

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

FIFTH MEETING

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WCED/86/4

MEMORANDUM

TO: All Members of the World Commission on Environment and Development

FROM: Jim MacNeill, Secretary General

DATE: 9 May, 1986

RE: The Need for Greater International Co-operation:
Provisional Draft of Chapter IV

1. Attached is a provisional and partial draft of Chapter IV entitled "The Need for Greater International Co-operation". The purpose of this chapter, as conceived in Sao Paulo, is to rearticulate the case for international co-operation from an environment and development perspective, in the light of the experience of the past 15 years, and the implications of the critical trends through the year 2000 and beyond.
2. Before reading it, there are a number of points that Commissioners should note.
3. The first is that the draft pre-supposes that the reader will come into it from Chapter I (A Common Concern); Chapter II (The Environment and Development Connection); and Chapter III (Towards Sustainable Development). Commissioners should have received a provisional draft of Chapters I and II, but not Chapter III, which is not yet ready. This is a bit awkward for our discussions in Ottawa, since Chapter III will lay much of the foundation for this chapter. It will, for example, describe the great transition through which the world is now passing, with a full discussion of the key trends, their interrelatedness and their persistence into the next century. It will also describe the principles of sustainable development.
4. The second point to note is that several of the essential messages of the Commission need to be woven further into this chapter, even though they are stated in various ways in the first three chapters, for example:

- that the gist of the environment and development problematique has moved "South", not because of excessive development, but because of lack of development and mal-development;
 - that environment and development problems that were once largely local have become increasingly regional or global in scale and that resolving them is in the self-interest of all;
 - that with proper management and available technologies, many of the problems arising out of the transition can be reduced or even avoided;
 - that the experience of the past two decades demonstrates that the pre-conditions for proper management, including the early integration of environment in development, can be created;
 - that science and technology can be harnessed to support sustainable development;
 - that the resource and environmental content of future growth can be reduced; etc.
5. It is important to note that this is an incomplete text; several sections have needed to be left open for completion after Ottawa, including
- the section on international law, under directions for change;
 - the final section on the global commons, including marine and coastal waters, antarctica and outer space.
6. There is a noticeable absence of material on Eastern Europe; in terms of perspective, in terms of examples and in other terms. This is a general problem and one on which we must depend on Commissioners from Eastern Europe to assist us.
7. Finally, it should be stressed that the chapter is not intended to be a "stand-alone" chapter, but an integral part of the Commission's report. One should not, therefore, look for an extensive treatment of all of the issues mentioned in this one chapter.

Action Required: Discussion and Direction

Draft Chapter IV

THE NEED FOR GREATER INTERNATIONAL CO-OPERATION

I. THE GREAT TRANSITION

1. The planet earth and its biosphere was always ONE, a grand synthesis of complex systems within systems, interactive and dynamic, the source of life, the foundation for all activity, sustainable through all time. That was the abiding reality... or so it was confidently assumed. The human world, on the other hand, man's organization of his occupancy of the earth to fulfil his purposes was dependent on the earth but also separate from it... or so it was equally assumed.
2. The enormous transition underway in the relationships between the human world and its development and the planet earth and its biosphere has now overtaken these comfortable assumptions. The planet earth and the human world have become ONE, united by the interrelated dynamics of technological, economic, ecological, demographic and other forces. These forces belong less and less to sovereign national systems; they belong more and more to complex and interdependent regional and world systems. Gathering strength at ever increasing rates on ever greater scales and with rising impacts, they have changed the conditions for successful governance, and they have created new imperatives for international co-operation.

3. This is the insistent message that emerges from the Commission's work. At all levels, local, regional and global, the growth of economic interdependence has been increasingly matched by the growth of ecological interdependence. The two are now completely intermeshed.
4. This has enormous implications for development. In the future, for example, national economic and social development will not only impact on international ecosystems (the traditional concern of international environmental management) but also, and increasingly, national development will be conditioned by reverse impacts from the ecosystems affected. While this has long been evident at the local scale, it is now manifest at the regional scale, whether in Africa with desertification and "ecological refugees", in Asia and Latin America with deforestation, or in Europe and North America with acid rain.
5. In fact, environment and development problems that were once largely local in scale have become increasingly regional or global in scale. Moreover, there is a significant, on-going shift in the locus of environment and development issues. It is moving "South", not because of excessive development, but because of lack of development and mal-development.
6. Ecological interdependence became an early object of international co-operation, emerging around the turn of the century. Local, small-scale and conceived largely within a "conservation" ethic, it focussed initially on boundary water resources and migratory species. In the last two decades,

however, ecological interdependence on a regional and global scale has entered the political agenda and has found significant expression in international law and institution-building.

7. Limited concepts of economic interdependence emerged into political consciousness at a comparatively late date and, only after the Second World War did they become the object of serious international economic institution-building. This was driven, in part, by post-war circumstances that were quite exceptional and in order to address a range of issues that were, and were perceived to be, quite different.
8. In 1945, most critical decisions affecting the world community could be taken by a few sovereign states: only 51 were among the original signatories of the UN Charter. Since then, more than 100 new nation states have emerged, giving rise not only to a more pluralistic world community, but also to a much more divided global ecosystem.
9. In 1945, there was a broad consensus on more or less Keynesian lines. Today that consensus has broken down and no new consensus has replaced it. The same is true of the "development consensus" of the '50s and '60s. At the same time, the world economy has evolved in ways that increase the breadth and depth of interdependence with stronger networks for expanding trade, for commerce and capital movements, and for flows of communications, energy, mineral and agricultural products, technology and labour. In 1945, the scale of impact of technology and development was more often contained within the borders of a city, province or

nation state and could be managed within those boundaries: today this is more often not the case. In 1945, traditional decision processes could keep up, more or less, with the pace of change: today, they have fallen far behind and can't catch up - let alone keep up.

10. The most complex environment and development issues emerging from the transition derive directly from the growing intermeshing of economic and ecological systems. Working in synergistic combination to reinforce each other positively and negatively; these issues are only now beginning to confront nations. Emerging swiftly, they are perhaps the most significant consequence of the transition, providing the new "objective reality" for international relations through the year 2000 and beyond. They represent the new challenge for international co-operation.
11. Following a brief discussion of the new issues, let shall look at the significant growth in international co-operation to manage ecological interdependence that has taken place during the past several decades. Then, we turn to the more complex questions associated with managing economic and ecological interdependence, which will increasingly dominate the international agenda. Throughout the discussion, we cite a number of examples, and conclude with the special case of the global commons: including marine and coastal waters, outer space and antarctica. Further examples will be found in later chapters, and in the final chapter we return to international co-operation with some concrete recommendations for action now.

II. A NEW CLASS OF ISSUES

12. The transition has given rise to a new class of issues that are both quantitatively and qualitatively different than anything in our historical experience. These issues are distinguished by the same characteristics as the transition itself: rapid pace of change; vast scope and scale of impact; accelerating and irreversible interdependence between development and the ecological basis of development. They are marked by an open-endedness, a dynamic clustering around common sources in various policies. They are marked by varying degrees of uncertainty, reversibility, cumulative synergism and inter-generational transferability of costs and benefits. And they are stamped by an insistent, horizontal reach across institutional sectors and political boundaries that will not be denied.
13. The capacity of the economic, trade and development system to transmit pressures from one region to another is now a significant factor in their successful management. To take a couple of examples: we have long known that, because of the largely closed nature of this planet's life-support system, many physical spill-overs have a global reach - some persistent chemicals, for example. Action to ban or severely restrict the use of such chemicals would come under the standard agenda for environmental action. We now know, however, that banning or restricting the use of such chemicals in one region may simply increase the pressures to export and dump them in other regions. Action to deal effectively with that requires entirely different forms of international co-operation. They are much more

difficult, bringing us into complex areas of industrial policy and trade policy and raising awkward questions of institutional mandates and national sovereignty.

14. Through the trading system, higher levels of consumption in one region can quickly translate into increased pressures on the environment of another, more distant region. North American soils, for example, have not escaped the pressures generated by the food needs of a growing world population and are today under serious attack from erosion. Mostly, however, the external environmental costs of production move in the other direction. In fact, as discussed in a later chapter, a large transfer of environmental costs from the richer industrialized to the poorer resource-based economies is built into existing and projected trading patterns. Moreover, policies narrowly conceived to address debt and balance of payment problems can also translate into increased pressures on the environment that effectively reduce the future development potential of the countries and regions concerned.
15. The critical issues of environment and development emerging from the great transition, considered against the backdrop of existing forms of international co-operation, reveal a large and growing gap between man's capacity to change the biosphere through development, which is leaping upwards at unprecedented rates, and his capacity to manage those changes in the interests of both the biosphere and development, which is at a comparative standstill. Some attempts have been made to narrow this gap and, as discussed below, a number of successes can be identified. But the

general response to date has been largely one of fear and retrenchment around old forms, with governments pulling ever more insistently at levers that are no longer connected effectively to the forces they are designed to influence.¹⁾

16. This gap is most striking and it is widening most rapidly at the international level. In fact, the most perilous paradox of the past decade has been the steady erosion of support for international co-operation in face of the rapidly rising need for it. The results are all too clear in the opportunities missed in the areas of macro-economic performance, trade and development; in the now third energy shock, the consequences of which will further undermine the ecological basis for future development; and in the opportunities missed for strengthening the human and physical resource base for food security in Africa and Latin America. The results are also clear in the growing number and scale of crises having to be confronted.
17. Few institutions today, national or international, have a mandate that reflects this new reality. The central economic, trade, finance, planning and development agencies, and the agricultural, forestry, energy, industry and other sectoral agencies have all inherited fragmented responsibilities that attempt to deal with interdependent issues, including the environment, as if the linkages did not matter: yet, these linkages are critical. As for environment, the inherited agenda, although very recent in origin, is an environmental agenda, pure and simple - it takes development as a given.

18. There is today no "environment and development" agenda, neither at the national nor at the international level. There are a large number of fragmented pieces, which are the territorial preserve of a lot of separate and largely independent agencies, but nowhere have they been brought together in a set of integrated agendas.
19. The difficult fact is that, as presently conceived and organized, most of our existing institutions are by mandate and structure incapable of handling the new class of issues emerging from the great transition. If these institutions can be adapted in time to manage both the new issues, and the enormous problems and opportunities they present, then there are grounds for confidence that humanity can pass through the next century building a future that is "more prosperous, more just and more secure" for all.
20. It is a race against time, but it is a race that can be won. The question is not one of finding adequate resources. We devote huge resources to pushing back the frontiers of science and technology and to refining the arts of offence and defence; we devote comparatively none to the modernization of our human institutions. The question is one of will. Internationally, we have yet even to establish a serious process for the systematic examination of the pre-conditions for such modernization. ¹⁾

III. THE MANAGEMENT OF ECOLOGICAL INTERDEPENDENCE

21. The new issues began to emerge around the turn of the century and early efforts at international environmental co-operation were largely ad hoc, tied to physical spill-overs from economic activity or tied to resources which crossed or physically constituted the boundaries of neighbouring states in Europe and North America.
22. Since mid-century, there has been a rapid expansion of international law and, since 1970, of international institutions to facilitate management of the effects and physical spill-overs or of the use of shared resources.

International Law

23. Prior to 1960, most relevant international agreements dealt with the use of transboundary waters, especially for navigation, fishing, and hydro-electric power (e.g. the Boundary Waters of North America, the Rhine, the Danube, the Black Sea, and Lake Constance in Europe). International agreements on rivers shared by developing countries came only after 1960 (e.g. the Indus river basin in Asia, the Plate River basin in South America, and the Niger, Chad and Senegal river basins in Africa).
24. The protection and conservation of flora and fauna were not significant international concerns of governments prior to 1960, although there were a few agreements which had been signed by different groupings of European countries and, in 1948, a major new international non-governmental Union for

Conservation of Nature and Natural Resources (IUCN) had been established. Transboundary air pollution was also not a major multilateral issue before 1960, although the United States versus Canada Trail Smelter Case in the 1930's established a new approach and precedents for the later development of international law.

25. At mid-century, an entirely new category of international issues was added to the multilateral agenda with the emergence of concerns for areas beyond the national jurisdictions of states. Between 1946 and 1960, the first few of many global and regional conventions were concluded on the prevention of marine pollution and the conservation of ocean living resources (e.g. the regulation of whaling, the prevention of pollution of the sea by oil, and conservation of North Pacific fur seals).
26. In just over two decades following 1960, more than twice as many multilateral conventions relating to environment were negotiated and signed than existed before, with the United Nations Conference on the Human Environment at Stockholm in 1972 serving as the major pivotal point in that accelerating process. With a few important exceptions, many of the multilateral agreements concluded in the 1960's supplemented or extended existing conventions (such as those on marine pollution and the conservation of ocean living resources), or they were applications in new regions of principles and procedures already established in others (such as those on international rivers in Africa, Asia and South America referred to earlier). A unique exception

was the 1967 Outer Space Treaty which established the new concept of a global commons as "the province of all mankind", and the principle that any exploration and use of it "should be carried on for the benefit of all peoples!"

27. Since 1970, a new series of global and regional agreements have been concluded, stimulated in large part by the new knowledge and public and political concern generated for and by the Stockholm Conference. Four distinctive and major thrusts have been:

27.1 the conservation of endangered species and habitats of international significance (e.g. conventions on Wetlands in 1971, on Protecting the World Cultural and Natural Heritage in 1972, on International Trade in Endangered Species in 1973, on Conservation of Migratory Species in 1979);

27.2 the negotiations over a decade on a new and comprehensive oceans legal regime, culminating in the 1982 signature of the Law of the Sea Treaty;

27.3 development of multilateral agreements and action plans for major regional seas (e.g. Baltic in 1974, Mediterranean in 1976, Kuwait Regional Convention in 1978, South-East Pacific in 1981, Red Sea and Gulf of Aden in 1982, Caribbean in 1983);

27.4 new multilateral agreements and joint programmes for monitoring, evaluating and eventually reducing long-range transmissions of air pollution (e.g. 1979 Geneva Convention on Long-range Transboundary Air Pollution).

28. In addition to these main thrusts, two conventions dealt with entirely new issues related to military activities (e.g. the 1977 Convention on Prohibition of Military or any other Hostile Use of Environment Modification Techniques).

International Institutions

29. As with international environment law, the post Stockholm Conference period saw a rapid increase in the number and expansion of programmes of international organizations dealing with environmental and natural resources problems. Prior to 1972, the majority of relevant international organizations were commissions or similar groups dealing with international river basins or marine fisheries (eg. Rhine and Mosel river commission, Indo-Pacific and Mediterranean fisheries commissions), and the principal global organizations devoted exclusively to environmental issues were the non-governmental International Union for Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF). In the late 1960's however, several existing global and regional inter-governmental organizations added major new committees and programmes on environmental issues (eg. UNESCO's Man and the Biosphere programme and in Europe the UN/ECE, OECD and Council of Europe).
30. The Stockholm Conference led directly to the establishment by the General Assembly in late 1972 of the United National Environment Programme (UNEP) with a Governing Council of 58 member

states to provide policy guidance for the direction of the programme, and a small Environment Secretariat to serve as a focal point for environmental action and co-ordination within the United Nations system.

31. Within a few years after the Stockholm Conference virtually all of the global organizations and regional economic commissions of the United Nations system had added new programmes, projects and a small staff unit on environment. Simultaneously, many of the regional inter-governmental organizations outside the United Nations System had also either expanded existing or created new environmental programmes and units (eg. CMEA, Nordic Council).
32. Major new international non-governmental organizations (INGO's) were also established after the Stockholm Conference (eg. IIED, Greenpeace International), and new and increasingly effective international coalitions, networks and programmes among national environmental NGO's were created (eg. regional groups such as European Environment Bureau, Asia-Pacific Peoples Environment Network, African network of Environmental NGO's, and global coalitions such as Pesticides Action Network, INGO Working Group on Development Assistance, Seeds Action Network). To promote information exchanges and closer contacts among the many national and international NGO's, an independent Environmental Liaison Centre (ELC) was established in 1974 in Nairobi. By 1985 the ELC had over 230 organizational members, with the majority from developing countries, and was in contact with over 7,000 others.

33. Given the time lags associated with change in perceptions, attitudes and institutions, especially at the international level, this is a record of enormous achievement. Even more so when one recognizes that underlying it all at the national level was a similar explosion of laws and institutions, especially after 1970. This demonstrates clearly that advances in the basis for international co-operation, even rapid advances, are possible, especially when people and governments become jointly convinced that the potential for life and development in a shared ecosystem is threatened.
34. Yet, however rapid these advances were from an historical perspective, they were not sufficiently rapid to keep up with the pace of change and scale of impact of economic growth and technology on shared resources and ecosystems. And, as discussed later, they hardly touched the more complex issues emerging from the intermeshing of economic and ecological interdependence.
35. Even as regards the management of ecological interdependence, the advances were not uniformly shared, but concentrated in the industrialized countries. Of the world's 200 international river basins shown on the enclosed map, for example, only are subject to any kind of an agreed regime, and of these flow between the industrialized countries. Moreover, agreed regimes tended to be limited largely to questions of flow and quality rather than questions of development.
36. The same is true of regional airsheds. (expand on this)

37. Several forms of physical spill-overs and interdependencies were not adequately recognized or addressed. This includes, for example, agreed measures to control the spill-over or encroachment of deserts from one state into neighbouring states (map). It includes agreed measures under which neighbouring and distant states would be automatically and fully informed of radioactive fall-out from nuclear accidents, etc.
38. Moreover, the advances were predominantly effects-oriented, reflecting a react-and-cure approach rather than source-oriented, enabling an anticipate-and-prevent approach. This is natural, since they developed largely in response to situations where significant damage had already occurred or appeared imminent (e.g. preservation of endangered species instead of biological diversity). For this reason, perhaps, they deal largely with the mutual obligations of sovereign states to each other and too little with the collective rights and responsibilities of all peoples and nations (e.g. with respect to areas outside national jurisdictions, to future generations or even other species).

IV. THE MANAGEMENT OF ECONOMIC AND ECOLOGICAL INTERDEPENDENCE

39. Given the record of achievement to date, however, it seems clear that these deficiencies could be overcome given sufficient time, resources and the free flow of information essential to generate political will. It provides grounds for some optimism even though the growing intermeshing of economic and ecological systems has significantly altered the nature of the challenge.
40. Ecological interdependence married to economic interdependence brings an essential spatial dimension to economic, trade and sectoral policy and to considerations of international co-operation thereon. While a spatial dimension is by no means new to environmental management, it features only rarely as an explicit factor in macro-economic, finance and trade policy. The significant intermeshing of economy and ecology requires that this become the rule.
41. World development at the pace and scale projected through the year 2000 and beyond requires the continued rapid expansion of economic, trade, finance and sectoral relationships. But the anatomy of these relationships as discussed in earlier chapters, shows that in many resource-based and other sectors sustainable economic and trade growth depends on sustaining the ecological basis of that growth through mutually reinforcing policies. There are a growing number of major issues on the separate and fragmented agendas of central economic, environmental and sectoral agencies, national and international, that demonstrate this.

Soil Degradation, Poverty, Agriculture and Trade Policies

42. Look, for example, at the links between the rich incentive-driven food surpluses of North America and Europe on the one hand and the threat to sustainable agriculture on the other, both in those regions and in many regions of the Third World.
43. As discussed in Chapter VI, these policies have induced the occupation of marginal lands, the overuse of fertilizers and pesticides and a range of other phenomena designed to achieve short-term gains in agricultural production and profitability. In a growing number of areas, however, these practices have caused erosion and other forms of permanent degradation of the soil base. The result has been lower productivity and great economic losses to the agricultural community.
44. Virtually the entire food cycle in North America, Western Europe and Japan now attracts direct or indirect subsidies. The system has become extremely expensive and imposes a heavy and annually increasing burden on the budgets and debt load of the countries concerned. The system has also led to huge and unmanageable surpluses. They have created a context in which it has become politically necessary to raise protective barriers against certain agricultural imports, including those from developing countries heavily dependent on exports of agricultural products.

45. They have also created a context in which it is politically attractive and often cheaper, to ship the surpluses at subsidized prices or as food aid rather than store them. While there is no doubt that food aid is essential in emergency situations, outside of such situations the growing volume of food aid tends to compound the real problems of receiving countries. Indeed, the most serious consequence of this cluster of policies is the depressive effect it has on much needed but politically very difficult measures to reorient agricultural policies and thus combat rural poverty in receiving nations. Rising numbers of rural poor find themselves resting on the fringes of the development process longer than would otherwise be the case. Their marginal status drives them to seek their livelihoods in marginal environments, over-harvesting fuelwood stocks, over-grazing grasslands, engaging in slash-and-burn farming of forest lands, inducing erosion and stimulating the spread of deserts.
46. This cluster of interdependent policies, fragmented in their origin, accelerates the degradation of the resource base for agriculture and food security not only in the industrialized market economies but also in certain developing economies. Everyone loses. Looking to the year 2000 and beyond, it seems clear that these policies cannot be sustained. The increasing burden on budgets, and the prospects of a destabilizing trade war in subsidized agricultural products, is being questioned in Brussels, Washington and other capitals. The destructive effect of these policies on the resource base of agriculture caused the US and Canadian Governments and the European Communities to ring official

alarm bells in 1985. Their equally destructive effects on the economy of certain developing countries needs to be highlighted and taken fully into account.

47. Unfortunately, none of the economic, trade and environmental institutions put in place since the Second World War has the mandate or the structure to enable it to consider and advise on this new class of mega-issues, stemming from a cluster of policies with a reach across institutional sectors and national boundaries. The mandate of environmental agencies, including UNEP, would focus on the effects and propose soil and water conservation programmes, sustained yield forestry, tree planting, watershed management, research, monitoring and other programmes. While such programmes are vital, they can be, and often are, undermined completely by the countervailing impact of more powerful economic, tax, agricultural and trade policies. Yet, most economic, trade and financial agencies would fail to take into account the economic costs, trade and financial implications of a depreciating resource base. Many agricultural agencies would recognize it them, but would nonetheless be forced to continue to give priority to measures to secure short-term gains in production, even in the face of falling productivity.

Tropical Deforestation, Settlement and Trade Policies

48. Another example of the new class of issues is provided by the linkages between the accelerating destruction of forests in tropical countries on the one hand and agricultural settlement and trade policies on the other. The sources of destruction

vary greatly from country to country. In many countries, especially those in Asia and South and Central America, governments are actively promoting the settlement of forest lands through land grants and resettlement schemes and the opening of precarious roads. The roads and settlements are sometimes financed through international banks and multilateral and bilateral assistance with scant, if any, regard for sustainability of the development being promoted. The millions of rural poor and landless who move in search of hope end up paying the costs of unsustainable development with their lands, their lives and their cultures.

49. Deforestation can, and often does, lead to serious damage downstream, permanently reducing the development potential of the country. The Central American highlands and the Andean range have seen a frightening increase in the frequency of flooding of areas otherwise capable of sustainable development in lowlands. Increased flooding and erosion can impact on several nations at once, as witness the damage from erosion caused to the 1.25 million sq. km Ganges river basin with its 350 million people in Nepal, India and Bangladesh.
50. Development pressures take other forms as well. The need for investment and jobs, or for foreign currency to retire a nation's debt and improve its balance of payments, can make the cutting of tropical forests for immediate gain extremely tempting and experts in short-term accounting can always justify the economics involved. The world's demand for tropical hardwoods has increased by leaps and bounds over the past three decades. Since 1950 the developed-world

consumption of tropical hardwoods has increased fifteen times. Producer-region home consumption has increased three times, until now each accounts for about half of the total.

51. Almost one half of the world's total imports of tropical timber (or nearly three-quarters of developed-world imports) is accounted for by one country, Japan, which takes nearly two-fifths of all its lumber imports from one region (or more than three-quarters of the region's exports) i.e. the countries of Southeast Asia including Malaysia, Indonesia, Papua New Guinea and the Philippines.
52. Two-thirds of Japan's mountainous terrain is now covered with forests and it could supply a substantial part of its hardwood needs from its own forests (although, never its voracious appetite for pulp and paper). Yet annual removals from these forests have been reduced by half during the past 20 years, until they now represent considerably less than annual growth. Having to compete with the lower costs of imported hardwood timber, domestic Japanese forestry industry now finds itself lacking the capacity, and the incentive, to maintain many of its own forests in good quality.
53. Thus, the post-war Japanese trade policy of large scale timber imports, coupled with the small-size and weak structure of its domestic wood-processing industry, has had the effect, perhaps unintended, of further weakening its own forest resources as well as the resource base of tropical timber exporting countries. Again, everybody loses. The price of a ton of tropical hardwood exported to

Japan and other countries does not nearly reflect all the costs that have gone into its production - especially costs associated with resource depletion and environmental damage. These costs, including soil erosion, watershed degradation, flood-and-drought regimes, siltation of dams and reservoirs, irrigation channels, industrial installations and port facilities are putting severe strains on the economies of tropical timber exporting nations, apart from the eventual decline of export revenues from depleting forest resources.

54. As in the earlier case of agriculture, the economic, trade, forestry and environmental institutions now in place are not well suited to address this type of mega issue. Attempts have been made at national and international level over the past three decades, and an impressive number of measures have been adopted including several conventions and agreements that bear directly or indirectly on forests in the humid tropics. Given the trends, however, it must be admitted that they have not been effective. Most have suffered from the limited mandates of the agencies involved, and those that have been implemented, normally either provided or facilitated investment in development without regard to sustainability. The investors sometimes enjoyed a quick return before the ecological basis of the development was destroyed. Sometimes they didn't. In either case, investment has served to reduce, often permanently, the future development potential of the community concerned.

55. If the aim is to assist host countries to achieve sustainable development of their tropical forests through integrated management, as discussed in Chapter VI, new forms of regional and international co-operation will be needed, with open agendas within which relevant policies, including trade, credit and aid policies can be concerted. In recent times a few encouraging, if very partial, steps in this direction have been taken. The Convention on International Trade of Endangered Species is among the best applied. It relates, of course, to all species, not just those from the tropics. The Amazon Pact, an attempt to bring all parties together in a single entity, has not yet become a working entity. The most significant recent attempt to build sustainability provisions into a trade agreement is the 19.. International Tropical Timber Agreement. In the light of what was said earlier, it is encouraging to note that Japan was one of the prime movers behind this agreement, which was successfully negotiated under the aegis of UNCTAD.
56. While it is much too early to know whether the sustainability provisions of this agreement will be taken up and implemented effectively, it does suggest certain useful directions for change. In the future, for example, international agreements on trade touching on resources should as a matter of course build-in provisions to ensure the sustainability of the resource being exploited. When the market cannot capture the damage costs associated with the development and reflect them in prices, alternative mechanisms should be considered. This should not, of course, be limited to international commodity agreements covering agricultural products such as cocoa,

rubber, sugar, jute, etc. It should also apply to loans from the World Bank, regional banks and private banks and to agreements providing bilateral and multilateral assistance for investment in any development which impacts on resources.

57. This would require significant change in the goals, mandates and structures of the organizations concerned and we will return to this subject in the final chapter. It will also require corresponding changes at regional and national level, which are equally difficult.

V. THE MANAGEMENT OF UNCERTAINTY/REVERSIBILITY

58. It is common to observe that environmental issues are marked by varying degrees of uncertainty. These apply to the reversibility of the effects and the probability distribution of the combined total of all effects on man and the biosphere. It is much more interesting - and useful - to observe that the economic, investment, tax, trade and other policies that determine the content of the development giving rise to these effects have so far largely escaped this characterization. Yet, if the impact of a pesticide on the incidence of cancer or on the genetic structure of man is uncertain, so equally are the agricultural policies that permit that pesticide to be used or the price subsidies, advertising promotion and other measures that actively encourage it. If soil and water acidification are marked by uncertainty, so equally are the energy policies that encourage the use of fossil fuels without built-in preventive measures reflected in the price of the energy produced.

59. Action to increase research to improve our knowledge about the specific effects of pesticides comes under the standard environmental agenda. So does the improvement of our capability to monitor and assess the scope and scale of the effects of fossil fuels. Such action can normally be justified and is often supported. When the effects exceed the bounds of public tolerance, this can lead to the adoption of measures to alleviate the symptoms.

60. Action to modify economic, investment, trade, agricultural, energy and other policies to prevent or reduce the use of such pesticides or to encourage efficiency measures to reduce the use of fossil fuels, would fall under the Commission's proposed "new agenda". At the moment, environment agencies are required to take uncertainty into account in justifying measures that treat symptoms. Central and sectoral agencies, and industry are under no such constraints when proposing or implementing economic, tax, trade and other measures which determine the content of the development that gives rise to the effects. This is as true, for example, of an electric power utility setting its price schedules as it is of UNCTAD negotiating a commodity agreement.
61. If development is to proceed at the pace and scale required through the year 2000 and beyond, this ecological blindness must be corrected. The uncertainties inherent in these policies cannot be escaped. Failure to take them into account deliberately when formulating policy means only that they will be taken into account by default. This will usually be in a way which increases cumulative impacts, irreversibilities and the frequency and scale of collapse of the ecological bases of the development in question.
62. While this failure is universal, the consequences pose a far more serious threat to the potential of fragile resource-based developing economies than of more resilient industrialized economies. Few developing countries, for example, will succeed in sustaining the increases in food production needed to feed their rapidly growing populations, if

forest and soil depleting settlement, agricultural and trade policies continue. Similarly, few countries will succeed in sustaining forest export revenues if, as in 76 developing countries today, these policies continue to induce ten times as much clearing as replanting. Moreover, few will gain a sustainable hold on industrialization in a competitive world economy, if economic, industrial and trade policies continue to favour outdated resource and energy consumptive and pollution-intensive technologies.

63. The uncertainties inherent in these policies can be identified and removed, but not easily. It will require new perspectives on the policy sources of uncertainty and some new forms of international co-operation, through agencies with broader mandates and vigorous programmes.
64. The only reasonable strategy available to deal with increasing uncertainty in development, which can avoid both a shortsighted passivity and a premature adoption of major changes in the structure of development, involves parallel movement along three tracks. These would combine, on the first track, improved monitoring and assessment of the evolving phenomena; on the second, increased research to improve our knowledge about the sources and effects of the phenomena; and on the third track, the development and implementation of new or modified clusters of economic, finance, trade and sectoral policies that would prevent or reduce avoidable and destructive impacts of these phenomena on human health, resources and ecosystems, especially those involving a high risk of irreversibility and transgenerational transfers.

65. As noted earlier, action on the first one and one-half of these tracks comes under the standard mandates of environment agencies, national and international. Action on the last one and one-half tracks, however, cuts across the mandates of central and sectoral agencies, national and international, across national boundaries and reaches into the global commons. No single nation has the institutional, professional and resource capacity needed to undertake the research, monitoring and assessment that is now called for. And no nation has the political reach to entertain the changes in the structure of policies that will be necessary. Increasingly sophisticated forms of international burden sharing to address these issues are required.

VI. DIRECTIONS FOR CHANGE

66. Times of rapid change generate both crises and opportunity. If this is true, the world is entering a period in which it will confront both more crisis and more opportunities than ever before.
67. Facing crises, societies and their institutions tend to draw into themselves seeking to maintain the status quo through various forms of protection. Seizing opportunity requires change and this puts a premium on leadership. While intellectual leadership may identify the directions for change, political leadership is needed to shape the priorities to move society in these directions.
68. In comparing the characteristics of the new class of issues emerging from the transition with those of the institutions inherited to manage them, it is impossible not to be struck by the overwhelming need for change. Interdependence issues contrast with independent institutions. A need for integration confronts fragmentation and specialization. A need to deal on a continuing basis with changing groups of issues clustered dynamically around several different policy sources is impeded by narrow mandates and territorial rigidity. A need for open involvement of citizen groups, non-governmental organizations, and industry with reasonable freedom of information flows is threatened by decision processes that are often closed and marked by secrecy. A 20th century need and 21st century imperative to manage issues that reach across

frontiers clash with concepts of sovereignty and security inherited largely from the 19th century.

69. While the contrasts are strong, stating them is not to suggest that present organizations have failed. As noted throughout this report, the past three decades are a record of achievement. They are also, however, a record of a growing gap between the issues and our capacity to manage the issues. The fact is that the swift evolution of objective realities has now outdistanced most of our institutions to such an extent that, without change, they cannot succeed.
70. This is not always obvious. Institutions have a congenital compulsion to classify problems in their own image. Yet, most of the new class of issues considered by the Commission do not lend themselves to this exercise. They cannot be classified as either "domestic" or "foreign", for many are both at the same time. They can no longer be assigned to either the "public" or "private" sector, for many straddle both sectors. Nor can they be conveniently separated into "micro" and "macro" compartments, for the most pressing, such as tropical forests and genetic resources, are simultaneously local and global - and unconcerted or countervailing action at one level can easily defeat the purpose of action at another.
71. Societal interest, including self-interest, is best served through international co-operation. The perception that no nation, acting alone, can stop water or air pollution, or radio-active fall-out at its borders has provided the foundation for many co-operative efforts. The

perception that a resource formerly considered "national" was actually "shared" with a neighbouring state, or was "regional" or "global", has provided the foundation for other co-operative efforts. The perception that, with the rapid intermeshing of economic and ecological interdependence, neither resource deterioration nor environmental pollution can be prevented or controlled, unless the policies causing the deterioration and pollution are identified and modified, can provide the foundation for new and strengthened efforts at international co-operation.

Extend Responsibility for Sustainable Development

72. This will require change along several directions. Foremost, is the need to make the central economic, financial, trade, energy, agricultural and other sectoral agencies formally responsible for promoting sustainable development, including not only the economic and social but also the ecological dimension of sustainability. In the case of most international (and national) agencies, this would involve a significant change in their mandates and charters, under which they would be required to ensure that the policies they recommend and the programmes they implement induce practices that are sustainable.

Broaden Mandates

73. Second is the need to reconcile the independence of inherited institutions with the interdependence of the new class of issues arising out of the transition. This would require at least two changes: first, the mandates and charters of most

international (and national) agencies would need to be broadened to enable them to address the issues in appropriate clusters related to their sources in the policy fields for which they are responsible. Second, in the case of a number of mega-issues, there is need for an effective means to co-ordinate the tasking of multi-agency participation in multi-country programmes of environmental regeneration and sustainable development.

74. These directions (and variants of them) presume that structural changes in the UN system, and other international organizations are possible. While there is no doubt that they are necessary if these issues are to be effectively addressed, many doubt that structural change is possible.

Strengthen Non-State Participation

75. This leads to a third direction, namely the need to greatly increase support for these functions outside the formal intergovernmental system. This direction reflects a conviction based on experience that a continuing source of synthesized data and information, policy analysis and advice will be needed to shift agencies and their policies along the lines proposed above; and that such information, analysis and advice, to be effective, cannot be provided from within the system.
76. The experience supporting this direction is formidable. During the '50s, Rachel Carson awakened the world to the risks of chemical pollution, and later René Dubois, Barbara Ward and

other thinkers changed the world view of environment and development. Eminent scientists working in many fields have altered the way we think about the whole range of environmental and resource issues. Their work has been fundamental.

77. This advance of knowledge has, however, accelerated its specialization, affecting not only the ways in which it is accumulated, but also the way in which it is used. The capacity for synthesis is lacking, reinforcing the inability of international agencies to act coherently and decisively.

78. Add paragraph on role of industry

79. At another level, much of the progress of past decades has stemmed directly from the leadership and pressure of grassroots organizations. Establishing policy paths to sustainable development is essentially a political process, and it requires broad support based on information, awareness and participation. As the Commission has witnessed in its Public Hearings, these organizations are gradually growing in strength in developing countries. Looking to the year 2000 and beyond, the issues of environment and development will place intense stress on the international political fabric, requiring their informed participation.

Extend Body of International Law

80. In addition to these directions, it will be necessary to strengthen the body of international law and extend it to embrace development and certain policies underlying development as well as

environment, the effects on environment and agreed means to ameliorate those effects.

81. NB: the discussion of this direction will be expanded following completion of the report of the Legal Panel.
82. Even if the international legal framework were broadened in these ways, it would still lack a major attribute that has proven essential to the effectiveness of all other legal systems: the ability to induce and enforce compliance if necessary. All communities and nations have at least some common rules which are enforceable and enforced. Given the characteristics and global implications of the new class of issues, the viability of the community of nations will require a similar capacity to promote and protect common interests. Much of the evidence and conclusions presented in later chapters of the report call into question not just the desirability but even the feasibility of maintaining as absolute the sovereign right of one or several states to ignore or harm the interest of any other or even all other states.

Matching Area and Power

83. In addition to strengthening existing agencies in the directions mentioned, there is a need for some new agencies, especially at the regional level. As noted earlier, there are a number of rapidly developing international river basins, airsheds and regions that do not have any, or adequate, institutions for co-operation. Yet, there is no doubt that states sharing these common resources

or similar socio-economic conditions can further their self-interest through such co-operation. The opportunities that exist to develop and institute joint measures to prevent further degradation in the environmental base of their development could be lost at great economic and social cost, if such co-operation is delayed.

84. Examples of such opportunities are cited repeatedly in the succeeding chapters, in the fields of energy, food security, industry and international economic relations. China and Korea, for example, together with Japan, have a major interest in ensuring that their future development does not incur the heavy damage costs from acid precipitation now being borne by the economies of Europe and North America. (other examples will be drawn from the other reports).
85. Instead of establishing a number of river basin authorities, regional airshed commissions, etc., it may be more effective for states sharing resources and similar socio-economic conditions to strengthen an existing agency, such as ASEAN, SADAAC, or to establish a single new agency with a broad mandate for regional co-operation and joint action to deal with interrelated economic, energy, agriculture, forestry, environment and development problems and to manage the transition in a co-ordinated and cost-effective way. Such an agency would not only be more cost-effective, given limited resources, but would also enable the governments concerned to achieve a better match between the geographical reach of the problems (and opportunities) on the one hand and the geographical reach of the policies giving rise to the problems (and opportunities) on the other.

86. Examining the successes in dealing with an earlier generation of environmental issues, this match between the geography of the power to act on a problem, and the geography of the problem itself, stands out as a fundamental pre-condition.
87. In the case of Tokyo air pollution or the London smog, these relationships - given the political structure and the perceptions of the day - were largely built-in. In the case of the few large river basins that have been cleaned up, however, this reconciliation of "area and power" resulted from negotiations between the jurisdictions whose borders the rivers crossed. The resulting conventions or agreements embraced sharing in the decisions and in the costs and benefits of the decisions. In the case of the Great Lakes, shared by Canada and the US, the negotiations were driven by an aroused public demanding action on both sides of the border.
88. The Regional Seas Programme of the United Nations Environment Programme is perhaps another case in point, although the strength of the relationship between the area of the problem and the power to act varies greatly from sea to sea. Possible action is often restricted in reality to monitoring and research. Indeed, no Regional Seas Programme has created the structure or attracted the resources needed for concerted action. Acid Rain is another case where concerted action is awaiting a fully effective reconciliation of power within the region affected by the problem, both in Europe and in North America. (See map on spatial dimensions of acid rain). There has been a long

process of negotiations. It has produced a convention, the so-called 30 Per Cent Club, and the recent Helsinki agreement. But so far there has been no collective action.

89. In the past, the international community has dealt with the need to marry area and power largely in respect of the transfer of physical pollutants or migratory animal species from one jurisdiction to another. This is a natural consequence of the standard agenda. If the focus is on cleaning-up point sources of air and water pollution, it may continue to be sensible to define the boundaries of the problem area in terms of the spatial reach of the effects: eg. on an airshed, a lake, a river basin. We now know, however, that this limited approach to defining the problem area has not been successful in dealing with many non-point sources (eg. agricultural and urban run-off of fertilizers, pesticides and other chemicals), and it does not lend itself to preventive measures (eg. increasing energy and materials efficiency in industry, reducing chemical dependency in agriculture, etc.). The reason, of course, is that a problem area defined in terms of effects usually fails completely to embrace the jurisdiction and institutions that influence the policy sources of the effects and, hence, as we have seen in the Great Lakes and other areas that enjoyed an initial clean-up, classical environment management based on it ultimately fails.
90. The same is true of resource issues such as upland deforestation causing erosion and downstream siltation and flooding. If the focus is on development and remedial measures such as

hydro-dams, floodworks and dikes, the watershed may be the appropriate problem area. If, however, the jurisdictions in which the watershed is located continue to pursue policies that actively induce deforestation or erosion, the problem area so defined is not appropriate and classical measures pursued within it will ultimately fail. This is especially true if we include time as well as space in the problem definition. When a nuclear or chemical company, for example, undertakes development which may cause major clean-up problems fifty years later, the timing of the effect is displaced from the timing of the production, and costs are transferred to the next generation with no corresponding benefit. With transgenerational effects now often collapsing into less than one generation, time needs increasingly to be brought into the calculus of management.

91. In general, measures conceived within problem areas defined according to the effects criterion cannot come to grips with the interdependent clusters of policies that are at the source of many of the critical environment and development issues considered by the Commission, including those discussed earlier in this Chapter. In the future, therefore, a primary criterion for defining the problem area and hence the area in which some degree and form of power needs to be shared is the spatial reach of the economic, trade and sectoral policies that cause the problems. Any economic, energy or trade policy which displaces the area affected by an environment and development problem away from those responsible for creating it must be viewed with great suspicion in our shrinking world.

92. In the light of this, the next direction for change will come as no surprise. As just stated, issues that are essentially regional or bilateral in character, in respect of both their principal policy sources and their effects, require appropriately defined regional or bilateral forms of management.²⁾ Issues that are essentially global in character, however, in respect of both their principal policy sources and their effects, require world-scale forms of management.
93. In order to illustrate these directions further, let us briefly consider five classical examples: one bilateral (i.e. ???); one regional (i.e. deforestation/erosion/etc. in the Ganges Basin) and three involving the future management of the global commons (i.e. the marine and coastal environment; antarctica; and outer space).
94. Note to Commissioners: the material is available to draft these or other examples that the Commission might suggest. Before doing so, however, it would be useful to have the Commission discuss the analysis and the proposed directions for change. In the last chapter, of course, these directions would be picked up again, transformed into specific recommendations.

- 1) See Some Reflections on Reform of the United Nations,
Maurice Bertrand, Joint Inspection Unit, United
Nations, Geneva, 1985
- 2) The term regional is used here to embrace three or more
nations; bilateral, two.