportunities be created in rural areas, but that the whole structure of social and economic services in these areas be developed. This places a new emphasis on the rural environment and on planning and policy-making in this field. It would indeed be unfortunate if the new environmental concern over the effects of development on urban areas should result in an excessive concentration of resources on urban expenditures at the cost of environmental improvements in the rural sector.

Urban Areas:As mentioned before, in the urban areas of the developing world, environmental quality is virtually synonymous with social welfare. Urbanization within a country can, of course, be accompanied by increased economic and social welfare, and urban concentration of dynamic enterprises can serve a valuable function as "development poles," generating growth throughout wider regions. However, the carrying capacity of any city submitted to rapid population growth is eventually overextended, and the economies of size are displaced by the diseconomies of inadequate infrastructure. Disease, water supply shortages, lack of sewage treatment, congestion, and deteriorating housing are all manifestations of environmental stress. The more developed urban areas are now confronted with chemical contamination of air and water and the hazards of social disorganization.

The major cities of the developing world experienced a fourfold increase in their populaces between 1920 and 1960. Today, in many developing countries, the influx of population is straining the existing capacity of cities. Their failure is symptomatic of imbalance in the development process, which could produce total breakdown in some instances in the coming decade. Each city has its own carrying capacity, which changes over time. This depends on the level and combination of population, economic and human resources, and infrastructure, which are in turn in constant evolution. But once that carrying capacity is exceeded, degradation proceeds very quickly. There is, however, a high possibility of reversibility in this trend, which is not the case with natural systems. Government actions can reverse the city's deterioration, if sufficient resources can be mobilized.

The urban renewal projects in the industrialized countries are one line of attack. Often, however, such projects merely displace the slum population to new slums while more well-to-do people move into the renewed areas. Another line of attack is urban dispersal contingent upon planned allocation of new growth poles in conjunction with newly established industries and new urban settlements. Such planning is already under way in many developing countries. Less capital-intensive renewal schemes, especially ones drawing upon abundant labour, should be accorded a very high priority. Solid waste collection could also be resolved through mobilizing popular participation. In implementing municipal sewerage systems, methods emphasizing

Cont. on page 25

Cont. from page 13

the use of labour could be selected. Rather than relying on large inputs of technology or capital, multiple aerated lagoons which are stocked with fish, or spray irrigation to enhance soil conditioning, could be used.

It is widely recognized that deviant social behaviour emerges from a loss of community and social organization. Many developing societies display a high degree of social organization and a considerable sense of community, even in urban settings, as a result of the transplantation of traditional social structures in the process of rural-urban interaction. Where traditional social systems–with broad citizen participation–are conducive to integration as well as change, urban planning should make room for such traditional patterns.

Some Considerations for Environmental Policy Formulation

We discussed in the last section some of the major environmental issues which may arise in the process of development. We turn now to a number of considerations which are relevant in formulating environmental policies in the developing countries. In describing these, we wish to make it quite clear that no general guidelines or specific formulas can be prescribed at this uncertain stage of our knowledge regarding the interaction of environmental and developmental policies. Each country must find its own solutions in the light of its own problems and within the framework of its own political, social and cultural values. The formulation of environmental goals, as indeed the formulation of economic and social policies in general, falls entirely and exclusively within the sovereign competence of the developing countries.

It is important that environmental policies are integrated with development planning and regarded as a part of the overall framework of economic and social planning. As we have stressed so often before, environmental concern is only another dimension of the problem of development in the developing countries and cannot be viewed separately from their development effort. The objective should be to regard environmental improvement as one of the multiple goals in a development plan. The developing countries have certain inherent advantages in integrating environmental and developmental policies. Most of them are already committed to planning, so that imposition or acceptance of social controls is nothing new for them. They are also making a fresh start in many fields and can anticipate the environmental effects and provide for them in their current planning. The overriding constraint in the developing countries is, of course, the limitation of resources, which poses fairly sharp choices between various objectives of planning. Since environmental improvement can be regarded only as one of the multiple objectives of planning, its priority in relation to other objectives should be determined by each society in the light of its own urgent economic and social problems and its own stage of development. Basically, this is a question of alternative uses of resources within the framework of comprehensive economic and social planning.

As we have pointed out before, the integration of environmental concern with development planning would require a broader definition of development goals than a mere increase in gross national product. The redefinition of development objectives must include greater stress on income distribution and employment, more attention to social services and welfare-oriented public goods, and greater provision for political participation. There should also be a quantification of social goals in development plans so that actual progress can be measured against these goals. Besides quantitative targets in the fields of income growth and employment, similar targets should also be spelled out for income distribution, public health, nutritional standards, housing, and other welfare-oriented public goods. In other words, the quality of life in a poor society should be defined in terms of a selective attack on the problems of mass poverty, and development plans should attempt to quantify the improvement that is being sought in eliminating the worst forms of malnutrition, squalor, disease, and ignorance.

One of the ways to quantify social goals in development plans would be to establish the concept of minimum environmental standards. Each developing country can define for itself the minimum environmental standards that it is seeking in various fields and sectors such as public health, nutrition, water supply etc. The formulation of these environmental standards can facilitate redirection of the efforts and energies of these societies toward certain concrete goals. Environmental indicators can then be devised to measure the progress of the society toward the norms it has established for itself. It should be stressed that environmental standards cannot be fixed for all time to come and must necessarily change over time as development proceeds. Again, it is quite possible that the resources of many of these societies may not be sufficient to achieve even the very minimum environmental standards in the short run. However, the advantage of establishing these standards is that they can serve as a focus for national effort. The concept of minimum—or threshold—environmental standards would also help in disaggregating the target of GNP growth. Many developing countries are increasingly turning from a preoccupation with "how much to produce and how fast" to "what is produced and how it is distributed." The formulation of quantitative social goals and minimum environmental standards merely gives a concrete expression to this growing concern.

The integration of environmental concern in development planning would require national action by developing countries on a fairly broad front. Some of the major policy areas will include location of industries, land use policy, urban-rural interaction and community development, and sectoral policies as described in the last section. Greater attention is also needed for physical planning of facilities so that individual development projects and programs get integrated into the overall physical environment. There is some possibility that surplus labour in the developing countries could be mobilized in the cause of environmental improvement, especially through projects of community development in the rural areas, since such projects may be found particularly attractive by the community and since they may require a larger labour input. These possibilities should be carefully explored through further research and study, especially as many

developing countries are currently faced with the prospect of growing unemployment and underemployment and they have not been very successful so far in mobilizing their surplus labour to promote economic development.

From the macro level of redefinition of development goals, establishment of minimum environmental standards and formulation of environmental policies on an aggregative and sectoral basis, the developing countries need also turn to the micro level of devising appropriate techniques for including the environmental factor in the appraisal of development projects. It is necessary to find techniques for quantifying the impact of development projects on environment, both favourable and unfavourable, so that the society can choose these projects with a fuller knowledge of their social costs and benefits. All too often the social costs of various projects have been ignored in the initial appraisal, especially when development proceeded under a regime of free enterprise, so that the society's awareness of many of the environmental disruptions resulting from these projects came at too late a stage, when the construction had already been completed. It is important that the social costs should be ascertained before undertaking development projects, so that the society can carefully choose whether these costs are still worthwhile in view of the other economic and social benefits of the project, whether some of these costs could and should be minimized in the design of the project, and whether some of the costs could and should be postponed through adoption of alternative technology.

The basic idea of social cost calculus is to make individual enterprises and units responsible to society at large. The society suffers when the individual unit does not assume all the costs which it generates. For an individual enterprise, environment is a free good which can be used and contaminated at will in the pursuit of high and quick profits or planned production quotas. For the society as a whole, environment is a part of its real wealth and cannot be treated as a free resource. This is why the traditional cost benefit analysis is inadequate unless it is broadened to reflect social costs and benefits. While an individual can afford to ignore these costs, the society as a whole cannot, and it has every right to insist that these costs be carefully calculated and deliberate decisions made as to who pays these costs and how much.

Some of the factors which may have to be considered in making allocation decisions are the following: the quantity and quality of known and required natural resources; the possible effects and probable date of their exhaustion; the availability or possible development of alternative technologies, including their relative costs; the suitability of alternative sites; the existing level of air and water pollution; the opportunities for waste disposal and for the recycling of raw materials; the environmental impact of the project, speed of degeneration, degree of severity, possibilities of reversibility, and costs of various alternatives. This is not a comprehensive list of the questions to be raised in the case of each development project, but only illustrative of some of the concerns which should be formulated into specific questions whenever a development project is being appraised.

There is a considerable debate at present how specific guidelines should be formulated for project appraisal, taking into account environmental considerations in each sector and field. We have learned that some work on guidelines is already under way in certain international financial institutions. While we recognize the need for specific guidelines for project appraisal, we must enter a note of caution here. In the present state of our knowledge, there is need for extreme care in devising specific guidelines so that they do not become bottlenecks in the implementation of development projects or raise such issues of detail as are irrelevant in the current state of development in many of the developing countries. In any case, it is for the developing countries to formulate such guidelines in the light of their own experience and requirements. We suggest, therefore, that the developing countries take an initiative in this regard and also discuss this issue at the level of the regional economic commissions, regional banks, and other relevant international agencies. No rigid guidelines should be laid down by multilateral or bilateral donors at this stage unless there has been an opportunity for adequate consultations with the developing countries through various appropriate forums.

In order that social costs and benefits be properly calculated and reflected in the allocation of scarce resources, developing countries will have to consider the framework of social controls that they need to establish over economic decision-making, particularly, in the private sector. There is a wide variety of social controls which can be considered in this context. There are indirect controls, relying on the imposition of disincentives, such as taxes, effluent charges, etc. and on giving incentives through fiscal subsidies for environmental improvement. There are direct controls, which range from outright prohibition, statutory regulation, or the curtailment of production of toxic materials, to administrative measures taken to control location of industrial production or human settlements. No general guidelines can be laid down as to the effectiveness of direct or indirect controls in various developing countries, since this will depend on a wide variety of factors, including their political systems, their social and cultural values, and the economic strategy being pursued by them. Each society must find its own balance between the range of direct and indirect controls available in this field. Since a large proportion of total investment in developing countries is generally under public control, directly or indirectly, and since these countries are already using a number of administrative controls as well as fiscal incentives to regulate private activity, it should be easier for them to find a judicious balance between various forms of social controls for environmental improvement. We suggest that more study and research be undertaken on the effectiveness of direct and indirect social controls over environment, so that a range of specific policies is available to the developing countries from which they can choose in accordance with their own requirements and preferences.

In order to formulate environmental policies, the developing countries require a lot more information and knowledge than they currently possess. We suggest therefore that one of the first priorities be to broaden their knowledge and information in the environmental field. It would be useful if the developing countries undertake a survey of their present state

of environment and the major hazards to which they are exposed. They should also undertake studies and research to define the kinds of environmental problems that are likely to arise in the process of development over the course of the next two to three decades. It would also be helpful to compile all existing legislation regarding environmental control, including the regulations dealing with urban zoning, location of industries, protection of natural resources, and so on. This accumulation of information and knowledge should enable the developing countries to get a clearer perspective of their environmental problems and the corrective action that they may require at different stages of development. Since public participation in any such efforts is vital, efforts should also be made to build the environmental concern into education curricula, and to disseminate it to the general public through media of mass information. We would like to stress once again the need for a good deal of careful research and study in this field, and the importance of avoiding hasty guidelines and action.

Once the developing countries have integrated the environmental concern in their framework of development planning and undertaken studies of specific policy action required at the national level, concrete institutional arrangements would be needed to implement policies of environmental control. It is premature at this stage to spell out in great detail what institutional arrangements may be required under different conditions. Nor can we say anything definite at present about the kind of special legislation that may have to be devised. A number of institutional arrangements have been suggested for the consideration of the developed countries, including establishment of separate ministries or departments dealing with environmental control; setting up of environmental standards and indicators and their monitoring by special institutions; proposals for establishing Environment, Technology and Location Assessment Boards and for Environmental Quality Management Services; specific legislation to establish norms for the maintenance of clean air and clean water; new liability legislation regulating compensations for environmental disruption; enunciation of common or collective property rights with regard to such free and hitherto unprotected resources as air, water, soil etc. Many of these institutional arrangements have greater relevance to the problems of the developed countries than to the developing societies, though the latter can study the experience of the developed countries with the implementation of these proposals with some profit. As we have repeatedly stressed, the problems of environmental disruption are still a relatively small part of the development concern of the developing countries, and it may be premature for many of them to divert their administrative energies to the establishment of new institutions or machinery; they can just as well try to integrate their environmental concern within the framework of existing machinery for planning and development. In any case, the developing countries will have to undertake their own experimentation and improvisations in devising their institutional arrangements for environmental control in the light of their own specific needs and requirements as they emerge in the course of development.

It has been our aim in this section to provide an overall framework within which the developing countries can consider their own specific national action for environmental control. As we said in the beginning, no general guidelines or specific prescriptions are possible, or indeed desirable, at this stage. The basis of national action is so much rooted in the varied conditions in each country that all we could do was to draw attention to certain overall considerations rather than to prescribe any specific policies. We recommend that further work be done by the developing countries themselves on the range of national action which would suit their individual requirements and that this be discussed at the level of regional commission meetings and at the Stockholm Conference.

Implications for International Economic Relations

We have discussed in the earlier part of our Report the changing nature of environmental issues in the development process and environmental policies relevant to different stages of development. While we believe that continued development is the only answer to many of the environmental problems of the developing countries, we also believe that these countries cannot afford either to neglect the environmental problems or to treat environment as a free resource, as the presently developed countries too often did in their initial stages of economic progress. The character of these problems, of course, is quite different in the developing countries and the priority to be given to them in resource allocations is a critical issue, but what is important is that the longterm costs of environmental problems are fully understood and reflected in the current planning policies of the developing world.

Even if the developing countries were to regard the present environmental concern of the developed countries as an irrelevant irritant, they can hardly remain indifferent to, or be unaffected by it. Inevitably, the environmental concern will cast its shadow on all international economic relations. One can perceive these international implications only a little dimly at this stage; much more thought and research work is needed before the outlines become any clearer. But it is important to anticipate the adverse implications for international economic relations, on the one hand, and the great opportunities which may open up, on the other, and then to suggest policy measures and institutional arrangements which could reduce the former and maximize the latter. There is, in fact, no other choice if a confrontation between the developed and developing countries is to be avoided.

There are growing fears in the developing world that the current environmental concern in the developed countries will affect them adversely in the fields of trade, aid, and transfer of technology. Some of these fears may be no more than the inherent fears of the weak in any confrontation with the stronger members of the international community. But it is important that they be articulated clearly, analyzed objectively, and provided for in any international arrangements which are made.

There is a fear that the insistence of the developed countries on rigorous environmental standards of products exchanged in international trade may well give rise to a "neo-protectionism." Many of the developed countries will be loath to see their production and employ-

ment suffer if their export prices rise as environmental standards are enforced; they may try to argue that imports from the developing countries based on less rigorous environmental standards should either be taxed or banned. The import-competing sectors and organized lobbies are likely to join in this outcry. Agricultural products may be the first to suffer. Some industrial products, notably chemicals, may fare no better. And from specifics, the argument can quickly go on to a general level. Why be liberal in admitting the products of the developing countries if they are the outgrowth of a "sweated environment"? The humanitarian concern for environment can far too easily become a selfish argument for greater protectionism. The developing countries still confront the argument of "sweated labour"; the argument of "seated environment" will be equally fallacious but even harder to beat.

In analyzing these fears regarding trade disruption, we have to make several distinctions. First, there may be some exports of the developing countries (e.g. lead, high sulphur fuel) which are increasingly displaced by the development of a non-pollutive technology. The recycling of raw materials may also reduce the demand for some primary exports from the developing countries. This is merely the outcome of technological advancement, and all that we can suggest is that there should be an anticipatory study of such export threats, development of an early warning system, and measures to enable the seriously affected countries to restructure their investment, production, and exports. Second, as has already happened in the case of some products on sanitary grounds, there is the possibility of a rise non-tariff barriers against those exports of the developing countries which carry some environmental hazards. Dairy products, fish, meat, fruits, and vegetables are among the likely products where the developed countries may enforce very high environmental standards. Already the import of fruits and vegetables carrying traces of DDT has been banned in certain European countries. Insofar as the standards enforced in the developed countries are primarily meant to prevent health hazards and some international agreement is reached on maximum acceptable standards, it should not be interpreted as a discriminatory move against the exports of the developing countries. But in the meantime, action should be taken to cushion the disruptive effects of such measures on the trade of the developing countries through a system of prior consultation and warnings by the developed countries of environmental actions contemplated by them. In certain cases, the possibility of channeling additional aid toward adapting export industries in developing countries to the new requirements in developed countries or toward a diversification of their exports should also be studied. The real danger is if the environmental standards enforced by the developed countries are unrealistic and unilateral and are arbitrarily invoked by them to keep some of the exports of the developing countries out of their own markets. Finally, the major danger that both developing and developed countries have to guard against is that the argument for better environment may be turned into an argument for greater protection by vested interests. When the concern spreads from the quality of a product to the environment in which such a product was produced, the alarm bells should ring all over the world, for it would be the beginning of the worst form of protectionism.

As a first step, it appears necessary to draw advance attention to the implications of environmental concerns for the continued growth of international trade. Appropriate procedures for prior notification, consultation and coordination will be needed to avoid adverse effects for world trade arising from national measures designed to promote pollution control. Conflicts of trade interests arising in this area should be resolved through existing and evolving arrangements and procedures. In this connection, the existing GATT framework-under which most of the industrialized countries have assumed specific rights and obligations should be further used to mitigate such problems so as to reduce the fears of the developing countries that a desire for a better environment may lead to an increase in protectionism.

It is important that the dimensions of this problem should be carefully defined and more concrete information accumulated so as to serve as the basis of international action. We therefore recommend that a number of specific studies be undertaken to analyze the implications of the current environmental concern for trade disruption. First, a comprehensive study should be made, possibly by UNCTAD of the major threats that may arise to the exports of the developing countries, the character and severity of such threats, and the corrective action that may be possible. Second, the FAO should continue its present useful work on food standards considerations, including contamination, and seek to establish agreed environmental standards and guidelines for the export of foodstuffs. Third, GATT should undertake to monitor the rise of non-tariff barriers on grounds of environmental concern and bring out pointedly any such trends in its annual reports.

There is also a fear in the developing countries that excessive preoccupation with environmental problems will lead to a diminution of aid resources from the developed countries. Since there is an increasing concern in the developed world about the deteriorating quality of life and more attention is likely to be given to their own problems of slums, pockets of poverty, and poor public services, it is argued that this may divert resources from foreign assistance to domestic needs. In a more exaggerated form, the fear is that the concern for environment may become a priority unto itself in the developed countries, like space exploration in the 1960s, and take away resources badly needed for other purposes. Since there has been a progressive weakening of the will in a part of the developed world for giving foreign assistance to the developing countries, anxiety on this score is not entirely unfounded.

Aid priorities and project appraisal may also, it is feared, be distorted by an excessive tendency by the developed countries to apply their own environmental standards unthinkingly to the developing countries. To the extent that aid priorities are influenced by, and are an extension of, the current concerns in the developed countries, it is inevitable that they will respond to the growing environmental concern. Aid donors may well believe that projects meant for environmental improvement should claim a fairly high priority in the developing countries, while the latter may give these projects a

lower priority in the context of their own competing needs. Again, development projects may be help up for their presumed impact on environment if extensive guidelines for project appraisal are developed by the donors, as seems to have happened in the case of some recent hydroelectric projects. These projects may also become more expensive if much higher environmental standards are insisted upon than are appropriate to the developing countries at their present stage of development. By their very nature, environmental diseconomics are very difficult to measure or quantify, and there can be greatly different judgements on the time period over which they may occur and the priority that should be attached to their elimination or reduction in the current design of a project. There is a fear as such that there may be serious distortions in the allocation of aid funds to various projects and even greater delays in the processing of projects in view of the growing environmental concern in the developed countries and its unthinking extension to the context of the developing countries. It is imperative, therefore, that multilateral and bilateral donors do not rush into the preparation of detailed guidelines for project appraisal from an environmental viewpoint without adequate consultation with the developing countries and without providing adequate safeguards against arbitrary guidelines and undue project delays. We realize that the question of a shift of aid from a project basis to a program basis is already under debate and raises many issues beyond the purview of our discussion, but the danger which we point out above should add one further consideration in favour of such a shift. It seems to us desirable that environmental considerations be discussed between donor and recipients on their own merits and the danger must be avoided that discussion of environmental aspects of projects may delay and reduce the flow of aid.

Besides the flow and direction of aid, the kind of technology that is transferred from the developed to the developing world may be seriously affected. It is quite likely that future technological developments in the developed world will be influenced by their current preoccupation with non-pollutive technology. To the extent that these developments are shaped by the environmental problems faced by the advanced countries and do not take into account the conditions in the developing countries, technology which is transferred from the developed to the developing regions may become even more inappropriate than it often is at present. It is also obvious that some of this non-pollutive technology would be quite costly for the developing coutries. No definite estimates are at present available as to how costly the non-pollutive technology may be (vague estimates ranging between 5 and 20 per cent are often mentioned). We propose that further research be undertaken in this area, preferably under the auspices of the United Nations Committee for Science and technology. If such equipment is significantly more expensive than the present technology, its export to developing countries under tied credits will further reduce the real content of foreign assistance.

All these are legitimate fears. But they should not be exaggerated. In any case, the best strategy for the developing countries is to articulate them fully and to seek opportunities to turn the environmental concern in the developed countries to their own advantage or at least neutralize its adverse implications.

There is, first of all, prospect that the global concern for environment may reawaken the concern for elimination of poverty all over the globe. An emerging understanding of the indivisibility of the earth's natural systems on the part of the rich nations could help strengthen the vision of a human family, and even encourage an increase in aid to poor nations' efforts to improve and protect their part of the global household. There is at least a chance that the legislatures in the developed world may be more, not less, forthcoming in their allocations for foreign assistance as they face up to the problem of deteriorating quality of life at home in the midst of obvious affluence. This opportunity must be seized. For this, the environmental problem has to be placed in its proper perspective both in the developed and the developing countries. It should be treated as a problem of the most efficient synthesis of developmental and environmental concerns at different stages of social transitions. Furthermore, it must be emphasized in all international forums, including the Stockholm Conference, that it is for the developed countries to reassure the developing world that their growing environmental concern will not hurt the continued development of the developing world, nor would it be used to reduce resource transfers or to distort aid priorities or to adopt more protectionist policies or to insist on unrealistic environmental standards in the appraisal of development projects.

The environmental concern can also be utilized for greater support for projects and programs in the social sectors. Traditionally, the aid-giving agencies have tended to frown upon such projects and programs for their presumed low rate of return, at least in the short run. But investment in human resources is now catching the imagination of the donors. Programs in education, nutrition, public health, water supply, and other social services are beginning to be regarded favourably. Here is another opportunity that can be grasped. The developing countries can use the growing concern for social services in the developed world to escape from the tyranny of financial rates of return in traditional project appraisal, to seek broader international support for their social programs in conformity with their own national priorities, and to obtain a greater amount of local currency financing for these programs and projects.

There may well be other opportunities. If there is a growing concern about the pollutive effects of synthetics industries, the present rate of substitution for natural resources of the developing countries may at least tend to slow down. If there is a concern about the depletion of natural resources, opportunities may open up for reexamination of prices negotiated under long-term commodity agreements and renegotiation of concessions for minerals and oil. If there is a technology based on recycling of raw materials, it could also help the developing countries by opening up opportunities for saving in resource use, use of waste materials, and more efficient management of their own development. If there is a universal concern for global environmental problems, additional financial resources may become available from the deve-

loped world to combat these problems at an earlier stage in the developing countries. Special attention could also be given to seeking out other possibilities of achieving complementarity between the Second Development Decade strategies and efforts in the field of human environment. The main strategy should be to seize these and other similar opportunities, to enlarge their scope, and to build upon them the edifice of more beneficial international economic relations. Attitudes of isolationism and indifference will hardly help in a world drawn increasingly closer; the developing countries must articulate their own interests in the changing pattern of trade, aid, and technology.

In this context, there are two major issues that we considered at some length; the opportunity for relocating industries with pollutive implications in the developing countries and the possibility of setting up a Special Fund for financing the implications of the environmental concern for the developing world. Our deliberations on these two issues are set down below.

The enforcement of higher environmental standards in the developed countries is likely to raise the cost of production of several "pollutive" industries such as petroleum and chemical industries, metal extracting and processing industries, and paper and pulp industries. Such a development opens up an opportunity for the developing countries to move into some of these industries if their natural resource endowments, including relatively less used environmental resources, create a comparative advantage in these fields. Such efforts should not, however, lead to a discarding of environmental standards adopted by the developing countries. Unfortunately, this whole subject bristles with controversies. There are those who argue vigorously that there should be no export of pollutive industries from the developed to the developing world. There are others who believe, just as strongly, that the opportunity for a better geographical distribution of industries must be seized immediately irrespective of any environmental costs. The elements of a sensible policy probably lie somewhere in the middle of these two extreme viewpoints. First, industries which may be regarded as pollutive in some advanced countries because of their more limited environmental carrying capacity may well not be pollutive, or much less so, in the context of the developing countries with much less environmental pollution at present. Second, environmental standards and costs are likely to be quite different in the developed and in the developing world, so that the developing countries may still possess a comparative advantage in some of these industries, despite the adoption of certain environmental controls in conformity with their own requirements. Third, there is no reason why the developing countries should permit foreign investment that comes to their countries into pollutive industries to escape more stringent environmental standards back home if it results in a high rate of remittance of profits and even a lower net transfer of resources. In any arrangement that is made, it must be ensured that (a) foreign investment is on favourable terms and conditions, (b) it adds to the net transfer of resources, and (c) it conforms to the environmental standards that the recipient country wishes to impose in the light of its own stage of development and its own cultural and social objectives. So long as these safeguards are provided, there is no reason why the developing countries should not increasingly specialize in certain industrial fields, both for home market production and export purposes, which are going to become more costly for the developed world because of their growing concern with environmental standards.

We have also discussed the question of who pays for the higher costs arising out of the environmental concern and how the burden is to be shared between the developed and the developing world. Looking at the problem strictly from the point of view of the developing countries, it is quite clear that additional funds will be required to subsidize research for environmental problems for the developing countries, to compensate for major dislocations in the exports of the developing countries, to cover major increases in the cost of development projects owing to higher environmental standards, and to finance restructuring of investment, production or export patterns necessitated by the environmental concern of the developed countries. There was some discussion on how these additional funds should be provided. A proposal was made that a Special Fund should be set up specifically for this purpose. It was, however, felt that the consideration of a Special Fund was premature at this stage and the additional funds could as well be channeled through the existing international machinery so long as they could be clearly earmarked for the above stated objectives, and clearly recognized as being additional. While the precise mechanism for the channeling of additional funds could not be discussed by us in any comprehensive manner, it was generally agreed that additional resource flows in one form or another will be needed.

Finally, there is a need for coordinating various international activities in the field of environment as well as for diffusing knowledge among developing countries of the nature and scope of these activities. Adequate institutional arrangements should be ensured for this purpose.

The subjects discussed in this section are closely related to the Strategy for the Second Development Decade as adopted by the United Nations. It is suggested that the considerations set out here should be taken into account during the review and appraisal of this strategy.

Implications for Policy Action

Our effort in this Report has been to draw attention to the interrelationship between development and environment and to provide an overall framework within which environmental policies can be formulated. We have hesitated to make many specific proposals both because we did not have the full information or the time to consider them and because we believe that these proposals can only be formulated by the developing countries themselves in the light of further research and study. In the present section, we are grouping together some of our recommendations which have implications for policy action, with a view to focusing attention on a few selected areas of policy. The list is neither complete nor exhaustive; it is only an invitation to further work and thought.

Before summarizing our policy-oriented recommendations, we would like to point out that considerable work is presently proceeding in Intergovernmental Working

Groups to identify areas of national, regional, and international action. We have not had any access to this work, since much of it was continuing or was to follow when we met. This also explains some of the gaps in our recommendations, which we hope will be filled by the deliberations of these Working Groups.

We have stated our recommendations in a summary fashion below, since elaboration of all of them is available in the relevant sections.

Development Strategy

1. The projected reivew and appraisal of International Development Strategy for the Second Development Decade should aim at integrating the environmental concern within the framework of development policies.

2. The developing countries should include environmental improvement as one of the multiple goals in a development plan and define its priority and dimensions in the light of their own cultural and social values and their own stage of economic development.

3 The development objectives should be redefined to include greater stress on income distribution and employment, more attention to social services and welfare-oriented public goods, and greater provision for political participation. There should also be a greater quantification of social goals.

4. Each developing country should define for itself the minimum environmental standards that it is seeking in various fields and sectors, such as public health, nutrition, water supply etc., and measure its progress toward these "norms" by developing environmental indicators.

5. In order to incorporate the environmental concern in development planning, greater attention should be devoted to the policy areas concerning location of industries, land use policy, physical planning, and community development.

6. The developing countries should attempt to mobilize surplus labour for projects of environmental improvement.

Project Appraisal

7. The developing countries should formulate specific guidelines for project appraisal, taking into account environmental considerations. The soical costs and benefits of projects, including their favourable and unfavourable impact on environment, should be fully reflected in these guidelines.

8. The developing countries should take the initiative to discuss the formulation of such guidelines at the level of the regional economic commissions, regional banks, and other relevant international agencies.

9. It would be undesirable that rigid guidelines for project appraisal from an environmental viewpoint be laid down by multiiateral or bilateral donors at this stage without adequate consultations with the developing countries through various appropriate forums.

Research and Study

10. The developing countries should initiate surveys of the present state of their environment and the major hazards to which it is exposed.

11. It would be useful to compile all existing legislation regarding environmental control, including the regulations dealing with urban zoning, location of industries, protection of natural resources and so on.

12. Research should be concentrated into matters of urgent environmental concern, such as soil convservation, land management, rural-urban interaction patterns, location and physical planning of new urban centres, and other such environmental issues in each sector as are of immediate relevance to the conditions of individual countries.

Institutional Requirements

13. There is need for more study and research on the effectiveness of various forms of direct and indirect controls over environment so that a range of specific policies is available to the developing countries from which they can choose in accordance with their requirements and preferences.

14. The developing countries should make appropriate institutional arrangements for the implementation and monitoring of environmental policies, including establishment of any new institutions or legislation for this purpose.

Information and Education

15. Some thought should be given to building the growing environmental concern into education curricula.

16. Public opinion should be informed of environmental problems and policies through programs of mass information.

Trade and Aid

17. A comprehensive study should be made, possibly by UNCTAD, of the major threats that may arise to the exports of the developing countries from the environmental concern of the developed countries, the character and severvity of such threats, and the corrective action that may be possible.

18. FAO should continue its present useful work on food standards considerations, including contamination, and seek to establish agreed environmental standards and guidelines for the export of foodstuffs.

19. GATT should undertake to monitor the rise of non-tariff barriers on grounds of environmental concern and bring out pointedly any such trends in its annual reports.

20. The developing countries should explore the possibilities of increased specialization in certain industrial fields, both for home market production and export purposes, which are going to become more costly for the developed world because of their growing concern with environmental standards. Such efforts should not, however, lead to an indiscriminate export of pollution by developed countries or to a discarding of environmental standards adopted by the developing countries.

21. The aid agencies should consider greater support for projects in the social sectors, both by providing larger assistance and through the provision of local currency financing and program lending.

International Action

22. The developed countries should ensure that their growing environmental concern will not hurt the continued development of the developing countries, or result in a reduction of resource transfers, or distortion of aid priorities, or adoption of more protectionist policies, or insistence on unrealistic environmental standards in the appraisal of development projects.

23. Additional aid funds will be required to subsidize research on environmental problems for the developing countries; to compensate for major dislocations in the exports of the developing countries; to cover major increases in the cost of development projects owing to higher environmental standards; and to finance restructuring of investment, production, or export patterns necessitated by the

Cont. on page 41

Cont. from page 31

environmental concern of the developed countries. A suitable mechanism for the channeling of these funds should be devised.

24. Research should be undertaken on how costly the non-pollutive technology is likely to be in various sectors and fields, preferably under the auspices of the United Nations Committee for Science and Technology.

25. Adequate institutional arrangements should be made for coordinating various international activities in the field of environment as well as for diffusing knowledge among developing countries of the nature and scope of these activities.