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MEMORANDUM

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

FROM: Nitin Desai

DATE: 11 February, 1987

RE: Chapter 4

Herewith a final draft of Chapter 4 for discussion at the Tokyo meeting. Some major changes have been made on the basis of the discussions in Moscow and the subsequent discussions in Berlin. The principal changes relative to the Moscow draft are the following:

- The introductory paras have been rewritten to focus attention on the adverse impact of population growth and the link with women's rights.
- The need for a population policy has been stressed more sharply. (See, in particular, paras 2,7, 10-12, 32).
- The discussion on the links between population environment and development have been brought forward.
- The statements about family allowances, etc. in industrial countries has been dropped. (See para 18)
- An example of integrated population policies in Zimbabwe has been added. (See para 43)
- The section on Policy framework now deals both with population and human resource development.
- The section on education has been recast to deal more with general education and less with the details of environmental education. (See paras 60-67)
- A specific proposal on teacher training for environmental awareness has been added. (See para 69).
- Water supply and sanitation are discussed explicitly. (See para 50).
- The role of health education, particularly in relation to AIDS, has been covered. (See paras 56-57)

ACTION REQUIRED: For Discussion and Approval

CHAPTER 4

POPULATION AND HUMAN RESOURCES

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CHAPTER 4

POPULATION AND HUMAN RESOURCES

1. In 1985, some 80 million people were added to a world population of 4.8 billion. Each year the number of new arrivals increases, but the amount of natural resources with which to sustain this population, to improve the quality of human lives, and to eliminate mass poverty remains finite - or diminishes.

2. Present rates of increase cannot continue. They already compromise many governments' abilities to provide education, health care, and food security for people, much less their abilities to raise living standards. This gap between numbers and resources is all the more compelling because so much of the population growth is concentrated in low-income countries, ecologically disadvantaged regions, and poor households.

3. Yet the population issue is not solely about numbers. And poverty and resource degradation can exist on thinly populated lands, such as the drylands and the tropical forests. People are the ultimate resource. Improvements in education, health, and nutrition allow them to better use the resources they command, to stretch them further. In addition, threats to the sustainable use of resources come as much from inequalities in people's access to resources as from the sheer numbers of people. Thus concern over the 'population problem' also calls forth concern for human progress and human equality.

4. Nor are population growth rates the challenge solely of those nations with high rates of increase. An additional person in an industrial country consumes far more and places far greater pressure on natural resources than an additional person in the Third World. Consumption patterns and preferences are as important as numbers of consumers in the conservation of resources.

5. Thus many governments must work on several fronts - to limit population growth, to limit the impact of such growth on resources, to realize human potential so that people can better husband and use resources, and to provide people with forms of social security other than large numbers of children. The means of accomplishing these goals will vary from country to country, but all should keep in mind that sustainable economic growth and equitable access to resources are two of the more certain routes towards lower fertility rates. And both are in keeping with all the world's religious and cultural traditions.

6. Giving people the means to choose the size of their families is not just a method of demographic adjustment; it is a way of assuring - especially for women - the basic human right of self-determination. The extent to which facilities for exercising such choices are made available is itself a measure of a nation's development. In the same way, enhancing human potential not only promotes development but helps to ensure the right of all to a full and dignified life.

I. THE LINKS WITH ENVIRONMENT AND DEVELOPMENT

7. Population growth, the enhancement of human potential, and the processes of development are linked in complex ways. Economic development generates resources that

can be used to improve education and health. These improvements, along with associated social changes, reduce both fertility and mortality rates. On the other hand, high rates of population growth that eat into surpluses available for economic and social development can hinder improvements in education and health.

8. In the past, the intensification of agriculture and the production of higher yields helped nations cope with the increasing population pressures on available land. Migration and international trade in food and fuels eased the pressure on local resources. They permitted and helped sustain the high population densities of some industrialized countries.

9. The situation is different in most of the developing world. There, improvements in medicine and public health have led to a sharp drop in mortality rates and have accelerated population growth rates to unprecedented levels. But fertility rates remain high; much human potential remains unrealized, and economic development is stalled. Agricultural intensification can go some way towards restoring a balance between food production and population, but there are limits beyond which intensification cannot go. (See Box 4-1.)

10. The very possibility of development is compromised by high population growth rates. Moreover, most developing countries do not have the resources to wait for a few generations before population stabilizes. The option of migration to new lands is virtually closed. And low levels of economic and social development limit possibilities of using international trade to augment resources. Hence, in the absence of deliberate measures, the imbalance between population growth and resource development will worsen.

BOX 4-1

The Food/Population Balance

1. The potential population-supporting capacity of land in developing countries has been assessed in a joint study by FAO and the International Institute for Applied Systems Analysis. Data on soil and land characteristics were combined with climatic data to calculate the potential yields of major crops, to select the optimum crops, and to derive the overall potential for calorie production. Three levels of crop production were calculated: the first at a low level of technology with no fertilizer or chemicals, traditional crop varieties, and no soil conservation; the second at an intermediate level, where the most productive crop mix is used on half the land along with fertilizers, improved varieties, and some soil conservation; and the third at a high level of technology with an ideal crop mix and technology on all lands. The population-supporting capacity was determined by dividing the total calorie production by a minimum per capita intake level. This figure was then compared with the medium-variant UN population projections.

2. The 117 developing countries covered in the study, taken together, can produce enough food to feed one-and-a-half times their projected population in the year 2000, even at a low level of technology. But the picture is less hopeful in the cases of individual countries. At the low level of technology, 64 countries with a population of around 1.1 billion lack the resources to feed themselves. With the most advanced agricultural methods, the number of countries where food production potential would fall short of requirements drops to 19, with a total population of 100 million. Most are high-income West Asian countries and some small island states. Many of these countries have the capacity to earn enough foreign exchange to import their food requirements. In the others, the real issue is the modernization of agriculture on a sustainable basis.

3. Some researchers have assessed the 'theoretical' potential for global food production. One study assumes that the area under food production can be around 1.5 billion hectares (close to the current level) and that average yields could go up to 5 tons of grain equivalent per hectare (as against the present average of 2 tons of grain equivalent). Allowing for production from rangelands and marine

(Box 4-1 continued)

sources, the total 'potential' is placed at 8,000 million tons of grain equivalent.

4. How many people can this sustain? The present global average consumption of plant energy for food, seed, and animal feed amounts to about 6,000 calories daily, with a range among countries of 3,000-15,000 calories depending on the level of meat consumption. On this basis, the potential production could sustain a little more than 11 billion people. But if the average consumption rises substantially - say, to 9,000 calories - the population carrying capacity of the Earth comes down to 7.5 billion. These figures could be substantially higher if the area under food production and the productivity of 3 billion hectares of permanent pastures can be increased on a sustainable basis. Nevertheless, the data do suggest that meeting the food needs of an ultimate world population of around 10 billion would require some changes in food habits, as well as greatly improving the efficiency of traditional agriculture.

Sources: B. Gill and, 'Considerations on World Population and Food Supply', Population and Development Review 9(2): 203-11; G.M. Higgins et al., Potential Population Supporting Capacities of Lands in the Developing World (Rome: FAO, 1982); D.J. Mahar (ed.), Rapid Population Growth and Human Carrying Capacity, Staff Working Papers No. 690 (Washington, D.C.: World Bank, 1985).

11. Population pressure is already forcing traditional farmers to work harder, often on shrinking farms on marginal land, just to maintain household income. In Africa and Asia, rural population nearly doubled between 1950 and 1985, with a corresponding decline in land availability.^{1/} Rapid population growth also creates urban economic and social problems that threaten to make cities wholly unmanageable. (See Chapter 9.)

12. Larger investments will be needed just to maintain the current inadequate levels of access to education, health care, and other services. In many cases, the resources required are just not available. Health, housing conditions, and the quality of education and

Since 1970 it has been fashionable to draw a distinction between population and environment as two crisis areas, but often times we forget that population is in fact a very integral part of the environment and therefore when we are addressing ourselves to population we are looking at not only the physical, biological, and chemical environments, we are also looking at the socio-cultural or socio-economic environment in which these development programmes are being set. And population makes much more sense if you are talking of population within a context.

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Nairobi, 23 Sept 1986

public services all deteriorate; unemployment, urban drift, and social unrest increase.

13. Industrial countries seriously concerned with high population growth rates in other parts of the world have obligations beyond simply supplying aid packages of family planning hardware. Economic development, through its indirect impact on social and cultural factors, lowers fertility rates. International policies that interfere with economic development thus interfere with a developing nation's ability to manage its population growth. A concern for population growth must therefore be a part of a broader concern for a more rapid rate of economic and social development in the developing countries.

14. In the final analysis, and in both the developed and developing worlds, the population issue is about humans and not about numbers. It is misleading and an injustice to the human condition to see people merely as consumers. Their well-being and security are the goal of development. Almost any activity that increases well-being and security lessens people's desires to have more children than they and national ecosystems can support.

II. THE POPULATION PERSPECTIVE

1. Growth in Numbers

15. Population growth accelerated in 1750 with the advent of the Industrial Revolution and associated improvements in agriculture, not just in the regions that are more developed but elsewhere as well. The recent phase of acceleration started around 1950 with the sharp reduction in mortality rates in the developing countries.

16. Between 1950 and 1985, world population grew at an annual rate of 1.9 per cent, compared with 0.8 per cent in the half-century preceding 1950.^{2/} Population growth is now concentrated in the developing regions of Asia, Africa, and Latin America, which accounted for 85 per cent of the increase of global population since 1950 (see Table 4-1).

17. The processes of population growth are changing in most developing countries as birth and death rates fall. In the early 1950s, practically all developing countries had birth rates over 40 and death rates over 20, the major exception being the low death rates in Latin America. (These rates refer to the annual number of births and deaths per 1,000 population.) Today the situation is quite different:

- * Thirty-two per cent of the people in the Third World live in countries - such as China and the Republic of Korea - with birth rates below 25 and death rates below 10.

TABLE 4-1

World Population 1950-85: Key Facts

| Size and Rates | 1950 | 1960 | 1970 | 1980 | 1985 |
|------------------------|------|------|------|------|------|
| (billions) | | | | | |
| Total Population: | | | | | |
| World | 2.5 | 3.0 | 3.7 | 4.4 | 4.8 |
| More developed regions | 0.83 | 0.94 | 1.05 | 1.14 | 1.17 |
| Less developed regions | 1.68 | 2.07 | 2.65 | 3.31 | 3.66 |
| (per cent) | | | | | |
| Annual Growth*: | | | | | |
| World | | 1.8 | 2.0 | 1.9 | 1.7 |
| More developed regions | | 1.3 | 1.0 | 0.8 | 0.6 |
| Less developed regions | | 2.1 | 2.5 | 2.3 | 2.0 |
| (per cent) | | | | | |
| Urban Population: | | | | | |
| World | 29 | 34 | 37 | 40 | 41 |
| More developed regions | 54 | 67 | 67 | 70 | 72 |
| Less developed regions | 17 | 22 | 25 | 29 | 31 |

*Data are for growth over previous decade or, for last column, over previous five years.

Source: Department of International Economic and Social Affairs, World Population Prospects: Estimates and Projections as Assessed in 1984 (New York: United Nations, 1986).

- * Forty-one per cent are in countries where birth rates have fallen, but not as much as death rates, and their populations are growing at around 2 per cent - doubling, in other words, every 34 years. Such countries include India, Indonesia, Brazil, and Mexico.
- * The remaining 27 per cent live in countries, such as Algeria, Iran, Bangladesh, and Nigeria, where death rates have fallen slightly but birth rates remain high. Overall population growth is in the range of 2.5 to 3 per cent (doubling every 28 to 23 years), with even higher growth rates in some countries, such as Kenya.^{3/}

18. In the industrial world, fertility rates have declined and the population is not growing rapidly. In fact, it has stabilized in many countries. Still, the population in North America, Europe, the USSR, and Oceania is expected to increase by 230 million by the year 2025, which is as many people as live in the United States today.

19. The acceleration in population growth in the Third World and the decline in fertility levels in industrial countries are changing age distribution patterns radically. In developing countries, the young predominate. In 1980, 39 per cent of developing-country populations were younger than 15; the figure for industrialized countries was only 23 per cent.^{4/} Yet in these countries, the proportion of the elderly is growing. Those 65 or older accounted for 11 per cent of the population in 1980; in developing countries, they represented only 4 per cent.^{5/} Thus in the industrial world, relatively fewer people of working age will bear the burden of supporting relatively larger numbers of older people.

20. A changing age structure helps to set patterns of future population growth. The large number of young people in developing countries means large numbers of future parents, so that even if each person produces fewer children, the total number of births will continue to increase. Population growth can continue to grow for some decades after fertility rates decline to the 'replacement level' of slightly over two children on average per couple. Thus in many nations, high population growth rates over the next few generations are assured.

21. The population projections in Table 4-2 indicate an increase in global population from 4.8 billion in 1985 to 6.1 billion by 2000, and to 8.2 billion by 2025. More than 90 per cent of this increase is expected in

TABLE 4-2
Current and Projected
Population Size and Growth Rates

| Region | Population | | | Annual Growth Rate | | |
|---------------|------------|------|------|--------------------|--------------------|--------------------|
| | 1985 | 2000 | 2025 | 1950 to 1985 | 1985 to 2000 | 2000 to 2025 |
| | (billion) | | | (per cent) | | |
| World | 4.8 | 6.1 | 8.2 | 1.9 | 1.6 | 1.2 |
| Africa | 0.56 | 0.87 | 1.62 | 2.6 | 3.1 | 2.5 |
| Latin America | 0.41 | 0.55 | 0.78 | 2.6 | 2.0 | 1.4 |
| Asia | 2.82 | 3.55 | 4.54 | 2.1 | 1.6 | 1.0 |
| North America | 0.26 | 0.30 | 0.35 | 1.3 | 0.8 | 0.6 |
| Europe | 0.49 | 0.51 | 0.52 | 0.7 | 0.3 | 0.1 |
| USSR | 0.28 | 0.31 | 0.37 | 1.3 | 0.8 | 0.6 |
| Oceania | 0.02 | 0.03 | 0.04 | 1.9 | 1.4 | 0.9 |

Source: Department of International Economic and Social Affairs, World Population Prospects: Estimates and Projections as Assessed in 1984 (New York: United Nations, 1986).

developing regions. Large differences exist among countries in these areas, and the momentum of population growth is higher in Africa than in Latin America or Asia. In some developing countries, such as China, population growth rates are already well below 2 per cent and are expected to fall below 1 per cent by the beginning of the next century.^{6/}

22. Reflecting the 'momentum' of population growth, long-term UN projections show that at the global level
- if replacement-level fertility is reached in 2010, global population will stabilize at 7.7 billion by 2060;
 - if this rate is reached in 2035, population will stabilize at 10.2 billion by 2095;

- if, however, the rate is reached only in 2065, global population in 2100 would be 14.2 billion.^{7/}

23. These projections show that the world has real choices. Policies to bring down fertility rates could make a difference of billions to the global population next century. The greater part of the differences between the three variants is accounted for by South Asia, Africa, and Latin America. Hence much depends on the effectiveness of population policies in these regions.

2. Changes in Mobility

24. The number of people in Europe, Japan, North America, and the Soviet Union quintupled between 1750 and 1950, and these regions' share in world population increased sharply over this period.^{8/} By the latter part of the 19th century, there was growing concern about population pressures in Europe. Migration to North America, Australia, and New Zealand helped to some extent. At its peak between 1881 and 1910, permanent emigration absorbed nearly 20 per cent of the increase in population in Europe.^{9/}

25. Today, however, migration is not a major factor in determining population distribution among countries. Between 1970 and 1980 permanent emigration as a percentage of population increase fell to 4 per cent in Europe and was only 2.5 per cent in Latin America. The corresponding percentages in Asia and Africa were very much lower.^{10/} Thus the option of emigration to new lands has not been and will not be a significant element in relieving demographic pressures in developing countries. In effect, this reduces the time available to bring population into balance with resources.

26. Within countries, populations are more mobile. Improved communications have enabled large movements of people, sometimes as a natural response to the growth of economic opportunities in different places. Some governments have actively encouraged migration from densely to sparsely settled areas. A more recent phenomenon is the flight of 'ecological refugees' from areas of environmental degradation.

27. Much of the movement is from countryside to city. (See Chapter 9.) In 1985, only 40 per cent of the world's population lived in cities; the magnitude of the urban drift can be seen in the fact that since 1950, the increase in urban population has been larger than the increase in rural population both in percentage and in absolute terms. This shift is most striking in developing countries, where the number of city-dwellers quadrupled during this period.^{11/}

3. Improved Health and Education

28. Improvements in the health and education of all, but especially of women and in conjunction with other social changes that raise the status of women, can have a profound effect in bringing down population growth rates. In an initial period, however, better health care means that more babies live to reproduce and that women reproduce over longer time spans.

29. The 'health status' of a society is a complex concept that cannot be measured easily. Two widely available indicators that reflect at least some aspects of a given society's health are life expectancy and infant mortality rates (see Table 4-3). These statistics suggest that health has improved virtually everywhere; and, at least with regard to these two indicators, the gap between industrial and developing regions has narrowed.

| TABLE 4-3 | | | | |
|-------------------|-----------------------------|---------|-----------------------------------|---------|
| Health Indicators | | | | |
| Region | Life Expectancy at Birth | | Infant Mortality Rates | |
| | 1950-55 | 1980-85 | 1960-65 | 1980-85 |
| | (years) | | (deaths per 1,000 live births) | |
| World | 49.9 | 64.6 | 117 | 81 |
| Africa | 37.5 | 49.7 | 157 | 114 |
| Asia | 41.2 | 57.9 | 133 | 87 |
| South America | 52.3 | 64.0 | 101 | 64 |
| North America | 64.4 | 71.1 | 43 | 27 |
| Europe | 65.3 | 73.2 | 37 | 16 |
| USSR | 61.7 | 70.9 | 32 | 25 |
| Oceania | 61.0 | 67.6 | 55 | 39 |

Source: WCED, based on data in World Resources Institute/International Institute for Environment and Development, World Resources 1986 (New York: Basic Books, 1986).

30. Many factors can increase life expectancy and reduce mortality rates; two are worth emphasizing. First, although generally speaking national wealth buys national health, some relatively poor nations and areas, such as China, Sri Lanka, and the Indian state of Kerala, have achieved remarkable success in lowering mortality and improving health through increases in education, especially of women, the establishment of primary health clinics, and other health care programmes.^{12/} Second, the principal reductions in mortality rates in the industrial world came about before the advent of modern drugs; they were due to improved nutrition, housing, and hygiene. The recent gains in developing countries have also been largely due to public health programmes, particularly for the control of communicable diseases.

TABLE 4-4

Male and Female Enrolment Ratios, by Region, 1960 and 1982

| Region | Male | | Female | |
|--------------------------------|-------|-------|--------|-------|
| | 1960 | 1982 | 1960 | 1982 |
| World | | | | |
| First Level | 92.2 | 101.3 | 71.1 | 87.3 |
| Second Level | 31.3 | 53.3 | 23.1 | 42.5 |
| Africa | | | | |
| First Level | 56.2 | 89.2 | 32.0 | 72.1 |
| Second Level | 7.3 | 29.6 | 2.9 | 19.5 |
| Latin America and Caribbean | | | | |
| First Level | 75.0 | 106.2 | 71.2 | 103.3 |
| Second Level | 14.9 | 46.6 | 13.6 | 48.5 |
| North America | | | | |
| First Level | 117.4 | 119.7 | 116.4 | 119.9 |
| Second Level | 69.4 | 85.4 | 71.4 | 86.6 |
| Asia | | | | |
| First Level | 94.9 | 100.1 | 63.1 | 79.9 |
| Second Level | 29.3 | 49.3 | 16.6 | 32.9 |
| Europe and USSR | | | | |
| First Level | 103.4 | 105.4 | 102.7 | 104.5 |
| Second Level | 46.5 | 76.2 | 44.6 | 81.3 |
| Oceania | | | | |
| First Level | 102.2 | 102.9 | 100.7 | 98.9 |
| Second Level | 53.8 | 71.1 | 58.8 | 72.0 |

Note: The figures are percentages of appropriate age groups receiving a given level of education. As many older children are in primary school, percentages can be over 100.

Source: WCED, based on data in UNESCO, 'A Summary Statistical Review of Education in the World, 1960-1982', Paris, July 1984.

31. Education is another key dimension of 'population quality'. The past few decades have seen a great expansion of educational facilities in virtually all countries. In terms of school enrolment, literacy rates, the growth in technical education, and the development of scientific skills, much progress has been achieved (see Table 4-4).

The environment is the business of everybody, development is the business of everybody, life and living is the business of everybody. I think the solution will be found in encouraging mass environmental literacy so that there can be democratic and literate decisions, because if decisions are taken by a few without the incorporation of the opinion of the masses, the NGOs especially included, the likelihood is that the situations will not succeed. They will be imposed from above, the people will not respond positively to them, and the project is lost before it is launched.

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Nairobi, 23 Sept 1986

III. A POLICY FRAMEWORK

32. Population growth puts a brake on development in many developing countries; a reduction of current growth rates is an imperative for sustainable development. The critical issue is the balance between population size and available resources, not just today but for generations. Such a long-term view is necessary because attitudes to fertility rarely change rapidly and because, even after fertility starts declining, past increases in population impart a momentum of growth as people reach child-bearing age. However a nation proceeds towards the goals of sustainable development and lower fertility levels, the two are intimately linked and mutually reinforcing.

33. Measures to influence population size cannot be effective in isolation from other environment/development issues. The number, density, movement, and growth rate of a population cannot be influenced in the short run if these efforts are being overwhelmed by adverse patterns of

development in other areas. Population policies must have a broader focus than controlling numbers: Measures to improve the quality of human resources are as important.

34. A first step may be for governments to abandon the false division between 'productive' or 'economic' expenditures and 'social' expenditures. Policymakers must realize that spending on population activities and other efforts to raise human potential is crucial to a nation's economic and productive activities and to achieving sustainable human progress - the end for which a government exists.

1. Managing Population Growth

35. Many countries have recently made progress in developing population policies, while many others seem to regard their support of family planning activities as their population policy. Family planning programmes, which have narrower goals than overall population policies, only provide information and services to help limit fertility. A population policy, on the other hand, sets out and pursues broad national demographic goals in relation to other socio-economic objectives.

36. Social and cultural factors dominate all others in affecting fertility. The most important of these is the roles women play in the family, the economy, and the society at large. Fertility rates fall as women's employment opportunities outside the home and farm, their access to education, and their age at marriage all rise. Hence policies meant to lower fertility rates must include not only economic incentives and disincentives, but must aim to improve the position of women in society. Such policies should essentially promote women's rights.

37. Poverty breeds children: Families poor in income, employment, and social security need children first to work and later to sustain elderly parents. Measures to provide an adequate livelihood for poor households, to establish and enforce minimum-age child labour laws, and to provide publicly financed social security will all lower fertility rates. Improved public health and child nutrition programmes that bring down infant mortality rates - so parents do not need 'extra' children as insurance against child death - can also help to reduce fertility levels.

38. All these programmes are effective in bringing down birth rates only when their benefits are shared by the majority. Societies that attempt to spread the benefits of economic growth to a wider segment of the population may do better at lowering birth rates than societies with both faster and higher levels of economic growth but a less even sharing of the benefits of that growth.

39. Thus developing-country population strategies must deal not only with the population variable as such but also with the underlying social and economic conditions of underdevelopment. They must be multi-faceted campaigns: to strengthen social, cultural, and economic motivations for couples to have small families and, through family planning programmes, to provide to all who want them the education, technological means, and services required to control family size.

40. Family planning services in many developing countries suffer by being isolated from other programmes that reduce fertility and even from those that increase motivation to use such services. They remain separate both in design and implementation from such

Demographic phenomena constitute the heart of the African Development problematique. They are the data that lead most analysts to project a continuing and deepening crisis in Africa. There is no doubt of the imperative and urgent need for a far reaching population policy to be adopted and vigorously implemented by African governments.

One issue of relevance that requires further research is the use of the tax system as a means for controlling population growth and discouraging rural-urban migration.

To slow down population growth, should families without children be given a tax incentive or tax break? Should a tax penalty be imposed for each child after a fixed number of children, considering that the tax system has not solved the population migration problem?

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WCED Public Hearing
Harare, 18 Sept 1986

fertility-related programmes as nutrition, public health, mother and child care, and preschool education that take place in the same area and that are often funded by the same agency.

41. Such services must therefore be integrated with other efforts to improve access to health care and education. The clinical support needed for most modern contraceptive methods makes family planning services heavily dependant on the health system. Some governments have successfully combined population programmes with health, education, and rural development projects, and implemented them as part of major socio-economic programmes in villages or regions. This integration increases motivation, improves access, and raises the effectiveness of investments in family planning.

42. Only about 1.5 per cent of official development aid now goes for population assistance.^{13/} Industrial nations must increase their assistance for population activities, and deliver it as part of other socio-economic development projects.

43. Zimbabwe is one nation that has successfully integrated its family planning efforts not only with its rural health services but also with efforts to improve women's abilities to organize group activities and earn money through their own labour. The government's initial efforts were aimed less at limiting population growth than at assisting women to space births in the interests of mother and child health and at helping infertile women to bear children. But gradually families have begun to use the contraceptives made available for child spacing as a way to limit fertility. Zimbabwe now leads sub-Saharan Africa in the use of modern contraceptive methods.^{14/}

2. Managing Distribution and Mobility

44. Population distribution across a country's different regions is influenced by the geographical spread of economic activity and opportunity. Most countries are committed in theory to balancing regional development, but are rarely able to do this in practice. Governments able to spread employment opportunities throughout their nations and especially through their countrysides will thus limit the rapid and often uncontrolled growth of one or two cities. China's efforts to support village-level industries in the countryside are perhaps the most ambitious of this sort of national programme.

45. Migration from countryside to city is not in itself a bad thing; it is part of the process of economic development and diversification. The issue is not so much

the overall rural-urban shift but the distribution of urban growth between large metropolitan cities and smaller urban settlements. (See Chapter 9.)

46. A commitment to rural development implies more attention to realizing the development potential of all regions, particularly those that are ecologically disadvantaged. (See Chapter 5.) This would help reduce migration from these areas due to lack of opportunities. But governments should avoid going too far in the opposite direction, encouraging people to move into sparsely populated areas such as tropical moist forests, where the land may not be able to provide sustainable livelihoods. (See Chapter 6.)

3. From Liability to Asset

47. When a population exceeds the carrying capacity of the available resources, it can become a liability in efforts to improve people's welfare. But talking of population just as numbers glosses over an important point: People are also a creative resource, and this creativity is an asset societies must tap. To nurture and enhance that asset, people's physical well-being must be improved through better nutrition, health care, and so on. And education must be provided to help them become more capable and creative, skilful, productive, and better able to deal with day-to-day problems. All this has to be achieved through access to and participation in the processes of sustainable development.

3.1 Improving Health

48. Good health is the foundation of human welfare and productivity. Hence a broad-based health policy is essential for sustainable development. In the developing

We in Asia, I feel, want to have an equilibrium between the spiritual and material life. I noticed that you have tried to separate religion from the technological side of life. Is that not exactly the mistake in the West in developing technology, without ethics, without religion? If that is the case, and we have the chance to develop a new direction, should we not advise the group on technology to pursue a different kind of technology which has as its base not only the rationality, but also the spiritual aspect? Is this a dream or is this something we cannot avoid?

Speaker from the floor
WCED Public Hearing
Jakarta, 26 March 1985

world, the critical problems of ill health are closely related to environmental conditions and development problems.

49. Malaria is the most important parasitic disease in the tropics, and its prevalence is closely related to wastewater disposal and drainage. Large dams and irrigation systems have led to sharp increases in the incidence of schistosomiasis (snail fever) in many areas. Inadequacies in water supply and sanitation are direct causes of other widespread and debilitating diseases such as diarrhoeas and various worm infestations.

50. Though much has been achieved in recent years, 1.7 billion people lack access to clean water, and 1.2 billion to adequate sanitation.^{15/} Many diseases can be controlled not just through therapeutic interventions but also through improvements in rural water supply, sanitation, and health education. In this sense, they really require a developmental solution. In the developing world, the number of water taps nearby is a better indication of the health of a community than is the number of hospital beds.

51. Other examples of links between development, environmental conditions, and health include air pollution

and the respiratory illnesses it brings, the impact of housing conditions on the spread of tuberculosis, the effects of carcinogens and toxic substances, and the exposure to hazards in the workplace and elsewhere.

52. Many health problems arise from the nutritional deficiencies that occur in virtually all developing countries, but most acutely in low-income areas. Most malnutrition is related to a shortage of calories or protein or both, but some diets also lack specific elements and compounds, such as iron and iodine. Health will be greatly improved in low-income areas by policies that lead to the production of more of the cheap foods the poor traditionally eat - coarse grains and root crops.

53. These health, nutrition, environment, and development links imply that health policy cannot be conceived of purely in terms of curative or preventive medicine, or even in terms of greater attention to public health. Integrated approaches are needed that reflect key health objectives in areas such as food production; water supply and sanitation; industrial policy, particularly with regard to safety and pollution; and the planning of human settlements. Beyond this, it is necessary to identify vulnerable groups and their health risks and to ensure that the socio-economic factors that underlie these risks are taken into account in other areas of development policy.

54. Hence, WHO's "Health for All" strategy should be broadened far beyond the provision of medical workers and clinics, to cover health-related interventions in all development activity.^{16/} Moreover, this broader approach must be reflected in institutional arrangements to coordinate all such activities effectively.

55. Within the narrower area of health care, providing primary health care facilities and making sure that everyone

has the opportunity to use them are appropriate starting points. Maternal and child health care are also particularly important. The critical elements here are relatively inexpensive and can have a profound impact on health and well-being. An organized system of trained birth attendants, protection against tetanus and other childbirth infections, and supplemental feeding can dramatically reduce maternal mortality. Similarly, low-cost programmes to assure immunization, teach and supply oral dehydration therapy against diarrhoeas, and encourage breast-feeding (which in turn can reduce fertility) can increase child survival rates dramatically.

56. Health care must be supplemented by effective health education. Some parts of the Third World may soon face growing numbers of the illnesses associated with life-styles in industrial nations - cancer and heart disease especially. Few developing nations can afford the expensive treatment required for the latter diseases, and should begin efforts now to educate their citizens on the dangers of smoking and of high-fat diets.

57. A rapid spread of acquired immune deficiency syndrome in both developed and developing nations could drastically alter all countries' health priorities. The disease is at present incurable, but it is largely avoidable. Governments should overcome any lingering shyness and rapidly educate their people about this syndrome and about the ways in which it is spread.

58. Most medical research focuses on drugs, vaccines, and other technological interventions for disease management. Much of this research is directed at the diseases of industrialized countries, as their treatment accounts for a substantial part of the sales of pharmaceutical companies. More research is urgently needed on the environmentally related tropical diseases that are the major health problem

in the Third World. This research should focus not merely on new medicines, but also on public health measures to control these diseases. Existing arrangements for international collaboration on tropical disease research should be greatly strengthened.

3.2 Broadening Education

59. Human resource development demands knowledge and skills to help people improve their economic performance. Sustainable development requires changes in values and attitudes towards environment and development - indeed, towards society and work at home, on farms, and in factories. Improved health, lower fertility, and better nutrition will depend on greater literacy and social and civic responsibility. Education can induce all these, and can enhance a society's ability to overcome poverty, increase incomes, improve health and nutrition, and reduce family size.

60. Education should also be geared towards making people more capable of dealing with problems of overcrowding and excessive population densities, and better able to improve what could be called 'social carrying capacities'. This is essential to prevent ruptures in the social fabric, and schooling should enhance the levels of tolerance and empathy required for living in a crowded world.

61. The investment in education and the growth in school enrolment during the past few decades are signs of progress. Access to education is increasing and will continue to do so. Today almost all the world's boys are getting some form of primary education. In Asia and Africa, however, enrolment rates for girls are much lower than for boys at all levels. A large gap also exists between developed and developing countries in enrolment rates beyond primary schools (see Table 4-4).

Education and communication are vitally important in order to impress each individual of his or her responsibility regarding the healthy future of the earth. The best way for students to recognize that their action can make a difference is to have projects organized by the school or community on which the students can work. Once convinced that they can help, people tend to change both their attitude and their behaviour. New attitudes towards the environment will be reflected in decisions at home and in corporate boardrooms around the world.

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62. UN projections of enrolment rates for the year 2000 suggest a continuation of these trends. Thus despite the growth in primary education, illiteracy will continue to rise in terms of sheer numbers; there will be more than 900 million people unable to read and write at the end of the century. By then, girls' enrolment rates are still expected to be below the current rates for boys in Asia. As for secondary education, the developing countries are not expected to attain even the 1960 industrial country levels by the year 2000.^{17/}

63. Sustainable development requires that these trends be corrected. The main task of education policy must be to make literacy universal and to close the gaps between male and female enrolment rates. Realizing these goals would improve individual productivity and earnings, as well as personal attitudes to health, nutrition, and childbearing. It can also instill a greater awareness of everyday environmental factors. Facilities for education beyond primary school must be expanded to improve skills necessary for pursuing sustainable development.

64. Education has often been unable to provide the skills needed for appropriate employment. This is evident in the large numbers of unemployed people who have been trained for white-collar employment in swelling urban populations. Education and training should also be directed towards the acquisition of practical and vocational skills, and particularly towards making people more self-reliant. All this should be supported by efforts to nurture the informal sector and the participation of community organizations.

65. Providing facilities is only the beginning. Education must be improved in quality and in relevance to local conditions. In many areas, it should be integrated with children's participation in farm work, a process requiring flexibility in the school system. It should impart knowledge relevant for the proper management of local resources. Rural schools must teach about local soils, water, and the conservation of both, about deforestation and how the community and the individual can reverse it. Teachers must be trained and the curriculum developed so that students learn about the agricultural balance sheet of an area.

66. Most people base their understanding of environmental processes and development on traditional beliefs or on information provided by a conventional education. Many thus remain ignorant about ways in which they could improve traditional production practices and better protect the natural resource base.

67. Education needs to be approached in a more holistic way due to the interdependencies implicit in sustainable development and the tightening of global links. Education should therefore provide comprehensive knowledge, encompassing and cutting across the social and natural sciences and the humanities, thus providing insights on the interaction between natural and human resources, between development and environment.

68. Environmental education should be included in and should run throughout the other disciplines of the formal education curriculum at all levels - to foster a sense of responsibility for the state of the environment and to teach students how to monitor, protect, and improve it. These objectives cannot be achieved without the involvement of students in the movement for a better environment, through such things as nature clubs and special interest groups. Adult education, on-the-job training, and other less formal methods must be used to reach out to as wide a group of individuals as possible, as environmental issues and knowledge systems now change radically in the space of a lifetime.

69. A critical point of intervention is during teacher training. The attitudes of teachers will be key in increasing understanding of the environment and its links with development. To enhance the awareness and capabilities of teachers in this area, multilateral and bilateral agencies must provide support for the relevant curriculum development in teacher training institutions, for the preparation of teaching aids, and for other similar activities. Global awareness could be fostered by encouraging contacts among teachers from different countries, for instance in specialized centres set up for this purpose.

3.3 Protecting Vulnerable Groups

70. The processes of development generally lead to the gradual integration of local communities into a larger social and economic framework. But some communities - so-called indigenous or tribal peoples - remain isolated because of such factors as physical barriers to communication or marked differences in social and cultural practices. Such groups are found in the remote northern

Every summer in Acre, the rubber tree tappers hold a spontaneous demonstration in defence of the forests. The rubber tree tappers, along with the Indians and other groups whose livelihood depends on the utilization of natural resources, have a profound dominion over the ecology of the Amazon - a dominion which developed over centuries of living in harmony with nature.

In the opinion of the Brazilian public and government authorities, the regional populations which subsist by the extraction of Amazon natural resources ceased to exist when these natural products were substituted by those manufactured artificially. But this is untrue. Over 500,000 people in the Amazon depend for their very survival on activities which entail extraction of natural resources, not to mention the innumerable city-dwelling families supported by members who remain in the forest.

This does not, however, constitute an eulogy to the primitive or the archaic. People die in the Amazon of diseases which were eradicated long ago in other regions of the country. Whole generations of rubber tree tappers never attended school. The organizational systems of this "extractive" economy in some areas amount to near slavery.

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Tappers
WCED Public Hearing
Brasilia, 30 Oct 1985

regions of North America, in the Amazon Basin, in the forests and hills of Asia, in the deserts of North Africa, and elsewhere.

71. The isolation of many such people has meant the preservation of a traditional way of life in close harmony with the natural environment. Their very survival has depended on their ecological awareness and adaptation. But their isolation has also meant that few of them have shared in national economic and social development; this may be reflected in their poor health, nutrition, and education.

72. With the gradual advance of organized development into remote regions, these groups are becoming less isolated. Many live in areas rich in valuable natural

resources that planners and 'developers' want to exploit, and this exploitation may disrupt the local environment so as to endanger traditional ways of life. The legal and institutional changes that accompany organized development add to such pressures.

73. Growing interaction with the larger world is increasing the vulnerability of these groups, since they are often left out of the processes of economic development. Social discrimination, cultural barriers, and the exclusion of these people from national political processes often mean that their interests are neglected. Many groups become dispossessed and marginalized, and their traditional practices disappear.

74. This is a loss not merely for these individuals but for the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems. It is a terrible irony that as formal development reaches more deeply into rain forests, deserts, and other isolated environments, it tends to destroy the only cultures that have proved able to thrive in these environments.

75. The starting point for a just and humane policy for such groups is the recognition and protection of their traditional rights to their habitats - rights they may define in terms that do not fit into standard legal systems. These groups' own institutions to regulate rights and obligations are crucial for maintaining the harmony with nature and environmental awareness characteristic of the traditional way of life. Hence the recognition of traditional rights must go hand in hand with measures to protect the local institutions that enforce responsibility in resource use. And this recognition must also give local communities a decisive voice in the decisions about resource use in their area.

76. Protection of traditional rights should be accompanied by positive measures to enhance the well-being of the community in ways appropriate to the group's life-style. For example, earnings from traditional activities can be increased through the introduction of marketing arrangements that ensure a fair price for produce, but also through steps to conserve and enhance the resource base and increase resource productivity. These measures must go beyond financial matters and deal with social and cultural problems, such as the sudden introduction of alcohol into a community unfamiliar with its effects.

77. Those promoting policies that have an impact on the lives of an isolated, traditional people must tread a fine line between keeping them in artificial, perhaps unwanted isolation and wantonly destroying their life-styles. Hence broader measures of human resource development are essential. Health facilities must be provided to supplement and improve traditional practices; nutritional deficiencies have to be corrected, and educational institutions established. These steps should precede new projects that open up an area to economic development. Special efforts should also be made to ensure that the local community can derive the full benefit of such projects, particularly through jobs.

78. In terms of sheer numbers, these isolated, vulnerable groups are small. But their marginalization is a symptom of a style of development that tends to neglect both human and environmental considerations. Hence a more careful consideration of their interests is a touchstone of a sustainable development policy.

CHAPTER 4 - FOOTNOTES

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