



## CHAPTER 4

### ACHIEVING HUMAN RESOURCE POTENTIAL

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## CHAPTER 4

### ACHIEVING HUMAN RESOURCE POTENTIAL

1. The size, structure and regional distribution of world population and people's resource consumption patterns, health, and education all have a direct impact on developmental and environmental conditions. Hence the human factor is a fundamental element in the transition to sustainable development.

2. Population size is often viewed in isolation from other environment-development issues. It is assumed that the number, density, movement, and growth rate of a population can be manipulated in the short run regardless of what is happening to other social and economic indicators of development. Thus fertility control programmes are sometimes thought of as national population programmes, and demographic objectives are confused with population policies, which should have a broader focus than controlling numbers.

3. Population growth is an important environment-development issue because it affects the balance between resources and people. In this context, the high growth rates in developing countries and their impact on the people/resource balance is a matter of grave concern. But that is not the only issue. An additional person in a developed country consumes far more and places far greater pressure on natural resources than a person in the Third World. Hence even the lower growth rates in

developed countries are a matter of concern, especially when these demands are likely to grow as consumption responds to increased incomes.

4. The rate of growth of population has clearly put pressure on the people/resource balance in many parts of the world, as described in Chapter 1. The environmental degradation and social unrest witnessed in many areas arise not just from population growth but also from unequal access to resources and persistent poverty. The breakdown of social controls and traditional mechanisms evolved by communities for resource management adds to these pressures on resources.

5. A slower rate of population growth would certainly lower the number of people needing to draw on finite resources. But by itself it is not enough to ensure a globally sustainable people/resource balance, which must involve these other considerations of human resource development and equity in access to resources. The objective should be a sustainable balance between population size, the human resource potential, and available natural capital at a level of consumption sufficient to provide a dignified standard of living for all people when stabilization is finally reached.

6. The implications of this objective will vary from country to country. In most, its pursuit will require greater attention to human resource development and social equity so as to enhance the capacity to use resources in a sustainable manner to meet growing needs. Such a focus will also lead to demographic changes that past experience shows are intimately linked to social development. In many countries, however, the prospects of an imbalance between resources and people is so immediate that a simultaneous effort will be required to reduce the population growth rate and to

modify current migration trends.

## I. THE POPULATION PERSPECTIVE

### 1. Growth in Numbers

7. In 1985 the world population was around 4.8 billion and was growing some 1.7 per cent per year - in absolute terms, by about 80 million annually.<sup>1/</sup> These bare facts have to be seen in the context of long-term trends in global population, its spatial distribution and age structure, and the likely pattern of future growth.

8. The size of population at the global or regional level has depended essentially on the technological and institutional capacity of human societies and on the environmental constraints within which they operate. The historical context of the growth in world population since 1200 is given in Table 4-1. The population growth accelerated in 1750, with the advent of the Industrial Revolution and associated improvements in agriculture, not just in the regions that are today more developed but also to a lesser extent elsewhere in the world.

9. The record of population growth since 1950 is rather different (see Table 4-2). The annual growth rate is now much higher: 1.9 per cent between 1950 and 1985 compared with 0.8 per cent in the half-century preceding 1950. Moreover, growth in population 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 in this period. In many parts of the Third World the growth in population is not based on a commensurate increase in the capacity

to provide sustenance and livelihood. Nor do developing countries have the same options for outmigration that Europe had.

TABLE 4-1

Growth of World Population: The Historical Context

<u>World Population</u>	<u>1200</u>	<u>1750</u>	<u>1900</u>	<u>1950</u>	<u>1985</u>
	(million)				
Size	384	731	1,668	2,516	4,837
Distribution					
By regions as presently defined:	(per cent)				
More developed	18	23	32	33	24
Less developed	82	77	68	67	76
By area:					
Asia and Oceania	63	66	59	55	59
Africa	16	14	7	9	11
Europe, including USSR	15	18	25	23	16
North and South America	6	2	9	13	14

a/ Current regional divisions and categories of development have been applied to historical data on population.

Source: Based on data in Clark. C. (1967) and UN Population Division, "Population Projections as Assessed in 1984" (unofficial version), New York, 1986.

TABLE 4-2

## 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

Source: UN Population Division, "Population Projections as Assessed in 1984" (unofficial version), New York, 1986.

10. The processes of population expansion in most developing countries are changing with falling birth and death rates. The European experience suggests two major demographic transitions. First, death rates drop below 20 and birth rates fall to 30 or so, a stage that Europe reached in the early part of this century. Second, death rates drop to about 10 and birth rates to below 20, which has been the case in developed countries for the last three decades.

11. In the early 1950s, practically all developing countries had birth rates over 40 and death rates over 20, the major exception to this being the low death rates in Latin America. Today the situation is quite

different:

- \* Thirty-two per cent of the people in the Third World live in countries with a birth rate below 25 and a death rate below 10, which is the situation in China and the Republic of Korea. The death rate, in fact, is well below 10 because of the age distribution, and the overall population growth rate is a little over 1 per cent. These countries are clearly into the second stage of the transition.
- \* Thirty-one per cent are in countries where birth rates are in the 25-35 range and death rates are below 15, a level that keeps population growing at around 2 per cent. These countries, such as India and Indonesia, are in the first stage of demographic transition.
- \* Ten per cent live in countries with birth rates below 35 but death rates below 10, so overall population growth is in excess of 2 per cent. Brazil and Mexico are examples of countries in this situation.
- \* Twelve per cent of the people are in countries where despite a fall in the death rates to 15 or below, birth rates remain above 35 and population growth rates are close to 3 per cent (as in Algeria and Iran).
- \* The remaining 15 per cent live in countries where death rates are still over 15 and birth rates over 40, with population growth generally in the range of 2.5 to 3 per cent (as in Bangladesh and Nigeria).<sup>2/</sup>

12. The population of developed countries is not growing rapidly, but the resource demands per head of population are so much larger that even a small increase in numbers adds substantially to global resource pressures. The



orientation of population policy and other policies relating to tax allowances, maternity leave, and so on in many developed countries encourages an increase in the number of children per family. In some cases this is defended on the grounds that, in the absence of immigration, the population of these countries would decline. Nevertheless, the total population of the developed world is not expected to decline, and will in fact increase.

13. The acceleration in population growth in the Third World and the decline in fertility levels in developed countries is leading to certain crucial changes in the age distribution. In developing countries, the most critical feature is the high and growing proportion of the young in total population. In 1980, the population younger than 14 accounted for 39 per cent of developing-country total; the corresponding figure for the developed countries is only 23 per cent.<sup>3/</sup> In developed countries, the critical factor is the high proportion of the elderly, with those 65 or older accounting for 11 per cent of the population in 1980. In contrast, the corresponding figure in developing countries is only 4 per cent.<sup>4/</sup>

14. The pattern of future population growth is inherent in the changing age structure. The large number of young people in developing countries means a substantial increase in the number of future mothers, so that even if each woman has fewer children, the total number of births will continue to increase. Population projections based on an unofficial version of the 1984 assessment by the UN Population Division are presented in Table 4-3. These

Really population control efforts do not end with birth control, but birth control should be in conjunction with fostering small families as an ideal situation, by improving the general quality of life and not only the number.

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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 to take place in developing regions. Substantial differences exist among developing countries, 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.<sup>5/</sup>

15. Population growth is not subject to some inexorable force and much depends on policy initiatives. If current trends continue, average fertility at the global level could be at replacement level by the year 2025. Reaching this point 20 years earlier could mean 2.2 billion fewer people. Hence much depends on the orientation and effectiveness of population policies.

TABLE 4-3

## Current and Projected Population Size and Growth Rates

Region	Population			Annual Growth Rate		
	1985	2000	2025	1950-1985	1985-2000	2000-2025
	(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: UN Population Division, "Population Projections as Assessed in 1984" (unofficial version), New York, 1986.

## 2. Changes in Mobility

16. In a historical context, substantial changes have occurred in the spatial distribution of world population. The number of people in Europe, Japan, North America, and the Soviet Union quintupled between 1750 and 1950, and the share these regions represented in world population increased sharply over this period.<sup>6/</sup> This acceleration of population growth was perhaps an important factor in stimulating economic development. By the latter part of the 19th century, however, there was growing concern about population pressures in Europe. Outmigration to North America and Oceania played an important role in mitigating these pressures. At its peak between 1881 and 1910, permanent emigration absorbed nearly 20 per cent of the increase in population in Europe.<sup>7/</sup>

17. Today, migration is not a major factor in determining population distribution among countries except in some very local contexts. Between 1970 and 1980, permanent emigration as a percentage of continental population increase fell to 4 per cent in Europe and was only 2.5 per cent in Latin America. The corresponding figures in Asia and Africa were much lower. In absolute terms, the number of permanent emigrants from Africa, Asia, and Latin America amounted to about 4.7 million during this period.<sup>8/</sup> 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.

18. The distribution of population within countries is rather different. As communications improved, substantial movements of population have taken place within national boundaries. Some shifts are a natural response to the differential growth of economic opportunities. In certain cases governments have actively encouraged migration from densely to sparsely settled areas. A more recent phenomenon is the movement of "ecological refugees" from areas of environmental degradation.

19. One important aspect of the changing spatial distribution is the shift from rural to urban areas. (See also Chapter 8.) Since 1950, the increase in urban population has been larger than the increase in rural population not merely in percentage but also in absolute terms. This particular shift is most striking in developing countries, where the number of city-dwellers quadrupled during this period.

### 3. Improved Health and Education

20. In some ways it is misleading to regard population primarily as a problem that results in pressure on resources. The most serious resource wastage in the

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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world today is the loss of human potential because of unemployment, lack of opportunity, social discrimination, poor health, ignorance, and inadequate access to education. This is particularly true in developing countries. People who are malnourished, illiterate, and susceptible to disease do not have the skills, knowledge, or wherewithal to bring significant and enduring changes in their own welfare and life-styles, and hence poverty conditions persist.

21. The fault lies in a tendency to view a person as an agent of deterioration whose activities perturb an otherwise perfectly functioning system. This viewpoint, though important for drawing attention to the more deleterious areas of human activity, tends to neglect the fact that people are also a resource, and that their well-being is the ultimate objective of conservation and

development.

22. An important dimension of human resource development is health status, a complex concept that cannot be measured easily. Two widely available indicators reflect at least broad differences in health conditions: life expectancy and the infant mortality rate (see Table 4-4). A substantial improvement in health status has occurred in virtually all parts of the world and, at least with regard to these two indicators, the gap between developed and developing regions narrowed.

23. Improvements in life expectancy and reductions in mortality rates are due to a variety of factors, two of which are worth emphasizing. First, although levels of economic development and health status are broadly correlated, the connection is by no means rigid. For example, China, Sri Lanka, and the Indian state of Kerala have shown remarkable success in lowering mortality and improving health despite low income levels.<sup>9/</sup> The second point worth stressing is the importance of public health. The principal reductions in mortality rates in the developed world came about before the advent of modern drugs and were due to improved nutrition, housing, and hygiene. The gains made in developing countries in recent years are also due in large measure to public health programmes, particularly for the control of communicable diseases.

24. Health status is directly affected by fertility patterns, as well as having an influence on them. Closely spaced births that begin when a woman is young entail health risks to both the mother and the children. The interval between births strongly influences the new child's health and survival. Close spacing also puts an older child at risk of malnutrition if weaning is advanced by the arrival of another infant. And closely spaced

births carry high risks for mothers due to complications of pregnancy and nutrition.

TABLE 4-4				
Health Indicators				
Region	<u>Life Expectancy at Birth</u>		<u>Infant Mortality Rates</u>	
	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: World Resources Institute/International Institute for Environment and Development, World Resources 1986 (New York: Basic Books, 1986).

25. The second dimension of population quality worth stressing is educational attainment. The past few decades have seen a remarkable 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, remarkable progress has been achieved (see Table 4-5). Today the problem is not one of quantity but of quality of education, and of its relevance for the problems faced by individuals and societies.

**TABLE 4-5**

**(TO BE ADDED)**



## II. LINKS TO ENVIRONMENT AND DEVELOPMENT

26. Serious damage to resources can take place without population pressure. Tropical deforestation has proceeded rapidly in such sparsely populated areas as the outer islands of Indonesia, the Amazon Basin, and Central Africa. Examples abound where commercial exploitation, often to meet foreign demands, had led to resource depletion and the destruction of potentially renewable resources. The worldwide economic expansion, even more than population growth, will continue to be the largest source of additional demand for cereals, minerals, energy, industrial wood, and many agro-industrial products.

27. The relationship between natural resources and population is determined by technology and social organization. A recent FAO study of regional carrying capacities has demonstrated that the number of people who can be fed is determined mainly by the degree of agricultural intensification achieved. (See Box 4-1.) Historically, intensification of agriculture and higher yields have been the response to increasing pressure of population on available land. The spread of irrigation, the wider use of manures, a reduction of fallowed land, and changes in cropping patterns are typical responses.

28. Migration and international trade in commodities, including foodstuffs and fuels, have been a major historical response to regional differences in resource and population densities. The establishment and expansion of the world economy rested largely on international trade driven by such differences. International trade in the 20th century has grown even more rapidly than population, and many countries with totally inadequate natural resources have drawn on the

resources of other nations to achieve outstanding success in improving living standards.

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 yield of major crops, select the optimum crop, and derive the overall potential for calorie production. Three levels 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 when the comparison is made for each country. At the low level of technology, 64 countries with a population of around 1.1 billion lack the resources to feed their population. 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 therefore 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

(Box 4-1 continued)

tonnes of grain equivalent (as against the present average of 2 tonnes of grain equivalent). Allowing for some production from rangelands and marine sources, the total "potential" is placed at 8,000 million tonnes 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, with a range amongst countries of 3,000-15,000 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 will require some changes in food habits, particularly with regard to meat consumption, as well as the complete transformation of low-yield traditional agriculture into high-yield modern agriculture.

Source:

29. But in most parts of the developing world the situation is quite different. Population pressure is already making people work harder, often on marginal land and shrinking farms, just to maintain household income in traditional agriculture. In Africa and Asia, rural population nearly doubled between 1950 and 1985, with a corresponding decline in land availability.<sup>10/</sup> Looking ahead, the numbers in rural areas are expected to rise substantially in Africa but not in Asia and Latin America. Thus, at least in Africa, population-induced pressures to extend cultivation to forest areas and marginal lands will continue. Even in Asia and Latin America this will be the case in local situations.

I submit that this country and other countries in Africa urgently require population policies and this government should have a stated population policy which should be an overt policy and which should be seen to be implemented. And I wonder how many more conferences and seminars one must attend or how many more hectares of Africa must be reduced to desert before countries in Africa adopt stated population policies.

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Harare, 18 Sept 1986

30. Rapid population growth is also testing the carrying capacities of cities, creating economic and social problems that risk becoming wholly unmanageable. (See Chapter 8.) Cities in developing countries are growing to a size for which the world has no prior experience. Between 1950 and 1980, the proportion of urban dwellers in Third World cities of more than 5 million increased from 2 per cent to 14 per cent, growing at a rate of 15 per cent a year.<sup>11/</sup> The rise in urban population, 60 per cent of which is due to natural increase, poses unprecedented problems of management even to maintain, let alone improve, the living conditions of city-dwellers.

31. One of the most difficult problems is the pressure on infrastructure from both high consumption levels and rising population. Larger investments will be needed just to maintain the current inadequate levels of access to education, health, and other services. The same is true for investments in skill formation and productive activity. In many cases, the resources required are just not available. The consequences are a deterioration in education, health, housing conditions, and the quality of public services, as well as

unemployment, urban drift, and social unrest. In many countries, much of the huge projected increases in the labour force will have to be absorbed in agriculture, a difficulty that today's developed countries never faced during their economic transformation. Thus rapid population growth slows the transfer of labour out of low-productivity agriculture into modern agriculture and other modern jobs.

32. Today, in many developing countries population growth is a brake on development and a reduction of current growth rates is an imperative need for sustainable development. Diverse views exist on causes and measures required. Nevertheless, sustainable development and lower fertility levels appear to be intimately linked and mutually reinforcing.

### III. Population Policies for Sustainable Development

#### 1. Managing Population Growth

33. Many developing countries have made significant progress during the past decade in developing a population policy. But many others seem to regard their support of family planning as their population policy. Family planning programmes, which have narrower goals than overall population policies, only provide information and services to help achieve a particular fertility objective. A population policy, on the other hand, describes broad national demographic goals in relation to other socio-economic objectives.

34. The rate of population growth is determined by fertility and mortality rates. The dominant factors affecting fertility behaviour are essentially social and

cultural in character. Economic development affects fertility rates largely through its impact on these social and cultural variables. In some ways, the most important of these is the status and role of women in the family, the economy, and the society at large. Hence policy interventions meant to influence fertility behaviour should be directed not merely towards economic incentives and disincentives, but more centrally towards improving the position of women in society.

35. Economic factors are not irrelevant. In particular, widespread poverty tends to sustain high birth rates because families without adequate incomes, employment, and social security not unreasonably rely on and welcome additional children:

- \* When schooling opportunities for children are lacking, it is difficult to argue that it is a better investment to have two or three educated children than a large family who cannot be educated.
- \* In the absence of social security and pensions, the need for support in old age outweighs the immediate costs of children.
- \* Due to high infant mortality, many children die young and the inclination is great to have many babies in order to ensure that a few survive.

36. Fertility behaviour can therefore be influenced by policy measures to provide more educational and employment opportunities for women, to establish minimum-age child labour laws, to provide publicly financed social security, and so on. In some countries, high female employment opportunities outside the home and the farm and greater female and male school attendance, especially during the primary and early

secondary years, have been clearly associated with lower levels of fertility.<sup>12/</sup> Moreover, a decline in infant mortality is strongly associated with a subsequent decline in fertility.<sup>13/</sup> This fact alone underlines the importance of improved public health and child nutrition programmes in ultimately reducing fertility levels.

37. The impact of economic and social development programmes (employment, education, health, social

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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Harare, 18 Sept 1986

security, and nutrition) in lowering fertility can be effective only when the benefits are shared by the majority. Societies that attempt to spread economic growth benefits to a wider segment of the population may do better at lowering birth rates than societies with both higher levels and faster growth of gross national product but where the benefits of growth are more unevenly shared.

38. Thus developing-country strategies to lower population growth rates must deal not only with the population variable as such but also with the underlying social and economic conditions of underdevelopment. Within an overall framework that strengthens the social, cultural, and economic motivation for a small family, family planning programmes must provide to all who wish to regulate fertility the education, technological means, and services they require.

39. To realize these goals, changes are required both in the overall orientation of development policy and in specific measures that directly affect fertility. The demographic transition will be achieved more rapidly with development policies that aim to:

- \* eliminate absolute poverty;
- \* reduce the gap in economic and social opportunities between rural and urban areas;
- \* lessen income inequalities;
- \* expand educational opportunities for women;
- \* increase employment for men and women;
- \* make preventive medicine and public health programmes available;
- \* provide clean water, improved sanitation, and sewage disposal;
- \* improve maternal and child care services, especially immunization and improved nutrition for children; and
- \* establish a system for social security.

40. Within the context of such a development strategy, policies to influence fertility in the short term should be aimed at enhancing motivation and improving access. Family planning services in many developing countries are currently focused only on the need to deliver to



target groups the services that promote fertility reduction. They are linked neither to other programmes that reduce fertility nor to those that increase motivation to use these services. Both in design and implementation, they remain separate from such fertility-related programmes as nutrition, preventive health, maternal and child care, and preschool education that take place in the same area and that are often funded by the same donor or the agency.

41. To be effective, family planning services must be integrated with other efforts to improve access to services. For example, the clinical support needed for most modern contraceptive methods makes family planning services heavily dependant on the health system. A clear area for action here is to integrate population programmes with health, education, and rural development projects and to implement them as part of a major socio-economic intervention in a given village or a cluster of villages. Such action will increase the motivation, improve access, underscore the development dimension of the population issue, and enhance the effectiveness of investments in the family planning.

## 2. Managing Distribution and Mobility

42. Population growth, production, incomes, poverty, environmental damage, and resource depletion have been unequally distributed between regions and income classes within nations. To correct the imbalance between growing numbers and resource demands, national population policies and development strategies will have to be closely linked and implemented in an integrated manner, paying particular attention to their impact by region and income class.

43. The distribution of population across a country's different regions will be influenced greatly by the extent to which development policy takes into account the geographical spread of economic activity. Most countries are committed to the objective of balanced regional development, but in practice this is seldom achieved. A policy commitment to agriculture and rural development implies, to a certain extent, greater attention to realizing more fully the development potential of all regions, particularly those that are ecologically disadvantaged at present. (See Chapter 5.) This would help reduce the outmigration that arises from lack of opportunities. At the same time, a measure of caution is required in planned movements of population to areas that may be sparsely populated precisely because they have a limited potential to provide sustainable livelihoods.

44. Many of the population problems in developing countries arise not from overall size but from concentration, especially in cities. The migration from rural to urban areas is part of a process of economic development and diversification. The real issue here 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 8.)

### 3. Strengthening International Support

45. An integrated view of population, environment, and development also carries certain obligations for developed countries. First it must be recognized that any international action that enhances the possibilities for sustainable development in the Third World will also help to lower fertility levels through its impact on

incomes. Thus developed country policies on agricultural exports and imports and on market access for simple labour-intensive manufacturers could have a profound impact on poverty and employment, and, through them, on demographic changes in developing countries. Hence a concern about global population size requires an equal degree of concern about global development.

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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WCED Public Hearing  
Nairobi, 23 Sept 1986

46. Within the context of population policies in a narrower sense, developed country policies on development assistance for population activities bear examining. Only about 1.5 per cent of official development aid now goes for population assistance.<sup>14/</sup> It is therefore essential that donors step up their assistance for population activities. An increase in assistance is not enough, however. Population assistance should be designed and delivered as part of other socio-economic development projects and of trade and commercial regimes. Such action will promote the inclusion of population policies in national development strategies and will also raise the visibility of population assistance programmes.

#### IV. HUMAN RESOURCE DEVELOPMENT

47. The relationship between human beings and nature is not merely a matter of the balance between population size and natural resources. A more positive approach sees people as a resource who can be used to enhance the quality of the environment and increase the pace of development. But in order to do this the institutional arrangements and developmental priorities and policies must be geared towards ensuring that every human being is able to fully realize his or her creative potential and productive ability. This requires integration of human resource development with other measures directed at environmental improvement and economic development.

48. Conventional economic and social policy is limited in its capacity to handle these concerns. It is based on an artificial separation between "economic" and "social" departments of life. For example, it assumes that health expenditures are for social purposes and that money spent on enabling people to be healthy might be an investment as important as funds spent on machinery or construction. Economic policy in turn relies on a narrow set of indicators that do not reflect either human welfare or the status and potential of human resource development.

49. The net result of this artificial distinction is an enormous wastage of human resources, reflected in unemployment, poverty, and refugee movements, in social discrimination and the marginalization of various ethnic groups, and in malnutrition, ill health, illiteracy, and drug and alcohol abuse. The roots of these problems lie not just in social policy, as conventionally defined, but in the entire framework of development policy.

Hence the solutions have to be found in a reorientation of development efforts rather than in purely sectoral approaches.

50. The principal reorientation required is a greater attention to distributional equity. A great deal of development effort is based on the assumption that the benefits of growth and resource development will "trickle down" to the poor without any direct intervention. As with the link between poverty, environmental deterioration, and development, the link between poverty and human resource development is a two-way affair. It is the poor who are most seriously affected by ill health, illiteracy, lack of skills, and marginalization. And this in turn reinforces their poverty. Hence development policy in general, and economic policy in particular, must pay greater attention to its impact on employment and other opportunities for a sustainable livelihood, on access to land, water, capital, and other productive resources and on equity of access to health, education, and similar public services.

There must be realization of the importance of including women in any strategy geared towards management of the environment. We are aware that in most programmes where planners plan for implementing various projects or various technologies, the target is always not included and I want to emphasize that without the involvement of the people concerned who are actually involved in the problems - if they are not involved, then if it is a technology without women, it is not a technology at all.

Betty Tero  
Association of Women's Clubs  
WCED Pubic Hearing  
Harare, 18 Sept 1986

51. The other area that deserves attention is the priority given to "social expenditures". For instance, government expenditures on defense in developing countries are almost as large as the combined expenditure on education and health. Even within the framework of development spending these sectors tend to suffer in comparison with so called productive sectors. This is due largely to the false dichotomy between "social" and "economic" expenditures. It is essential that this dichotomy be eliminated and that development policy recognize the importance of human resource development both as a means for promoting sustainable development and as an end in itself.

52. In a broad sense, the objectives of human resource development underlie virtually all the recommendations in this book. But three areas of development policy are directly involved in the link between human resource development and environment. First, the whole area of human health is directly affected by environmental conditions and, in turn, influences the possibilities of productive work and sustainable development. Second, education - particularly environmental education - can provide the basis for new attitudes to environment and development. Third, the habitat and way of life of a variety of small groups not in the mainstream of economy and society are threatened because they lack the political and economic power to resist outside developmental and commercial pressures.

#### 1. Improving Health

53. Good health is crucial because physical well-being is the foundation of human welfare and productivity. Hence a broad-based health policy is essential for sustainable development. In the developing world, the

critical problems of ill health that need to be tackled are closely related to environmental conditions and developmental problems.

54. Malaria is the most important parasitic disease in the tropics. In 1982, some 365 million people lived in areas, mainly in Africa, where it is highly endemic and about 2.2 billion more in areas where control measures have reduced but not eliminated its occurrence.<sup>15/</sup>

The growing resistance to insecticides and drugs has led to a resurgence of the disease in areas where it was thought to be under control, and it is now recognized that current approaches hold limited promise. The common prevalence of malaria is closely related to wastewater disposal and drainage and, in this sense, the health problem really requires an environmental solution. The link with inadequacies in water supply and sanitation is even more striking in the case of certain other widespread and debilitating diseases like the diarrhoeas, worm infestations, and certain types of filariasis.

55. Some health risks also arise from the nature of development. Large-scale water resource projects have led to sharp increases in the incidence of schistosomiasis, which now affects about 200 million people in 74 countries.<sup>16/</sup> As has been shown in several projects, the disease can be controlled not just through therapeutic interventions but also through improvements in rural water supply sanitation and health education.<sup>17/</sup> Other examples of the link between development, environmental conditions, and health include air pollution and respiratory illnesses, the effects of carcinogens and toxic substances, and the exposure to hazards in the workplace and elsewhere.

56. A large class of health problems arises from serious and extensive nutritional deficiencies that occur in virtually all developing countries, though they are worst in low-income areas. The available evidence on child mortality also reflects the combined effects of sickness and malnutrition. Most malnutrition is related to a shortage of calories, protein, or both. But some diets are inadequate because they lack specific nutrients. Anemia, resulting primarily from too little iron, is the most prevalent example; iodine deficiency in some areas is another.

57. The close links between health, nutrition, environment, and development imply that health policy cannot be conceived of purely in terms of curative or preventive medicine. The issue is not merely one of greater attention to public health programmes. What is needed is an intersectoral approach so that key health objectives are reflected in areas like food production; water supply and sanitation; industrial policy, particularly with regard to safety and pollution control; the planning of human settlements; and so on.

58. Providing primary health care facilities and ensuring equitable access to them are starting points of an intersectoral approach to health. Beyond this it is necessary to identify vulnerable groups and their health risks and to ensure that socio-economic factors are accounted for in other areas of development policy. Linking health objectives with development and environment policy is clearly relevant for practically all health problems. Hence, the "Health for All" strategy of the World Health Organization should be broadened to cover health-related interventions in other sectors of development activity.<sup>18/</sup> Moreover, this broader intersectoral approach must be reflected in institutional arrangements for co-ordination between



these various areas of development administration.

59. The intersectoral approach can be illustrated in the case of nutrition. A purely health programme approach would look at supplementary feeding programmes, nutrition education, fortification of food in micronutrients, and so forth - all undoubtedly important interventions. An intersectoral approach however, would also direct attention to agricultural policy. For nutritional purposes, a great deal can be achieved by producing more of what the poor traditionally eat - coarse grains and root crops - which are generally the cheapest source of calories. Coarse grains require less irrigation and drainage and, like root crops, could be perennial and drought-resistant; both crops can be produced by small farmers, an added advantage. Food marketing and storage programmes can also have a major nutritional impact by reducing regional, seasonal, and annual variations in food supplies and prices - which contribute significantly to malnutrition. Market stability can be helped by better transport and roads.

60. Medical research currently focuses on chemotherapy, vaccines, and other therapeutic interventions for disease management. At the global level, much of this research is directed at diseases widely prevalent in developed countries, as their treatment accounts for a substantial part of the sales of pharmaceutical companies. More systematic research is urgently needed on the environmentally related tropical diseases that are the major health problem in the Third World. This research should focus attention not merely on therapeutic interventions but also on public health measures that are so necessary for controlling these diseases. Existing arrangements for international collaboration on tropical disease research should be greatly strengthened.

61. Within the narrower area of health care, maternal and child health care are particularly important. As indicated earlier, an improvement in child survival rates could lead to reduction in fertility and lower population growth rates. The critical elements here are relatively inexpensive and can have a profound impact on health and well-being. Attended births, protection against tetanus and other infections, and supplemental feeding can dramatically reduce maternal mortality. Similarly, child survival rates can increase sharply with a few low-cost interventions such as immunization, oral dehydration therapy against diarrhoeas, and breast-feeding, which in turn can reduce fertility.

## 2. Education for Environment

62. Human resource development demands knowledge and skills to help people improve their economic performance. Sustainable development demands 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 call for greater literacy and social and civic responsibility. Education has the potential to induce all these, and to enhance a society's ability to overcome poverty, increase incomes, improve health and nutrition, and reduce family size.

63. Most people base their understanding of environmental processes and development on traditional beliefs or on information provided by a conventional education. Quite often they do not realize the depth and intensity of environmental changes taking place, and so they continue their traditional patterns of natural resource use. Their idea that nothing they do could harm the environment can be aggravated by lack of

understanding of the possible grave consequences of their usual activities, a situation often found in regions relatively rich in natural resources.

64. The investment in education and the substantial growth in school enrolment during the past few decades is a sure sign of progress. Today, universal literacy is a political objective in many countries. Access to and opportunities for education are increasing and will continue to do so. The challenge for a sustainable future will come not from quantity of education but quality.

The world is unfortunately not what we would like it to be. The problems are many and great. Actually, they can only be solved with co-operation and quick-wittedness.

I represent an organization called "Nature and Youth". I know that I have full support among our members when I say that we are worried about the future if drastic changes do not take place, concerning the world's way of treating our essential condition, nature.

We who work with youth, and are youth ourselves in Norway today, know very well how the destroying of nature leads to an apathetic fear among youth concerning their future and how it will turn out.

It is of great importance that common people get the chance to take part in deciding how nature should be treated.

Frederic Hauge  
Nature and Youth  
WCED Public Hearing  
Oslo, 24-25 June 1985

65. From the point of view of sustainable development, the foremost task of education policy is the universalization of basic education to the level permitted by available resources. Most governments are committed to this goal, and its realization will have a favourable impact not just on individual productivity and earnings but also on attitudes to health, nutrition, and childbearing. It can also provide the basis for a greater awareness of environmental factors in everyday

life.

66. Support for basic education should not divert attention from the need to improve and expand those skills usually provided by secondary and higher education. These levels are currently dominated by the requirements of the modern sector. Greater emphasis is needed on the knowledge and skills necessary for pursuing sustainable development in the traditional sectors of economic activity. Moreover, 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, for knowledge, technical skills, and value systems now change in much less than the space of one lifetime.

67. Environmental education, in a broad, interdisciplinary sense should be reflected in the curriculum of the formal education system at all levels. Students should be taught the fundamental principles of the interaction between nature and society and acquire some practical skills. Environmental education should be integral, interdisciplinary, socially-oriented, and adapted to specific levels of socio-economic development, which will vary not merely between but also within countries. Two objectives are essential - to foster a sense of responsibility for the state of the environment that students will observe in all forms of their personal and social behaviour, and to teach practical skills of how to monitor, protect, and improve the environment. Intolerance of carelessness and wastefulness in respect to nature must be encouraged. This objective can hardly be achieved without general involvement of students in the active movement for a better environment. Though these goals are separate, they may go hand in hand in the educational process.

68. The need for an interdisciplinary approach in environmental education is recognized by an overwhelming majority of specialists, including school teachers. Special courses pull together information from classes on different subjects and bring into focus environmental problems at the national and global levels. Out-of-class environmental activities are important as well. Nature clubs and special interest groups directed, for instance, at local problems of forestry or soil erosion can help students make a constructive contribution to the community.

If the Commission is going to be successful in charting a new course for society a massive increase in public awareness and education is necessary. It is important that television and newspaper networks of the world begin to participate in an active instead of just a passive way in advancing the cause of environmental protection and world development.

The news media cannot consider themselves as mere spectators viewing our global demise. They must become active participants working to systematically increase awareness about the dead-end road we currently find ourselves on. While governments around the world can effect a certain degree of social change, the only proven way to effect a massive shift of human behaviour is through public awareness.

Mark Stephenson  
Manitoba Department of the  
Environment  
WCED Public Hearing  
Ottawa, 26-27 May 1986

69. Technical and vocational schools have to tackle concrete environmental problems using a problem-solving approach and leaving considerable room for participation. The primary task of environmental education in universities and institutes is the training of specialists in interrelated disciplines. Environmental education at this level should be continuous, multi-interdisciplinary, and integrated,

although differentiated in terms of occupational orientation. The rapid rate of change in technology and environmental conditions also requires a continuing process of re-education, particularly for technical personnel.

70. Non-formal environmental education has great potential to shape public opinion and response to local, regional, and global environmental problems. It can stimulate the direct participation of the public in outdoor nature conservation activities and increase the efficiency of these endeavours.

71. This important role of education - and of environmental education in particular - should not be overestimated, however. It is impossible to improve the environment only through environmental education. Education can provide the basis for the future activities. But the solution of environment problems is bound up with socio-economic development, where the causes of the problems are based.

### 3. Protecting Vulnerable Groups

72. The processes of development generally lead to the gradual integration of local communities into a larger social and economic framework. Some communities, however, do not share in this process of integration and remain isolated because of such factors as physical barriers to communication or marked differences in social and cultural practices. Such groups can be found in the remote northern regions of North America, in the Amazon Basin, in the forests and hills of Asia, in the deserts of North Africa, and elsewhere.

73. The isolation of these groups has often meant the preservation of a traditional way of life in close harmony with the natural environment. In fact, the survival of these communities has depended on such ecological awareness and adaptation. But the isolation has also meant that many people have not shared in economic and social development, which is reflected in their health, nutrition, education, and, in a more general sense, standard of living.

74. With the growth in communications and the gradual advance of organized development into remote regions, these groups are becoming less isolated. In many cases

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.

Mary Allegretti  
Syndicate of Rubber Tappers  
WCED Public Hearing  
Brasilia, 30 Oct 1985

they live in areas rich in valuable natural resources that someone wants to exploit for the national or

international economy. Frequently such exploitation disrupts the local environment in a manner that endangers the traditional way of life. The legal and institutional changes that accompany organized development add to these pressures.

75. Growing interaction with the larger world is increasing the vulnerability of these groups since they generally lack the capacity to benefit from development. Social discrimination, cultural barriers, and the exclusion from national political processes often translates into the neglect of their interests. Many groups become dispossessed and marginalized, and their traditional practices disappear. This is a loss not merely for these individuals but for the larger society, which could learn a great deal from the traditional practices and use of the environment.

76. The starting point for a just and humane policy, for such groups is the recognition and protection of their traditional rights to their habitat - rights that are often defined in terms that do not fit into a standard framework of law. Community institutions to regulate these rights and corresponding obligations may also be involved. This indigenous legal and institutional framework is 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 it must include giving local communities a decisive voice in the decisions about resource use in their area.

77. Protection of traditional rights should be accompanied by more positive measures to enhance the well-being of the community at an appropriate pace for



the group. An initial focus should be on measures that increase earnings from traditional activities. These could take the form of marketing arrangements that ensure a fair price for produce, and steps to conserve and enhance the resource base and increase resource productivity. The measures must go beyond economic matters and deal with the social and cultural problems confronting people, such as the sudden introduction of alcohol to a community unfamiliar with its effects.

78. The policy framework cannot stop at the preservation of the traditional way of life, nor can it maintain isolation in an artificial fashion. Hence broader measures of human resource development are also required. Health facilities have to be provided to supplement and improve traditional practices, nutritional deficiencies have to be corrected, and educational institutions established. In fact, such a programme 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 new projects, particularly through jobs.

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