

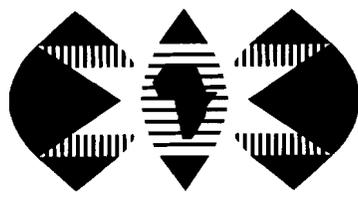
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**Africa's Development Crisis:  
Agriculture Stagnation,  
Population Explosion,  
and Environmental Degradation**

by

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## **I. THE EXTENT OF THE CRISIS AND ITS IMPACT ON SOCIAL AND ECONOMIC DEVELOPMENT**

### **Introduction**

This report addresses the fundamental development challenge that faces this generation of Africans.<sup>1</sup> The manner in which this challenge is met will shape the world of future generations.

In 1983, the Economic Commission for Africa, in its report "ECA and Africa's Development 1983-2008," stated:

"The picture that emerges from the analysis of the perspective of the African region by the year 2008, under the historical trend scenario, is almost a nightmare....Firstly, the potential population explosion would have tremendous repercussions on the region's physical resources such as land and the essential social services: education, health, housing, nutrition, water, etc. At the national level, the socio-economic conditions would be characterized by a degradation of the very essence of human dignity. The rural population, which would have to survive on intolerable toil, will face an almost disastrous situation of land scarcity — whole families would have to subsist on a mere hectare of land. Poverty would reach unimaginable dimensions...."

Eight years have elapsed since that report was published. What has happened in the intervening period?

Put very bluntly, the situation has worsened. Africa is a continent in crisis, and there is little reason to believe that current development programs will reverse the adverse trends. The situation five years from now will be worse, not better, unless more resolute steps are taken.

### **The Situation Today**

A child born today in Sub-Saharan Africa faces a bleak set of statistics. The odds are one in 10 that he or she will not live more than

one year (Table 9); the odds are one in 20 that the child's mother will die giving birth.

The child born today in Sub-Saharan Africa can expect to live for only 51 years — 25 years less than children in the high-income countries and 12 years less than in India and China (Table 1).

The newborn African child enters a world in which one person in five does not receive enough food to lead a productive, healthy life. There is only one doctor for every 24,000 people, compared with one for every 470 people in the high-income countries.

By the time the child born today is 23, if present population growth continues, Sub-Saharan Africa's population will have doubled. When the child is 45, it will have quadrupled.

And all this will occur in a region where many people are already poorer than they were 30 years ago; where there is mass unemployment and widespread malnutrition; and where the number of people living in absolute poverty is expected to expand by over 75 million within the next decade.

The African child comes into a land in the midst of an unprecedented crisis. Or, as Nigeria's Chinua Achebe has so poignantly described it, into a land where *Things Fall Apart*.

## **A Multifaceted Crisis**

Sub-Saharan Africa unquestionably poses the greatest development challenge facing the planet today. The problems are deep-seated and multifaceted.

- **Poverty.** A fundamental problem is poverty. Of the more than 1 billion people living in the developing world on less than \$370 per year (compared to per capita income in the United States of \$20,000), over 16 percent live in Sub-Saharan Africa. By the year 2000, it is projected that the region will account for 32 percent of the world's poor. While incomes of most of the world's poor — those living in East and South Asia — rose in the 1980s, they fell in Sub-Saharan Africa. While infant mortality, school enrollment

rates, and other indicators have continued to improve for most of the developing world, they have stagnated or declined for the poor of Africa. By the year 2000, child mortality is projected to fall to around 30 deaths per thousand in East Asia; in Sub-Saharan Africa, it will still hover around 135 per thousand — the highest in the world. Most regions in the developing world are expected to achieve universal primary school enrollment by the end of this decade. Sub-Saharan Africa is the exception.

- **Economic Growth.** A major cause of the deep incidence of poverty in Africa has been economic and political mismanagement in the face of adverse external conditions. This mismanagement has led to inefficiency, low productivity, meager returns on investment, and extremely low rates of economic growth. On average, for the three decades since 1960, economic growth in Sub-Saharan Africa has barely kept ahead of population growth. And in the 1980s, per capita income declined by around 20 percent. Today, this region of 45 countries and 530 million people has a total GNP of less than \$150 billion — the same as a small European country like Belgium, which has only 10 million people.

- **Agriculture.** Agriculture is the backbone of Sub-Saharan Africa's economy. The mass of Africa's people still dwell in villages and earn their living cultivating family farms of between five and 15 acres. Although Africa's agriculture has grown over the last three decades by about 2 percent a year, it has not kept up with population growth (Table 7).

- **Population.** The population is expanding at a rate rarely, if ever, seen in any large region in human history, about 3.1 percent a year (Table 10). In the nineteenth century, as the European nations industrialized and developed, their populations doubled over a period of 90 years. African populations are currently doubling in about 23 years. Sub-Saharan Africa now has twice the population it had in 1965 and more than five times the population it had at the beginning of the century. The population is projected to increase nearly sixfold before it stabilizes (Table 11).

- **Environment.** This pressure of people, combined with traditional agricultural practices, is causing environmental degradation

at an alarming pace — desertification, deforestation, soil erosion, destruction of vegetative cover, and biodiversity loss. The major problem is not industrial pollution but, rather, depletion of Africa's natural resource base, which poses a major threat to both present and future generations.

There are other economic indicators of the African crisis:

- Sub-Saharan Africa's debt has risen 28-fold since 1970 and now stands at about \$160 billion — roughly 12 percent more than its GNP. Relative to GNP, this makes Sub-Saharan Africa the most heavily indebted region of the world.
- The region's terms of trade have dropped by 10 percent in the latter part of the 1980s. More seriously, Africa's share in world markets has fallen by half since 1970. Sub-Saharan Africa now accounts for less than 2 percent of all world trade, placing the region at the very margin of the global economy.
- Net financial transfers<sup>2</sup> to Sub-Saharan Africa (in current dollars unadjusted for inflation) declined from an average of around \$13 billion in the early 1980s to \$7 billion in the mid-1980s, before rising again to \$12 billion a year at the end of the decade (Table 22). Private transfers, including direct investment, dropped from around \$3.9 billion in 1980 to a net negative transfer of several hundred million dollars a year by 1989. Since the North-South dialogue of the mid-1970s and the Brandt Report of 1980 — which pushed for a more equitable distribution of international resources — the atmosphere for aid and investment in Africa has chilled. There is also the risk that historic events in Eastern Europe and the need for reconstruction in the Gulf may divert future capital flows from Africa.

### Signs of Hope

The general picture is gloomy. As with any general picture, however, it does not tell the whole story. Since the UN Special Session on Africa in 1986, a substantial number of Sub-Saharan countries, including Nigeria, have embarked on programs of economic reform. These programs, often subsumed under the phrase "structural adjust-

ment," have been extremely difficult and painful but absolutely essential.

Policies have been introduced that, if continued and strengthened, have the potential for rekindling growth, revitalizing agriculture, and increasing Africa's competitiveness. The adjustment process has been far from perfect. There have been heavy costs as well as benefits, losers as well as winners. The process needs to be refined. But it surely needs to be pursued if Africa is not to be left further and further behind.

Policy reform is one sign of hope for Africa. So, too, is the fact that, despite the general climate of aid fatigue, the donor community increased its disbursements to Sub-Saharan Africa in the latter part of the 1980s in response to the region's own efforts to bring about a turnaround. Net official development assistance (ODA) flows<sup>3</sup> to Sub-Saharan Africa increased, on average, by about 3 percent a year in real terms during 1985-89. The region's share in worldwide net ODA disbursements increased from 26 percent in 1980-81 to around 36 percent in 1988-89.

The World Bank, which is an important catalyst for increased assistance to Africa, has called for a 4 percent real annual increase in gross ODA for the rest of this decade. Financial resources are particularly important for countries undergoing adjustment since absorptive capacity for both aid and investment resources should expand. Still, this is an ambitious target. But lower levels of assistance are not likely to provide enough fuel to allow for even modest per capita income growth.

There are no quick or easy solutions to Sub-Saharan Africa's problems. Only by laying out long-term, 20- or 25-year "indicative" development programs for each country, and for the region as a whole, can the problems be tackled in a systematic and realistic way. The programs must address the fundamental determinants of economic and social advance, and they must show for each country, for the short, medium, and long terms, the rates of progress that need to be achieved in each of the basic measures of human welfare.

To register even a modest improvement in the quality of life, the Sub-Saharan economies must raise their rate of GDP growth from less

than 2 percent per annum, the level of the 1980s, to at least 4-5 percent a year (per capita income growth rates would need to rise from -1.2 percent to +1 or 2 percent). During the next decade, expansion of agricultural output will be the foundation of growth. And this will require that the relationship among agricultural technologies, population growth, and preservation of the environment — a relationship that will be a critical long-term issue — receive far more emphasis than in the past. I turn to this subject now.

## **II. AGRICULTURAL STAGNATION, POPULATION EXPLOSION, AND ENVIRONMENTAL DEGRADATION**

### **The Nexus**

Africa must grapple with three major trends that have deeply affected its past development and that will largely determine its future prospects: agricultural stagnation, explosive population growth, and degradation of its natural resource base.

The majority of the people of Sub-Saharan Africa depend on the land for their living. But the land's capacity to produce is ebbing away under the pressure of rapidly growing numbers of people who do not have the wherewithal to put back into the land what they take from it to survive. Resource-poor farmers, in effect, mine the land to produce their crops and feed their livestock. They are too poor to add organic or inorganic fertilizer, or undertake soil and water conservation. As the land's vegetative cover — trees, shrubs, grasses — shrinks, its already fragile soils lose the capacity to nourish crops and retain moisture. Consequently, agricultural yields fall, and the land becomes steadily more vulnerable to the naturally variable rainfall, turning dry spells into droughts and periods of food shortage into famines.

This vicious cycle spins in different ways and at different speeds in different places. There are important country variations. A few countries have performed moderately well in agricultural development (Kenya, Cameroon, and Zimbabwe are examples), while others have performed extremely poorly (Table 7). Some countries have very high population growth rates (Tanzania, Zambia, Kenya, and Côte d'Ivoire have populations growing at over 3.5 percent a year: Table 10). Others have more modest rates (for example, Chad and Mauritius

have populations growing at below 2.5 percent). The nature of environmental degradation also varies from country to country. Some countries, such as those in the Sahel, Namibia, and Botswana, face serious desertification. Others in coastal West Africa are witnessing rapid destruction of their tropical forests. Some countries — such as Madagascar, Lesotho, and Mauritius — suffered important environmental degradation including alarming deforestation, soil erosion, and loss of biodiversity, but they have prepared and are implementing national environmental action plans to stop such degradation.

Despite these variations among countries, the basic linkages among agricultural stagnation, population growth, and environmental degradation are common to the region. And this linkage poses a critical threat to Africa's development in the 21st century. The following indicates what has been happening in each of the three areas.

### **Agricultural Performance**

Agriculture is absolutely essential today, and will continue to be essential in the foreseeable future, to Sub-Saharan Africa's growth and development. It contributes 34 percent of GDP, 40 percent of exports, and 70 percent of employment. It is by far the largest sector of almost all African economies. It is the sector on which the vast majority of Africans depend for their well-being and livelihood. If Africa is to meet its food requirements and generate the financial resources needed for its overall development programs, it simply must improve — and improve dramatically — its agricultural performance.

The magnitude of this task comes into focus when one considers that, over the last 25 years, agricultural production in Africa rose by only about 2 percent a year — below the current average population growth rate of about 3.1 percent (Tables 7 and 10). Per capita food production has declined; food imports are increasing at about 5 percent per year; and food aid has expanded at nearly 6 percent a year. Yet, despite the growth in food aid and food imports, about 100 million Africans are malnourished, and Africans on average consume fewer calories than people in other parts of the developing world (Table 8). Famines in several African countries in the 1980s have been one of the most graphic indications of the growing inability of Africa to feed itself.

This failure of African agriculture has also choked off the continent's earning potential in the global economy. During the 1960s, Africa's agricultural exports grew at nearly 2 percent a year. Since then, they have declined sharply — by more than 3 percent a year. As a result, Africa's share of world exports for most of its major agricultural commodities has fallen. Between 1970 and 1984, for example, Africa's world market share for three main agricultural exports — coffee, cocoa, and cotton — shrank by 13, 33, and 29 percent respectively. The implications are substantial: if Sub-Saharan countries had maintained their 1970 market share of non-oil primary exports, their export earnings would have been \$9-10 billion a year higher in 1986-87. The difference is approximately equal to the region's total annual debt service payments in this period.

The decline in agriculture has been caused by many factors. A fundamental one has been the failure to modernize African agricultural practices. Farming methods, such as shifting cultivation, that served Africa well when its population was small are proving disastrous as the number of people grows. Under the traditional "slash and burn" agriculture, a farmer clears a plot of land, burns the felled trees, and cultivates the land for two or three years until the soil begins to lose its fertility. Then the farmer leaves that land to fallow and clears another plot. Bushes and trees gradually reestablish themselves on the abandoned land. In six to 15 years, they restore its nutrients, and a farmer can start over.

That process takes about four times more land than if the farmer worked one plot, maintained its fertility, controlled its weeds, and intensified its production. Moreover, with each burning, some nutrients are lost into the air or washed away, and valuable wood goes up in smoke. Now, as the population grows, farmers are forced to shorten the fallow periods. Soil erosion increases and fuelwood becomes scarce. As a substitute, people burn animal dung and crop residues, further denying nutrients to the soil. They also walk farther to fuelwood, spreading the destruction. Major results of this vicious cycle are low agricultural productivity and environmental damage.

In addition to poor farming methods, Africa's agricultural performance has been affected by bad weather, including severe droughts in 1972-73 and 1983-84, and by poor project design and imple-

mentation. Aid projects and government programs in Africa have had an appalling failure rate. One in every two World Bank agriculture projects in East Africa has failed — against one in five in Asia. Projects have been overambitious; not sufficiently focused on farmers' real needs, constraints, and capacities; and, most importantly, not attentive enough to the overall policy deficiencies governing the agricultural sector. In many African countries, agriculture has suffered from a combination of overvalued exchange rates, confiscatory pricing and marketing policy, and excessive regulation of private investment in agricultural marketing, including farm input supply and credit.

The failure of African agriculture partly reflects the low priority accorded to farming by Africa's post-Independence policymakers and governments. Policies keeping farm prices and retail food prices low encouraged labor and capital to flow into cities and resulted in a rapid expansion of imported foods to satisfy the needs of the growing population. Subsidized imported cereals have come to be preferred by urban consumers to locally produced root, tuber, millet, and sorghum. Governments also ignored the development of viable agricultural research and extension systems, which are one basis of long-term technological improvement of agriculture.

While many Asian countries gave priority to agriculture and allocated up to 25 percent of their budgets to that sector in the 1970s, the median for Africa was 7.6 percent. Is it any wonder, then, that Africa's share of exports in the world market has dropped by 50 percent since 1970, and agricultural growth per capital has been negative?

## **Population Growth**

As Africa's agriculture was declining, her population was growing — exponentially. The situation is unique. Whereas in Asia and Latin America better health care and extension of education have been accompanied by falling population growth, in Africa generally the reverse has been true.

In 1960, African population growth rates were not high in relation to those of Asia and Latin America (2.5 percent per annum versus 2.5 percent and 2.9 percent respectively). Today, Asia's and Latin America's

have fallen to 2.1 and 2.5 percent, respectively, but Africa's has risen to 3.1 percent. Sub-Saharan Africa's total fertility rate in 1990 (the average number of children born to women in their childbearing years) is roughly equivalent to 6.5. It has remained at this level since 1965 (Table 10); in other low-income countries, it has declined — for example, in India from 6.2 in 1965 to 4 in 1990, and from 6.4 to 2.3 in China from 6.4 to 3 over the same period. Even if fertility fell tomorrow to two children per Sub-Saharan African family, the region's population would continue to expand for the next 60 to 70 years. If fertility rates drop by 50 percent by 2030, the region's population will reach 1.5 billion in that year (Table 11). No region of the world has ever managed to develop satisfactorily with this rate of population growth.

Forty-five percent of Africa's population is below the age of 15. Each year, Africa's school-age population increases by 5 million. There is a corresponding increase in the number of minds to be trained, mouths to be fed, health services to be provided — all just to maintain the existing and already disgracefully low levels of education, nutrition, and health. Nearly half of those who will enter the labor force in the next three decades are already born. Even in the best-case scenario, about 350 million new workers will be looking for jobs between now and the year 2020.

This exceptional demographic surge will be accompanied by massive pressures for migration — both national and regional — creating social and political tension. Most of the migrants are likely to settle in the expanding urban centers, creating megacities. By 2020, there will probably be 30 African cities with more than a million inhabitants. Several, including Lagos, can be expected to exceed 10 million — requiring vast sums to provide even the most basic infrastructure and services.

Yet, many Africans remain to be persuaded of the imperative of smaller families. They continue to see land as abundant and labor as scarce. It is an increasingly false perception. As Sub-Saharan Africa's population has grown, the amount of arable land available per person has declined: from an average of 0.5 hectare in 1965 to 0.3 hectare in 1987. In some countries, the pressure of population on arable

agricultural land and other natural resources is already intense — for example, in much of the Sahel, Burundi, western Cameroon, Kenya, and Rwanda (Table 5). Other countries will soon face similar situations. In Nigeria, for example, at the present rate of population growth, arable land per capita will decline from the current level of 0.3 hectare to 0.19 hectare by the year 2000. This would bring arable land scarcity to about the same level as that of Rwanda and Somalia (0.2 hectare) today.

It is true that some areas are still underpopulated and could support larger numbers. Where possible, governments should encourage people to move to areas of high agricultural and economic potential. However, the pace of population growth is going to make it difficult to finance and adequately support such programs, and the availability of unused cultivable land is increasingly constrained.

This underlines the fundamental point: the urgency of curbing Africa's population explosion is not due to the present size of the population but rather to the accelerated and increasingly unmanageable rate of increase. In short, population growth is running ahead of the ability of economies and agricultural sectors to expand, swamping Africa's development effort.

An African child is seen as blessing its family's past as well as future. He or she is one twig on the vast African tree of life. In African societies, as in many others, children remain the surest and strongest source of prestige. Moreover, in poor, primarily agricultural African societies, there are economic incentives to have children. They provide farm labor and support their parents in old age. And, especially when infant mortality rates have been traditionally very high, there is an incentive to have many children to ensure that some survive.

Even given these cultural and economic considerations — and we are talking here about the most private and personal decision made by human beings — the demographic choice facing Africa can no longer be deferred. Africa has to decide whether to fill its lands quickly with many ill-fed, unhealthy, uneducated, unemployed people; or to space its children so that they and the society as a whole have a better chance of a much better life. The choice has to be made now because

exceptionally high population growth is already compromising economic growth and family welfare — and is jeopardizing Africa's future development. No other continent's destiny has been so shaped by population growth as has Africa's in the late twentieth century.

The demographic consequences of procrastination and delay are inexorable. For example, as is illustrated below, if Nigeria were to begin to introduce now those policies that would permit it to achieve replacement-level fertility by the year 2010 (instead of the year 2035, as is projected in Table 11), its population would level off at about 324 million instead of 580 million. Similarly, were Ghana and Kenya to reach replacement level fertility in 2010, these populations would ultimately stabilize at 40 million and 72 million respectively, instead of 63.2 and 148.4 million as projected in Table 11.

### Population size scenarios <sup>a</sup>

(population in millions)

| Country | Population in 1990 | Ultimate population size if NRR=1 in 2010 | Ultimate population size if NRR=1 in year indicated |            | Difference due to delay in reaching NRR=1 |                            |
|---------|--------------------|---|---|------------|---|----------------------------|
|         | Population         | Population                                | Population  | Year NRR=1 | Population                                | Percent of 1990 population |
| Nigeria | 117                | 321                                       | 580   | 2035       | 259                                       | 221                        |
| Kenya   | 24                 | 73  | 148   | 2040       | 75  | 313                        |
| Ghana   | 15                 | 40  | 63  | 2030       | 23  | 153                        |

*Note:* NRR is net reproduction rate.

a. Effect on ultimate population size of reaching NRR=1 in Years 2010, 2040, and 2035 respectively.

*Source:* World Bank estimates.

### Environmental Degradation

One of the most serious long-term threats posed by Sub-Saharan Africa's extraordinarily rapid population growth rate is to the region's environment. Like the population explosion, which was largely ignored until it began to translate into food shortages, the threats to Africa's environment tended to pass unnoticed until they began to affect agricultural yields. Except where degradation has been dramatic — as in the enormous gully erosions of Ethiopia's highlands — annual losses of soil and tree cover are often imperceptible to the casual observer. And when they are perceived, stopping the drain of natural

resources may be as complicated as the African environment itself, entailing long years of investment in tree planting, soil conservation, complicated agroforestry, and introduction of organic matter into soils. So much damage has been done that reversing the process will be impossible in many areas. Therefore, conservation now is vital.

The environment consists of intricate ecological systems. Trees and grass, for example, not only provide food (tree crops), fuel, and fodder but also build soil fertility, prevent erosion, provide water catchment, ameliorate climate changes, and provide wildlife habitats. These systems are the very underpinnings for human welfare and survival.

Data on Africa's environment are scarce and unreliable. Even so, some disturbing trends may be discerned. Trees are being cut down 30 times as fast as they are being replaced (Table 16); as many as 80 million Africans have serious difficulty finding fuelwood (their main source of energy). In some countries, such as Ethiopia, topsoil losses of as much as 290 tons per hectare per year have been reported; and many of Africa's unique plant and animal species have been or are being driven to extinction.

The most pressing problems are the high rate of loss of vegetative cover (resulting from a combination of deforestation, overgrazing, and slash and burn cultivation), loss of soil fertility, and soil erosion. In 1980, there were approximately 660 million hectares of forest and woodland in Sub-Saharan Africa. Approximately 3.2 million hectares of this were lost each year of the 1980s, and the rate is accelerating. On the other hand, reforestation amounted to only 90 thousand hectares per year during the 1980s (Table 16). Soil erosion and reduction of soil fertility are even more widespread. The United Nations Environment Programme (UNEP) estimates that about 80 percent of Sub-Saharan Africa's drylands and rangelands — about 1500 million hectares — show significant signs of desertification (meaning extreme loss of vegetative cover).

In many places, environmental damage has already reached crisis point. In the Sahel, for example, expanding populations and accelerated deforestation have triggered a cascading decline in biological and economic productivity and have created what is now the world's largest area threatened by desertification. Hardship is widespread as people seek refuge in the cities. The Sahel's urban populations have

quadrupled in the past 20 years. Pollution in these areas and their growing demand for raw materials (such as fuelwood), in turn, accelerate deforestation and environmental degradation. And so the vicious cycle spins on.

The Sahelian example highlights what is happening, in varying degrees, throughout Sub-Saharan Africa: forests are being cut down, croplands turned into deserts, species of flora and fauna lost, and water and air polluted. What must be emphasized is that these are losses not just to the present generation, but to future generations as well.

### **The Vicious Cycle**

It must also be recognized that this environmental degradation does not occur in isolation. Its causes and consequences are broad and deep, and it is inextricably linked to Africa's growth and development. The land, in a fundamental sense, is Africa's basic capital — its patrimony. If this capital is consumed or destroyed through overuse and misuse, it will have the same effect as a company carelessly depleting its financial assets: in the end, Africa, too, will be out of business.

In a speech to the Food and Agriculture Organization (FAO) in 1985, former President of Tanzania Julius Nyerere made the following point:

“Until the last few years, Africa regarded environmental concern as an American and European matter. Indeed, there was a tendency to believe that talk of the environment was part of a conspiracy to prevent modern development on our continent. Now we have reached the stage of recognizing that environmental concern and development have to be linked together if the latter is to be real and permanent.”

He was right to stress the link between the environment and economic development. Without proper care for the environment, development is not sustainable. And the links between environment, population, and agriculture are particularly critical.

Within Sub-Saharan Africa's 21 million square kilometers, water and land resources hold much potential for agricultural growth. But this ecology is all too easily damaged. Eighty percent of the soils are fragile; 45 percent of the land is too dry to support rainfed agriculture; and average rainfall varies from year to year by an enormous 30 to 40 percent. Without appropriate care and attention, the African environment will suffer irreversible damage. The costs will be enormous. The old Swahili proverb, "Do not borrow off the earth for the earth will require its own back with interest," expresses a fundamental truth.

Africa's environmental degradation has already left its mark in a number of measurable ways:

- **On wildlife and plant life:** The World Resources Institute estimates that 64 percent of original wildlife habitat in Sub-Saharan Africa has been lost (Table 17). This is directly caused by deforestation, desertification, and other human activity. Many plants and animal species have become extinct in Africa, and some of the best known, including the rhinoceros and the gorilla, are in danger of extinction in the future.
- **On fuelwood:** There are severe fuelwood deficits in the savannah regions of West, Central, and East Africa, and in the arid areas of the Sahel, southeastern, and southwestern Africa.
- **On water availability:** There is less water for human consumption and irrigation because of reduced rainfall, more rapid run-off, and less absorption of water into the ground. As a result, as water tables drop, wells dry up and must be dug deeper.
- **On livestock-carrying capacity:** It declines due to decreasing vegetation on which livestock can feed.
- **On crop yields:** They decline as the result of top soil and nutrient losses on croplands.
- **And on arable land:** The FAO estimates that, without effective conservation, more than 16 percent of Africa's rainfed cropland could be lost by the year 2000.

How can this potentially catastrophic situation be reversed? Only by a combination of a reduction in population growth, improved agricultural performance, and better environmental management. I suggest the following targets and action programs for each of these areas.

### **III. TARGETS AND ACTION PROGRAMS**

#### **Transforming Agriculture**

Transforming Africa's agriculture and expanding its productive capacity is a fundamental requirement. To achieve food security, food production will have to grow at about 4 percent a year — above the current 3.1 percent population growth rate. Beyond that, to raise incomes and help finance Africa's import needs, the production of export crops must grow by no less than 4 percent a year. Thus, while recognizing the variability among countries, Africa must set its overall target for long-term agricultural growth no lower than 4 percent a year — over twice the rate achieved in the 1980s (Table 7). Given the past performance, this will be no easy task. How can it be achieved?

Productivity is the key. The scope for expanding agricultural production in Africa is great, although it varies from country to country. To meet the 4 percent output growth target will require an annual increase in labor productivity of about 1.5 percent, with the rural labor force growing at about 2.5 percent. Since the area under cultivation cannot be expanded by more than 0.5 percent a year without adverse environmental consequences (the average rate of the past two decades was 0.7 percent a year), land productivity must rise by a substantial 3.5 percent a year.

The 4 percent growth rate for African agriculture is ambitious, but not impossible. Cameroon, Côte d'Ivoire, and Kenya all have achieved that much or more for extended periods. Additional countries, including Tanzania, Togo, and Burkina Faso, have agricultural growth rates approaching this level. Until recently, these countries were regarded as very poor agricultural performers. Several other countries — Ethiopia, Sudan, Zaire, Mozambique, and Zambia, to name the largest — have great potential due to large areas of cultivable land,

and their agriculture could grow very rapidly. At the same time, it has to be acknowledged that a few countries — including several in the Sahel — have such a weak natural resource base that they are unlikely to reach the 4 percent growth rate target.

The overseas markets on which much of African agriculture depends will remain highly competitive. Long-term price trends are not projected to improve much. Nevertheless, African countries can diversify their production and seek out specialty markets — in off-season fruits and vegetables, for instance. Indeed, diversification to reduce dependency on a relatively few primary commodities is essential. Diversification crops, especially fruits and vegetables, have considerable potential. Greater regional cooperation can also help to expand trade within Africa in agricultural products, especially food. There is considerable scope for import substitution in agricultural products such as meat, cereals, and vegetable oils. In addition, productivity improvements — cutting input costs per unit of output — will be critical to maintain Africa's competitiveness, including the competitiveness of its traditional products, such as coffee, cocoa, rubber, and palm oil.

Some of the new biotechnologies for plant propagation and breeding hold enormous potential in this regard and may well result in dramatically different patterns of agricultural production and trade. We are living in an era of worldwide biotechnological discovery analogous to that of Columbus and Magellan. Africa cannot afford to miss these opportunities. To succeed, Africa must tap into networks of international agricultural research, including that undertaken by private enterprises and universities. African countries cannot depend exclusively on narrow government agricultural research establishments to develop improved agricultural technologies.

Despite wide variations across the continent, there is surprising commonality in the kinds of policies and actions needed to stimulate growth in Africa's agricultural sector. There are seven priorities. To achieve the growth target, all African countries will need to: (a). Create an enabling policy environment; (b). Harness new technologies; (c). Build and maintain rural infrastructure; and (d). Ensure food security. These strategic objectives require: (e). Building African

capacity to manage agriculture at all levels; (f). Explicitly bringing women into the agricultural development process; and (g). Doing all of the above in a way that conserves the environment.

(a) *An enabling policy environment* for agriculture means allowing prices to move flexibly in response to changing market conditions. It means turning over input supply, marketing, processing, and exporting largely to individual entrepreneurs and reducing administrative controls. It means promoting credit at realistic interest rates through homegrown financial institutions including commercial banks and cooperative and credit banks managed by the rural population (as already exist, for example, in Benin, Cameroon, Burundi, and Rwanda). It means strengthening protection of land tenure to increase security of ownership, thereby encouraging investment in land improvements. There is much evidence that the African farmer, like farmers everywhere, will respond to incentives. In recent years, increased production of maize in Zimbabwe, coffee in Guinea, cotton in Benin, Togo, and Tanzania, cocoa in Ghana, food in Nigeria, and groundnuts in the Gambia can be attributed in large part to policy reform directed at making private farming and agroprocessing profitable, along with an appropriate macroeconomic framework.

(b) *Harnessing technologies* requires an emphasis on improved agricultural research, directed increasingly to developing technologies that are environmentally benign. This, in turn, calls for rehabilitating national research institutions (for example, through the Special Program of African Agricultural Research and through investment projects within cooperating African countries); expanding the role of international research centers (monitored by the Consultative Group for International Agricultural Research); establishing multi-country research networks to pool research efforts on specific topics; and bringing industrial country and private sector agricultural research into Africa.

The core of any new research strategy must be to coordinate and apply the entire battery of research undertaken and to make it more responsive to farmers' needs. The linkage to the farmer is undertaken largely through agricultural extension. An effective method of extension is the "training and visit" system. Agricultural extension workers visit farmers on a regular schedule, not only bringing technical messages to farmers but also helping farmers to experiment with technical

innovations, observing best farmer practice, and feeding back farmers' questions to researchers. The job of national researchers is to mobilize their own and other resources to provide responses to farm-level issues. In a number of countries, the "training and visit" system has already led to substantially improved yields — of rice, maize, and coffee in Kenya and Côte d'Ivoire, for example, and of cassava and maize in Nigeria.

The Green Revolution in Asia occurred largely on irrigated lands. We should not expect a Green Revolution-type breakthrough in Africa — because of the limited land presently under irrigation and the limitation on its expansion in the future. Irrigation should be expanded to the extent feasible, but improving the productivity of African agriculture will require many separate efforts focused primarily on rainfed conditions. The key is to adapt new technologies (rainfed and irrigated) that offer a reliable return. Farmers at the margin will invest scarce cash and labor only in surefire success. The new breed of cassava developed by the International Institute for Tropical Agriculture (IITA) in Ibadan is an excellent example of a low-cost technology that doubles yields at little additional cost. It has been spreading spontaneously among Nigerian farmers. Hybrid maize in Kenya and Zimbabwe and improved cotton varieties in West Africa are additional examples of successful new technologies widely introduced in Africa in the last decade. These efforts need to be replicated on a vast scale.

(c) The third priority is *providing rural infrastructure*, including rural roads, market development in rural towns, rural water supply, irrigation, and drainage. It is over such infrastructure that expanded supplies of farm products, farm inputs, and consumer goods for farmers will flow. Without this infrastructure, these goods will not flow, or will flow in lower volume. The infrastructure needs to be developed and maintained through a combination of (a)/ planning and investment by responsible government line agencies (public works departments, rural water supply departments, municipal councils); and (b)/ investment by private individuals, cooperatives, and local communities (for small-scale irrigation and drainage, rural water, local market construction, and maintenance of rural roads).

(d) Strategies to *improve food security* put first priority on employment and income generation for the poor. In rural areas, this

translates into measures to stimulate agricultural growth that involve all of the farming population, including the poor. Investment in rural infrastructure, built and managed by rural people, targeted to the poor, are important elements of food security strategies. Often, infrastructure construction can be done by people in exchange for food. Development of handicrafts, small industry, and food marketing activities in rural areas provides income and hence contributes to food security. Finally, nutrition interventions, targeted particularly to vulnerable groups, especially women and children, are important for assuring food security.

(e) *Building African capacity to manage agriculture* is an imperative that runs through all levels of African agriculture: to produce better-trained policy analysts, economists, researchers, extension agents, and farmers, and to strengthen rural institutions such as farmers' associations, cooperatives, and women's groups. Some capacity building will be undertaken in formal education and vocational training. Some will be done for farmers through agricultural extension.

(f) *Women must be accorded priority* in any program to modernize agriculture since about 80 percent of the food grown in Africa is grown by women. Indeed, the African woman's triple burden — childbearing and rearing, farm production, and household management (including the responsibility for food, fuel, and water supply) — is a central element affecting decisions that relate to population growth rates, choice of agricultural technology, and, thereby, to environmental degradation. Improving the condition of women — by increasing their access to education, as well as to credit, agricultural training, and extension services — would have a positive impact on agricultural development as well as on decisions on family size. There has been a great deal of discussion about promoting the role of women in Africa but, as yet, little evidence of significant change in their role or status. A far more comprehensive and sustained approach is needed.

(g) Modernization of Africa's agriculture must be achieved in an *environmentally sustainable manner*. Numerous simple technologies are available to African farmers that would expand crop yields while maintaining soil fertility, without shifting cultivation from one area to

another. These technologies include terracing, alley cropping, agroforestry, water-spreading, use of surface mulches and appropriate fertilizers, and integrated livestock and crop management. In addition, increased use of chemical inputs, genetic engineering, and simple mechanization (such as animal-drawn implements) can have high impact and are not environmentally destructive at levels likely to be applied in Africa for many years. The simple use of animal traction is estimated to reduce farm labor requirements by 30 to 40 percent, with an apparently positive impact on reduced family size. Water harvesting in Burkina Faso is another example of a simple but highly successful new technique introduced at the community level. Most of these technologies fit perfectly the objectives of a sustainable agriculture. They increase the productivity of the land and, for the most part, need little capital. In his book, *The Greening of Africa*, Paul Harrison cites example after example of environmentally benign agricultural technologies that can be applied at the local level and often at relatively low cost.

That these improved agricultural technologies have not been introduced on a wide scale is largely due to the lack of incentive or profitability for the farmer to introduce improved technology of any kind. Moreover, where uncultivated land was available for clearing, it was usually cheaper and more profitable for the farmer to open up new land rather than use more labor or more risky, less known agricultural methods. The low profit and high risk to the farmer of innovation and of intensive cultivation have been major causes of the widespread failure of agricultural development in Africa — and major causes of environmental degradation.

This reality leads back, of course, to the strategy for agricultural development described above, particularly incentives and policy frameworks. Policies must be established that permit farmers to make a profit from sustainable agricultural methods and that, conversely, ensure they will lose money if they use environmentally destructive methods. In the final analysis, the entire battery of recommendations listed above, including investment in rural infrastructure, capacity building, better targeting of women, and ensuring food security, will have to be undertaken if agriculture is to grow at a 4 percent rate on a sustainable basis.

What would be the cost of meeting the sustainable agricultural production targets for Africa? Public investment in the agriculture sector already amounts to about \$2.4 billion per annum. Forty percent of this total is aid-financed. An additional \$2.5 billion is invested in agriculture each year by private and community investors. But only a portion of this total investment goes to the types of sustainable agricultural practices mentioned previously. If a larger portion were redirected to them, the total investment in agriculture required to meet the target growth rates would not need to increase by more than 4 percent a year.

Productivity gains to labor and land would permit the African population to both feed itself and increase income, without greatly increasing farmed area. Such gains would assist in turning the current vicious cycle of agricultural stagnation and environmental degradation into one of growth with less destruction of the land. Moreover, improved agricultural incomes (especially in conjunction with improved education and health care) should help further encourage smaller families — thus helping to reduce pressure on the environment, allowing some much-needed healing to take place. This, in turn, should stimulate additional agricultural productivity.

Realization of this cycle of growth and conservation will be enormously difficult, requiring radical changes in government policies and a renewed commitment by the international community. But of greatest importance will be the synergy of millions of African farmers acting individually and in their own self-interest to modernize and sustain the region's agricultural development.

### **Slowing Population Growth**

The positive impact of modernizing African agriculture will be offset if population growth continues at explosive rates. A minimum target would be for Africa to follow the pace of fertility decline already achieved by other developing countries. This would mean reducing the average population growth rate to about 2 percent a year within the next 30-35 years. Even under this scenario, the Sub-Saharan population of 532 million in 1990 would increase to over 1.5 billion by 2030 and would not level off until it reaches 3 billion (Table 11). Moreover, in the African context, the 2 percent target is highly

ambitious and would require a reduction in the total fertility rate from about 6.5 children per woman in 1990 (Table 10) to about 3.2 by 2025-30. How can this be achieved?

First, I should point out that progress in reducing fertility rates has been made in recent years by a few African countries. Four countries — Zimbabwe, Kenya, Botswana, and Mauritius — have increased their contraceptive prevalence rates and are witnessing declines in fertility. These accomplishments provide learning experiences for other African countries despite the economic, cultural, and ethnic diversities that must be recognized. Second, the solutions to Africa's population problems have to be uniquely African and must be found by Africans themselves. Therefore, stronger local commitment to the problem is important. In the 1980s, a growing number of African countries came to recognize the urgency of action and began to develop national population policies and programs. By the end of that decade, seven countries had developed family planning policies, and another 20 were in the process of developing them.

How did the four countries mentioned above slow down their fertility rates? Table 9 shows that Zimbabwe has a relatively low infant mortality rate (44 per thousand as compared to 103 per thousand for the region as a whole), and Table 1 indicates that educational opportunities have spread to large segments of Zimbabwe's population — about 75 percent of its adult population is literate. In addition to these very important factors that facilitate acceptance of small family norms, Zimbabwe implemented a robust population program backed by political commitment and budget allocations to support an infrastructure of clinics and rural services. The program distinguishes itself by providing quality family planning services through effective community-based outreach. The staff are well trained, highly motivated, and provide counselling and services that fit clients' needs. Since the late 1960s, the contraceptive prevalence rate in Zimbabwe has increased almost ninefold — from 5 percent to an estimated 43 percent in 1988, 36 percent of which consists of modern methods. Total fertility rate has dropped from over 7 to 5.0 during the past 10 years.

Recently, Kenya, known for one of the highest fertility rates in the world, also has made progress. The latest demographic surveys reveal

a decline in total fertility from 7.7 in 1984 to 6.9 in 1990 (Table 10). Kenya has a national population program with a growing involvement of nongovernmental organizations, community groups, and the private sector. Even voluntary surgical contraception is attracting growing numbers of clients. Since the 1970s, the contraceptive prevalence rate has increased sixfold — from 5 percent in the mid-1970s to almost 30 percent in 1990. The population growth of over 4 percent a year in the 1980s — growth that contributed to unemployment and other social and economic hardship — is being reduced, although still too slowly. A relatively low infant mortality rate and moderately high literacy rates with strong pressure on parents to assume many of the costs of educating their children may have contributed to this decline in fertility.

In Botswana, the high per capita income is combined with a strong health infrastructure to provide high-quality family planning services. About 80 percent of the population lives within 15 kilometers of health clinics that provide integrated maternal and child health and family planning services. Consequently, between 1984 and 1988, the total fertility rate declined from 6.5 to 5.0. During this same period, the contraceptive prevalence rate doubled from 16 to 33 percent.

Mauritius is a unique case, as its infant mortality rate is as low as 21 per thousand, and the adult literacy rate is 83 percent. These indicators are comparable to some of the more successful Asian countries. Mauritius's living standard is high, and the population program is well established. The total fertility rate has been reduced from over 6 in the 1950s to 2.2 in 1986 and is below replacement level today.

These "success stories" stand in stark contrast to other African countries where, on average, only an estimated 11 percent of couples use contraceptive methods, including both modern and traditional, compared with over 80 percent in China and 38 percent in India (Table 12). Demand for contraceptives in Africa, except in the four countries mentioned above, is low compared to countries in Asia and Latin America, as shown by recently completed Demographic and Health Surveys (DHS). In most of the Latin American and Asian countries where surveys were conducted, the demand for contraceptives ap-

proximates the level in developed countries (Table 13). In all of the Sub-Saharan African countries except Kenya, demand for contraceptives for spacing exceeds that for limiting births. By contrast, in most of the countries of Asia and Latin America, limiting births is the primary reason for family planning. However, it is clear that substantial unmet need for contraception exists in Africa and that this need provides a good basis to expand population programs.

At present, most population programs in Africa are weak compared to programs in the developing countries of Latin America and Asia (Table 14). Although a report of the strength of family planning programs in Sub-Saharan Africa shows that the number of countries ranked as "Very weak or none" declined from 28 in 1982 to seven in 1989, only six countries in that year had "Strong or moderately strong" programs.

#### Sub-Saharan Africa: strength of family planning programs, 1982, 1989

*(number of countries)*

|                   | 1982 | 1989 |
|-------------------|------|------|
| Strong            | 1    | 1    |
| Moderate          | 0    | 5    |
| Weak              | 8    | 24   |
| Very weak or none | 28   | 7    |
| Total             | 37   | 37   |

Source: W. Parker Mauldin and John A. Ross. 1991. "Family Planning Programs: Efforts and Results, 1982-1989." Paper for 1991 Population Association of America meeting (unpublished).

Another indicator of the magnitude of the family planning problem is desired family size. In the countries in Africa for which DHS data are available, desired family size far exceeds the fertility rate target of 3.1 (Table 15). To reach this target by 2025-30, desired family size must be cut almost in half, and over 50 percent of African couples will need to use contraception. Achieving these targets will require an intensive effort by African countries and greater and more enlightened support from the international community. The programs need to be comprehensive. They must focus on underlying conditions of fertility decline, generate public commitment, strengthen management, and provide quality family planning services.

First, let me comment on *underlying conditions*. Population policies should seek to affect the factors that underlie family size decisions. This means expanding basic education and reducing infant mortality.

Basic education, especially for girls, will elevate the marriage age — a key determinant of fertility. Recent DHS data show that increases in age at marriage have played an important part in fertility rate decline in Africa. Parents need to be encouraged to place a high value on their children's education. This can provide a strong incentive to reduce family size in the interest of improving children's quality of life, as demonstrated by Kenya's experience. Men play an important role in family-size decisions, particularly in Africa. A change in their attitude toward basic education is therefore crucial.

Reduction in infant mortality is another essential element of the underlying conditions. Professor Ali Mazrui has emphasized that improvements in well-being and health are essential to lowering birth rates. "Death is a more regular visitor than the doctor to most African homes," he has said. Fears about survival continue to shape decisions about bearing children, and health in Africa is still far worse than in most other parts of the developing world. Reducing the death rate in Africa must, therefore, be a major part of a program to reduce the birth rate.

Better family planning can also serve as a cornerstone for improved health care and reduced infant and maternal mortality rates. Despite decreasing mortality rates, almost a third of all maternal deaths in the world still occur on the African continent. (The risk of pregnancy-related death faced by an African woman is about one in 21, compared with one in 54 for Asia and one in 10,000 for a woman in Europe.) International research has shown that the risks of death to both mother and infant are much higher when the mother is under 20 or over 35, when births are closely spaced, or when the mother has already had more than three children. Thus, the fertility trends behind Africa's rapid population growth also contribute to its tragic death toll among mothers and infants.

Second, *generating public and political consensus and commitment* is the key to program success. It is evident from successful

programs that strong political and public commitment leads to effective implementation of policies. Without it, they are little more than rhetoric.

Understanding the consequences of rapid population growth is important for generating commitment and consensus. Political and community leaders must be sensitized to the economic and environmental consequences of rapid population growth. Population issues should be elevated and integrated into country policy and planning processes by governments and donors. Ministers of Finance and Planning who deal with resource allocation and macroeconomic issues should provide strong support to population programs.

If there is to be a strong commitment in Africa to reducing the desired family size, much more information is needed about the reasons for the continued strong demand for large families. Country-specific studies should be carried out by interdisciplinary groups including anthropologists, sociologists, political scientists, demographers, and economists. Based on such studies, action could then be initiated to motivate couples to use contraception. This strategy should specifically focus on younger age groups and men — often neglected in existing programs. Involvement of donors to provide adequate resources for these efforts will be essential. A high-level African Population Advisory Committee already exists.<sup>4</sup> It would undertake this task.

Third, equipping population programs with sound *management* will be a major challenge of the 1990s. As I mentioned earlier, a number of African countries have developed or are developing population policies. These policies will need to be translated into effectively implemented national population programs. Monitorable targets for each country including indicators of the availability and quality of services, information and motivation efforts, contraceptive prevalence rates, and fertility rates should be set. Mechanisms for monitoring these targets should be established. An Africa Technical Committee to help countries establish their national population programs and to evaluate their results should be set up, perhaps as an arm of the Population Advisory Committee. Similarly, funds for training Africans in population program management and for carrying

out associated operational research would help improve the programs.

Fourth, *provision of high-quality family planning services* is critical for programs. As we have seen, DHS data indicate that demand for such services already exists in several countries. Between 13 and 32 percent of currently married women in Ghana and Kenya respectively want no more children even at ages 25-29, and the percentage of women wanting no more children goes up with age (Figure 1). These figures provide evidence of an existent demand and show a need to expand family planning services so that women can obtain the means with which to implement their fertility decisions. Services also must be extended to men — who are often ignored — so that families can make the appropriate choices regarding male or female contraception.

The key word is “quality.” Easy access to contraceptives that are in line with the clients’ desires has been responsible for the success of family planning programs in Latin America and Asia. Research indicates that even a small number of satisfied contraceptive acceptors will provide the basis for program expansion. Newer developments in contraceptive technology such as Norplant provide wider choices to clients. Community-based distribution and social marketing of contraceptives provide low-cost alternatives to extension of clinics.

This is a difficult agenda, but, if it is vigorously pursued, Africa can achieve a population growth rate of 2 percent a year by 2025-30. The record in Asia and Latin America clearly shows how effective family planning programs can be. The World Bank estimates that about 40 percent of the decline in fertility throughout the world between 1965 and 1975 can be traced to the expansion of such programs. Direct government and donor intervention has changed demographic history in other developing regions. The same can happen in Sub-Saharan Africa.

What would it cost? Present aid levels for family planning in Sub-Saharan Africa are about \$100 million per year. To meet the targets indicated previously, aid would need to be increased to \$650 million per annum by the year 2000. As for the costs to individual countries, based on recent experience in Zimbabwe and Botswana, annual

allocations of no more than 0.6 to 0.8 percent of GNP would allow countries to put in place substantial family planning programs. Not only are these costs modest, they would be more than offset by the savings in education and health budgets and food imports that lower fertility would bring.

One imponderable in this whole scenario is the AIDS pandemic. The World Health Organization (WHO) estimates that, out of an estimated world total of 10 million persons infected by the HIV virus, more than 5 million are Africans. It has already spread with frightening speed through the Central African countries of Zaire, Burundi, Rwanda, Uganda, Tanzania, and Zambia.

How will AIDS affect Africa's population growth rate? We do not know for sure at this point. There are as many as 2.5 million infected women and 500,000 infected children in Sub-Saharan Africa. At least 50,000 Africans have died of the disease since it emerged in the late 1970s. WHO projects that, by 1992, an additional 1.5 million African women and 500,000 African children will be infected with HIV, and over 1 million Africans will have developed AIDS.

While we do not know the full extent of the AIDS plague, at the moment, evidence is scant that Sub-Saharan Africa's population growth rate will fall significantly as a direct result of the disease. The costs of treating AIDS cases will be high, of course, as will be the impact on a critical group of productive people aged between 20 and 40. However, it would be wrong at present to view AIDS as some macabre Malthusian solution to Africa's population problems. The message remains clear: unless effective population planning measures are taken, and taken now, overall population growth rates in Africa will remain unsustainably high.

### **Protecting the Environment**

Reducing the population growth rate and increasing the productivity and sustainability of agriculture will be the two most effective means of protecting Africa's environment. But these measures alone will not be sufficient. A specific and extensive affirmative environmental action program will also be required.

The main causes of Africa's environmental problems are complex and interconnected. There are no panaceas. As President Nyerere said, "conservation" was long resented in Africa as a colonial imposition on rural people. Indeed, it was used as a springboard for nationalist opposition during the pre-Independence period.

Over the last decade, attitudes toward environmental protection have been changing in Africa — as in the rest of the world. The time has come for these changing attitudes to be backed by action programs and resources. Even if there are no panaceas, even if our knowledge is incomplete, we must strive to address the problem.

First, natural resource management must be seen from both a "production" and a "protection" perspective. It is not enough to argue that land, water, and other natural resources should be conserved for their intrinsic value or beauty. As they are being protected, ways must be found to make them productive. The essence of sustainability is this combination of productivity and protection.

Ultimately, planting the trees and protecting the vegetation, terracing the fields, and applying mulch to worn-out soils will have to be done by Africa's rural people — and they will make that effort only when they see a clear advantage in it for themselves. The single most important advantage will be increased production. As indicated previously, natural resource use can be greatly improved and protected through the introduction of sustainable land, water, and livestock technologies — such as agroforestry techniques and high-yielding crops and fertilizers.

This leads us back to the policy dimension. The basic link between economic policy management at the national level and sound natural resource use at the local level should be clearly understood. African farmers are excellent economists. If they are given the right prices for using environmentally sustainable crops and technologies, they will not only make the right economic decisions, they will make the right decisions on natural resource management as well.

Widespread tree-planting, for example, will occur only when wood prices are made attractive to growers. In many countries, the price of wood is far below the economic cost of producing it. Wood fuels

priced realistically would encourage conservation and, in the process, stimulate demand for other appropriately priced alternative energy supplies. One important way to do this is to reduce "open-access" land tenure, which would eliminate access to free wood. Prices of fuelwood would then increase, stimulating planting of fuelwood by landowners, reduced use by consumers, and, eventually, substitution of other fuels. Areas under trees in Africa should expand at the rate of at least 1 percent per annum in order to maintain wood and building supplies and to replenish the natural resource base. This is more likely to occur when a good market price is available to stimulate planting. This target represents a major undertaking (Table 16). Deforestation is currently taking place at a rate of about 0.5 percent per annum, and more than two-thirds of Africa's wilderness areas are already estimated to have been destroyed.

As a matter of policy, every country should be encouraged to prepare and implement its own national environmental action plan — backed with sufficient staff, institutional and financial resources, and political support. These plans would set targets as well as design the criteria for specific environmental actions — biological importance, level of degradation, productive potential, and population pressures. As with population planning, governments should use every available method of communication — public and private — to emphasize the importance of these plans.

Strictures on environmental management, however, cannot be imposed from on high, particularly in the rural areas. Top-down programs will fall apart as soon as the governments lose interest or funds. Thus, the local people must understand, and be fully involved in, the design and implementation of environmental policies and programs. In turn, these policies must take account of local traditions, cultures, and needs. This requires a major effort to involve local populations in design and implementation of area-specific programs. And again, since women are principal players in smallholder farms in Africa — and thus make many of the decisions regarding natural resource use — they must be specifically targeted and assisted as a part of this process.

Earlier approaches to environmental management in Africa were based on environmental impact assessments of individual projects

and on investment in programs such as pollution abatement, afforestation, or water management. These approaches are useful but inadequate. The project-by-project approach tends to address the symptoms, rather than the causes, of environmental problems. Future strategies should look beyond projects to the broader policy issues and explicitly recognize intersectoral links and intergenerational concerns. To this end, a growing number of African countries are now preparing National Environmental Action Plans that aim to attain sustainable growth through multi-sectoral activities including family planning, improved land security, environmentally sound agricultural technologies, and improved range and livestock management.

Since many of the environmental issues facing these different countries are similar, increased regional cooperation and coordination — in terms of sharing experience, technologies, and institutional mechanisms — could greatly facilitate natural resource management on the continent. Some environmental issues demand a regional approach. Pest control, wildlife protection, watershed and river basin management, joint crop forecasting, and livestock disease control are all issues that can be adequately addressed only on a regional basis. The success of the Onchocerciasis Control Program in Africa — set up in 1974 to eradicate river blindness — demonstrates the potential of regional cooperation in tackling a common problem.

Enormous leaps have been made in weather and other environmental forecasting. Through satellite photography and agrometeorology, the probability of drought, levels of rainfall, and harvest yields can be predicted with an improving degree of accuracy. The key is for African governments to get together to acquire these technologies and share their benefits.

Donors, of course, have a role to play in helping to preserve Africa's patrimony. The concept of the global village is now a reality. Desertification and deforestation in Africa are increasingly of world-wide concern, just as the heavy pollution coming from industrial countries is of concern to Africa. The global impact of environmental trends in Sub-Saharan Africa can be expected to command increasing attention in the future, as environmental issues become increasingly prominent in world affairs.

Sub-Saharan Africa is endowed with an abundance of wild plants and animals. It is home to hundreds of thousands of species of a global total estimated to be between 10 and 50 million. Madagascar; the Congo Basin, particularly Zaire and Cameroon; the Tai Forest of Côte d'Ivoire; and the Montane forests of East Africa are among the most biologically diverse areas of the world. For example, more than 6,000 flowering plants, 106 different birds, and half the world's chameleon species are found only on the island of Madagascar.

The disappearance of Africa's natural treasures has implications beyond the extinction of species. It means the loss of genetic material for future development of crops, medicines, and industrial products — which, of course, has implications beyond Africa. This threat presents an opportunity to mobilize international resources to help save Africa's environment. Saving Africa's environment, however, should not be presented simply as a matter of donors giving aid to African recipients. We are talking about the "global commons" here and of the benefits that will accrue to all of us — industrial and developing countries alike — by preserving Africa's patrimony. The issue, therefore, is not so much one of aid but of cost-sharing. And since the industrial countries have greater ability to pay, they should shoulder the larger part of the burden — at least until most African countries can get back on the path of sustained economic growth.

Donors currently provide about \$500 million a year to Africa for environmental activities. This is totally inadequate. In Madagascar alone, the World Bank has put the cost of continued environmental degradation at between \$180 and \$300 million a year. The cumulative loss to Nigeria of continued water contamination, deforestation, and soil erosion is much higher. These costs need to be shared between African countries and donors — and the current level of resource transfer from donors is not up to the task. External environmental assistance to Africa should be increased on an annual basis in line with the vast need.

In addition, resource transfers should be used much more effectively. The ongoing preparation of tropical forestry action plans could be expanded within the framework of National Environmental Action Plans. This effort could be greatly assisted through improved environ-

mental information systems based on new mapping and remote sensing technologies. Such systems are being developed in a few countries in Africa, including Nigeria and Uganda.

There are early encouraging signs that the donor community is willing to respond to Africa's environmental crisis. In the two African countries — Madagascar and Mauritius — that have designed environmental "investment plans" to support their national environmental "action plans," donors have oversubscribed both programs. Furthermore, several projects of biodiversity conservation *cum* development are about to be financed by the newly established Global Environment Facility (GEF). Although the costs of these action programs are substantial, the international community appears to have realized that the costs of inaction may be even greater.

We must remember that the costs of environmental degradation are not always immediately apparent; some costs take years or decades to appear. Moreover, traditional measures of economic well-being, such as per capita GNP, fail to capture them. Indeed, because of the fundamental link between environment and development, measurement of national income accounts should begin to include a calculation of natural resource depletion.

This point was implicit in the 1987 report of the World Commission on Environment and Development entitled "Our Common Future." That report focused on the importance of "sustainable development," which it defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." During one of the Commission's hearings, the chairman, Mrs. Gro Harlem Brundtland, then Prime Minister of Norway, said, "Until recently, conservation of the environment was perceived as something external to the development process." In actuality, she explained, "Environmental protection and development, far from being in conflict, are in fact closely interdependent, locally, nationally, regionally and globally."

Soils, water, forests, the gene pool, and other natural resources are economic assets that can generate a flow of future income — for Africa and the rest of the world. Trading a decline in this long-term

source of wealth for a temporary economic gain is a bargain likely to lead to bankruptcy. The choice that must be made concerning Africa's environment does not lie in the future: it is here and now.

#### **IV. A STRATEGY FOR SUSTAINABLE AND EQUITABLE GROWTH**

##### **A Long Road**

The road to sustainable growth is long. Many African countries made a dash for "modernization" in the 1960s. However, the strategies were, at worst, misconceived; at best, not based on sustainable targets and objectives. The failure was not Africa's alone but also that of the international donor community, which did not fully understand the problems, focus on the priorities, nor help design projects and programs consonant with Africa's agroclimatic conditions or its economic, social, cultural, and political contexts.

Are Africa's problems intractable? They certainly have not been handled successfully — by myself and others — in the past quarter century. But surely we will not accept that they cannot be solved in the future. The action required must start within Africa. In this respect, in the past five years or so, there has been one great sea change for the better: African governments and institutions are coming to the realization that the primary responsibility for Africa's future rests in its own hands. I certainly subscribe to this view.

But I would add that Africa also needs sustained and increased external support — more than is now in prospect — if it is to overcome its development crisis. In addition, Africans and donors must constantly bear in mind that this is a long-term endeavor that must extend over decades. There are no shortcuts to success.

##### **A Strategic Agenda**

As I indicated earlier, to register even a modest improvement in the quality of life, the Sub-Saharan economies must raise their average annual rates of economic growth to at least 4-5 percent per annum. Allow me to outline a strategic agenda — drawn in part from the

World Bank's long-term perspective study, "*Sub-Saharan Africa: From Crisis to Sustainable Growth*" — designed to achieve this.

Let us assume — because it is a *sine qua non* — that the linkage of weak agricultural production, rapid population growth, and environmental degradation will be addressed through the kinds of parallel action programs that I have already suggested in order to achieve the target of 4 percent annual growth in agriculture. This target is of particular importance because it implies rising productivity of land and labor, which is essential if sustainable farming practices are to be adopted. This high rate of agricultural growth is also important because it will drive the rest of the economy. Industry could then be expected to grow in the near to medium term by 4-5 percent a year — gradually rising to 7-8 percent — consistent with experience in other developing regions. What else is required?

### **Continued Adjustment**

First, the process of economic policy reform and adjustment must continue. In everything from exchange rate management to investment in education and agriculture, the lessons of failed or inadequate policies in Africa stand out. One of the most telling indications of poor policy frameworks has been Africa's declining competitiveness in world markets. Certainly, the external environment has not been kind to Africa with the fall in commodity prices, oil shocks, and high interest rates. But a hostile external environment is not the main reason for Africa's poor economic performance. The region's disappointing GDP growth has resulted more from the low level and low efficiency of investment than from anything else.

Gross investment levels in Africa have declined from over 20 percent of GDP in the 1970s to around 15 percent today (compared to 22 percent in India and 38 percent in China in 1987). Even more disturbing, the incremental output generated by this investment has dropped dramatically from 31 percent of investment in the 1960s to 2.5 percent in the 1980s. This free-fall contrasts sharply with the experience of South Asia, the only other region with a comparable income level.

To meet the GDP growth target, investment levels must rise from 15 percent of GDP to about 25 percent. This will require a dramatic increase in domestic savings, which declined from 18 percent of GDP in 1972 to 13 percent in 1987. Savings rates must increase to 18 percent by the end of the decade and to 22 percent by 2020.

Contributing to the low productivity of investment are higher costs for almost everything — higher investment costs, higher labor costs, and higher utility and transport costs — 50 to 100 percent higher on average than comparable costs in South Asia. These high costs result partly from Africa's particular circumstances: difficult topography, widely dispersed settlements, and fragile soils. But more directly, the explanation lies in poor public resource management, inefficient bureaucracies, overvalued currencies, and inappropriate policy incentives. Together, these have weighed down the efforts of entrepreneurs and private operators in Africa by adding greatly to the cost of doing business and reducing profitability, whether it be in agriculture or industry. Simply put, Africa is not competitive.

Moreover, the going will only get tougher. The world is in the midst of a new technological age — driven by rapid advances in information systems, in the biological sciences, and in materials research. High-speed, low-cost information processing and communications are transforming the way the world does business. Good market intelligence, flexible production structures, adaptable pricing mechanisms, and a fast response to new opportunities are what give firms and farmers an edge. Africa is going to have to adjust in order to improve the efficiency of investment and hold its own in the world.

As I stated previously, the latter part of the 1980s has seen a beginning of this process. About 30 Sub-Saharan countries have adopted economic reforms, and some fragile but positive results are emerging. The major overhaul of Nigeria's exchange rate and trading system since 1986, for example, has helped reverse the previous downward trend in GDP. Ghana's strong performance — a GDP growth rate of about 5 percent a year over the past six years — also testifies to the value of the reforms that began in 1983. And the nine member countries of the Southern African Development Coordinating Conference (SADCC) — benefiting from reforms as well as good

weather — recently achieved the first positive growth in per capita income for that subregion in a decade. Preliminary figures for 1990 indicate that African countries under structural adjustment (the Special Program of Assistance countries) grew at 3.8 percent compared to a -2.5 percent annual growth rate registered by non reforming IDA countries.

### Growth of GDP, 1981-90

(percent per year based on constant 1987 US\$)

|   | 1981-84 | 1985-89 | 1990 <sup>a</sup> |
|---|---------|---------|-------------------|
| SPA countries <sup>b</sup>                  | 0.9     | 3.8     | 3.8               |
| Other IDA countries <sup>c</sup>            | 2.4     | 2.5     | -2.5              |
| IBRD borrowers, except Nigeria <sup>d</sup> | 4.2     | 4.0     | 0.0               |
| Nigeria                                     | -4.6    | 2.3     | 5.2               |
| All Sub-Saharan countries <sup>e</sup>      | 1.8     | 2.7     | 1.5               |
| Non-African developing countries            | 2.9     | 4.6     | 2.4               |

a. Preliminary estimate.

b. Special Program of Assistance countries at the end of 1990 (excludes Somalia and Zaire; includes Zambia).

c. Excludes Equatorial Guinea, Comoros, and Djibouti.

d. Excludes Angola.

e. Excludes Angola, Equatorial Guinea, Comoros, and Djibouti.

Source: World Bank.

I emphasize again that these are only preliminary results from the first steps down a very long road. The adjustment process must not only continue, but continue to evolve. Economic reform must be better phased and implemented. Policy change must be more responsive to long-term development priorities and to the needs of vulnerable groups affected by transitional costs. The international effort now under way to track and target these objectives — the Social Dimensions of Adjustment project — is a useful starting point for this process. But adjustment must also be more adequately funded by donors as it moves nations away from the centralized, bureaucratic, slow-moving patterns of the past onto faster and firmer paths of growth. The adjustment process can be improved, but it cannot be avoided. There is no alternative.

### People-Sensitive Development

Within the adjustment programs, a high priority must be placed on investment in people as both the means and ends of long-term development. The quality of human resource development programs

in Africa needs to be improved but, there is no escaping it, the quantity of resources being applied must also increase.

A realistic goal would be to double expenditures for human resource development from present levels to reach 8-10 percent of Sub-Saharan Africa's GDP within the next decade. The three-part aim of such investments would be to ensure food security, primary education, and health care for all Africans within the next generation, by the year 2020 at the latest. Any future development strategy for Africa must be "people-sensitive" and include a new commitment to develop the continent's greatest source of potential: its men, women — especially its women — and its children.

### **Africa's Entrepreneurs**

Constraints and excessive controls on the growth and development of Africa's entrepreneurs and business people also need to be relaxed. Private small- and medium-scale enterprises, especially in the informal sector, can be a potent stimulus for growth in Sub-Saharan Africa. The creativity of small, local enterprises and organizations working at the grass roots must be encouraged and promoted. Foreign direct investment can also be an important source of both capital and know-how, as other regions have learned to their great benefit. Much more should be done to create an enabling environment that can foster private sector dynamism in Africa and make it a strong ally in the long-term development effort.

### **Regional Integration**

Even with a dynamic private sector, it must be acknowledged that some African countries are too small to achieve economies of scale and survive on their own in the global marketplace — especially in a marketplace increasingly dominated by "blocs" of countries from Western Europe or North America. African countries need to cooperate much more with one another, and even integrate economically, in order to survive and prosper.

African leaders have long recognized the need for closer regional ties. Yet little has been done, in practical terms, to move from words to deeds. Intra-regional trade, for example, has hardly grown in 20

years and remains at a dismally low 5 percent of all African trade. Expanded intraregional trade would help overcome feast and famine surges and shortages in food supplies. It would also give industries that have been too long protected in markets that are too small more space in which to find their competitive bearings. Cooperation could also enhance efficiency in high-level manpower training and technology research.

The benefits of regional cooperation, expanded trade and markets, and shared resources are real. But they require more than lip service. Economic policies and tariffs need to be harmonized; political and bureaucratic obstacles to the movement of capital, labor, and goods across Africa need to be removed. All of these will require more political will and more decisive action than African governments have shown in the past.

### **Building African Capacities**

A single concept cuts across all the items on Africa's strategic development agenda: the imperative of building local African capacities. Whether in agriculture, industry, education, or natural resource management, Africa lacks the necessary skills and well managed public and private institutions for long-term, sustainable growth.

Despite some \$4 billion spent on technical assistance every year and despite the presence of nearly 100,000 foreign "experts" in Sub-Saharan Africa — more than at Independence — the record clearly shows a crippling shortfall in indigenous African capacities. This deficit must be overcome.

The challenge to help build long-term African capacity is an acid test for both African governments and the donor community. Traditional technical assistance approaches should be radically reappraised and reoriented toward strengthening African institutions. The objective must be to transfer skills and achieve self-sustaining improvements in African capacities. Capacity building is a priority to be included in every development activity in Africa. It should be a major focus for the 1990s and into the 21st century. Again, however, progress will take time. A determined and sustained effort over several decades is required.

## The Question of Governance

Capacity building is a crucial element of improved administrative and political structures in Africa — better governance. This is a highly sensitive issue. Outsiders should not attempt to impose on African countries any particular political system. This decision is theirs alone. However, there is a palpable popular demand for more accountable systems of governance. Donors, too, want to see a political environment that encourages effective resource allocation — rather than a system that allows for wasteful spending and widespread corruption. Unless there is better governance, there will be political unrest and a further draining of international goodwill away from Africa — goodwill that is essential if donor support for Africa is to be mobilized and retained.

Outlays that do not go for development are not just wasted: they deprive needy sectors and programs of vital support. One area of great potential savings is military spending, which, in the mid-1980s, approximated Africa's average expenditures on education. The military-social imbalance is further reflected in the fact that annual public expenditures on health have, according to the Economic Commission for Africa, equaled less than one-third of military outlays. Imagine what it would mean to social welfare in Africa, with all its positive multiplier effects, if real savings could be realized in defense spending and in other nonproductive expenditures. Imagine also what it might mean in terms of freeing African governments' budgetary resources to tackle the problems of agriculture, population, and environment that I have already emphasized.

The price tag for nonproductive expenditures and for poor governance in Africa has become increasingly visible and can no longer be ignored. A deep political malaise stymies action in many countries; the citizenry sees the elite as self-serving and clinging to political power for their own gain. Only six out of more than 150 national leaders in post-colonial Africa have voluntarily handed over power. The great majority has preferred to use the tired justification that more political freedom would intensify tribal rivalries. I would argue that, if anything, the mismanagement and failure of the old political order has exacerbated internal divisions. African governments must improve upon their past records and rally their people for development.

Regardless of whether African countries decide to choose one-party or multi-party systems, some basic foundation stones are required by all societies in order to offer people participation in the life of their nations and galvanize them for the development effort. These foundations include a free press, open debate, meritocracy in the civil service, an independent judiciary, institutional pluralism, and transparency in the making of government policy. Political leaders must become far more willing to subject themselves to public scrutiny, without accusing critics of disloyalty or subversion.

The winds of change are again beginning to blow through Africa. And the peoples of Africa are increasingly impatient with the old ways. Through its recent economic changes, Africa has started up the path of economic reform. Some basic political reforms are now required.

### **Donors' Responsibility**

General Obasanjo recently remarked that African leaders "have squandered 30 years." He emphasized that "...unless Africa takes the lead in helping itself, nobody will rush to our help," but he also questioned Western actions that only compound Africa's economic and political marginalization.

In the next few years, Europe is projected to provide far more assistance on a per capita basis to Poles and Hungarians than to Africans. Central Americans and Israelis will receive far more financial assistance per capita from the United States than will Africans. Japan will provide far more attention to Asians than to Africans. In this politicized lottery that passes for the development assistance process, Africans could end up being penalized for the expansion of the frontiers of freedom elsewhere. That would be a deplorable response to the African crisis.

Just as Africa's leaders must live up to their development responsibilities, so, too, must donors. To help achieve the 4.5 percent GDP growth target, as I have said, total investment in Sub-Saharan Africa will need to rise from 15 percent of GDP at present to 25 percent by the year 2000, and the domestic savings rate must increase from 12 percent today to 18 percent in 10 years' time. But even if such an increase in domestic savings is realized, it will be insufficient to support

the required investment levels. An increase in external financial assistance, beyond that now in prospect, is essential. Net transfers (including all forms of financing) would need to be about 9 percent of GDP by the year 2000, compared to about 7.6 percent in 1986-89. This will require an increase in official development assistance of at least 4 percent per year in real terms. ODA per year (excluding technical cooperation) would rise from \$9.8 billion in 1986-89 to \$22 billion in 2000 (in current dollars).

As part of the financial assistance program, donors need to put in place debt-relief mechanisms that would prevent the region's debt-service payments from exceeding current levels: about \$9 billion a year. At a minimum, this means an extension of the "Toronto terms" — reduced interest rates, extended maturities, and outright debt cancellation — for the poorest countries to the highly indebted middle-income African countries, such as Nigeria and Côte d'Ivoire. Donors need to get realistic about Africa's debt because it is impeding the entire development effort.

Providing the resources that Africa needs to overcome its development problems is a huge challenge to the donor community — but also a huge opportunity. I mentioned at the outset that the outlook for the subcontinent is bleak and that there is, at present, little sign that the adverse trends are reversing. If, however, the required levels of assistance can be provided, and used to back effective actions, then I believe that Africa's downward spiral can be turned around.

This is a vision worthy of the cost: a vision of self-reliant economies and healthy and skilled peoples; of countries with well maintained, functioning infrastructure and dynamic business centers; of food security for all and substantially increased life expectancy; and of an Africa that not only holds its own in the world but also makes an important and positive contribution.

## **V. CONCLUSION: COMMITMENT TO ACTION WITHIN A GLOBAL COALITION**

The greatest risk to Africa's future is loss of hope. However bleak the current situation may appear, the deterioration is largely of human origin and can yield only to human remedy. How African leaders and

challenge will reveal much about the human prospect in Sub-Saharan Africa over the remainder of this century and into the next. Can we doubt that radical action and unprecedented partnerships are required to resolve the African crisis? The continent's future and the future of every African child born today are at stake.

Many of the solutions are long-term, but there is also an urgency to strengthen the kinds of policies and action programs that will make a difference, and to do so now.

Since I addressed these problems in Nigeria at the Africa Leadership Forum on June 21, 1990, some of the recommendations to action that I urged at that time are coming to pass. In particular, the Global Coalition for Africa has been established. With membership from both African nations and the donor community, it will provide an informal mechanism for developing international consensus and action where they are now lacking. It will track trends in the key development sectors and provide a mechanism for evaluating progress.

What is needed now are concrete demonstrations of joint problem-solving as part of a shared future, for the problems are global in their dimensions and implications. A future that is more secure for Africa means a future more secure for this interdependent world, for this all-too-fragile lifeboat we call Earth.

## Endnotes

1. Throughout this paper, "Africa," when used, is an abbreviation for Sub-Saharan Africa.
2. Net financial transfers equal disbursements minus debt service after adjusting debt service for debt relief.
3. Net ODA flows equal gross ODA (gross disbursements of concessional loans and grants) less amortization on concessional loans after debt relief.
4. The African Population Advisory Committee, consisting of 16 high-level individuals such as ministers, implementers, and intellectuals interested in population issues, was formed in 1989 by multilateral donors to develop an Agenda for Action to Improve Population Program Implementation.

## Annex

### Sub-Saharan Africa: food consumption, agriculture, population, and the environment

| Country                           | Annual agricultural production growth rates (percent) |                  | Annual population growth rates (percent) |             | Daily per capita calorie consumption |              |
|-----------------------------------|---|------------------|--|-------------|--------------------------------------|--------------|
|                                   | 1980-88   | Target 1990-2020 | 1980-88                                  | Target 2020 | 1988                                 | Target 2010  |
|                                   | <b>Sub-Saharan Africa</b>                             | <b>1.8</b>       | <b>4.0</b>                               | <b>3.2</b>  | <b>2.3</b>                           | <b>2,095</b> |
| <b>Sahelian countries</b>         |   |                  |  |             |                                      |              |
| Burkina Faso                      | 6.4   | 4.0              | 2.6                                      | 2.4         | 2,139                                | 2,400        |
| Chad                              | 2.6   | 3.0              | 2.4                                      | 2.2         | 1,717                                | 2,200        |
| Mali                              | 0.3   | 2.0              | 2.4                                      | 2.7         | 2,073                                | 2,300        |
| Mauritania                        | 1.5   | 2.0              | 2.6                                      | 2.8         | 2,322                                | 2,400        |
| Niger                             | 2.8   | 3.0              | 3.5                                      | 3.1         | 2,432                                | 2,450        |
| <b>Coastal West Africa</b>        |   |                  |  |             |                                      |              |
| Benin                             | 4.2   | 4.0              | 3.2                                      | 1.9         | 2,184                                | 2,400        |
| Cape Verde                        | NA  | 3.0              | 2.2                                      | 1.8         | 2,717                                | 2,800        |
| Cote d'Ivoire                     | 1.6   | 4.0              | 4.0                                      | 2.6         | 2,562                                | 2,700        |
| Gambia                            | 7.1   | 4.5              | 3.3                                      | 2.4         | 2,517                                | 2,700        |
| Ghana                             | 0.5   | 4.5              | 3.4                                      | 1.9         | 1,759                                | 2,400        |
| Guinea                            | NA  | 5.0              | 2.4                                      | 2.4         | 1,776                                | 2,400        |
| Guinea-Bissau                     | 5.7   | 5.0              | 1.7                                      | 1.9         | 2,186                                | 2,400        |
| Liberia                           | 1.2   | 4.0              | 3.2                                      | 1.9         | 2,381                                | 2,500        |
| Nigeria                           | 1.0   | 4.0              | 3.3                                      | 2.1         | 2,149                                | 2,400        |
| Senegal                           | 3.2   | 4.0              | 3.0                                      | 2.5         | 2,350                                | 2,500        |
| Sierra-Leone                      | 1.6   | 4.0              | 2.4                                      | 2.4         | 1,854                                | 2,400        |
| Togo                              | 4.2   | 3.0              | 3.5                                      | 2.1         | 2,207                                | 2,400        |
| <b>Central Africa forest zone</b> |   |                  |  |             |                                      |              |
| Angola                            | NA  | 4.0              | 2.5                                      | 2.5         | 1,880                                | 2,400        |
| Cameroon                          | 2.4   | 4.5              | 3.2                                      | 2.4         | 2,028                                | 2,400        |
| Central African Rep.              | 2.6   | 4.5              | 2.7                                      | 1.8         | 1,949                                | 2,400        |
| Congo                             | 2.0   | 4.5              | 3.5                                      | 2.7         | 2,619                                | 2,700        |
| Equatorial Guinea                 | NA  | 4.0              | 1.9                                      | 1.7         | NA                                   | 2,400        |
| Gabon                             | NA  | 4.0              | 3.9                                      | 2.4         | 2,521                                | 2,600        |
| Zaire                             | 3.2   | 5.0              | 3.1                                      | 2.0         | 2,163                                | 2,400        |
| <b>Northern Sudanian</b>          |   |                  |  |             |                                      |              |
| Djibouti                          | NA  | 3.0              | 3.0                                      | 2.1         | NA                                   | 2,400        |
| Ethiopia                          | -1.1  | 3.0              | 2.9                                      | 3.0         | 1,749                                | 2,200        |
| Somalia                           | 3.9   | 3.0              | 3.0                                      | 2.5         | 2,138                                | 2,400        |
| Sudan                             | 2.7   | 4.0              | 3.1                                      | 1.8         | 2,208                                | 2,400        |
| <b>Comparison</b>                 |   |                  |  |             |                                      |              |
| India                             | 2.3   | NA               | 2.2                                      | ..          | 2,238                                | ..           |
| China                             | 6.8   | ..               | 1.3                                      | ..          | 2,630                                | ..           |

Note: NA indicates not available. Projection methodology is discussed on the following page.

a. Defined as percent who do not have adequate food all the time.

b. A negative number means deforestation as percent of total forested area per year.

Sources: Tables 1 to 22.

| <i>Population food insecure <sup>a</sup> (percent)</i> |                    | <i>Reforestation rates per year <sup>b</sup> (percent)</i> |                         | <i>Total land under crops (percent)</i> |                            | <i>Wilderness area to total area (percent)</i> |                       |
|--|--------------------|--|-------------------------|---|----------------------------|--|-----------------------|
| <i>1980-81</i>   | <i>Target 2020</i> | <i>1980s</i>   | <i>Target 1990-2020</i> | <i>1987</i>                             | <i>Minimum target 2020</i> | <i>Present</i>                                 | <i>Minimum target</i> |
| <b>25</b>  | <b>10</b>          | <b>-0.5</b>  | <b>1.0</b>              | <b>6.6</b>                              | <b>8.9</b>                 | <b>27</b>                                      | <b>25</b>             |
| 32   | 5                  | -1.7   | 1.5                     | 11                                      | 12                         | 3  | 3                     |
| 54   | 20                 | -0.6   | 1.5                     | 3                                       | 5                          | 52   | 45                    |
| 35   | 20                 | -0.5   | 1.5                     | 2                                       | 5                          | 49   | 45                    |
| 25   | 10                 | -2.4   | 1.5                     | 0                                       | 1                          | 74   | 69                    |
| 28   | 5                  | -2.6   | 1.5                     | 3                                       | 6                          | 53   | 45                    |
| 18   | 0                  | -1.7   | 1.5                     | 17                                      | 19                         | 15   | 14                    |
| NA   | 0                  | NA   | ..                      | 10                                      | 10                         | 0  | 0                     |
| 8  | 0                  | -5.2   | 1.5                     | 11                                      | 13                         | 10   | 10                    |
| 19   | 5                  | -2.4   | 1.5                     | 17                                      | 23                         | 0  | 0                     |
| 36   | 10                 | -0.8   | 1.5                     | 12                                      | 15                         | 0  | 0                     |
| NA   | 0                  | -0.8   | 1.5                     | 6                                       | 8                          | 0  | 0                     |
| NA   | 0                  | -2.7   | 1.5                     | 12                                      | 14                         | 0  | 0                     |
| 30   | 5                  | -2.3   | 1.5                     | 4                                       | 9                          | 17   | 17                    |
| 17   | 5                  | -2.7   | 1.5                     | 34                                      | 34                         | 2  | 2                     |
| 21   | 0                  | -0.5   | 1.5                     | 27                                      | 29                         | 11   | 11                    |
| 23   | 5                  | -0.3   | 1.5                     | 25                                      | 25                         | 0  | 0                     |
| 29   | 10                 | -0.7   | 1.5                     | 26                                      | 27                         | 0  | 0                     |
| NA   | 5                  | -0.2   | 1.0                     | 3                                       | 5                          | 26   | 24                    |
| 9  | 0                  | -0.4   | 1.0                     | 15                                      | 17                         | 3  | 3                     |
| 39   | 5                  | -0.2   | 1.0                     | 3                                       | 7                          | 39   | 32                    |
| 27   | 0                  | -0.1   | 0.0                     | 2                                       | 5                          | 42   | 37                    |
| NA   | 0                  | -0.2   | 0.0                     | 8                                       | 10                         | 0  | 0                     |
| 0  | 0                  | -0.1   | 0.0                     | 2                                       | 5                          | 35   | 30                    |
| 42   | 10                 | -0.2   | 0.0                     | 3                                       | 5                          | 6  | 6                     |
| 0  | 0                  | NA   | NA                      | NA                                      | NA                         | 0  | 0                     |
| 46   | 20                 | -0.3   | 1.5                     | 13                                      | 17                         | 22   | 18                    |
| 50   | 15                 | -0.1   | 1.5                     | 1                                       | 2                          | 24   | 22                    |
| 18   | 0                  | -0.2   | 1.5                     | 5                                       | 9                          | 40   | 35                    |
| ..   | ..                 | ..   | ..                      | 57                                      | ..                         | ..   | ..                    |
| ..   | ..                 | ..   | ..                      | ..                                      | ..                         | ..   | ..                    |

## Annex

### Sub-Saharan Africa: food consumption, agriculture, population, and the environment (cont.)

| Country   | Annual agricultural production growth rates (percent) |                  | Annual population growth rates (percent) |             | Daily per capita calorie consumption |             |
|---|---|------------------|--|-------------|--------------------------------------|-------------|
|   | 1980-88   | Target 1990-2020 | 1980-88                                  | Target 2020 | 1988                                 | Target 2010 |
| <b>East Africa mountain and temperate zones</b> |   |                  |  |             |                                      |             |
| Burundi   | 3.1   | 3.0              | 2.8                                      | 2.7         | 2,343                                | 2,400       |
| Kenya   | 3.3   | 4.0              | 3.8                                      | 2.4         | 2,060                                | 2,400       |
| Lesotho   | 1.8   | 3.0              | 2.7                                      | 1.5         | 2,303                                | 2,500       |
| Madagascar                                      | 2.2   | 4.0              | 3.3                                      | 2.0         | 2,440                                | 2,500       |
| Malawi  | 2.7   | 4.0              | 2.8                                      | 2.9         | 2,310                                | 2,400       |
| Rwanda  | 0.3   | 3.0              | 3.8                                      | 3.2         | 1,830                                | 2,300       |
| Swaziland                                       | 3.9   | 4.0              | 3.4                                      | 2.0         | 2,518                                | 2,600       |
| Tanzania  | 4.0   | 4.0              | 3.5                                      | 2.9         | 2,192                                | 2,400       |
| Uganda  | -0.3  | 4.5              | 3.2                                      | 2.7         | 2,344                                | 2,500       |
| Zambia  | 4.1   | 5.0              | 3.7                                      | 2.5         | NA                                   | 2,400       |
| Zimbabwe  | 2.5   | 4.5              | 3.7                                      | 1.4         | 2,132                                | 2,400       |
| <b>Other South East Africa</b>                  |   |                  |  |             |                                      |             |
| Botswana  | -5.9  | 2.0              | 3.4                                      | 1.4         | 2,201                                | 2,400       |
| Comoros   | NA  | 3.0              | 3.6                                      | 2.3         | 2,109                                | 2,300       |
| Mozambique                                      | -0.8  | 4.0              | 2.7                                      | 2.3         | 1,595                                | 2,200       |
| Mauntius  | 4.0   | 5.0              | 1.0                                      | 0.6         | 2,748                                | 2,900       |

#### Projection Methodology

1. The target agricultural growth rates reflect what is achievable in the long term from an agro-climatic perspective. The targets imply good agricultural policy and investment of the type described in the text.
  2. The target population growth rates were established as discussed in Table 11. They reflect the projected outcome in each country of the achievement of a reduction in the total fertility rate by almost 50 percent by 2020-25. Target 2020 derived from the average of population growth rates between 2015-2020 and 2020-2025.
  3. Minimum target calorie consumption was arbitrarily set to equal the present average in all the world's low-income countries.
  4. The target percentage of the food-insecure population is based on a subjective judgment about the possibility of reducing food insecurity in each country given the present numbers involved, the target agricultural growth rate, and the available new land for cultivation.
  5. The reforestation target for each country was set at the target rate for Sub-Saharan Africa as a whole. Only where there are large areas under forest in Central Africa was the target rate reduced.
- Source: World Bank demographic estimates and projections (preliminary 1991 revision).

| <i>Population food insecure <sup>a</sup> (percent)</i> |                    | <i>Reforestation rates per year <sup>b</sup> (percent)</i> |                         | <i>Total land under crops (percent)</i> |                            | <i>Wilderness area to total area (percent)</i> |                       |
|--|--------------------|--|-------------------------|---|----------------------------|--|-----------------------|
| <i>1988</i>  | <i>Target 2020</i> | <i>1980s</i>   | <i>Target 1990-2020</i> | <i>1989</i>                             | <i>Minimum target 2020</i> | <i>Present</i>                                 | <i>Minimum target</i> |
| 26   | 5                  | -2.7   | 1.0                     | 52                                      | 52                         | 0  | 0                     |
| 37   | 10                 | -1.7   | 1.5                     | 4                                       | 4                          | 25   | 25                    |
| NA   | 0                  | NA   | NA                      | 11                                      | 11                         | 80   | 75                    |
| 13   | 0                  | -1.2   | 1.5                     | 5                                       | 10                         | 2  | 2                     |
| 24   | 5                  | -3.5   | 1.5                     | 25                                      | 28                         | 10   | 8                     |
| 24   | 10                 | -2.3   | 1.5                     | 45                                      | 45                         | 0  | 0                     |
| 0  | 0                  | 0.0  | 1.5                     | 10                                      | 10                         | 0  | 0                     |
| 35   | 10                 | -0.3   | 1.5                     | 6                                       | 10                         | 10   | 10                    |
| 46   | 10                 | -0.8   | 1.5                     | 34                                      | 34                         | 4  | 4                     |
| 48   | 10                 | -0.3   | 1.5                     | 7                                       | 11                         | 24   | 20                    |
| NA   | 0                  | -0.4   | 1.5                     | 7                                       | 10                         | 0  | 0                     |
| NA   | 10                 | -0.1   | 1.5                     | 2                                       | 4                          | 63   | 58                    |
| NA   | 10                 | NA   | NA                      | 44                                      | 44                         | NA   | NA                    |
| 49   | 20                 | -0.8   | 1.5                     | 4                                       | 7                          | 9  | 9                     |
| 9  | 0                  | 0.0  | 1.5                     | 58                                      | 58                         | NA   | NA                    |

6. The target percentage of land under crops was determined on the basis of available wilderness, forest, and other uncultivated land for cultivation, given the constraint imposed by the need to expand forests by 1.0 percent per year, to reduce wilderness land by the minimum possible, and a judgment about the agro-climatic possibilities for agricultural intensification. A country with much wilderness, much land available to re-forest, and difficult agricultural conditions (Ethiopia, for example) will have to expand cultivated area. Rwanda, on the other hand, has virtually no wilderness and limited forest. It cannot afford to expand cultivated area at all.

7. The minimum target wilderness area was arrived at as that remaining after the maximum allowable increase in cropped area was taken out. The objective is to maintain as much wilderness area as possible subject to the realities of expanding crop area with a best effort at agricultural intensification.

Note: The targets are indicative only, reflecting the magnitude of the effort required in each country.



**Table 1. Sub-Saharan Africa: basic indicators**

| Country                        | Population<br>(millions) | Area<br>(thous.<br>sq. km) | GNP per<br>capita<br>(US\$) | Life       |           | Primary<br>school<br>enrollment<br>(percentage<br>of age group) |           | Adult<br>illiteracy<br>(age 15+) |
|--------------------------------|--------------------------|----------------------------|-----------------------------|------------|-----------|---|-----------|----------------------------------|
|                                |                          |                            |                             | expectancy |           | 1965  | 1987      |                                  |
|                                | Mid-1988                 | 1980s                      | 1988                        | 1965       | 1988      | 1965  | 1987      | 1985                             |
| <b>Sub-Saharan Africa</b>      | <b>464.1</b>             | <b>22,240</b>              | <b>330</b>                  | <b>43</b>  | <b>51</b> | <b>44</b>   | <b>68</b> | <b>53</b>                        |
| <b>Low-income economies</b>    | <b>408.9</b>             | <b>18,370</b>              | <b>269</b>                  | <b>42</b>  | <b>50</b> | <b>38</b>   | <b>64</b> | <b>54</b>                        |
| Benin                          | 4.4                      | 113                        | 390                         | 42         | 51        | 34  | 63        | 74                               |
| Burkina Faso                   | 8.5                      | 274                        | 210                         | 38         | 47        | 12  | 32        | 87                               |
| Burundi                        | 5.1                      | 28                         | 240                         | 44         | 49        | 26  | 67        | 66                               |
| Central African Rep.           | 2.9                      | 623                        | 380                         | 40         | 50        | 56  | 66        | 60                               |
| Chad                           | 5.4                      | 1,284                      | 160                         | 46         | 46        | 34  | 51        | 75                               |
| Comoros                        | 0.4                      | 2                          | 440                         | 46         | 56        | 24  | 80        | 75                               |
| Equatorial Guinea              | 0.4                      | 28                         | 410                         | 38         | 46        | 65  | 108       | 63                               |
| Ethiopia                       | 47.4                     | 1,222                      | 120                         | 43         | 47        | 11  | 37        | 38                               |
| Gambia, The                    | 0.8                      | 11                         | 200                         | 34         | 44        | 21  | 75        | 75                               |
| Ghana                          | 14.0                     | 239                        | 400                         | 48         | 54        | 69  | 71        | 47                               |
| Guinea                         | 5.4                      | 246                        | 430                         | 35         | 43        | 31  | 30        | 72                               |
| Guinea-Bissau                  | 0.9                      | 36                         | 190                         | 35         | 40        | 26  | 60        | 69                               |
| Kenya                          | 22.4                     | 580                        | 370                         | 48         | 59        | 54  | 96        | 41                               |
| Lesotho                        | 1.7                      | 30                         | 420                         | 48         | 56        | 94  | 113       | 26                               |
| Liberia                        | 2.4                      | 111                        | 410                         | 44         | 50        | 41  | 35        | 65                               |
| Madagascar                     | 10.9                     | 587                        | 190                         | 43         | 50        | 65  | 121       | 33                               |
| Malawi                         | 8.0                      | 118                        | 170                         | 39         | 47        | 44  | 66        | 59                               |
| Mali                           | 8.0                      | 1,240                      | 230                         | 38         | 47        | 24  | 23        | 83                               |
| Mauritania                     | 1.9                      | 1,026                      | 480                         | 37         | 46        | 13  | 52        | 83                               |
| Mozambique                     | 14.9                     | 802                        | 100                         | 38         | 48        | 37  | 68        | 62                               |
| Niger                          | 7.3                      | 1,267                      | 300                         | 37         | 45        | 11  | 29        | 86                               |
| Nigeria                        | 110.1                    | 924                        | 290                         | 42         | 51        | 32  | 77        | 58                               |
| Rwanda                         | 6.7                      | 26                         | 320                         | 49         | 49        | 53  | 67        | 53                               |
| São Tomé and Príncipe          | 0.1                      | 1                          | 490                         | ..         | 65        | ..  | ..        | 43                               |
| Sierra Leone                   | 3.9                      | 72                         | 240                         | 33         | 42        | 29  | 58        | 71                               |
| Somalia                        | 5.9                      | 638                        | 170                         | 38         | 47        | 10  | 15        | 88                               |
| Sudan                          | 23.8                     | 2,506                      | 480                         | 40         | 50        | 29  | 49        | 88                               |
| Tanzania                       | 24.7                     | 945                        | 160                         | 43         | 53        | 32  | 66        | 69                               |
| Togo                           | 3.4                      | 57                         | 370                         | 42         | 53        | 55  | 101       | 59                               |
| Uganda                         | 16.2                     | 236                        | 280                         | 45         | 48        | 67  | 70        | 43                               |
| Zaire                          | 33.4                     | 2,345                      | 170                         | 43         | 52        | 70  | 76        | 39                               |
| Zambia                         | 7.6                      | 753                        | 290                         | 44         | 53        | 53  | 97        | 24                               |
| <b>Middle-income economies</b> | <b>55.2</b>              | <b>3,870</b>               | <b>783</b>                  | <b>47</b>  | <b>54</b> | <b>81</b>   | <b>97</b> | <b>48</b>                        |
| Angola                         | 9.4                      | 1,247                      | 290                         | 35         | 45        | 39  | 93        | 59                               |
| Botswana                       | 1.2                      | 582                        | 1,016                       | 48         | 67        | 65  | 114       | 29                               |
| Cameroon                       | 11.2                     | 475                        | 1,010                       | 46         | 56        | 94  | 109       | 44                               |
| Cape Verdi                     | 0.4                      | 4                          | 680                         | 54         | 65        | 94  | 106       | 53                               |
| Côte d'Ivoire                  | 11.2                     | 322                        | 770                         | 42         | 53        | 60  | 70        | 57                               |
| Congo, People's Rep.           | 2.1                      | 342                        | 910                         | 49         | 53        | 114   | ..        | 37                               |
| Djibouti                       | 0.4                      | 23                         | 930                         | 38         | 48        | ..  | ..        | 37                               |
| Gabon                          | 1.1                      | 268                        | 2,970                       | 42         | 53        | 134   | 126       | 38                               |
| Mauritius                      | 1.1                      | 2                          | 1,800                       | 61         | 67        | 101   | 106       | 17                               |
| Senegal                        | 7.0                      | 197                        | 650                         | 41         | 48        | 40  | 60        | 72                               |
| Seychelles                     | 0.1                      | 0                          | 3,790                       | 66         | 70        | 40  | 55        | 72                               |
| Swaziland                      | 0.7                      | 17                         | 810                         | 43         | 56        | 74  | 110       | 32                               |
| Zimbabwe                       | 9.3                      | 391                        | 650                         | 48         | 63        | 110   | 136       | 26                               |
| India                          | 815.6                    | 3,288                      | 340                         | 45         | 58        | 74  | 96        | 57                               |
| China                          | 1,088.4                  | 9,561                      | 330                         | 53         | 70        | 89  | 132       | 31                               |

Source: World Bank.

**Table 2. Sub-Saharan Africa: selected economic indicators and projections**

| <i>Indicators</i>                             | <i>1965-80</i>    | <i>1980-88</i> | <i>1989</i> | <i>1990</i> | <i>1991</i> | <i>1990-98<sup>a</sup></i> |
|---|-------------------|----------------|-------------|-------------|-------------|----------------------------|
|   | <i>Percentage</i> |                |             |             |             |                            |
| <b>Growth rates</b>                           |                   |                |             |             |             |                            |
| Real GDP                                      | 5.2               | 0.8            | 3.1         | 1.5         | 2.4         | 4.0                        |
| Population                                    | 2.7               | 3.2            | 3.1         | 3.1         | 3.1         | 3.0                        |
| Real GDP per capita                           | 2.4               | -2.3           | 0.0         | -1.7        | -0.8        | 0.9                        |
| Real consumption per capita                   | 1.8               | -2.1           | -1.5        | -2.5        | -1.1        | 0.4                        |
| Export volumes (GNFS)                         | 5.8               | -0.5           | 8.7         | 5.8         | 2.4         | 2.7                        |
| Import volumes (GNFS)                         | 6.7               | -5.1           | 2.8         | 4.1         | 2.7         | 2.8                        |
|   | <i>Percentage</i> |                |             |             |             |                            |
| <b>Shares of GDP</b>                          |                   |                |             |             |             |                            |
| Gross domestic investment                     | 21.3              | 14.1           | 15.8        | 16.2        | 16.5        | 17.7                       |
| Gross domestic savings <sup>b</sup>           | 18.9              | 15.8           | 12.6        | 13.6        | 14.1        | 14.3                       |
| Real resource balance                         | 2.4               | -1.7           | 3.6         | 3.5         | 4.1         | 3.5                        |
| Current account balance <sup>c</sup>          | -4.0 <sup>d</sup> | -6.0           | -5.9        | -5.2        | -7.0        | -7.0                       |
| Exports (GNFS)                                | 24.7              | 20.5           | 25.4        | 27.2        | 28.0        | 27.0                       |
| <b>Elasticities</b>                           |                   |                |             |             |             |                            |
| Import to GDP <sup>e</sup>                    | 1.3               | -6.4           | 0.9         | 2.7         | 1.1         | 0.7                        |
| GDP to industrial countries' GNP <sup>f</sup> | 1.4               | 0.3            | 1.0         | 1.0         | 1.0         | 1.3                        |
| <b>Memorandum items</b>                       |                   |                |             |             |             |                            |
| Gross domestic savings to GDP <sup>b</sup>    |                   |                |             |             |             |                            |
| India   | 16.3              | 18.6           | 17.2        | 16.8        | 17.9        | 19.6                       |
| China   | 28.7              | 36.6           | 38.7        | 39.5        | 39.6        | 38.4                       |
| Population growth in industrial countries     | 0.8               | 0.6            | 0.5         | 0.5         | 0.5         | 0.4                        |
| Real GNP growth in industrial countries       | 3.7               | 2.8            | 3.3         | 2.7         | 1.4         | 3.0                        |
| World trade volume growth                     | 6.1               | 3.6            | 7.0         | 5.7         | 5.8         | 6.3                        |

Note: Constant price ("real") series use 1980 as base year.

a. Projections based on target growth of 4 percent per annum.

b. Unadjusted for changes in terms of trade.

c. Current account balances include official transfers.

d. Average for 1970-79.

e. Row 6 divided by row 1.

f. Row 1 divided by row 16.

Source: World Bank.

**Table 3. Sub-Saharan Africa: GNP per capita and GDP growth rates**

| Country                        | GNP per capita, average annual growth rate |             |             | GDP, average annual growth rate |            |                   |
|--------------------------------|--|-------------|-------------|---------------------------------|------------|-------------------|
|                                | 1965-73                                    | 1973-80     | 1980-89     | 1965-80                         | 1980-89    | 1990 <sup>a</sup> |
| <b>Sub-Saharan Africa</b>      | <b>3.0</b>                                 | <b>0.1</b>  | <b>-1.4</b> | <b>4.8</b>                      | <b>1.8</b> | <b>1.5</b>        |
| <b>Low-income economies</b>    | <b>3.1</b>                                 | <b>0.3</b>  | <b>-1.4</b> | <b>..</b>                       | <b>1.4</b> | <b>2.1</b>        |
| Benin                          | 0.0  | -0.3        | -1.8        | 2.1                             | 1.6        | 1.1               |
| Burkina Faso                   | 1.2  | 2.5         | 2.4         | ..                              | 4.8        | 1.7               |
| Burundi                        | 3.2  | 1.9         | 1.6         | 5.6                             | 4.8        | 3.2               |
| Central African Rep.           | 1.5  | -0.5        | -1.5        | 2.6                             | 1.6        | 3.6               |
| Comoros                        | ..   | ..          | -0.6        | ..                              | ..         | ..                |
| Chad                           | -1.3                                       | -3.5        | 3.9         | 0.1                             | 6.5        | 3.0               |
| Equatorial Guinea              | ..   | ..          | ..          | ..                              | ..         | ..                |
| Ethiopia                       | 1.1  | 0.0         | -0.9        | 2.7                             | 2.1        | -2.5              |
| Gambia, The                    | 1.7  | 0.2         | -0.6        | 4.1                             | 3.7        | 4.5               |
| Ghana                          | 1.0  | -2.1        | -0.8        | 1.4                             | 2.8        | 4.0               |
| Guinea                         | 1.2  | 1.3         | ..          | ..                              | 2.9        | 4.7               |
| Guinea-Bissau                  | ..   | -4.2        | 1.5         | ..                              | 3.9        | 3.0               |
| Kenya                          | 4.7  | 1.3         | 0.2         | 6.4                             | 4.1        | 4.2               |
| Lesotho                        | 4.2  | 6.6         | -0.5        | 5.7                             | 3.4        | 7.8               |
| Liberia                        | 2.4  | -0.7        | ..          | 3.3                             | -1.1       | ..                |
| Madagascar                     | 1.1  | -1.5        | -2.6        | 1.8                             | 0.8        | 4.6               |
| Malawi                         | 4.3  | 1.4         | -0.1        | 5.6                             | 2.6        | 3.7               |
| Mali                           | ..   | 4.3         | 1.3         | 3.9                             | 3.8        | 0.3               |
| Mauritania                     | 1.2  | -0.6        | -2.1        | 2.0                             | 1.7        | 0.3               |
| Mozambique                     | ..   | ..          | -5.6        | ..                              | -1.5       | 3.0               |
| Niger                          | -3.7                                       | 2.6         | -5.0        | 0.3                             | -1.6       | 3.1               |
| Nigeria                        | 5.3  | 1.2         | -3.6        | 6.9                             | -0.5       | 5.2               |
| Rwanda                         | 3.2  | 2.2         | -1.9        | 4.9                             | 1.5        | -2.7              |
| São Tomé and Príncipe          | ..   | 7.2         | -4.9        | ..                              | ..         | ..                |
| Sierra Leone                   | 2.3  | -0.8        | -1.1        | ..                              | -0.2       | ..                |
| Somalia                        | 0.1  | 4.6         | -1.3        | 3.4                             | 2.5        | 3.5               |
| Sudan                          | -1.7                                       | 3.5         | -1.8        | 3.8                             | 1.5        | -5.8              |
| Tanzania                       | 2.0  | -0.9        | -1.6        | 3.7                             | 2.8        | 4.5               |
| Togo                           | 2.0  | 1.5         | -2.3        | 4.5                             | 1.4        | 1.9               |
| Uganda                         | 0.7  | -6.2        | 0.7         | 0.8                             | 2.5        | 6.3               |
| Zaire                          | 0.3  | -4.7        | -1.6        | 1.4                             | 1.0        | -1.9              |
| Zambia                         | -0.5                                       | -2.2        | -3.6        | 1.9                             | 0.8        | 0.9               |
| <b>Middle-income economies</b> | <b>1.9</b>                                 | <b>-1.2</b> | <b>-1.3</b> | <b>..</b>                       | <b>2.7</b> | <b>0.0</b>        |
| Angola                         | 1.1  | -9.8        | ..          | ..                              | ..         | ..                |
| Botswana                       | 9.3  | 7.3         | 6.2         | 14.2                            | 11.3       | ..                |
| Cameroon                       | -0.4                                       | 5.7         | 0.7         | 5.1                             | 3.2        | -1.2              |
| Cape Verde                     | ..   | 7.3         | 3.2         | ..                              | ..         | ..                |
| Congo, People's Rep.           | 4.2  | 1.1         | 0.3         | 6.3                             | 3.9        | -0.1              |
| Côte d'Ivoire                  | 4.5  | 1.2         | -3.0        | 6.8                             | 0.9        | -6.1              |
| Djibouti                       | ..   | ..          | ..          | ..                              | ..         | ..                |
| Gabon                          | 4.9  | -1.2        | -2.8        | 9.5                             | 1.2        | ..                |
| Mauritius                      | 0.8  | 3.9         | 4.9         | 5.2                             | 6.4        | 6.3               |
| Senegal                        | -0.8                                       | -0.5        | 0.0         | 2.0                             | 3.1        | 4.4               |
| Seychelles                     | 2.6  | 4.5         | 1.7         | ..                              | 3.4        | ..                |
| Swaziland                      | 5.8  | 0.3         | 0.6         | ..                              | ..         | ..                |
| Zimbabwe                       | 2.6  | -2.0        | -1.1        | 5.0                             | 2.5        | 3.0               |
| India                          | 1.5  | 1.6         | 3.7         | 3.6                             | 5.6        | 4.4               |
| China                          | 4.9  | 3.8         | 8.6         | 6.4                             | 9.7        | 4.7               |

a. Estimates and projections.  
Source: World Bank.

**Table 4. Sub-Saharan Africa: land use**

| Country                        | Land use as a percentage of total land |          |          |           |           |           |
|--------------------------------|--|----------|----------|-----------|-----------|-----------|
|                                | Cropland                               |          |          | Pasture   |           |           |
|                                | 1965                                   | 1980     | 1987     | 1965      | 1980      | 1987      |
| <b>Sub-Saharan Africa</b>      | <b>6</b>                               | <b>7</b> | <b>7</b> | <b>27</b> | <b>27</b> | <b>27</b> |
| <b>Low-income economies</b>    | <b>6</b>                               | <b>7</b> | <b>7</b> | <b>26</b> | <b>26</b> | <b>26</b> |
| Benin                          | 13                                     | 16       | 17       | 4         | 4         | 4         |
| Burkina Faso                   | 8                                      | 10       | 11       | 37        | 37        | 37        |
| Burundi                        | 39                                     | 51       | 52       | 24        | 35        | 36        |
| Central African Rep.           | 3                                      | 3        | 3        | 5         | 5         | 5         |
| Comoros                        | 38                                     | 41       | 44       | 7         | 7         | 7         |
| Chad                           | 2                                      | 3        | 3        | 36        | 36        | 36        |
| Equatorial Guinea              | 8                                      | 8        | 8        | 4         | 4         | 4         |
| Ethiopia                       | 11                                     | 13       | 13       | 42        | 41        | 41        |
| Gambia, The                    | 13                                     | 16       | 17       | 9         | 9         | 9         |
| Ghana                          | 11                                     | 12       | 12       | 16        | 15        | 15        |
| Guinea                         | 6                                      | 6        | 6        | 12        | 12        | 12        |
| Guinea-Bissau                  | 9                                      | 10       | 12       | 38        | 38        | 38        |
| Kenya                          | 3                                      | 4        | 4        | 7         | 7         | 7         |
| Lesotho                        | 12                                     | 10       | 11       | 73        | 66        | 66        |
| Liberia                        | 4                                      | 4        | 4        | 2         | 2         | 2         |
| Madagascar                     | 4                                      | 5        | 5        | 58        | 58        | 58        |
| Malawi                         | 21                                     | 25       | 25       | 20        | 20        | 20        |
| Mali                           | 1                                      | 2        | 2        | 25        | 25        | 25        |
| Mauritania                     | 0                                      | 0        | 0        | 38        | 38        | 38        |
| Mozambique                     | 3                                      | 4        | 4        | 56        | 56        | 56        |
| Niger                          | 2                                      | 3        | 3        | 8         | 8         | 7         |
| Nigeria                        | 32                                     | 33       | 34       | 21        | 23        | 23        |
| Rwanda                         | 26                                     | 41       | 45       | 34        | 19        | 16        |
| São Tomé and Príncipe          | 35                                     | 38       | 39       | 1         | 1         | 1         |
| Sierra Leone                   | 20                                     | 25       | 25       | 31        | 31        | 31        |
| Somalia                        | 1                                      | 1        | 1        | 46        | 46        | 46        |
| Sudan                          | 5                                      | 5        | 5        | 24        | 24        | 24        |
| Tanzania                       | 4                                      | 6        | 6        | 40        | 40        | 40        |
| Togo                           | 20                                     | 26       | 26       | 4         | 4         | 4         |
| Uganda                         | 24                                     | 28       | 34       | 25        | 25        | 25        |
| Zaire                          | 3                                      | 3        | 3        | 4         | 4         | 4         |
| Zambia                         | 7                                      | 7        | 7        | 47        | 47        | 47        |
| <b>Middle-income economies</b> |  | <b>7</b> | <b>7</b> | <b>29</b> | <b>29</b> | <b>29</b> |
| Angola                         | 3                                      | 3        | 3        | 23        | 23        | 23        |
| Botswana                       | 2                                      | 2        | 2        | 74        | 78        | 78        |
| Cameroon                       | 12                                     | 15       | 15       | 19        | 18        | 18        |
| Cape Verdi                     | 10                                     | 10       | 10       | 6         | 6         | 6         |
| Congo, People's Rep.           | 2                                      | 2        | 2        | 29        | 29        | 29        |
| Côte d'Ivoire                  | 8                                      | 10       | 11       | 9         | 9         | 9         |
| Djibouti                       | ..                                     | ..       | ..       | 9         | 9         | 9         |
| Gabon                          | 1                                      | 2        | 2        | 20        | 18        | 18        |
| Mauntius                       | 51                                     | 58       | 58       | 4         | 4         | 4         |
| Senegal                        | 23                                     | 27       | 27       | 30        | 30        | 30        |
| Seychelles                     | 19                                     | 19       | 22       | ..        | ..        | ..        |
| Swaziland                      | 8                                      | 11       | 10       | 78        | 64        | 68        |
| Zimbabwe                       | 5                                      | 7        | 7        | 13        | 13        | 13        |
| India                          | 55                                     | ..       | 57       | 5         | ..        | 4         |
| China                          | 11                                     | ..       | 11       | 31        | ..        | 31        |

a. Refers only to areas larger than 4,000 square kilometers. Wilderness area is defined as land left in its natural state without any transformation by human action. These areas may partly include forests, pastures and other lands as classified by FAO.

| <i>Land use as a percentage of total land</i> |             |             |              |             |             |                  | <i>Total land area (000 ha) 1987</i> | <i>Wilderness area as percent of total land area * 1985</i> |
|---|-------------|-------------|--------------|-------------|-------------|------------------|--------------------------------------|---|
| <i>Forest</i>                                 |             |             | <i>Other</i> |             |             |                  |                                      |   |
| <i>1965</i>                                   | <i>1980</i> | <i>1987</i> | <i>1965</i>  | <i>1980</i> | <i>1987</i> |                  |                                      |   |
| <b>33</b>                                     | <b>31</b>   | <b>30</b>   | <b>34</b>    | <b>35</b>   | <b>36</b>   | <b>2,158,466</b> | <b>28</b>                            |   |
| <b>31</b>                                     | <b>29</b>   | <b>28</b>   | <b>37</b>    | <b>38</b>   | <b>39</b>   | <b>1,776,293</b> | <b>28</b>                            |   |
| 44  | 36          | 33          | 39           | 44          | 47          | 11,062           | 15                                   |   |
| 30  | 26          | 25          | 26           | 27          | 27          | 27,380           | 3                                    |   |
| 2   | 2           | 3           | 35           | 11          | 10          | 2,565            | 0                                    |   |
| 58  | 58          | 58          | 34           | 34          | 34          | 62,298           | 39                                   |   |
| 16  | 16          | 16          | 39           | 37          | 34          | 223              | ..                                   |   |
| 12  | 11          | 10          | 50           | 51          | 51          | 125,920          | 52                                   |   |
| 46  | 46          | 46          | 42           | 42          | 42          | 2,805            | 0                                    |   |
| 27  | 26          | 25          | 20           | 21          | 22          | 110,100          | 22                                   |   |
| 30  | 22          | 17          | 48           | 54          | 57          | 1,000            | 0                                    |   |
| 43  | 38          | 36          | 31           | 35          | 37          | 23,002           | 0                                    |   |
| 49  | 43          | 41          | 33           | 38          | 41          | 24,586           | 0                                    |   |
| 39  | 38          | 38          | 13           | 13          | 12          | 2,812            | 0                                    |   |
| 8   | 7           | 6           | 82           | 83          | 83          | 56,697           | 25                                   |   |
| ..  | ..          | ..          | 15           | 24          | 24          | 3,035            | 80                                   |   |
| 22  | 22          | 22          | 72           | 72          | 72          | 9,632            | 17                                   |   |
| 31  | 27          | 25          | 7            | 9           | 11          | 58,154           | 2                                    |   |
| 54  | 54          | 46          | 5            | 2           | 9           | 9,408            | 10                                   |   |
| 8   | 7           | 7           | 66           | 67          | 67          | 122,019          | 49                                   |   |
| 15  | 15          | 15          | 47           | 47          | 47          | 102,522          | 74                                   |   |
| 22  | 20          | 19          | 18           | 20          | 21          | 78,409           | 9                                    |   |
| 3   | 2           | 2           | 87           | 87          | 88          | 126,670          | 53                                   |   |
| 23  | 18          | 16          | 24           | 26          | 27          | 91,077           | 2                                    |   |
| 23  | 21          | 20          | 17           | 20          | 19          | 2,495            | 0                                    |   |
| ..  | ..          | ..          | 64           | 61          | 60          | 96               | ..                                   |   |
| 30  | 30          | 29          | 19           | 15          | 15          | 7,162            | 0                                    |   |
| 16  | 15          | 14          | 37           | 38          | 38          | 62,734           | 24                                   |   |
| 24  | 21          | 20          | 47           | 51          | 51          | 237,600          | 40                                   |   |
| 51  | 49          | 48          | 5            | 6           | 7           | 88,604           | 10                                   |   |
| 45  | 31          | 25          | 31           | 39          | 45          | 5,439            | 0                                    |   |
| 32  | 30          | 29          | 19           | 16          | 13          | 19,955           | 4                                    |   |
| 80  | 78          | 77          | 13           | 15          | 16          | 226,760          | 6                                    |   |
| 42  | 40          | 39          | 4            | 6           | 6           | 74,072           | 24                                   |   |
| <b>45</b>                                     | <b>41</b>   | <b>40</b>   | <b>21</b>    | <b>23</b>   | <b>24</b>   | <b>382,173</b>   | <b>26</b>                            |   |
| 44  | 43          | 43          | 30           | 31          | 31          | 124,670          | 26                                   |   |
| 2   | 2           | 2           | 23           | 18          | 18          | 56,673           | 63                                   |   |
| 59  | 55          | 53          | 10           | 12          | 14          | 46,540           | 3                                    |   |
| 0   | 0           | 0           | 84           | 84          | 84          | 403              | 0                                    |   |
| 64  | 63          | 62          | 5            | 6           | 7           | 34,150           | 42                                   |   |
| 60  | 31          | 20          | 22           | 50          | 59          | 31,800           | 16                                   |   |
| 0   | 0           | 0           | 91           | 91          | 91          | 2,318            | 0                                    |   |
| 78  | 78          | 78          | 2            | 2           | 2           | 25,767           | 35                                   |   |
| 34  | 31          | 31          | 12           | 7           | 7           | 185              | ..                                   |   |
| 35  | 31          | 31          | 12           | 12          | 12          | 19,253           | 11                                   |   |
| 19  | 19          | 19          | 63           | 63          | 59          | 27               | ..                                   |   |
| 8   | 6           | 6           | 6            | 19          | 16          | 1,720            | 0                                    |   |
| 52  | 52          | 52          | 30           | 29          | 29          | 38,667           | 0                                    |   |
| 20  | ..          | 22          | 20           | ..          | 17          | 297,319          | 1                                    |   |
| 12  | ..          | 14          | 46           | ..          | 44          | 932,641          | 20                                   |   |

Source: FAO; and the World Resource Institute and International Institute for Environment and Development (in collaboration with UN Environment Programme), *World Resources 1988-89, 1988*.

**Table 5. Sub-Saharan Africa: per capita arable land and fuelwood supply**

| Country                        | Per capita arable land area (hectares) |            |            |                   | Fuelwood supply demand balance (million cubic meters) <sup>a</sup> |       |
|--------------------------------|--|------------|------------|-------------------|--|-------|
|                                | 1965                                   | 1980       | 1987       | 2000 <sup>b</sup> | 1980   | 2000  |
| <b>Sub-Saharan Africa</b>      | <b>0.5</b>                             | <b>0.4</b> | <b>0.3</b> | <b>0.22</b>       | ..   | ..    |
| <b>Low-income economies</b>    |  |            |            |                   |  |       |
| Benin                          | 0.6                                    | 0.5        | 0.4        | 0.30              | 17.6   | 8.9   |
| Burkina Faso                   | 0.5                                    | 0.4        | 0.4        | 0.25              | -2.6   | -11.2 |
| Burundi                        | 0.3                                    | 0.3        | 0.3        | 0.18              | -3.2   | -7.0  |
| Central African Rep.           | 1.0                                    | 0.9        | 0.7        | 0.48              | 111.5  | 105.6 |
| Comoros                        | 0.4                                    | 0.3        | 0.2        | 0.15              | ..   | ..    |
| Chad                           | 0.9                                    | 0.7        | 0.6        | 0.51              | -1.2   | -9.8  |
| Equatorial Guinea              | 0.8                                    | 0.7        | 0.6        | 0.51              | 4.6  | 4.0   |
| Ethiopia                       | 0.5                                    | 0.4        | 0.3        | 0.20              | 4.4  | -30.8 |
| Gambia, The                    | 0.3                                    | 0.2        | 0.2        | 0.15              | -0.6   | -1.5  |
| Ghana                          | 0.3                                    | 0.3        | 0.2        | 0.14              | 29.3   | 13.8  |
| Guinea                         | 0.4                                    | 0.3        | 0.2        | 0.20              | 38.6   | 29.6  |
| Guinea-Bissau                  | 0.5                                    | 0.4        | 0.4        | 0.28              | 4.8  | 1.1   |
| Kenya                          | 0.2                                    | 0.1        | 0.1        | 0.07              | -4.5   | -58.4 |
| Lesotho                        | 0.4                                    | 0.2        | 0.2        | 0.15              | ..   | ..    |
| Liberia                        | 0.3                                    | 0.2        | 0.2        | 0.12              | 11.1   | 1.9   |
| Madagascar                     | 0.4                                    | 0.3        | 0.3        | 0.20              | 5.2  | -4.4  |
| Malawi                         | 0.5                                    | 0.4        | 0.3        | 0.19              | -3.1   | -13.1 |
| Mali                           | 0.4                                    | 0.3        | 0.3        | 0.21              | 0.4  | -5.0  |
| Mauritania                     | 0.2                                    | 0.1        | 0.1        | 0.00              | 3.8  | 3.8   |
| Mozambique                     | 0.3                                    | 0.3        | 0.2        | 0.15              | 16.8   | 0.3   |
| Niger                          | 0.6                                    | 0.6        | 0.5        | 0.36              | -0.9   | -5.5  |
| Nigeria                        | 0.5                                    | 0.4        | 0.3        | 0.19              | 57.5   | -89.6 |
| Rwanda                         | 0.2                                    | 0.2        | 0.2        | 0.11              | -5.5   | -16.0 |
| São Tomé and Príncipe          | 0.5                                    | 0.4        | 0.3        | 0.23              | ..   | ..    |
| Sierra Leone                   | 0.6                                    | 0.5        | 0.5        | 0.33              | 5.0  | -1.5  |
| Somalia                        | 0.3                                    | 0.2        | 0.2        | 0.07              | 11.1   | 6.5   |
| Sudan                          | 0.9                                    | 0.7        | 0.5        | 0.36              | 6.1  | -39.5 |
| Tanzania                       | 0.3                                    | 0.3        | 0.2        | 0.14              | -5.1   | -74.0 |
| Togo                           | 0.7                                    | 0.6        | 0.4        | 0.28              | 10.3   | 13.1  |
| Uganda                         | 0.6                                    | 0.4        | 0.4        | 0.28              | -18.7  | -57.3 |
| Zaire                          | 0.3                                    | 0.2        | 0.2        | 0.14              | 388.2  | 327.9 |
| Zambia                         | 1.3                                    | 0.9        | 0.7        | 0.45              | 15.2   | 5.4   |
| <b>Middle-income economies</b> |  |            |            |                   |  |       |
| Angola                         | 0.6                                    | 0.5        | 0.4        | 0.28              | ..   | ..    |
| Botswana                       | 1.9                                    | 1.5        | 1.2        | 0.70              | 25.6   | 23.9  |
| Cameroon                       | 1.0                                    | 0.8        | 0.6        | 0.43              | 72.6   | 59.6  |
| Cape Verde                     | 0.2                                    | 0.1        | 0.1        | 0.08              | ..   | ..    |
| Congo, People's Rep.           | 0.6                                    | 0.4        | 0.3        | 0.22              | 46.4   | 43.2  |
| Côte d'Ivoire                  | 0.6                                    | 0.4        | 0.3        | 0.20              | 43.9   | 14.4  |
| Djibouti                       | ..                                     | ..         | ..         | ..                | ..   | ..    |
| Gabon                          | 0.4                                    | 0.6        | 0.4        | 0.35              | 42.8   | 40.9  |
| Mauritius                      | 0.1                                    | 0.1        | 0.1        | 0.09              | ..   | ..    |
| Senegal                        | 1.1                                    | 0.9        | 0.8        | 0.51              | 0.3  | -4.4  |
| Seychelles                     | 0.1                                    | 0.1        | 0.1        | 0.08              | ..   | ..    |
| Swaziland                      | 0.4                                    | 0.3        | 0.2        | 0.16              | -0.5   | -1.3  |
| Zimbabwe                       | 0.5                                    | 0.4        | 0.3        | 0.21              | 2.8  | -12.2 |
| India                          | 0.3                                    | ..         | 0.2        | 0.16              | ..   | ..    |
| China                          | 0.6                                    | ..         | 0.4        | 0.32              | ..   | ..    |

a. Fuel wood supply-demand balance defined as increase in stock of fuelwood in the year minus total utilization of fuelwood in that year.

b. 1987 arable land areas have been divided by the projected population of the year 2000.

Source: FAO.

**Table 6. Sub-Saharan Africa: population and food security, 1990-2020**

| <i>Scenarios</i>  | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> |
|---|-------------|-------------|-------------|-------------|
| <b>Case I</b>   |             |             |             |             |
| Population (millions of persons, with fertility at current levels)                                | 500         | 700         | 1,070       | 1,500       |
| Food production (mtme at current trend growth rate of 2 percent a year)                           | 90          | 110         | 135         | 165         |
| Food consumption (mtme with constant per capita consumption)                                      | 100         | 140         | 205         | 300         |
| Food gap (mtme)   | 10          | 30          | 70          | 135         |
| <b>Case II</b>  |             |             |             |             |
| Population (as in Case I)   | 500         | 700         | 1,020       | 1,500       |
| Food production (mtme at 4 percent annual growth)   | 90          | 135         | 200         | 300         |
| Food requirement (as in Case I)   | 100         | 140         | 205         | 300         |
| Food gap (as in Case I)   | 10          | 5           | 5           | 0           |
| <b>Case III</b>   |             |             |             |             |
| Population (millions of persons, with total fertility rate declining by 25 percent by 2020)       | 500         | 690         | 960         | 1,305       |
| Food production (mtme at 2 percent of annual growth)  | 90          | 110         | 135         | 165         |
| Food requirement (mtme)   | 100         | 138         | 193         | 261         |
| Food gap (mtme)   | 10          | 28          | 58          | 60          |
| <b>Case IV</b>  |             |             |             |             |
| Population (millions of persons with total fertility rate declining by 50 percent to 3.3 by 2020) | 500         | 680         | 885         | 1,110       |
| Food production (mtme at 4 percent annual growth)   | 90          | 135         | 200         | 300         |
| Food requirement (mtme)   | 100         | 160         | 220         | 300         |
| Food gap (mtme)   | 10          | 25          | 20          | 0           |

Note: Mtme is millions of tons of maize equivalent.

Source: World Bank.

**Table 7. Sub-Saharan Africa: performance of agricultural sector**

| Country                        | Agricultural GDP, average annual growth (percent) |             |            | Agriculture's percentage share in GDP | Percentage of irrigated land <sup>a</sup> |
|--------------------------------|---|-------------|------------|---------------------------------------|---|
|                                | 1965-73   | 1973-80     | 1980-88    | 1988                                  | 1984-86                                   |
| <b>Sub-Saharan Africa</b>      | <b>2.2</b>  | <b>-0.3</b> | <b>1.8</b> | <b>34</b>                             | <b>..</b>                                 |
| <b>Low-income economies</b>    | <b>2.2</b>  | <b>0.0</b>  | <b>1.5</b> | <b>38</b>                             | <b>..</b>                                 |
| Benin                          | ..  | 3.4         | 4.2        | 40                                    | 0   |
| Burkina Faso                   | ..  | 1.3         | 6.4        | 39                                    | 0   |
| Burundi                        | 4.7   | 1.6         | 3.1        | 56                                    | 5   |
| Central African Rep.           | 2.1   | 1.8         | 2.6        | 44                                    | ..  |
| Comoros                        | ..  | ..          | ..         | 36                                    | 0   |
| Chad                           | ..  | 0.5         | 2.6        | 47                                    | 0   |
| Equatorial Guinea              | ..  | ..          | ..         | ..                                    | ..  |
| Ethiopia                       | 2.1   | 0.6         | -1.1       | 42                                    | 1   |
| Gambia, The                    | 4.5   | 0.9         | 7.1        | 35                                    | 7   |
| Ghana                          | 4.5   | 0.0         | 0.5        | 49                                    | 0   |
| Guinea                         | ..  | 2.5         | ..         | 30                                    | 4   |
| Guinea-Bissau                  | ..  | -3.4        | 5.7        | 61                                    | ..  |
| Kenya                          | 6.2   | 3.7         | 3.3        | 31                                    | 2   |
| Lesotho                        | ..  | 1.1         | 1.8        | 21                                    | ..  |
| Liberia                        | 6.5   | 4.0         | 1.2        | 37                                    | 1   |
| Madagascar                     | ..  | -0.4        | 2.2        | 41                                    | 27  |
| Malawi                         | ..  | 4.8         | 2.7        | 37                                    | 1   |
| Mali                           | 0.9   | 7.1         | 0.3        | 49                                    | 9   |
| Mauritania                     | -2.1  | -0.3        | 1.5        | 38                                    | 6   |
| Mozambique                     | ..  | ..          | -0.8       | 62                                    | 3   |
| Niger                          | -2.9  | 1.4         | 2.8        | 36                                    | 1   |
| Nigeria                        | 2.8   | -1.4        | 1.0        | 34                                    | 3   |
| Rwanda                         | ..  | 8.7         | 0.3        | 38                                    | 0   |
| São Tomé and Príncipe          | ..  | 7.2         | -7.3       | 30                                    | ..  |
| Sierra Leone                   | 1.5   | 3.9         | 1.6        | 45                                    | 2   |
| Somalia                        | ..  | 10.9        | 3.9        | 65                                    | 17  |
| Sudan                          | 0.3   | 3.4         | 2.7        | 33                                    | 15  |
| Tanzania                       | 3.1   | 0.2         | 4.0        | 66                                    | 2   |
| Togo                           | 2.6   | 1.9         | 4.2        | 34                                    | 0   |
| Uganda                         | 3.6   | -2.3        | 0.3        | 72                                    | 0   |
| Zaire                          | ..  | 0.9         | 3.2        | 31                                    | 0   |
| Zambia                         | 2.0   | 1.6         | 4.1        | 14                                    | 0   |
| <b>Middle-income economies</b> | <b>2.2</b>  | <b>-1.7</b> | <b>2.7</b> | <b>27</b>                             | <b>..</b>                                 |
| Angola                         | 0.2   | -9.7        | ..         | 46                                    | ..  |
| Botswana                       | 12.4  | 0.6         | -5.9       | 3                                     | 0   |
| Cameroon                       | 4.6   | 4.5         | 2.4        | 26                                    | 0   |
| Cape Verdi                     | ..  | ..          | ..         | 19                                    | 5   |
| Congo, People's Rep.           | 4.1   | 2.1         | 2.0        | 15                                    | 1   |
| Côte d'Ivoire                  | 4.9   | 3.3         | 1.6        | 36                                    | 1   |
| Djibouti                       | ..  | ..          | ..         | ..                                    | ..  |
| Gabon                          | ..  | ..          | ..         | 11                                    | ..  |
| Mauritius                      | ..  | -6.0        | 4.0        | 13                                    | 16  |
| Senegal                        | 0.2   | 0.4         | 3.2        | 22                                    | 3   |
| Seychelles                     | ..  | ..          | -2.9       | 6                                     | ..  |
| Swaziland                      | 8.0   | 3.5         | 3.9        | 24                                    | 34  |
| Zimbabwe                       | ..  | -0.3        | 2.5        | 11                                    | 6   |
| India                          | 3.3   | 1.8         | 2.3        | 32                                    | 26  |
| China                          | 2.8   | 5.8         | 6.8        | 32                                    | 44  |

a. Irrigated land as percentage of arable and permanent crop land.

Crop Yields

| Fertilizer<br>consumption<br>(100 g/ha) <sup>b</sup> | Cereals |                                  | Roots and tubers |                                  |
|--|---------|----------------------------------|------------------|----------------------------------|
|  | kg/ha   | Percentage change<br>compared to | kg/ha            | Percentage change<br>compared to |
|  |         | 1964-66                          |                  | 1964-66                          |
| 1987/88  | 1984-86 | 1964-66                          | 1984-86          | 1964-66                          |
| <b>85</b>  | ..      | ..                               | ..               | ..                               |
| <b>77</b>  | ..      | ..                               | ..               | ..                               |
| 49   | 825     | 54                               | 8,241            | 34                               |
| 57   | 690     | 33                               | 6,568            | 96                               |
| 20   | 1,101   | 12                               | 7,538            | -3                               |
| 4  | 513     | -31                              | 3,882            | 10                               |
| ..   | 1,116   | -15                              | 3,259            | -4                               |
| 17   | 531     | -13                              | 5,182            | 14                               |
| ..   | ..      | ..                               | 2,395            | -33                              |
| 39   | 1,081   | 39                               | 2,827            | -7                               |
| ..   | 1,207   | 15                               | 3,000            | -32                              |
| 38   | 969     | 7                                | 8,641            | 5                                |
| 6  | 728     | -10                              | 7,089            | -5                               |
| ..   | 848     | 19                               | 6,154            | 0                                |
| 421  | 1,611   | 31                               | 8,929            | 21                               |
| 125  | 683     | -12                              | 15,000           | 3                                |
| 94   | 1,302   | 107                              | 4,014            | -3                               |
| 21   | 1,731   | 1                                | 5,926            | -7                               |
| 203  | 1,162   | 24                               | 4,231            | -13                              |
| 59   | 807     | 3                                | 9,240            | 12                               |
| 55   | 431     | 20                               | 1,903            | -24                              |
| 21   | 660     | -29                              | 5,783            | 20                               |
| 8  | 366     | -30                              | 8,877            | 10                               |
| 94   | 1,121   | 67                               | 11,260           | 43                               |
| 20   | 1,289   | 2                                | 7,780            | 42                               |
| ..   | ..      | ..                               | ..               | ..                               |
| 22   | 1,431   | 8                                | 3,425            | -6                               |
| 40   | 725     | 47                               | 10,792           | 8                                |
| 40   | 508     | -27                              | 3,408            | -1                               |
| 92   | 1,109   | 41                               | 11,075           | 109                              |
| 76   | 865     | 83                               | 10,498           | -12                              |
| 2  | 949     | 5                                | 6,432            | 64                               |
| 15   | 851     | 24                               | 7,016            | 4                                |
| 183  | 1,747   | 106                              | 3,687            | 13                               |
| <b>123</b>   | ..      | ..                               | ..               | ..                               |
| 29   | 461     | -47                              | 14,088           | 22                               |
| 7  | 178     | -52                              | 5,385            | 35                               |
| 71   | 935     | 18                               | 2,455            | 10                               |
| ..   | 551     | -11                              | 3,007            | -27                              |
| 25   | 622     | -43                              | 6,457            | 31                               |
| 90   | 981     | 23                               | 6,282            | 70                               |
| ..   | ..      | ..                               | ..               | ..                               |
| 46   | 1,481   | -6                               | 6,393            | 0                                |
| 3,075  | 3,200   | 59                               | 25,939           | 108                              |
| 40   | 709     | 24                               | 4,232            | 2                                |
| ..   | ..      | ..                               | ..               | ..                               |
| ..   | 1,528   | 225                              | 1,815            | -53                              |
| 505  | 1,460   | 63                               | 4,907            | 22                               |
| 517  | 1,590   | 76                               | 14,268           | 61                               |
| 2,361  | 3,891   | 122                              | 15,614           | 81                               |

b. Fertilizer consumption in terms of plant nutrients per hectare of arable land. Source: World Bank; FAO.

**Table 8. Sub-Saharan Africa: food security**

| Country                        | Population facing<br>food insecurity<br>(millions)<br>1980/81 | Percentage of<br>population facing<br>food insecurity<br>1980/81 | Per capita daily calorie<br>supply (calories) |              |
|--------------------------------|---|--|---|--------------|
|                                |   |  | 1965  | 1988         |
| <b>Sub-Saharan africa</b>      | <b>98</b>   | <b>28</b>  | <b>2,092</b>                                  | <b>2,095</b> |
| <b>Low-income economies</b>    | <b>95</b>   | <b>30</b>  | <b>2,079</b>                                  | <b>2,076</b> |
| Benin                          | 1   | 18   | 2,009   | 2,184        |
| Burkina Faso                   | 2   | 32   | 2,009   | 2,139        |
| Burundi                        | 1   | 26   | 2,391   | 2,343        |
| Central African Rep.           | 1   | 29   | 2,135   | 1,949        |
| Comoros                        | ..  | ..   | 2,296   | 2,109        |
| Chad                           | 2   | 54   | 2,399   | 1,717        |
| Equatorial Guinea              | ..  | ..   | ..  | ..           |
| Ethiopia                       | 15  | 46   | 1,824   | 1,749        |
| Gambia, The                    | 0   | 19   | 2,194   | 2,517        |
| Ghana                          | 4   | 36   | 1,950   | 1,759        |
| Guinea                         | ..  | ..   | 1,923   | 1,776        |
| Guinea-Bissau                  | ..  | ..   | 1,910   | 2,186        |
| Kenya                          | 6   | 37   | 2,289   | 2,060        |
| Lesotho                        | ..  | ..   | 2,065   | 2,303        |
| Liberia                        | 1   | 30   | 2,154   | 2,381        |
| Madagascar                     | 1   | 13   | 2,462   | 2,440        |
| Malawi                         | 1   | 24   | 2,244   | 2,310        |
| Mali                           | 3   | 35   | 1,858   | 2,073        |
| Mauritania                     | 0   | 25   | 2,064   | 2,322        |
| Mozambique                     | 6   | 49   | 1,979   | 1,595        |
| Niger                          | 2   | 28   | 1,994   | 2,432        |
| Nigeria                        | 14  | 17   | 2,185   | 2,149        |
| Rwanda                         | 1   | 24   | 1,665   | 1,830        |
| São Tomé and Príncipe          | ..  | ..   | 2,186   | 2,338        |
| Sierra Leone                   | 1   | 23   | 1,837   | 1,854        |
| Somalia                        | 2   | 50   | 2,167   | 2,138        |
| Sudan                          | 3   | 18   | 1,938   | 2,208        |
| Tanzania                       | 7   | 35   | 1,832   | 2,192        |
| Togo                           | 1   | 29   | 2,378   | 2,207        |
| Uganda                         | 6   | 46   | 2,360   | 2,344        |
| Zaire                          | 12  | 42   | 2,187   | 2,163        |
| Zambia                         | 3   | 48   | ..  | ..           |
| <b>Middle-income economies</b> | <b>3</b>  | <b>12</b>  | <b>2,176</b>                                  | <b>2,234</b> |
| Angola                         | ..  | ..   | 1,897   | 1,880        |
| Botswana                       | ..  | ..   | 2,019   | 2,201        |
| Cameroon                       | 1   | 9  | 2,079   | 2,028        |
| Cape Verde                     | ..  | ..   | 1,766   | 2,717        |
| Congo, People's Rep.           | 0   | 27   | 2,259   | 2,619        |
| Côte d'Ivoire                  | 1   | 8  | 2,359   | 2,562        |
| Djibouti                       | ..  | ..   | ..  | ..           |
| Gabon                          | 0   | 7  | 1,881   | 2,521        |
| Mauritius                      | 0   | 9  | 2,271   | 2,748        |
| Senegal                        | 1   | 21   | 2,479   | 2,350        |
| Seychelles                     | ..  | ..   | 1,735   | 2,219        |
| Swaziland                      | ..  | ..   | 2,100   | 2,578        |
| Zimbabwe                       | ..  | ..   | 2,105   | 2,132        |
| India                          | ..  | ..   | 2,111   | 2,238        |
| China                          | ..  | ..   | 1,926   | 2,630        |

Note: Food security is defined as access to enough food for an active and healthy life. In measuring this, the minimum daily calorie requirement to meet the energy needs of an average healthy person, as calculated by the World Health Organization for each country, is taken into account.

| Calorie supply as percentage<br>of minimum requirement <sup>a</sup> | Average annual cereal im-<br>ports (thousands of tons) |              | Index of per capita food<br>production (1979-81 = 100) |         |
|---|--|--------------|--|---------|
|   | 1988   | 1974         | 1988   | 1964-66 |
| <b>90</b>   | <b>4,024</b>   | <b>8,218</b> | ..   | ..      |
| <b>89</b>   | <b>2,913</b>   | <b>5,904</b> | ..   | ..      |
| 95  | 7  | 121          | 94   | 110     |
| 90  | 99   | 128          | 113  | 114     |
| 101   | 7  | 15           | 100  | 92      |
| 86  | 7  | 40           | 94   | 83      |
| 90  | 12   | 32           | 114  | ..      |
| 72  | 37   | 61           | 124  | 99      |
| ..  | 2  | 10           | ..   | ..      |
| 75  | 118  | 1,157        | 111  | 88      |
| 106   | 15   | 62           | 152  | 101     |
| 76  | 177  | 228          | 120  | 118     |
| 77  | 63   | 222          | 106  | 91      |
| 95  | 22   | 53           | 140  | 134     |
| 89  | 15   | 86           | 119  | 101     |
| 101   | 48   | 107          | 120  | 79      |
| 103   | 42   | 103          | 95   | 95      |
| 107   | 114  | 217          | 105  | 93      |
| 100   | 17   | 44           | 87   | 84      |
| 88  | 281  | 109          | 100  | 95      |
| 101   | 115  | 219          | 143  | 87      |
| 68  | 62   | 527          | 132  | 84      |
| 103   | 155  | 151          | 105  | 85      |
| 91  | 389  | 333          | 125  | 96      |
| 79  | 3  | 11           | 78   | 76      |
| ..  | 4  | 15           | ..   | ..      |
| 81  | 26   | 114          | 99   | 89      |
| 93  | 42   | 236          | 144  | 98      |
| 94  | 125  | 702          | 89   | 88      |
| 94  | 431  | 120          | 87   | 88      |
| 96  | 6  | 110          | 118  | 88      |
| 101   | 36   | 28           | 110  | 82      |
| 97  | 343  | 415          | 110  | 94      |
| ..  | 93   | 128          | 98   | 94      |
| <b>96</b>   | <b>1,111</b>   | <b>2,314</b> | ..   | ..      |
| 80  | 149  | 313          | 127  | 84      |
| 95  | 21   | 150          | 134  | 70      |
| 87  | 81   | 282          | 89   | 96      |
| 116   | 40   | 52           | 163  | ..      |
| 118   | 34   | 113          | 110  | 94      |
| 111   | 172  | 494          | 73   | 97      |
| ..  | 12   | 51           | ..   | ..      |
| 108   | 24   | 59           | 110  | 79      |
| 121   | 160  | 177          | 111  | 104     |
| 99  | 341  | 461          | 156  | 113     |
| ..  | 6  | 8            | ..   | ..      |
| 111   | 15   | 61           | 68   | 97      |
| 89  | 56   | 93           | 96   | 90      |
| 101   | 5,261  | 2,985        | 94   | 113     |
| 111   | 6,033  | 15,517       | 81   | 128     |

a. Minimum daily calorie requirements have been calculated by the WHO for each country. Per capita daily calorie supply data of 1988 have been divided by the requirement.

Source: World Bank, *The Challenge of Hunger in Africa — A Call to Action*, September 1988; FAO.

**Table 9. Sub-Saharan Africa: crude birth and death, infant, and child mortality rates, 1965, 1990**

| Country                        | Crude birth rate per 1,000 population |           | Crude death rate per 1,000 population |           | Infant mortality per 1,000 live births |            | Child mortality (under age 5) per 1,000 live births |            |
|--------------------------------|---------------------------------------|-----------|---------------------------------------|-----------|--|------------|---|------------|
|                                | 1965                                  | 1990      | 1965                                  | 1990      | 1965                                   | 1990       | 1965  | 1990       |
| <b>Sub-Saharan Africa</b>      | <b>48</b>                             | <b>47</b> | <b>23</b>                             | <b>15</b> | <b>160</b>                             | <b>103</b> | <b>261</b>  | <b>154</b> |
| <b>Low-income economies</b>    | <b>49</b>                             | <b>47</b> | <b>23</b>                             | <b>16</b> | <b>165</b>                             | <b>107</b> | <b>269</b>  | <b>160</b> |
| Benin                          | 49                                    | 46        | 25                                    | 15        | 166                                    | 112        | 270   | 155        |
| Burkina Faso                   | 48                                    | 47        | 26                                    | 18        | 193                                    | 134        | 320   | 193        |
| Burundi                        | 47                                    | 46        | 24                                    | 15        | 142                                    | 69         | 237   | 98         |
| Central African Rep.           | 34                                    | 42        | 24                                    | 15        | 167                                    | 99         | 270   | 152        |
| Comoros                        | 49                                    | 48        | 20                                    | 12        | 119                                    | 93         | 193   | 124        |
| Chad                           | 45                                    | 44        | 28                                    | 19        | 183                                    | 126        | 302   | 201        |
| Equatorial Guinea              | 40                                    | 41        | 27                                    | 19        | 177                                    | 121        | 291   | 193        |
| Ethiopia                       | 43                                    | 50        | 20                                    | 19        | 165                                    | 131        | 273   | 186        |
| Gambia                         | 50                                    | 47        | 30                                    | 20        | 199                                    | 137        | 350   | 221        |
| Ghana                          | 47                                    | 44        | 17                                    | 13        | 119                                    | 85         | 197   | 129        |
| Guinea                         | 46                                    | 47        | 30                                    | 22        | 196                                    | 139        | 321   | 219        |
| Guinea-Bissau                  | 46                                    | 45        | 29                                    | 24        | 196                                    | 140        | 291   | 227        |
| Kenya                          | 52                                    | 45        | 20                                    | 12        | 112                                    | 67         | 179   | 96         |
| Lesotho                        | 42                                    | 40        | 18                                    | 12        | 142                                    | 95         | 194   | 127        |
| Liberia                        | 46                                    | 44        | 20                                    | 16        | 138                                    | 125        | 282   | 174        |
| Madagascar                     | 47                                    | 42        | 22                                    | 15        | 201                                    | 116        | 153   | 164        |
| Malawi                         | 56                                    | 54        | 26                                    | 19        | 200                                    | 147        | 347   | 235        |
| Mali                           | 50                                    | 50        | 27                                    | 19        | 207                                    | 166        | 363   | 220        |
| Mauritania                     | 47                                    | 47        | 27                                    | 19        | 178                                    | 122        | 281   | 196        |
| Mozambique                     | 49                                    | 46        | 27                                    | 17        | 179                                    | 136        | 294   | 194        |
| Niger                          | 48                                    | 52        | 29                                    | 20        | 180                                    | 129        | 296   | 207        |
| Nigeria                        | 51                                    | 46        | 23                                    | 15        | 177                                    | 99         | 290   | 152        |
| Rwanda                         | 52                                    | 54        | 17                                    | 18        | 141                                    | 117        | 237   | 188        |
| São Tomé and Príncipe          | ..                                    | 35        | ..                                    | 8         | ..                                     | 43         | ..  | 47         |
| Sierra Leone                   | 48                                    | 47        | 32                                    | 22        | 209                                    | 148        | 385   | 231        |
| Somalia                        | 50                                    | 48        | 26                                    | 18        | 165                                    | 127        | 273   | 204        |
| Sudan                          | 47                                    | 43        | 24                                    | 15        | 160                                    | 103        | 263   | 160        |
| Tanzania                       | 49                                    | 47        | 22                                    | 13        | 138                                    | 101        | 228   | 138        |
| Togo                           | 50                                    | 48        | 23                                    | 14        | 153                                    | 89         | 238   | 134        |
| Uganda                         | 49                                    | 51        | 19                                    | 16        | 121                                    | 97         | 197   | 149        |
| Zaire                          | 47                                    | 44        | 21                                    | 14        | 141                                    | 93         | 232   | 140        |
| Zambia                         | 49                                    | 48        | 20                                    | 12        | 121                                    | 75         | 192   | 109        |
| <b>Middle-income economies</b> | <b>47</b>                             | <b>44</b> | <b>21</b>                             | <b>13</b> | <b>119</b>                             | <b>86</b>  | <b>206</b>  | <b>125</b> |
| Angola                         | 49                                    | 47        | 29                                    | 19        | ..                                     | 131        | 312   | 209        |
| Botswana                       | 53                                    | 36        | 19                                    | 6         | 112                                    | 38         | 160   | 43         |
| Cameroun                       | 40                                    | 44        | 20                                    | 12        | 143                                    | 89         | 230   | 118        |
| Cape Verde                     | 41                                    | 40        | 11                                    | 8         | ..                                     | 41         | 176   | 47         |
| Congo, People's Rep.           | 42                                    | 47        | 18                                    | 15        | 118                                    | 114        | 184   | 165        |
| Côte d'Ivoire                  | 52                                    | 49        | 22                                    | 14        | 149                                    | 92         | 260   | 140        |
| Djibouti                       | 49                                    | 46        | 24                                    | 17        | 172                                    | 116        | ..  | 183        |
| Gabon                          | 31                                    | 41        | 22                                    | 15        | 153                                    | 97         | 250   | 149        |
| Mauntius                       | 36                                    | 18        | 8                                     | 7         | 65                                     | 21         | 93  | 23         |
| Senegal                        | 47                                    | 45        | 23                                    | 16        | 171                                    | 75         | 290   | 110        |
| Seychelles                     | ..                                    | 26        | ..                                    | 7         | ..                                     | 18         | ..  | 21         |
| Swaziland                      | 48                                    | 45        | 21                                    | 12        | 148                                    | 113        | 220   | 140        |
| Zimbabwe                       | 55                                    | 37        | 17                                    | 11        | 103                                    | 44         | 165   | 50         |
| India                          | 45                                    | 30        | 21                                    | 11        | 151                                    | 94         | 239   | 113        |
| China                          | 38                                    | 21        | 10                                    | 7         | 90                                     | 28         | 113   | 2          |

Source: World Bank.

**Table 10. Sub-Saharan Africa: population growth and fertility rates, 1965–1990**

| Country                        | Average annual growth of population (percent) |            |            | Total fertility rate <sup>a</sup> |            |
|--------------------------------|---|------------|------------|-----------------------------------|------------|
|                                | 1965-80                                       | 1980-88    | 1988-90    | 1965                              | 1990       |
| <b>Sub-Saharan Africa</b>      | <b>2.7</b>                                    | <b>3.2</b> | <b>3.1</b> | <b>6.6</b>                        | <b>6.5</b> |
| <b>Low-income economies</b>    |   |            |            |                                   |            |
| Benin                          | 2.7   | 3.2        | 3.2        | 6.8                               | 6.4        |
| Burkina Faso                   | 2.1   | 2.6        | 2.8        | 6.4                               | 6.5        |
| Burundi                        | 1.9   | 2.8        | 3.1        | 6.4                               | 6.8        |
| Central African Rep.           | 1.9   | 2.7        | 2.8        | 4.5                               | 5.8        |
| Comoros                        | 2.2   | 3.5        | 3.7        | 7.0                               | 6.9        |
| Chad                           | 2.0   | 2.4        | 2.5        | 6.0                               | 6.0        |
| Equatorial Guinea              | 1.7   | 1.9        | 2.3        | 5.0                               | 5.5        |
| Ethiopia                       | 2.7   | 2.9        | 3.4        | 5.8                               | 7.5        |
| Gambia                         | 3.0   | 3.3        | 3.1        | 6.5                               | 6.5        |
| Ghana                          | 2.2   | 3.4        | 3.1        | 6.8                               | 6.3        |
| Guinea                         | 1.5   | 2.4        | 2.8        | 5.9                               | 6.5        |
| Guinea-Bissau                  | 2.9   | 1.9        | 2.2        | 5.9                               | 6.0        |
| Kenya                          | 3.6   | 3.8        | 3.7        | 8.0                               | 6.9        |
| Lesotho                        | 2.3   | 2.7        | 2.8        | 5.8                               | 5.7        |
| Libéria                        | 3.0   | 3.2        | 3.0        | 6.4                               | 6.4        |
| Madagascar                     | 2.5   | 2.8        | 3.1        | 6.6                               | 6.5        |
| Malawi                         | 2.9   | 3.4        | 3.3        | 7.8                               | 7.6        |
| Mali                           | 2.1   | 2.4        | 2.8        | 6.5                               | 7.0        |
| Mauritania                     | 2.3   | 2.6        | 2.7        | 6.5                               | 6.8        |
| Mozambique                     | 2.5   | 2.7        | 2.8        | 6.8                               | 6.4        |
| Niger                          | 2.6   | 3.5        | 3.0        | 6.8                               | 7.1        |
| Nigéria                        | 2.5   | 3.3        | 3.3        | 6.9                               | 6.6        |
| Rwanda                         | 3.3   | 3.3        | 3.1        | 7.5                               | 8.3        |
| São Tomé and Príncipe          | 2.1   | 2.7        | 2.8        | ..                                | 5.1        |
| Sierra Leone                   | 2.0   | 2.4        | 2.5        | 6.4                               | 6.5        |
| Somalia                        | 2.7   | 3.0        | 3.1        | 6.7                               | 6.8        |
| Sudan                          | 2.8   | 3.1        | 2.8        | 6.7                               | 6.3        |
| Tanzania                       | 3.3   | 3.5        | 3.8        | 6.6                               | 7.1        |
| Togo                           | 3.0   | 3.5        | 3.7        | 6.5                               | 6.7        |
| Uganda                         | 2.9   | 3.2        | 3.4        | 6.9                               | 7.3        |
| Zaire                          | 2.8   | 3.1        | 3.2        | 6.0                               | 6.1        |
| Zambia                         | 3.0   | 3.7        | 3.7        | 6.6                               | 6.7        |
| <b>Middle-income economies</b> |   |            |            |                                   |            |
| Angola                         | 2.8   | 2.5        | 2.8        | 6.4                               | 6.5        |
| Botswana                       | 3.5   | 3.4        | 3.1        | 6.9                               | 4.8        |
| Cameroun                       | 2.7   | 3.2        | 3.3        | 5.2                               | 6.5        |
| Cape Verde                     | 1.6   | 2.4        | 2.8        | 7.2                               | 5.4        |
| Congo, People's Rep.           | 2.8   | 3.5        | 3.2        | 5.7                               | 6.6        |
| Côte d'Ivoire                  | 4.1   | 4.0        | 4.2        | 7.2                               | 7.3        |
| Djibouti                       | ..  | 3.3        | 3.9        | 6.6                               | 6.6        |
| Gabon                          | 3.6   | 3.9        | 2.6        | 4.1                               | 5.7        |
| Mauritius                      | 1.6   | 1.0        | 1.0        | 4.8                               | 1.9        |
| Senegal                        | 2.9   | 3.0        | 3.0        | 6.4                               | 6.5        |
| Seychelles                     | 1.9   | 0.7        | 1.0        | ..                                | 2.8        |
| Swaziland                      | 2.8   | 3.3        | 3.5        | 6.5                               | 6.4        |
| Zimbabwe                       | 3.1   | 3.7        | 2.9        | 8.0                               | 5.0        |
| India                          | 2.3   | 2.2        | 2.0        | 6.2                               | 4.0        |
| China                          | 2.1   | 1.4        | 1.7        | 6.4                               | 2.3        |

a. Total fertility rate (TFR) is the average number of children who would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year.

Source: World Bank, *World Development Report 1990*; data for 1988-90 "Average annual population growth" and 1990 "Total fertility rate" were derived from the 1991 revision of World Bank demographic estimates and projections.

**Table 11. Sub-Saharan Africa: population estimates and projections based on targeted decline of 50 percent in total fertility rate by 2030**

| Country                   | Population size<br>(millions) |              |                |                | Hypothetical size<br>of stationary<br>population <sup>a</sup><br>(millions) |
|---------------------------|-------------------------------|--------------|----------------|----------------|---|
|                           | 1980                          | 1990         | 2020           | 2030           |   |
| <b>Sub-Saharan Africa</b> | <b>380.1</b>                  | <b>532.0</b> | <b>1,233.2</b> | <b>1,539.6</b> | <b>3,039.7</b>  |
| Angola                    | 7.1                           | 10.0         | 23.9           | 30.4           | 64.7  |
| Benin                     | 3.4                           | 4.7          | 10.3           | 12.1           | 20.8  |
| Botswana                  | ..                            | 1.3          | 2.3            | 2.6            | 3.6   |
| Burkina Faso              | 6.1                           | 9.0          | 20.6           | 25.6           | 51.1  |
| Burundi                   | 4.1                           | 5.5          | 13             | 18.1           | 38.7  |
| Cameroon                  | 8.4                           | 11.9         | 29.6           | 36.4           | 69.3  |
| Cape Verde                | ..                            | 0.4          | 0.8            | 0.9            | 1.4   |
| Central African Rep.      | 2.3                           | 3.0          | 6.2            | 7.3            | 12.6  |
| Chad                      | 4.5                           | 5.7          | 12.2           | 14.9           | 28.6  |
| Comoros                   | ..                            | 0.5          | 1.2            | 1.4            | 2.6   |
| Congo, People's Rep.      | 1.6                           | 2.3          | 5.9            | 7.5            | 15.6  |
| Côte d'Ivoire             | 8.3                           | 12.2         | 32.9           | 41.2           | 85.1  |
| Djibouti                  | ..                            | 0.4          | 1              | 1.2            | 2.2   |
| Equatorial Guinea         | ..                            | 0.4          | 0.7            | 0.9            | 1.6   |
| Ethiopia                  | 31.1                          | 50.5         | 134.5          | 180.9          | 435.2   |
| Gabon                     | ..                            | 1.1          | 2.6            | 3.2            | 6.4   |
| Gambia, The               | ..                            | 0.9          | 2              | 2.5            | 5.2   |
| Ghana                     | 11.7                          | 14.9         | 32.4           | 37.7           | 63.2  |
| Guinea                    | 5.4                           | 5.7          | 12.3           | 16.6           | 34.5  |
| Guinea-Bissau             | ..                            | 1.0          | 1.9            | 2.3            | 4.3   |
| Kenya                     | 15.9                          | 24.1         | 56.4           | 78.7           | 148.4   |
| Lesotho                   | 1.3                           | 1.8          | 3.4            | 3.9            | 6.1   |
| Liberia                   | 1.9                           | 2.5          | 5.4            | 6.6            | 11.1  |
| Madagascar                | 8.7                           | 11.5         | 22.7           | 31.0           | 54.0  |
| Malawi                    | 6.1                           | 8.5          | 22.9           | 30.2           | 72.1  |
| Mali                      | 7.0                           | 8.5          | 20.8           | 26.9           | 60.5  |
| Mauritania                | 1.5                           | 2.0          | 4.7            | 6.2            | 14.4  |
| Mauritius                 | ..                            | 1.1          | 1.3            | 1.4            | 1.5   |
| Mozambique                | 12.1                          | 15.8         | 36.9           | 45.4           | 87.1  |
| Namibia                   | ..                            | 1.3          | 2.9            | 3.4            | 5.48  |
| Niger                     | 5.3                           | 7.7          | 20.8           | 27.8           | 75.7  |
| Nigeria                   | 84.7                          | 117.2        | 271.7          | 324.0          | 580.2   |
| Reunion                   | ..                            | 0.6          | 0.8            | 0.9            | 1.1   |
| Rwanda                    | 5.2                           | 7.1          | 20.0           | 28.2           | 74.1  |
| São Tomé and Príncipe     | ..                            | 0.1          | 0.2            | 0.3            | 0.4   |
| Senegal                   | 5.7                           | 7.4          | 18.1           | 22.7           | 46.4  |
| Seychelles                | ..                            | 0.1          | 0.1            | 0.1            | 0.1   |
| Sierra Leone              | 3.5                           | 4.1          | 9.1            | 11.4           | 24.4  |
| Somalia                   | 3.9                           | 6.3          | 14.9           | 18.8           | 39.0  |
| South Africa              | 29.3                          | 35.9         | 61.6           | 68.8           | 95.9  |
| Sudan                     | 18.7                          | 25.1         | 52.3           | 61.7           | 106.1   |
| Swaziland                 | ..                            | 0.8          | 1.8            | 2.2            | 3.7   |
| Tanzania                  | 18.7                          | 26.6         | 66.2           | 86.9           | 202.8   |
| Togo                      | 2.5                           | 3.6          | 8.5            | 10.2           | 18.2  |
| Uganda                    | 12.6                          | 17.4         | 44.8           | 56.8           | 119.3   |
| Zaire                     | 28.3                          | 35.6         | 79.0           | 93.8           | 164.5   |
| Zambia                    | 5.8                           | 8.1          | 21.2           | 26.4           | 51.5  |
| Zimbabwe                  | 7.4                           | 9.8          | 18.4           | 20.9           | 29.1  |
| India                     | 673.2                         | 849.7        | 1286.8         | 1,412.1        | 1,875.5   |
| China                     | 976.7                         | 1,122.0      | 1,512.4        | 1,614.4        | 1,838.8   |

a. Projection assumes that a 50 percent of decline in the total fertility rate from the 1985 level will be attained during 2025-30. These projections assume that the pace of decline in the future will be significantly higher than has hitherto been observed.

| Annual population growth<br>(percent) |             |             | Total fertility rate |             |             | Assumed year<br>of reaching<br>Net Reproduction<br>Rate = 1 <sup>b</sup> |
|---------------------------------------|-------------|-------------|----------------------|-------------|-------------|--|
| 1990-95                               | 2020-25     | 2025-30     | 1990-95              | 2020-25     | 2025-2030   |  |
| <b>3.02</b>                           | <b>2.24</b> | <b>1.99</b> | <b>6.24</b>          | <b>3.60</b> | <b>3.10</b> | <b>2055</b>  |
| 2.85                                  | 2.54        | 2.22        | 6.56                 | 4.34        | 3.59        | 2045   |
| 2.92                                  | 1.85        | 1.59        | 5.99                 | 3.00        | 2.53        | 2035   |
| 2.79                                  | 1.37        | 1.24        | 4.33                 | 2.07        | 2.06        | 2015   |
| 2.82                                  | 2.33        | 1.96        | 6.50                 | 3.95        | 3.20        | 2045   |
| 3.05                                  | 2.39        | 2.28        | 6.80                 | 3.74        | 3.50        | 2045   |
| 3.06                                  | 2.43        | 2.02        | 6.24                 | 3.67        | 2.91        | 2040   |
| 2.85                                  | 1.61        | 1.52        | 4.66                 | 2.17        | 2.07        | 2025   |
| 2.56                                  | 1.81        | 1.57        | 5.54                 | 3.10        | 2.59        | 2035   |
| 2.56                                  | 2.16        | 1.86        | 6.03                 | 3.75        | 3.09        | 2040   |
| 3.40                                  | 2.33        | 1.81        | 6.49                 | 3.43        | 2.65        | 2035   |
| 3.21                                  | 2.72        | 2.23        | 6.40                 | 4.17        | 3.24        | 2045   |
| 3.69                                  | 2.65        | 2.16        | 7.01                 | 4.17        | 3.24        | 2045   |
| 3.20                                  | 2.11        | 1.76        | 6.60                 | 3.54        | 2.90        | 2040   |
| 2.24                                  | 1.63        | 1.43        | 5.50                 | 3.01        | 2.61        | 2035   |
| 3.17                                  | 2.98        | 2.65        | 7.50                 | 4.95        | 4.20        | 2050   |
| 2.64                                  | 2.46        | 2.01        | 5.71                 | 4.08        | 3.15        | 2045   |
| 2.90                                  | 2.40        | 2.14        | 6.50                 | 4.46        | 3.80        | 2045   |
| 2.98                                  | 1.86        | 1.43        | 5.89                 | 2.92        | 2.27        | 2030   |
| 2.50                                  | 2.36        | 2.16        | 6.50                 | 4.46        | 3.80        | 2045   |
| 2.06                                  | 1.94        | 1.69        | 6.00                 | 3.96        | 3.37        | 2040   |
| 3.40                                  | 1.85        | 2.04        | 6.32                 | 2.58        | 2.80        | 2040   |
| 2.59                                  | 1.54        | 1.26        | 5.29                 | 2.52        | 2.12        | 2025   |
| 2.76                                  | 1.82        | 1.56        | 5.99                 | 2.98        | 2.49        | 2035   |
| 2.60                                  | 1.52        | 1.46        | 5.59                 | 2.69        | 2.42        | 2030   |
| 3.49                                  | 2.94        | 2.63        | 7.60                 | 5.05        | 4.30        | 2050   |
| 2.88                                  | 2.73        | 2.41        | 7.06                 | 4.62        | 3.87        | 2050   |
| 2.64                                  | 2.57        | 2.48        | 6.50                 | 4.46        | 4.10        | 2050   |
| 0.81                                  | 0.45        | 0.48        | 1.75                 | 2.01        | 2.05        | 2030   |
| 3.06                                  | 2.33        | 1.95        | 6.52                 | 3.90        | 3.13        | 2040   |
| 2.94                                  | 1.70        | 1.43        | 5.58                 | 2.59        | 2.20        | 2030   |
| 3.14                                  | 3.07        | 2.84        | 7.19                 | 5.32        | 4.65        | 2055   |
| 3.06                                  | 2.09        | 1.70        | 6.25                 | 3.30        | 2.62        | 2035   |
| 1.50                                  | 0.82        | 0.75        | 2.16                 | 2.05        | 2.04        | 1995   |
| 3.85                                  | 3.03        | 2.83        | 8.00                 | 4.94        | 4.39        | 2055   |
| 2.50                                  | 1.36        | 1.19        | 4.74                 | 2.17        | 2.06        | 2025   |
| 3.13                                  | 2.48        | 2.09        | 6.50                 | 3.95        | 3.20        | 2045   |
| 1.06                                  | 0.96        | 0.90        | 2.83                 | 2.09        | 2.07        | 2005   |
| 2.51                                  | 2.38        | 2.13        | 6.50                 | 4.46        | 3.80        | 2045   |
| 2.96                                  | 2.47        | 2.13        | 6.77                 | 4.22        | 3.47        | 2045   |
| 2.33                                  | 1.16        | 1.09        | 4.08                 | 2.08        | 2.06        | 2020   |
| 2.74                                  | 1.82        | 1.55        | 6.01                 | 3.13        | 2.62        | 2035   |
| 3.15                                  | 1.97        | 1.67        | 5.99                 | 2.97        | 2.49        | 2035   |
| 3.31                                  | 2.33        | 2.55        | 6.40                 | 3.56        | 4.03        | 2050   |
| 3.23                                  | 2.12        | 1.74        | 6.29                 | 3.23        | 2.61        | 2035   |
| 3.49                                  | 2.65        | 2.22        | 7.30                 | 4.24        | 3.40        | 2045   |
| 2.91                                  | 1.97        | 1.65        | 5.80                 | 3.18        | 2.60        | 2035   |
| 3.47                                  | 2.56        | 2.10        | 6.46                 | 3.84        | 3.02        | 2040   |
| 2.88                                  | 1.37        | 1.25        | 4.55                 | 2.07        | 2.06        | 2015   |
| 1.82                                  | 0.97        | 0.87        | 3.74                 | 2.15        | 2.12        | 2015   |
| 1.37                                  | 0.70        | 0.61        | 2.28                 | 2.08        | 2.08        | 2000   |

b. Even when the Net Reproduction Rate (NRR) reaches one, the age structure is such that the number of women in, or yet to enter, their childbearing years gives rise to total births exceeding the total number of deaths. The population, therefore, will increase for a further considerable period before reaching its hypothetical stationary level. All countries are projected to reach stationary population near the end of the 22d century.

Source: World Bank, preliminary 1991 revision of demographic estimates and projections.

**Table 12. Sub-Saharan Africa: required contraceptive prevalence rates for achieving population projections in Table 11.**

| Country                                  | Estimated contraceptive prevalence rates (percent) <sup>a</sup> |             |             |             |
|--|---|-------------|-------------|-------------|
|  | 1990  | 2020        | 2025        | 2030        |
| Angola                                   | 4.0   | 30.9        | 34.9        | 38.8        |
| Botswana                                 | 35.8  | 63.5        | 68.1        | 72.8        |
| Burkina Faso                             | 7.0   | 36.2        | 41.0        | 45.7        |
| Burundi                                  | 12.5  | 46.9        | 52.1        | 57.2        |
| Cameroon                                 | 7.9   | 42.4        | 47.6        | 52.6        |
| Chad                                     | 6.1   | 35.2        | 39.9        | 44.4        |
| Cote d'Ivoire                            | 7.8   | 41.7        | 46.8        | 51.7        |
| Ethiopia                                 | 4.6   | 27.6        | 31.9        | 36.4        |
| Ghana                                    | 16.8  | 53.8        | 59.7        | 65.7        |
| Guinea                                   | 7.4   | 48.7        | 55.2        | 61.6        |
| Kenya                                    | 28.1  | 63.6        | 72.1        | 78.8        |
| Liberia                                  | 11.3  | 49.8        | 56.5        | 63.4        |
| Madagascar                               | 6.7   | 49.2        | 56.3        | 63.4        |
| Malawi                                   | 4.9   | 30.7        | 34.6        | 38.5        |
| Mali                                     | 7.0   | 29.6        | 33.4        | 37.2        |
| Mozambique                               | 4.6   | 36.4        | 41.2        | 45.8        |
| Niger                                    | 5.0   | 24.1        | 27.2        | 30.1        |
| Nigeria                                  | 9.2   | 49.5        | 56.0        | 62.4        |
| Rwanda                                   | 13.5  | 39.7        | 44.4        | 49.1        |
| Senegal                                  | 14.2  | 42.0        | 46.5        | 50.9        |
| Somalia                                  | 5.7   | 33.4        | 38.3        | 43.2        |
| Sudan                                    | 10.6  | 47.8        | 54.2        | 60.7        |
| Tanzania                                 | 11.9  | 47.6        | 53.1        | 58.5        |
| Togo                                     | 36.9  | 63.3        | 67.2        | 71.0        |
| Uganda                                   | 7.2   | 40.1        | 45.7        | 51.4        |
| Zaire                                    | 5.3   | 41.4        | 47.8        | 54.5        |
| Zambia                                   | 8.2   | 41.7        | 47.6        | 53.5        |
| Zimbabwe                                 | 45.8  | 72.8        | 77.3        | 81.9        |
| <b>All Sub-Saharan African countries</b> | <b>10.8</b>   | <b>45.3</b> | <b>50.5</b> | <b>55.5</b> |
| India                                    | 37.7  | 64.2        | 61.4        | 64.8        |
| China                                    | 81.2  | 85.0        | 82.6        | 82.8        |

a. The estimated contraceptive prevalence rates (CPR) were derived by applying Bongaarts' model to available country-specific information including data on CPR, contraceptive mix, and proportion married, with assumptions on likely changes. (For countries without such information, proxy data from countries with a similar socio-cultural background were utilized.) The CPR estimates refer to the percentage of women aged 14-49 using contraception (both modern and traditional). For India and China, they refer to married women aged 15-44. Countries in the above table are selected on the basis of the size of population (over 5 million) and/or availability of Demographic and Health Surveys information, Phase I (Oct. 1984-Sept. 1989).

Source: World Bank Estimates; Demographic and Health Surveys of Resource Development/Macro System, Inc., Columbia, MD.

**Table 13. Demand for contraception and its components for currently married women**

| Countries                               | Demand for contraception |             |              | Unmet needs |             |              |
|---|--------------------------|-------------|--------------|-------------|-------------|--------------|
|   | Total                    | For spacing | For limiting | Total       | For spacing | For limiting |
| <b>Sub-Saharan Africa</b>               |                          |             |              |             |             |              |
| Botswana                                | 61.6                     | 38.6        | 23.0         | 26.9        | 19.4        | 7.4          |
| Burundi                                 | 33.8                     | 23.5        | 10.3         | 25.1        | 17.7        | 7.4          |
| Ghana                                   | 48.1                     | 34.2        | 13.9         | 35.2        | 26.2        | 9.0          |
| Kenya                                   | 64.9                     | 31.0        | 33.9         | 38.0        | 22.4        | 15.5         |
| Liberia                                 | 39.3                     | 23.4        | 15.8         | 32.8        | 19.8        | 13.0         |
| Mali                                    | 27.6                     | 21.2        | 6.4          | 22.9        | 17.2        | 5.7          |
| Togo                                    | 52.2                     | 36.4        | 15.8         | 40.1        | 28.5        | 11.7         |
| Uganda                                  | 32.1                     | 22.0        | 10.1         | 27.2        | 19.9        | 7.3          |
| Zimbabwe                                | 64.8                     | 37.6        | 27.2         | 21.7        | 10.1        | 11.6         |
| <b>North Africa</b>                     |                          |             |              |             |             |              |
| Egypt                                   | 64.8                     | 16.5        | 48.3         | 25.2        | 10.1        | 15.0         |
| Morocco                                 | 60.8                     | 26.4        | 34.4         | 22.1        | 12.5        | 9.6          |
| Tunisia                                 | 71.1                     | 24.9        | 46.2         | 19.7        | 10.6        | 9.1          |
| <b>Asia</b>                             |                          |             |              |             |             |              |
| Indonesia                               | 64.7                     | 28.5        | 36.1         | 16.0        | 10.1        | 6.0          |
| Sri Lanka                               | 73.9                     | 21.5        | 54.4         | 12.3        | 7.2         | 5.1          |
| Thailand                                | 77.1                     | 21.8        | 55.3         | 11.1        | 5.6         | 5.5          |
| <b>Latin American and the Caribbean</b> |                          |             |              |             |             |              |
| Bolivia                                 | 69.8                     | 17.5        | 52.3         | 35.7        | 9.5         | 26.2         |
| Brazil                                  | 81.1                     | 24.2        | 56.9         | 12.8        | 4.8         | 8.0          |
| Colombia                                | 80.9                     | 22.1        | 58.9         | 13.5        | 5.1         | 8.3          |
| Dominican Rep.                          | 71.2                     | 20.8        | 50.4         | 19.4        | 10.0        | 9.4          |
| Ecuador                                 | 70.8                     | 23.8        | 47.0         | 24.2        | 10.8        | 13.4         |
| Guatemala                               | 53.4                     | 22.1        | 31.4         | 29.4        | 16.4        | 13.0         |
| Mexico                                  | 79.0                     | 25.9        | 53.1         | 24.1        | 11.0        | 13.1         |
| Peru                                    | 77.8                     | 21.7        | 56.1         | 27.7        | 8.1         | 19.6         |
| El Salvador                             | 73.8                     | 22.3        | 51.5         | 26.0        | 13.9        | 12.1         |
| Trinidad and Tobago                     | 71.1                     | 28.6        | 42.5         | 16.1        | 8.3         | 7.9          |

Note: All figures except the last column with selected countries are percent of currently married women. Total demand includes method failures, current use, and unmet need. Unmet needs include non-use among women who would like to regulate their fertility. Percent of demand satisfied is the proportion of current use to total demand.

Source: Charles F. Westoff, and Luis H. Ochoa. 1991. Unmet Need and the Demand for Family Planning. DHS Comparative Studies No. 5, Columbia, MD: Institute for Resource Development.

| <i>Current use</i> |                    |                     | <i>Percent of demand satisfied</i> |                    |                     |
|--------------------|--------------------|---------------------|------------------------------------|--------------------|---------------------|
| <i>Total</i>       | <i>For spacing</i> | <i>For limiting</i> | <i>Total</i>                       | <i>For spacing</i> | <i>For limiting</i> |
| 33.0               | 17.9               | 15.1                | 53.6                               | 46.4               | 65.7                |
| 8.7                | 5.8                | 2.9                 | 25.8                               | 24.7               | 28.2                |
| 12.9               | 8.0                | 4.9                 | 26.8                               | 23.4               | 35.3                |
| 26.9               | 8.6                | 18.3                | 41.5                               | 27.7               | 54.0                |
| 6.4                | 3.6                | 2.9                 | 16.4                               | 15.4               | 18.4                |
| 4.7                | 4.0                | 0.7                 | 17.0                               | 18.9               | 10.9                |
| 12.1               | 8.0                | 4.1                 | 23.2                               | 22.0               | 25.9                |
| 4.9                | 2.1                | 2.8                 | 15.2                               | 9.5                | 27.7                |
| 43.1               | 27.5               | 15.6                | 66.5                               | 73.1               | 57.4                |
| 37.8               | 5.9                | 31.9                | 58.4                               | 35.8               | 66.0                |
| 35.9               | 12.7               | 23.2                | 59.1                               | 48.1               | 67.4                |
| 49.8               | 13.5               | 36.3                | 70.0                               | 54.2               | 78.6                |
| 47.8               | 17.8               | 29.9                | 73.8                               | 62.5               | 82.8                |
| 61.7               | 13.1               | 48.6                | 81.3                               | 60.9               | 89.3                |
| 65.5               | 15.9               | 49.6                | 85.0                               | 72.9               | 89.7                |
| 30.3               | 6.5                | 23.8                | 43.4                               | 37.1               | 45.5                |
| 66.2               | 17.9               | 48.3                | 81.6                               | 74.0               | 84.9                |
| 64.8               | 15.4               | 49.4                | 80.1                               | 69.7               | 83.9                |
| 49.8               | 9.6                | 40.1                | 69.9                               | 46.2               | 79.6                |
| 44.3               | 11.6               | 32.7                | 62.5                               | 48.7               | 69.6                |
| 23.2               | 5.1                | 18.1                | 43.3                               | 23.1               | 57.6                |
| 52.7               | 13.5               | 39.2                | 66.7                               | 52.1               | 73.8                |
| 45.8               | 11.2               | 34.6                | 58.8                               | 51.6               | 61.7                |
| 47.3               | 8.1                | 39.2                | 64.1                               | 36.3               | 76.1                |
| 52.7               | 18.9               | 33.8                | 74.2                               | 66.1               | 79.5                |

**Table 14. Developing countries by strength of family planning programs, 1989**

|                        | <i>Strong</i> | <i>Moderate</i> | <i>Weak</i>            | <i>Very weak or none</i> |
|------------------------|---------------|-----------------|------------------------|--------------------------|
| 1                      | Bangladesh    | Algeria         | Afghanistan            | Argentina                |
| 2                      | Botswana *    | Chile           | Angola *               | Bhutan                   |
| 3                      | China         | Colombia        | Benin *                | Cambodia                 |
| 4                      | El Salvador   | Costa Rica      | Bolivia                | Chad *                   |
| 5                      | India         | Cuba            | Brazil                 | Gabon *                  |
| 6                      | Indonesia     | Dominican Rep.  | Burkina Faso *         | Iraq                     |
| 7                      | Korea, Rep.   | Ecuador         | Burundi *              | Côte d'Ivoire *          |
| 8                      | Mexico        | Egypt           | Cameroon *             | Kuwait                   |
| 9                      | Sri Lanka     | Ghana *         | Central African Rep. * | Lao, PDR                 |
| 10                     | Taiwan        | Guatemala       | Congo *                | Liberia *                |
| 11                     | Thailand      | Guyana          | Ethiopia *             | Libya                    |
| 12                     | Tunisia       | Honduras        | Guinea *               | Malawi *                 |
| 13                     | Vietnam       | Iran            | Guinea-Bissau *        | Myanmar                  |
| 14                     |               | Jamaica         | Haiti                  | Namibia                  |
| 15                     |               | Kenya *         | Jordan                 | Oman                     |
| 16                     |               | Korea, PDR      | Lesotho *              | Saudi Arab               |
| 17                     |               | Lebanon         | Madagascar *           | Somalia *                |
| 18                     |               | Malaysia        | Mali *                 | Sudan *                  |
| 19                     |               | Mauntius *      | Mauritania *           | U.A.E.                   |
| 20                     |               | Morocco         | Mozambique *           |                          |
| 21                     |               | Nepal           | Niger *                |                          |
| 22                     |               | Pakistan        | Nigeria *              |                          |
| 23                     |               | Panama          | Papua New Guinea       |                          |
| 24                     |               | Peru            | Paraguay               |                          |
| 25                     |               | Philippines     | Rwanda *               |                          |
| 26                     |               | South Africa    | Senegal *              |                          |
| 27                     |               | Singapore       | Sierra Leone *         |                          |
| 28                     |               | Trin. & Tobago  | Syria                  |                          |
| 29                     |               | Venezuela       | Tanzania *             |                          |
| 30                     |               | Zambia *        | Togo *                 |                          |
| 31                     |               | Zimbabwe *      | Turkey                 |                          |
| 32                     |               |                 | Uganda *               |                          |
| 33                     |               |                 | Uruguay                |                          |
| 34                     |               |                 | Yemen                  |                          |
| 35                     |               |                 | Zaire *                |                          |
| Average score          |               | 53              |                        |                          |
| Maximum possible score |               | 120             |                        |                          |

Note: Program effort scores were divided into four groups: strong: 80+; moderate: 55-79; weak: 25-54; very weak or none: 0-24.

\* Sub-Saharan African countries

Source: W. Parker Mauldin and John A. Ross. "Family Planning Programs: Efforts and Results, 1982-1989" (1991).

**Table 15. Total fertility rates and desired family size for all women and currently married women, age 15-49**

| Country            | DHS Year | Total fertility rates <sup>a</sup> | Desired family size |                      |
|--------------------|----------|------------------------------------|---------------------|----------------------|
|                    |          |                                    | Mean, all women     | Mean, women in union |
| Botswana           | 1988     | 5.0                                | 4.7                 | 5.4                  |
| Burundi            | 1987     | 6.8 <sup>b,c</sup>                 | 5.3                 | 5.5                  |
| Ghana              | 1988     | 6.4                                | 5.3                 | 5.5                  |
| Kenya              | 1989     | 6.7                                | 4.4                 | 4.8                  |
| Liberia            | 1986     | 6.3 <sup>b</sup>                   | 6.0                 | 6.5                  |
| Mali               | 1987     | 6.7 <sup>b</sup>                   | 6.9                 | 6.9                  |
| Nigeria-Ondo State | 1986     | 6.0 <sup>b</sup>                   | 5.7                 | 6.1                  |
| Senegal            | 1986     | 6.6                                | 6.8                 | 7.2                  |
| Togo               | 1988     | 6.6                                | 5.3                 | 5.6                  |
| Uganda             | 1988/89  | 7.3                                | 6.5                 | 6.8                  |
| Zimbabwe           | 1988     | 5.5 <sup>b</sup>                   | 4.9                 | 5.4                  |

a. Based on 0-4 years prior to survey.

b. Data based on births to women aged 15-44.

c. Data available only for 0-6 years prior to survey.

Source: Demographic and Health Surveys, Phase I (Oct. 1984-Sep. 1989), Institute of Resource Development/Macro System, Inc., Columbia, MD.

**Table 16. Sub-Saharan Africa: environmental indicators**

| Country                        | Forest and woodland 1980s (thousand hectares) | Fuelwood and charcoal |                            |   |   |                                   |
|--------------------------------|---|-----------------------|----------------------------|---|---|-----------------------------------|
|                                |   | Deforestation, 1980s  |                            | Reforestation, 1980s (thousand hectares per year) | Annual production (thousand cubic meters) 1984-86 | Percentage increase since 1974-76 |
|                                |   | Percent per year      | Thousand hectares per year |   |   |                                   |
| <b>Sub-Saharan Africa</b>      | <b>658,314</b>                                | <b>0.5</b>            | <b>3.259</b>               | <b>91</b>   | <b>369,531</b>                                    | <b>NA</b>                         |
| <b>Low-income economies</b>    | <b>485,080</b>                                | <b>0.5</b>            | <b>2.368</b>               | <b>72</b>   | <b>333,361</b>                                    | <b>NA</b>                         |
| Benin                          | 3,867   | 1.7                   | 67                         | 0   | 4,181   | 33                                |
| Burkina Faso                   | 4,735   | 1.7                   | 80                         | 2   | 6,452   | 25                                |
| Burundi                        | 41  | 2.7                   | 1                          | 1   | 3,593   | 26                                |
| Central African Rep.           | 35,890  | 0.2                   | 55                         | ..  | 2,925   | 32                                |
| Comoros                        | ..  | ..                    | 0                          | 0   | ..  | ..                                |
| Chad                           | 13,500  | 0.6                   | 80                         | 0   | 3,063   | 25                                |
| Equatorial Guinea              | ..  | 0.2                   | 3                          | ..  | 447   | 16                                |
| Ethiopia                       | 27,150  | 0.3                   | 88                         | 6   | 36,132  | 27                                |
| Gambia                         | 215   | 2.4                   | 5                          | 0   | 829   | 9                                 |
| Ghana                          | 8,693   | 0.8                   | 72                         | 3   | 8,219   | 38                                |
| Guinea                         | 10,650  | 0.8                   | 86                         | 0   | 3,647   | 25                                |
| Guinea-Bissau                  | 2,105   | 2.7                   | 57                         | 0   | 422   | 7                                 |
| Kenya                          | 2,360   | 1.7                   | 39                         | 0   | 30,874  | 50                                |
| Lesotho                        | ..  | ..                    | ..                         | 0   | 525   | 28                                |
| Liberia                        | 2,040   | 2.3                   | 46                         | 1   | 3,913   | 43                                |
| Madagascar                     | 13,200  | 1.2                   | 156                        | 12  | 6,083   | 32                                |
| Malawi                         | 4,271   | 3.5                   | 150                        | 6   | 6,211   | 34                                |
| Mali                           | 7,250   | 0.5                   | 36                         | 0   | 4,599   | 29                                |
| Mauritania                     | 554   | 2.4                   | 13                         | 0   | 7   | 40                                |
| Mozambique                     | 15,435  | 0.8                   | 120                        | 1   | 14,203  | 54                                |
| Niger                          | 2,550   | 2.6                   | 67                         | 2   | 3,680   | 31                                |
| Nigeria                        | 14,750  | 2.7                   | 400                        | 14  | 87,656  | 41                                |
| Rwanda                         | 230   | 2.3                   | 5                          | 2   | 5,535   | 12                                |
| São Tomé and Príncipe          | ..  | ..                    | ..                         | ..  | ..  | ..                                |
| Sierra Leone                   | 2,055   | 0.3                   | 6                          | 0   | 7,635   | 18                                |
| Somalia                        | 9,050   | 0.1                   | 13                         | 1   | 4,358   | 43                                |
| Sudan                          | 47,650  | 0.2                   | 104                        | 11  | 17,690  | 35                                |
| Tanzania                       | 42,040  | 0.3                   | 130                        | 7   | 21,604  | 41                                |
| Togo                           | 1,684   | 0.7                   | 12                         | 0   | 603   | 31                                |
| Uganda                         | 6,015   | 0.8                   | 50                         | 0   | 10,868  | 38                                |
| Zaire                          | 177,590                                       | 0.2                   | 347                        | 0   | 27,989  | 34                                |
| Zambia                         | 29,510  | 0.3                   | 80                         | 3   | 9,418   | 29                                |
| <b>Middle-income economies</b> | <b>173,234</b>                                | <b>0.5</b>            | <b>891</b>                 | <b>19</b>   | <b>36,170</b>                                     | <b>NA</b>                         |
| Angola                         | 53,600  | 0.2                   | 84                         | 0   | 3,903   | 34                                |
| Botswana                       | 32,560  | 0.1                   | 20                         | ..  | 1,107   | 46                                |
| Cameroon                       | 25,620  | 0.4                   | 110                        | 1   | 9,134   | 30                                |
| Cape Verde                     | ..  | ..                    | ..                         | 0   | ..  | ..                                |
| Congo, People's Rep.           | ..  | 0.1                   | 22                         | 2   | 1,585   | 29                                |
| Côte d'Ivoire                  | 9,834   | 5.2                   | 510                        | 3   | 7,970   | 45                                |
| Djibouti                       | 106   | ..                    | ..                         | ..  | ..  | ..                                |
| Gabon                          | 20,575  | 0.1                   | 15                         | ..  | 2,525   | 15                                |
| Mauritius                      | ..  | ..                    | 0                          | 1   | 14  | -36                               |
| Senegal                        | 11,045  | 0.5                   | 50                         | 2   | 3,505   | 33                                |
| Seychelles                     | ..  | ..                    | ..                         | ..  | ..  | ..                                |
| Swaziland                      | 74  | ..                    | 0                          | 5   | 560   | 20                                |
| Zimbabwe                       | 19,820  | 0.4                   | 80                         | 5   | 5,867   | 41                                |

Note: Refers only to areas larger than 4,000 square kilometers. NA indicates not available.

Source: World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth*, 1989.

**Table 16. Sub-Saharan Africa: environmental indicators (cont.)**

| Country                        | Industrial roundwood:<br>average annual production<br>(thousand cubic meters) |                                       | Wilderness<br>as a                          | Length<br>of coastline<br>(km) | Coastline areas and resources:<br>average annual marine catch |  |
|--------------------------------|---|---------------------------------------|---|--------------------------------|---|--|
|                                | 1984-86   | Percentage<br>change since<br>1974-76 | percentage<br>of total<br>land area<br>1985 |                                | 1983-85<br>(thousand<br>metric tons)                          | Percentage<br>increase<br>since<br>1974-76 |
| <b>Sub-Saharan Africa</b>      | <b>40,126</b>   | <b>NA</b>                             | <b>NA</b>                                   | <b>25,006</b>                  | <b>1,198</b>  | <b>NA</b>                                  |
| <b>Low-income economies</b>    | <b>26,430</b>   | <b>NA</b>                             | <b>NA</b>                                   | <b>18,957</b>                  | <b>691</b>  | <b>NA</b>                                  |
| Benin                          | 223   | 29                                    | 15  | 121                            | 4   | -38  |
| Burkina Faso                   | 306   | 24                                    | 3   | ..                             | ..  | ..   |
| Burundi                        | 45  | 41                                    | 0   | ..                             | ..  | ..   |
| Central African Rep.           | 466   | -7                                    | 39  | ..                             | ..  | ..   |
| Comoros                        | ..  | ..                                    | NM  | 340                            | 5   | 38   |
| Chad                           | 505   | 25                                    | 52  | ..                             | ..  | ..   |
| Equatorial Guinea              | 140   | 218                                   | 0   | 296                            | 3   | -24  |
| Ethiopia                       | 1,813   | 38                                    | 22  | 1,094                          | 1   | -76  |
| Gambia                         | 21  | 110                                   | 0   | 80                             | 9   | -13  |
| Ghana                          | 1,111   | -40                                   | 0   | 539                            | 212   | 8  |
| Guinea                         | 604   | 17                                    | 0   | 320                            | 26  | 143  |
| Guinea-Bissau                  | 137   | 26                                    | 0   | 350                            | 3   | 30   |
| Kenya                          | 1,555   | 59                                    | 25  | 536                            | 6   | 60   |
| Lesotho                        | ..  | ..                                    | 80  | ..                             | ..  | ..   |
| Liberia                        | 557   | -6                                    | 17  | 579                            | 10  | 61   |
| Madagascar                     | 807   | 139                                   | 2   | 4,828                          | 13  | -22  |
| Malawi                         | 302   | 8                                     | 10  | ..                             | ..  | ..   |
| Mali                           | 309   | 26                                    | 49  | ..                             | ..  | ..   |
| Mauntania                      | 5   | 25                                    | 74  | 754                            | 44  | 97   |
| Mozambique                     | 966   | 4                                     | 9   | 2,470                          | 34  | 39   |
| Niger                          | 242   | 32                                    | 53  | ..                             | ..  | ..   |
| Nigeria                        | 7,765   | 106                                   | 2   | 853                            | 214   | -10  |
| Rwanda                         | 237   | 295                                   | 0   | ..                             | ..  | ..   |
| São Tomé and Príncipe          | ..  | ..                                    | ..  | ..                             | ..  | ..   |
| Sierra Leone                   | 140   | 2                                     | 0   | 402                            | 36  | -42  |
| Somalia                        | 67  | 29                                    | 24  | 3,025                          | 16  | 92   |
| Sudan                          | 1,841   | 32                                    | 40  | 853                            | 2   | 165  |
| Tanzania                       | 1,454   | 51                                    | 10  | 1,424                          | 38  | -10  |
| Togo                           | 163   | 27                                    | 0   | 56                             | 14  | 47   |
| Uganda                         | 1,633   | 31                                    | 4   | ..                             | ..  | ..   |
| Zaire                          | 2,501   | 29                                    | 6   | 37                             | 1   | -91  |
| Zambia                         | 515   | 34                                    | 24  | ..                             | ..  | ..   |
| <b>Middle-income economies</b> | <b>13,696</b>   | <b>NA</b>                             | <b>NA</b>                                   | <b>6,049</b>                   | <b>507</b>  | <b>NA</b>                                  |
| Angola                         | 997   | -8                                    | 26  | 1,600                          | 78  | -62  |
| Botswana                       | 73  | 49                                    | 63  | ..                             | ..  | ..   |
| Cameroon                       | 2,702   | 71                                    | 3   | 402                            | 32  | -14  |
| Cape Verde                     | ..  | ..                                    | 0   | 965                            | 11  | 248  |
| Congo, People's Rep.           | 849   | 49                                    | 42  | 169                            | 20  | 22   |
| Côte d'Ivoire                  | 4,030   | -19                                   | 16  | 515                            | 67  | -2   |
| Djibouti                       | ..  | ..                                    | 0   | 314                            | 0   | 32   |
| Gabon                          | 1,484   | -6                                    | 35  | 885                            | 49  | 838  |
| Mauritius                      | 5   | -72                                   | NM  | 177                            | 11  | 55   |
| Senegal                        | 546   | 37                                    | 11  | 531                            | 235   | -30  |
| Seychelles                     | ..  | ..                                    | ..  | 491                            | 4   | 11   |
| Swaziland                      | 1,663   | -10                                   | 0   | ..                             | ..  | ..   |
| Zimbabwe                       | 1,347   | 55                                    | 0   | ..                             | ..  | ..   |

Note: NM indicates not meaningful; NA indicates not available.

Source: World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth*, 1989.

**Table 17. Sub-Saharan Africa: wildlife habitat loss in Afrotropical nations, 1986**

| Country              | Original wildlife habitat (square kilometers) | Amount remaining (square kilometers) | Loss (percent) |
|----------------------|---|--------------------------------------|----------------|
| Angola               | 1,246.7                                       | 760.9                                | 39             |
| Benin                | 115.8   | 46.3                                 | 60             |
| Botswana             | 585.4   | 257.6                                | 56             |
| Burkina Faso         | 273.8   | 54.8                                 | 80             |
| Burundi              | 25.7  | 3.6                                  | 86             |
| Cameroon             | 469.4   | 192.4                                | 59             |
| Central African Rep. | 623.0   | 274.1                                | 56             |
| Chad                 | 720.8   | 173.0                                | 76             |
| Congo                | 342.0   | 174.4                                | 49             |
| Côte d'Ivoire        | 318.0   | 66.8                                 | 79             |
| Djibouti             | 21.8  | 11.1                                 | 49             |
| Equatorial Guinea    | 26.0  | 12.8                                 | 51             |
| Ethiopia             | 1,101.0                                       | 30.3                                 | 70             |
| Gabon                | 267.0   | 173.6                                | 35             |
| Gambia               | 11.3  | 1.2                                  | 89             |
| Ghana                | 230.0   | 46.0                                 | 80             |
| Guinea               | 245.9   | 73.8                                 | 70             |
| Guinea-Bissau        | 36.1  | 8.0                                  | 78             |
| Kenya                | 569.5   | 296.1                                | 48             |
| Lesotho              | 30.4  | 9.8                                  | 68             |
| Liberia              | 111.4   | 14.4                                 | 87             |
| Madagascar           | 595.2   | 148.9                                | 75             |
| Malawi               | 94.1  | 40.4                                 | 57             |
| Mali                 | 754.1   | 158.3                                | 79             |
| Mauritania           | 388.6   | 73.9                                 | 81             |
| Mozambique           | 783.2   | 36.8                                 | 57             |
| Niger                | 566.6   | 127.9                                | 77             |
| Nigeria              | 919.8   | 230.0                                | 75             |
| Rwanda               | 25.1  | 3.2                                  | 87             |
| Senegal              | 196.2   | 35.3                                 | 82             |
| Sierra Leone         | 71.7  | 10.8                                 | 85             |
| Somalia              | 637.7   | 376.2                                | 41             |
| Sudan                | 1,703.0                                       | 511.0                                | 70             |
| Swaziland            | 17.4  | 7.7                                  | 56             |
| Tanzania             | 886.2   | 505.1                                | 43             |
| Togo                 | 56.0  | 19.0                                 | 66             |
| Uganda               | 193.7   | 42.7                                 | 78             |
| Zaire                | 2,335.9                                       | 1,051.1                              | 55             |
| Zambia               | 752.6   | 534.3                                | 29             |
| Zimbabwe             | 390.2   | 171.7                                | 56             |
| <b>Total</b>         | <b>18,737.4</b>                               | <b>6,765.3</b>                       | <b>64</b>      |
| Namibia              | 823.2   | 444.5                                | 46             |
| South Africa         | 1,236.5                                       | 531.7                                | 57             |

Note: Habitat is a place or type of site where a plant or animal naturally or normally lives and grows. The Afrotropical realm is defined as all of the continent south of the Sahara Desert, including the island of Madagascar. Therefore, data for Mauritania, Mali, Niger, Chad, and Sudan cover only parts of these countries. Comoros, Seychelles, São Tomé and Príncipe, Mauritius, Rodrigues, Reunion, and the extreme southeastern corner of Egypt are not included. Source: World Resource Institute and International Institute for Environment and Development (in collaboration with UN Environment Programme), *World Resources 1988-89*, 1988.

**Table 18. Sub-Saharan Africa: current account balances <sup>a</sup>**

| Country                        | Current account<br>annual average<br>(millions of US\$) |               |               | Share of GNP<br>(percent) |             |             |
|--------------------------------|---|---------------|---------------|---------------------------|-------------|-------------|
|                                | 1970-72   | 1979-81       | 1986-89       | 1970-72                   | 1979-81     | 1986-89     |
| <b>Sub-Saharan Africa</b>      | <b>-1,259</b>   | <b>-7,531</b> | <b>-6,440</b> | <b>-2.8</b>               | <b>-4.0</b> | <b>-4.3</b> |
| <b>Low-income economies</b>    | <b>-981</b>   | <b>-4,650</b> | <b>-4,017</b> | <b>-2.6</b>               | <b>-3.0</b> | <b>-3.9</b> |
| Benin                          | -4.7  | -176          | -79           | -1.5                      | -16.4       | -5.0        |
| Burkina Faso                   | 4.7   | -49           | -51           | 1.4                       | -3.7        | -2.0        |
| Burundi                        | -3.7  | -77           | -59           | -1.5                      | -8.6        | -5.3        |
| Central African Rep.           | -6.7  | -21           | -47           | -3.7                      | -2.7        | -4.6        |
| Comoros                        | ..  | ..            | -10           | ..                        | ..          | -5.6        |
| Chad                           | 1.7   | 11            | -16           | 0.5                       | 1.8         | -2.3        |
| Equatorial Guinea              | ..  | ..            | -8            | ..                        | ..          | -6.7        |
| Ethiopia                       | -23.0   | -135          | -196          | -1.3                      | -3.3        | -3.5        |
| Gambia, The                    | -0.2  | -51           | 7             | -0.4                      | -23.9       | 5.0         |
| Ghana                          | -35.3   | -90           | -76           | -1.4                      | -2.1        | -1.5        |
| Guinea                         | ..  | -59           | -116          | ..                        | -3.8        | -5.2        |
| Guinea-Bissau                  | ..  | ..            | -25           | ..                        | ..          | -16.5       |
| Kenya                          | -76.3   | -648          | -393          | -4.3                      | -10.0       | -5.0        |
| Lesotho                        | 14.3  | -17           | -21           | 13.1                      | -2.4        | -2.8        |
| Liberia                        | -10.7   | 46            | ..            | -2.5                      | 4.2         | ..          |
| Madagascar                     | 6.0   | -468          | -140          | 0.5                       | -15.9       | -5.5        |
| Malawi                         | -39.0   | -226          | -79           | -11.2                     | -21.1       | -6.1        |
| Mali                           | -7.3  | -126          | -110          | -1.8                      | -8.4        | -6.3        |
| Mauritania                     | -5.3  | -126          | -82           | -2.3                      | -23.9       | -10.4       |
| Mozambique                     | ..  | -367          | -358          | ..                        | -15.9       | -26.0       |
| Niger                          | 9.3   | -199          | -48           | 1.3                       | -8.8        | -2.3        |
| Nigeria                        | -372.0  | 165           | -10           | -2.5                      | 0.2         | -0.2        |
| Rwanda                         | 0.5   | -23           | -107          | 0.3                       | -1.5        | -5.0        |
| São Tomé and Príncipe          | ..  | -3            | -16           | ..                        | -11.8       | -37.1       |
| Sierra Leone                   | -15.0   | -150          | 36            | -3.6                      | -15.3       | 1.7         |
| Somalia                        | -4.0  | -142          | -109          | -1.1                      | -15.8       | -11.2       |
| Sudan                          | -44.3   | -612          | -607          | -2.0                      | -8.0        | -5.7        |
| Tanzania                       | -67.3   | -316          | -245          | -4.8                      | -6.4        | -7.8        |
| Togo                           | -4.7  | -117          | -75           | -1.4                      | -12.5       | -6.3        |
| Uganda                         | -16.7   | -4            | -161          | -0.8                      | -0.2        | -3.5        |
| Zaire                          | -165.0  | -250          | -624          | -4.1                      | -2.8        | -7.4        |
| Zambia                         | -116.3  | -411          | -158          | -7.0                      | -10.9       | -8.9        |
| <b>Middle-income economies</b> | <b>-278</b>   | <b>-2,881</b> | <b>-2,423</b> | <b>-4.2</b>               | <b>-9.3</b> | <b>-5.4</b> |
| Angola                         | ..  | ..            | -86           | ..                        | ..          | -1.9        |
| Botswana                       | -47.0   | -94           | 402           | -46.1                     | -10.2       | 27.2        |
| Cameroun                       | -55.3   | -318          | -761          | -4.5                      | -4.6        | -6.6        |
| Cape Verde                     | ..  | -35           | 3             | ..                        | -29.3       | 1.4         |
| Congo, People's Rep.           | -68.7   | -242          | -333          | -20.5                     | -15.0       | -18.6       |
| Côte d'Ivoire                  | -80.3   | -1,540        | -827          | -5.2                      | -17.7       | -8.9        |
| Djibouti                       | ..  | ..            | -24           | ..                        | ..          | ..          |
| Gabon                          | 3.7   | 345           | -574          | 1.1                       | 10.3        | -18.4       |
| Mauritius                      | 6.3   | -140          | 6             | 2.2                       | -12.2       | 0.9         |
| Senegal                        | -10.3   | -371          | -243          | -1.3                      | -14.3       | -5.8        |
| Seychelles                     | -3.3  | -16           | -29           | -11.9                     | -11.3       | -12.0       |
| Swaziland                      | ..  | -119          | 28            | ..                        | -23.7       | 4.8         |
| Zimbabwe                       | -23.3   | -349          | 15            | -1.4                      | -6.2        | -0.3        |
| India                          | -353.3  | -1,897        | -6,906        | -0.6                      | -1.2        | -2.7        |
| China                          | -112.3  | 898           | -4,582        | -0.1                      | 0.3         | -1.4        |

a. Includes all official transfers.

Source: World Bank, *World Debt Tables 1990-91*.

**Table 19. Sub-Saharan Africa: total external debt and debt service ratios**

| Country                        | (US\$ millions) |               |                | Percentage of GNP |             |             |
|--------------------------------|-----------------|---------------|----------------|-------------------|-------------|-------------|
|                                | 1970            | 1980          | 1989           | 1970              | 1980        | 1989        |
| <b>Sub-Saharan Africa</b>      | <b>5,678</b>    | <b>56,201</b> | <b>146,988</b> | <b>13.8</b>       | <b>28.2</b> | <b>97.3</b> |
| <b>Low-income economies</b>    | <b>4,606</b>    | <b>41,592</b> | <b>110,011</b> | <b>16.7</b>       | <b>26.4</b> | <b>99.3</b> |
| Benin                          | 41              | 421           | 1,177          | 15.1              | 36.8        | 71.9        |
| Burkina Faso                   | 21              | 334           | 756            | 6.6               | 23.2        | 29.6        |
| Burundi                        | 7               | 166           | 867            | 3.1               | 18.2        | 81.9        |
| Central African Rep.           | 24              | 195           | 716            | 13.5              | 24.4        | 65.8        |
| Comoros                        | 1               | 44            | 176            | 4.7               | 36.4        | 88.6        |
| Chad                           | 33              | 218           | 368            | 9.9               | 30.0        | 36.7        |
| Equatorial Guinea              | 5               | 75            | 228            | 7.5               | ..          | 182.8       |
| Ethiopia                       | 169             | 804           | 3,013          | 9.5               | 19.5        | 50.6        |
| Gambia                         | 5               | 137           | 342            | 9.5               | 57.0        | 173.0       |
| Ghana                          | 497             | 1,314         | 3,078          | 22.9              | 29.7        | 59.9        |
| Guinea                         | 312             | 1,143         | 2,176          | 47.1              | 70.1        | 85.3        |
| Guinea-Bissau                  | 0               | 132           | 458            | ..                | 126.3       | 274.3       |
| Kenya                          | 406             | 3,512         | 5,690          | 26.3              | 51.2        | 71.7        |
| Lesotho                        | 8               | 71            | 324            | 7.8               | 11.0        | 39.0        |
| Liberia                        | 158             | 686           | 1,761          | 39.3              | 62.9        | ..          |
| Madagascar                     | 89              | 1,257         | 3,607          | 10.4              | 39.1        | 154.1       |
| Malawi                         | 122             | 821           | 1,394          | 43.2              | 71.4        | 91.4        |
| Mali                           | 238             | 733           | 2,157          | 71.4              | 44.7        | 105.2       |
| Mauritania                     | 27              | 845           | 2,010          | 13.9              | 125.7       | 213.1       |
| Mozambique                     | ..              | ..            | 4,737          | ..                | ..          | 426.8       |
| Niger                          | 32              | 863           | 1,578          | 5.0               | 34.5        | 79.4        |
| Nigeria                        | 567             | 8,855         | 32,832         | 4.3               | 8.9         | 119.3       |
| Rwanda                         | 2               | 190           | 652            | 0.9               | 16.3        | 30.2        |
| São Tomé and Príncipe          | ..              | 24            | 131            | ..                | 51.2        | 350.1       |
| Sierra Leone                   | 59              | 427           | 1,057          | 14.3              | 40.3        | 119.5       |
| Somalia                        | 77              | 664           | 2,137          | 24.4              | 99.0        | 202.8       |
| Sudan                          | 298             | 5,218         | 12,965         | 14.8              | 78.0        | 82.9        |
| Tanzania                       | 265             | 2,572         | 4,918          | 20.7              | 50.2        | 186.1       |
| Togo                           | 40              | 1,041         | 1,186          | 16.0              | 93.8        | 91.2        |
| Uganda                         | 138             | 733           | 1,809          | 7.3               | 42.5        | 39.0        |
| Zaire                          | 311             | 4,831         | 8,843          | 9.1               | 48.2        | 96.6        |
| Zambia                         | 654             | 3,266         | 6,874          | 37.5              | 90.9        | 158.8       |
| <b>Middle-income economies</b> | <b>1,071</b>    | <b>14,607</b> | <b>36,977</b>  | <b>18.4</b>       | <b>43.8</b> | <b>91.7</b> |
| Angola                         | ..              | ..            | ..             | ..                | ..          | ..          |
| Botswana                       | 17              | 156           | 513            | 21.1              | 18.5        | 23.2        |
| Cameroon                       | 140             | 2,513         | 4,743          | 12.6              | 36.8        | 44.2        |
| Cape Verde                     | ..              | 22            | 130            | ..                | 16.8        | 46.0        |
| Congo, People's Rep.           | 124             | 1,686         | 4,316          | 46.5              | 109.6       | 215.0       |
| Côte d'Ivoire                  | 267             | 5,801         | 15,412         | 19.5              | 58.3        | 182.2       |
| Djibouti                       | 3               | 26            | 180            | ..                | ..          | ..          |
| Gabon                          | 91              | 1,550         | 3,176          | 28.8              | 40.8        | 101.8       |
| Mauritius                      | 32              | 468           | 832            | 14.3              | 41.6        | 41.0        |
| Senegal                        | 131             | 1,309         | 4,139          | 15.5              | 45.6        | 93.2        |
| Seychelles                     | 0               | 84            | 168            | 0.0               | 59.2        | 60.4        |
| Swaziland                      | 37              | 206           | 281            | 33.3              | 38.5        | 43.6        |
| Zimbabwe                       | 229             | 786           | 3,088          | 15.5              | 14.9        | 53.9        |
| India                          | 7,937           | 20,561        | 62,509         | 15.1              | 11.9        | 24.0        |
| China                          | ..              | 4,503         | 44,857         | ..                | 1.6         | 10.8        |

Note: Includes public and private non-governmental, IMF, and, except for 1970, short-term debt.  
Source: World Bank, *World Debt Tables 1990-91*.

| <i>Total debt<br/>per capita<br/>(\$US)</i> | <i>Debt service payments as<br/>a percentage of exports<br/>of goods and services</i> |             |             |
|---|---|-------------|-------------|
|   | <i>1989</i>   | <i>1970</i> | <i>1980</i> |
| <b>313</b>                                  | <b>6.3</b>  | <b>11.0</b> | <b>22.2</b> |
| <b>261</b>                                  | <b>7.9</b>  | <b>9.2</b>  | <b>21.8</b> |
| 256   | 2.4   | 5.8         | 7.8         |
| 86  | 4.3   | 5.9         | 17.7        |
| 164   | 2.4   | 9.4         | 32.9        |
| 243   | 5.2   | 4.9         | 14.4        |
| 383   | ..  | 2.6         | 18.3        |
| 66  | 4.2   | 8.4         | 5.2         |
| 663   | ..  | 19.4        | 20.3        |
| 62  | 11.4  | 7.6         | 39.1        |
| 403   | 0.6   | 6.2         | 12.1        |
| 213   | 5.5   | 12.5        | 49.2        |
| 392   | ..  | ..          | 15.2        |
| 477   | ..  | ..          | 32.9        |
| 244   | 9.1   | 22.1        | 33.2        |
| 188   | 1.3   | 1.5         | 32.6        |
| 711   | 8.1   | 8.8         | ..          |
| 323   | 3.8   | 17.3        | 54.6        |
| 169   | 7.8   | 27.7        | 32.0        |
| 263   | 1.3   | 5.1         | 19.8        |
| 1,029                                       | 3.4   | 17.3        | 20.5        |
| 308   | ..  | ..          | 31.3        |
| 211   | 4.0   | 21.7        | 34.3        |
| 289   | 7.1   | 4.1         | 17.7        |
| 95  | 1.3   | 4.1         | 15.1        |
| 1,070                                       | ..  | 5.0         | 52.7        |
| 262   | 10.7  | 23.1        | 3.7         |
| 351   | 2.1   | 4.9         | 34.1        |
| 531   | 10.5  | 25.4        | 9.2         |
| 192   | 6.3   | 23.3        | 16.7        |
| 338   | 3.1   | 10.4        | 14.9        |
| 108   | 2.9   | 13.3        | 74.4        |
| 257   | 4.4   | 22.5        | 19.7        |
| 877   | 7.2   | 25.3        | 13.1        |
| <b>783</b>                                  | <b>4.7</b>  | <b>16.8</b> | <b>22.7</b> |
| ..  | ..  | ..          | ..          |
| 421   | 1.1   | 1.9         | 4.3         |
| 411   | 4.1   | 15.2        | 17.2        |
| 351   | ..  | ..          | 13.0        |
| 1,955                                       | 11.4  | 12.4        | 27.6        |
| 1,316                                       | 7.5   | 28.4        | 41.4        |
| 439   | ..  | ..          | 7.9         |
| 2,874                                       | 5.7   | 18.2        | 13.5        |
| 783   | 3.2   | 9.1         | 10.2        |
| 574   | 4.0   | 24.3        | 29.7        |
| 2,475                                       | 0.0   | 36.2        | ..          |
| 370   | ..  | 4.0         | 6.3         |
| 323   | 2.3   | 3.8         | 26.9        |
| 75  | 23.0  | 9.2         | 30.2        |
| 41  | ..  | 4.6         | 10.0        |

**Table 20. Sub-Saharan Africa: amortization payments***(US\$ millions)*

| Country                        | Amortization (after rescheduling) |              |              |              |              |              |
|--------------------------------|-----------------------------------|--------------|--------------|--------------|--------------|--------------|
|                                | 1980                              | 1982         | 1984         | 1986         | 1988         | 1989         |
| <b>Sub-Saharan Africa</b>      | <b>2,998</b>                      | <b>3,399</b> | <b>5,235</b> | <b>5,828</b> | <b>5,085</b> | <b>4,738</b> |
| <b>Low-income economies</b>    | <b>1,758</b>                      | <b>2,144</b> | <b>3,777</b> | <b>3,580</b> | <b>2,821</b> | <b>2,804</b> |
| Benin                          | 6                                 | 9            | 22           | 36           | 13           | 9            |
| Burkina Faso                   | 11                                | 8            | 13           | 22           | 25           | 18           |
| Burundi                        | 4                                 | 3            | 14           | 19           | 22           | 22           |
| Central African Rep.           | 7                                 | 3            | 16           | 15           | 15           | 19           |
| Comoros                        | 0                                 | 0            | 1            | 1            | 0            | 0            |
| Chad                           | 5                                 | 1            | 7            | 4            | 5            | 8            |
| Equatorial Guinea              | 2                                 | 3            | 7            | 4            | 6            | 5            |
| Ethiopia                       | 17                                | 36           | 79           | 145          | 177          | 197          |
| Gambia                         | 0                                 | 11           | 6            | 21           | 14           | 12           |
| Ghana                          | 100                               | 45           | 75           | 123          | 418          | 328          |
| Guinea                         | 78                                | 59           | 88           | 61           | 118          | 75           |
| Guinea-Bissau                  | 3                                 | 2            | 4            | 8            | 4            | 5            |
| Kenya                          | 216                               | 277          | 377          | 465          | 382          | 372          |
| Lesotho                        | 3                                 | 5            | 17           | 10           | 17           | 15           |
| Libéna                         | 18                                | 19           | 32           | 13           | 9            | 4            |
| Madagascar                     | 33                                | 39           | 36           | 99           | 126          | 112          |
| Malawi                         | 34                                | 44           | 60           | 96           | 65           | 55           |
| Mali                           | 9                                 | 4            | 15           | 39           | 56           | 45           |
| Mauritania                     | 26                                | 20           | 30           | 60           | 87           | 66           |
| Mozambique                     | ..                                | ..           | ..           | 66           | 12           | 17           |
| Niger                          | 57                                | 158          | 48           | 69           | 90           | 74           |
| Nigeria                        | 241                               | 833          | 2,217        | 1,225        | 573          | 485          |
| Rwanda                         | 3                                 | 3            | 6            | 13           | 12           | 17           |
| São Tomé and Príncipe          | 1                                 | 2            | 2            | 1            | 1            | 2            |
| Sierra Leone                   | 49                                | 14           | 23           | 35           | 6            | 3            |
| Somalia                        | 11                                | 10           | 7            | 39           | 2            | 18           |
| Sudan                          | 130                               | 131          | 75           | 148          | 44           | 46           |
| Tanzania                       | 88                                | 57           | 63           | 66           | 56           | 47           |
| Togo                           | 27                                | 20           | 46           | 91           | 50           | 48           |
| Uganda                         | 33                                | 47           | 97           | 119          | 103          | 163          |
| Zaire                          | 277                               | 85           | 166          | 245          | 198          | 413          |
| Zambia                         | 269                               | 196          | 128          | 222          | 115          | 108          |
| <b>Middle-income economies</b> | <b>1,240</b>                      | <b>1,255</b> | <b>1,458</b> | <b>2,248</b> | <b>2,264</b> | <b>1,934</b> |
| Angola                         | ..                                | ..           | ..           | ..           | ..           | ..           |
| Botswana                       | 6                                 | 4            | 16           | 18           | 39           | 36           |
| Cameroon                       | 131                               | 199          | 200          | 433          | 384          | 197          |
| Cape Verde                     | 0                                 | 0            | 2            | 2            | 4            | 3            |
| Congo, People's Rep.           | 55                                | 123          | 217          | 213          | 190          | 179          |
| Côte d'Ivoire                  | 558                               | 608          | 499          | 899          | 823          | 841          |
| Djibouti                       | 2                                 | 2            | 3            | 4            | 10           | 9            |
| Gabon                          | 286                               | 193          | 201          | 103          | 31           | 63           |
| Mauritius                      | 19                                | 39           | 86           | 84           | 146          | 89           |
| Senegal                        | 135                               | 28           | 50           | 146          | 196          | 191          |
| Seychelles                     | 0                                 | 0            | 3            | 7            | 8            | 13           |
| Swaziland                      | 8                                 | 12           | 10           | 23           | 25           | 21           |
| Zimbabwe                       | 40                                | 47           | 171          | 316          | 408          | 292          |
| India                          | 764                               | 932          | 1,225        | 2,581        | 3,327        | 3,110        |
| China                          | 613                               | 1,302        | 1,287        | 1,910        | 2,180        | 2,930        |

Note: Excludes short-term debt.

Source: World Bank, *World Debt Tables 1990-91*.

**Table 21. Sub-Saharan Africa: debt, amortization, and interest payments, 1989 <sup>a</sup>**

(US\$ millions)

| <i>Debt and debt service payments</i><br><i>Sub-Saharan Africa</i> | <i>IMF</i> | <i>World Bank Group</i> | <i>Bi-lateral</i> | <i>Commercial bonds and other private guaranteed</i> | <i>Other multi-lateral</i> | <i>Private non-guaranteed</i> | <i>Total</i>         |
|--|------------|-------------------------|-------------------|--|----------------------------|-------------------------------|----------------------|
| <b>Debt outstanding and disbursed</b>                              |            |                         |                   |  |                            |                               |                      |
| Low income   | 5,343      | 17,088                  | 44,727            | 22,827   | 7,473                      | 2,087                         | 99,545               |
| Other  | 1,037      | 4,314                   | 11,366            | 7,627  | 2,436                      | 4,656                         | 31,438               |
| Total  | 6,380      | 21,402                  | 56,094            | 30,454   | 9,909                      | 6,744                         | 130,982 <sup>b</sup> |
| India  | 1,566      | 19,136                  | 13,707            | 21,405   | 528                        | 1,478                         | 57,820               |
| China  | 908        | 4,604                   | 6,173             | 26,108   | 157                        | 0                             | 37,950               |
| <b>Amortization</b>  |            |                         |                   |  |                            |                               |                      |
| Low income   | 1,003      | 425                     | 412               | 619  | 248                        | 97                            | 2,804                |
| Other  | 307        | 234                     | 111               | 464  | 132                        | 686                           | 1,934                |
| Total  | 1,310      | 659                     | 523               | 1,083  | 380                        | 784                           | 4,738                |
| India  | 1,008      | 450                     | 567               | 579  | 17                         | 309                           | 2,930                |
| China  | 79         | 62                      | 406               | 1,932  | 1                          | 0                             | 2,481                |
| <b>Interest payments</b>   |            |                         |                   |  |                            |                               |                      |
| Low income   | 206        | 422                     | 500               | 1,006  | 165                        | 70                            | 2,370                |
| Other  | 77         | 272                     | 242               | 216  | 113                        | 284                           | 1,204                |
| Total  | 283        | 693                     | 742               | 1,223  | 279                        | 354                           | 3,574                |
| India  | 184        | 619                     | 422               | 1,758  | 21                         | 135                           | 3,138                |
| China  | 67         | 175                     | 276               | 2,054  | 3                          | 0                             | 2,575                |

Note: Excludes short-term debt.

a. After debt relief.

b. Including short-term debt, this would be US\$146.9 billion — as shown in Table 19.

Source: World Bank, *World Debt Tables 1990-91*.

**Table 22. Sub-Saharan Africa: net financial transfers, 1980–1989**

(US\$ millions)

|                                       | 1980          | 1982          | 1984          | 1986          | 1988          | 1989             |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|------------------|
| <b>To Low-income Africa</b>           |               |               |               |               |               |                  |
| IMF                                   | 601           | 294           | 81            | -672          | -370          | -472             |
| World Bank Group                      | 375           | 634           | 792           | 1,269         | 1,028         | 1,280            |
| Other multilaterals                   | 553           | 442           | 359           | 524           | 536           | 602              |
| Bilateral loans                       | 1,269         | 1,747         | 1,604         | 880           | 273           | 512              |
| Commercial banks                      | 754           | 395           | -2,075        | -1,327        | -649          | -794             |
| Other private loans                   | 1,046         | 1,816         | 270           | 342           | -220          | 174              |
| ODA grants <sup>a</sup>               | 2,553         | 2,505         | 2,695         | 4,623         | 6,312         | 5,246            |
| ODA tech. cooper. grants              | 1,599         | 1,585         | 1,694         | 2,519         | 3,084         | 2,578            |
| <b>Total</b>                          | <b>8,750</b>  | <b>9,418</b>  | <b>5,420</b>  | <b>8,158</b>  | <b>9,994</b>  | <b>9,126</b>     |
| <b>To other countries</b>             |               |               |               |               |               |                  |
| IMF                                   | 129           | 296           | -122          | -282          | -122          | -256             |
| World Bank Group                      | 100           | 250           | 236           | 77            | -183          | -97              |
| Other multilaterals                   | 114           | 130           | 87            | 106           | 199           | 5                |
| Bilateral loans                       | 356           | 460           | 327           | 108           | 441           | 433              |
| Commercial banks                      | 902           | 671           | 252           | 190           | -17           | -79              |
| Other private loans                   | 169           | 53            | -112          | -101          | -66           | 271              |
| ODA grants <sup>a</sup>               | 418           | 351           | 568           | 660           | 873           | 952              |
| ODA tech. cooper. grants              | 576           | 443           | 461           | 591           | 662           | 800              |
| <b>Total</b>                          | <b>2,764</b>  | <b>2,654</b>  | <b>1,697</b>  | <b>1,349</b>  | <b>1,787</b>  | <b>2,029</b>     |
| <b>To Sub-Saharan Africa</b>          |               |               |               |               |               |                  |
| IMF                                   | 730           | 590           | -41           | -954          | -492          | -728             |
| World Bank Group                      | 475           | 884           | 1,028         | 1,346         | 845           | 1,183            |
| Other multilaterals                   | 667           | 572           | 446           | 630           | 735           | 607              |
| Bilateral loans                       | 1,625         | 2,207         | 1,931         | 988           | 714           | 945              |
| Commercial banks                      | 1,656         | 1,066         | -1,823        | -1,137        | -666          | -874             |
| Other private loans                   | 1,215         | 1,869         | 158           | 241           | -286          | 446              |
| ODA grants <sup>a</sup>               | 2,971         | 2,856         | 3,263         | 5,283         | 7,185         | 6,198            |
| ODA tech. cooper. grants              | 2,175         | 2,028         | 2,155         | 3,110         | 3,746         | 3,377            |
| <b>Total</b>                          | <b>11,514</b> | <b>12,072</b> | <b>7,117</b>  | <b>9,507</b>  | <b>11,781</b> | <b>11,154</b>    |
| Direct investment <sup>b</sup> (DAC)  | 1,000         | 2,200         | -290          | 612           | 254           | 800 <sup>c</sup> |
| <b>Total net transfer</b>             | <b>12,514</b> | <b>14,272</b> | <b>6,827</b>  | <b>10,119</b> | <b>12,035</b> | <b>11,954</b>    |
| <i>Plus debt service</i>              |               |               |               |               |               |                  |
| (after debt relief)                   | 5,274         | 6,389         | 8,911         | 9,234         | 9,103         | 8,312            |
| Less direct investment                | 1,000         | 2,200         | -290          | 612           | 254           | 800              |
| <b>Total gross disbursements</b>      | <b>16,788</b> | <b>18,461</b> | <b>16,028</b> | <b>18,741</b> | <b>20,884</b> | <b>19,466</b>    |
| (of which OECD bilateral ODA) (4,991) | (4,673)       | (4,673)       | (5,407)       | (7,832)       | (10,478)      | (10,634)         |
| <b>To India</b>                       |               |               |               |               |               |                  |
| IMF                                   | 1,010         | 1,824         | -307          | -965          | -1,443        | -1,192           |
| World Bank Group                      | 639           | 1,153         | 748           | 676           | 1,516         | 942              |
| Other multilaterals                   | 37            | 58            | 25            | 7             | 131           | 57               |
| Bilateral loans                       | -87           | -247          | -77           | 27            | 79            | 459              |
| Commercial banks                      | 347           | -40           | 56            | 298           | -309          | 453              |
| Other private loans                   | -15           | 320           | 920           | 541           | 130           | -646             |
| ODA grants <sup>a</sup>               | 648           | 455           | 583           | 596           | 722           | 756              |
| ODA tech. cooper. grants              | 151           | 172           | 172           | 226           | 316           | 332              |
| <b>Total</b>                          | <b>2,730</b>  | <b>3,695</b>  | <b>2,120</b>  | <b>1,406</b>  | <b>1,142</b>  | <b>1,161</b>     |
| Direct investment (DAC)               | 79            | 72            | 19            | 118           | 91            | ..               |

Note: Excludes short-term debt.

a. Technical cooperation grants are not included.

b. Not separately available for low-income and other countries.

c. Data for 1989 are not yet available; this is an approximation.

Source: World Bank, *World Debt Tables 1990-91*, and OECD, *Geographical Distribution of Financial Flows to Developing Countries*, 1991 (unpublished).

**Table 22. Sub-Saharan Africa: net financial transfers, 1980–1989 (cont.)**

|                          | 1980  | 1982  | 1984  | 1986  | 1988  | 1989  |
|--------------------------|-------|-------|-------|-------|-------|-------|
| Total                    | 2,809 | 3,767 | 2,139 | 1,524 | 1,233 | ..    |
| <b>To China</b>          |       |       |       |       |       |       |
| IMF                      | 0     | -34   | -2    | 663   | -134  | -146  |
| World Bank Group         | 0     | 1     | 187   | 532   | 930   | 855   |
| Other multilaterals      | 0     | 0     | 12    | 11    | 8     | 53    |
| Bilateral loans          | 177   | 509   | 467   | 357   | 85    | -82   |
| Commercial banks         | -142  | -296  | 138   | 1,289 | 3,372 | -219  |
| Other private loans      | 1,574 | -220  | -343  | 2,018 | 783   | 1,386 |
| ODA grants *             | 7     | 47    | 112   | 155   | 312   | 311   |
| ODA tech. cooper. grants | 48    | 79    | 102   | 186   | 322   | 321   |
| Total                    | 1,664 | 86    | 673   | 5,211 | 5,678 | 2,479 |
| Direct investment (DAC)  | 24    | 42    | 66    | 202   | -33   | ..    |
| Total                    | 1,688 | 128   | 739   | 5,413 | 5,645 | ..    |

**Table 23. Sub-Saharan Africa: gross disbursements of official development assistance, 1989**

| Country                        | Disbursements<br>(US\$ millions) | Per capita<br>disbursements<br>(US\$) | Ratio of<br>disbursements<br>to GNP<br>(percent) |
|--------------------------------|----------------------------------|---------------------------------------|--|
| <b>Sub-Saharan Africa</b>      | <b>14,035.1</b>                  | <b>29</b>                             | <b>8.9</b>                                       |
| <b>Low-income economies</b>    | <b>11,403.6</b>                  | <b>27</b>                             | <b>10.3</b>                                      |
| Benin                          | 243.4                            | 53                                    | 14.9   |
| Burkina Faso                   | 282.8                            | 32                                    | 11.1   |
| Burundi                        | 205.4                            | 39                                    | 19.4   |
| Central African Rep.           | 187.9                            | 64                                    | 17.3   |
| Comoros                        | 43.1                             | 94                                    | 21.8   |
| Chad                           | 250.7                            | 45                                    | 25.0   |
| Equatorial Guinea              | 40.2                             | 117                                   | 32.2   |
| Ethiopia                       | 693.1                            | 14                                    | 11.6   |
| Gambia                         | 105.0                            | 124                                   | 53.1   |
| Ghana                          | 708.3                            | 49                                    | 13.8   |
| Guinea                         | 347.4                            | 63                                    | 13.6   |
| Guinea-Bissau                  | 101.5                            | 106                                   | 60.8   |
| Kenya                          | 1,062.4                          | 46                                    | 13.4   |
| Lesotho                        | 121.2                            | 70                                    | 14.6   |
| Liberia                        | 58.4                             | 24                                    | 5.8  |
| Madagascar                     | 358.9                            | 32                                    | 15.3   |
| Malawi                         | 415.9                            | 51                                    | 27.3   |
| Mali                           | 407.6                            | 50                                    | 19.9   |
| Mauritania                     | 206.4                            | 106                                   | 21.9   |
| Mozambique                     | 774.8                            | 50                                    | 69.8   |
| Niger                          | 297.0                            | 40                                    | 14.9   |
| Nigeria                        | 339.1                            | 3                                     | 1.2  |
| Rwanda                         | 230.8                            | 33                                    | 10.7   |
| São Tomé and Príncipe          | 33.6                             | 275                                   | 90.1   |
| Sierra Leone                   | 98.3                             | 24                                    | 11.1   |
| Somalia                        | 437.4                            | 72                                    | 41.5   |
| Sudan                          | 725.5                            | 30                                    | 4.6  |
| Tanzania                       | 911.6                            | 36                                    | 34.5   |
| Togo                           | 201.5                            | 57                                    | 15.5   |
| Uganda                         | 410.7                            | 24                                    | 8.8  |
| Zaire                          | 733.6                            | 21                                    | 8.0  |
| Zambia                         | 370.1                            | 47                                    | 8.6  |
| <b>Middle-income economies</b> | <b>2,631.2</b>                   | <b>46</b>                             | <b>5.7</b>                                       |
| Angola                         | 138.9                            | 14                                    | 2.3  |
| Botswana                       | 165.7                            | 136                                   | 7.5  |
| Cameroon                       | 464.3                            | 40                                    | 4.3  |
| Cape Verde                     | 75.5                             | 205                                   | 26.8   |
| Congo, People's Rep.           | 88.8                             | 40                                    | 4.4  |
| Côte d'Ivoire                  | 401.9                            | 34                                    | 4.8  |
| Djibouti                       | 79.3                             | 193                                   | 19.8   |
| Gabon                          | 135.0                            | 122                                   | 4.3  |
| Mauritius                      | 59.8                             | 56                                    | 2.9  |
| Senegal                        | 704.1                            | 98                                    | 15.9   |
| Seychelles                     | 19.5                             | 287                                   | 7.0  |
| Swaziland                      | 28.1                             | 37                                    | 4.4  |
| Zimbabwe                       | 270.6                            | 28                                    | 4.7  |
| India                          | 1,736.9                          | 2                                     | 0.7  |
| China                          | 2,145.2                          | 2                                     | 0.5  |

Note: ODA figures in this table reflect donor records and therefore are not comparable to figures underlying Table 26, which reflect recipient records. The \$14.0 billion total 1989 ODA for Sub-Saharan Africa in this table would compare with \$9.8 billion for average 1987-89 in Table 26; unrecorded technical assistance, which amounted to about \$3.4 billion in 1989, accounts for most of the difference.

Source: World Bank; OECD, *Geographical Distribution of Financial Flows to Developing*

**Table 24. Sub-Saharan Africa: OECD official development assistance, 1989**

| <i>OECD country</i> | <i>Gross disbursements to Sub-Saharan Africa (US\$ millions)</i> | <i>Sub-Saharan Africa share in total ODA (percent)</i> | <i>Ratio of ODA to Sub-Saharan Africa to donor GNP (percent)</i> |
|---------------------|--|--|--|
| Australia           | 66   | 9.3  | 0.02   |
| Austria             | 41   | 16.3   | 0.03   |
| Belgium             | 214  | 58.5   | 0.14   |
| Canada              | 446  | 27.5   | 0.08   |
| Denmark             | 301  | 53.4   | 0.30   |
| Finland             | 222  | 50.9   | 0.20   |
| France              | 3,170  | 49.3   | 0.33   |
| Germany, Fed. Rep.  | 1,036  | 27.0   | 0.09   |
| Ireland             | 12   | 63.2   | 0.04   |
| Italy               | 1,084  | 46.4   | 0.13   |
| Japan               | 1,151  | 14.6   | 0.04   |
| Netherlands         | 494  | 30.1   | 0.22   |
| New Zealand         | 1  | 1.3  | 0.00   |
| Norway              | 285  | 51.0   | 0.32   |
| Sweden              | 464  | 36.3   | 0.25   |
| Switzerland         | 151  | 35.5   | 0.08   |
| United Kingdom      | 731  | 45.4   | 0.09   |
| United States       | 765  | 10.0   | 0.01   |
| Total bilateral     | 10,634 (8,718) <sup>b</sup>                                      | 28.2 (39.4) <sup>b</sup>                               | 0.08 (0.15) <sup>b</sup>   |
| Total multilateral  | 3,401  |  |  |
| Total               | 14,035   |  |  |

*Note:* Bilateral official development assistance; excludes contributions through multilateral institutions.

a. Includes technical cooperation grants.

b. Figures in parentheses exclude Japan and the USA.

*Sources:* OECD, *Geographical Distribution of Financial Flows, 1997*(unpublished); World Bank.

**Table 25. Sub-Saharan Africa: Required gross disbursements including debt relief, 1991-1993**

(annual average, US\$ millions)

|                               | Balance of payments support <sup>d</sup> |                   |                     |                          |                    |              |
|-------------------------------|--|-------------------|---------------------|--------------------------|--------------------|--------------|
|                               | Total                                    | Project financing |                     | Debt relief <sup>c</sup> | World Bank and IMF |              |
|                               |  | ODA <sup>a</sup>  | Others <sup>b</sup> |                          | World Bank         | Other        |
| <b>IDA-only countries</b>     | <b>20,148</b>                            | <b>7,305</b>      | <b>483</b>          | <b>6,036</b>             | <b>1,349</b>       | <b>4,573</b> |
| Benin                         | 274                                      | 159               | 3                   | 17                       | 23                 | 72           |
| Burkina Faso                  | 468                                      | 392               | 6                   | 31                       | 33                 | 7            |
| Burundi                       | 242                                      | 132               | 1                   | 11                       | 20                 | 78           |
| Cape Verde                    | 40                                       | NA                | NA                  | NA                       | NA                 | NA           |
| Central African Republic      | 258                                      | 157               | 6                   | 11                       | 17                 | 67           |
| Chad                          | 372                                      | 262               | 0                   | 7                        | 32                 | 70           |
| Comoros                       | 89                                       | 11                | 1                   | 6                        | 4                  | 67           |
| Djibouti                      | 39                                       | NA                | NA                  | NA                       | NA                 | NA           |
| Equatorial Guinea             | 72                                       | 51                | 0                   | 0                        | 4                  | 16           |
| Ethiopia                      | 979                                      | 533               | 92                  | 0                        | 0                  | 354          |
| Gambia, The                   | 85                                       | 57                | 10                  | 3                        | 5                  | 9            |
| Ghana                         | 716                                      | 457               | 34                  | 30                       | 112                | 83           |
| Guinea                        | 497                                      | 341               | 54                  | 9                        | 33                 | 59           |
| Guinea-Bissau                 | 150                                      | 65                | 3                   | 47                       | 12                 | 24           |
| Kenya                         | 1,115                                    | 659               | 110                 | 100                      | 196                | 49           |
| Lesotho                       | 242                                      | NA                | NA                  | NA                       | NA                 | NA           |
| Liberia                       | NA                                       | NA                | NA                  | NA                       | NA                 | NA           |
| Madagascar                    | 610                                      | 319               | 8                   | 145                      | 72                 | 65           |
| Malawi                        | 237                                      | 132               | 17                  | 2                        | 38                 | 48           |
| Mali                          | 506                                      | 383               | 5                   | 35                       | 59                 | 24           |
| Mauritania                    | 325                                      | 171               | 4                   | 30                       | 35                 | 86           |
| Mozambique                    | 1,186                                    | 402               | 1                   | 304                      | 66                 | 415          |
| Niger                         | 361                                      | 164               | 5                   | 88                       | 24                 | 81           |
| Rwanda                        | 261                                      | 158               | 16                  | 0                        | 50                 | 38           |
| Sao Tome and Principe         | 49                                       | 14                | 0                   | 20                       | 4                  | 11           |
| Senegal                       | 871                                      | 463               | 15                  | 180                      | 72                 | 140          |
| Sierra Leone                  | 314                                      | 18                | 20                  | 185                      | 0                  | 91           |
| Somalia                       | 713                                      | 253               | 0                   | 229                      | 33                 | 198          |
| Sudan                         | 3,905                                    | NA                | NA                  | 2,803                    | 0                  | 1,102        |
| Tanzania                      | 1,328                                    | 353               | 30                  | 307                      | 163                | 476          |
| Togo                          | 265                                      | 100               | 11                  | 56                       | 17                 | 81           |
| Uganda                        | 586                                      | 262               | 0                   | 6                        | 116                | 201          |
| Zaire                         | 1,940                                    | 607               | 31                  | 941                      | 0                  | 361          |
| Zambia                        | 1,053                                    | 230               | 0                   | 433                      | 109                | 200          |
| <b>Other countries</b>        | <b>9,650</b>                             | <b>966</b>        | <b>1,986</b>        | <b>3,304</b>             | <b>282</b>         | <b>2,499</b> |
| Angola                        | 215                                      | NA                | NA                  | NA                       | NA                 | NA           |
| Botswana                      | 270                                      | NA                | NA                  | NA                       | NA                 | NA           |
| Cameroon                      | 1,476                                    | 0                 | 197                 | 603                      | 123                | 554          |
| Congo                         | 533                                      | 0                 | 5                   | 73                       | 0                  | 455          |
| Côte d'Ivoire                 | 2,261                                    | 92                | 60                  | 851                      | 41                 | 1,218        |
| Gabon                         | 0  | NA                | NA                  | NA                       | NA                 | NA           |
| Mauritius                     | 128                                      | NA                | NA                  | NA                       | NA                 | NA           |
| Nigeria                       | 3,985                                    | 639               | 1,450               | 1,777                    | 118                | 0            |
| Seychelles                    | 0  | NA                | NA                  | NA                       | NA                 | NA           |
| Swaziland                     | 0  | NA                | NA                  | NA                       | NA                 | NA           |
| Zimbabwe                      | 781                                      | 235               | 274                 | 0                        | 0                  | 272          |
| <b>All Sub-Saharan Africa</b> | <b>29,798</b>                            | <b>8,271</b>      | <b>2,469</b>        | <b>9,340</b>             | <b>1,631</b>       | <b>7,072</b> |

Note: The totals do not include countries for which information is not available.

a. Gross disbursements basis. Figures are not directly comparable to OECD grant information in Table 22.

b. Includes nonconcessional loans and direct investment.

c. Includes rescheduling by Paris Club, London Club, and other creditors; cancellation of ODA debt, and debt buybacks. Figures are net of moratorium charges on reschedulings.

d. Primarily support for adjustment programs but includes emergency relief and general budgetary support.

Source: World Bank.

**Table 26. Sub-Saharan Africa: prospective gross disbursements including debt relief, 1991-2000**

(annual average, US\$ billions)

|                                       | 1987-89          | 1991-93          | 1994-2000        |
|---------------------------------------|------------------|------------------|------------------|
| <b>All Sub-Saharan Africa</b>         | <b>26.5</b>      | <b>29.8</b>      | <b>28.2</b>      |
| Gross loan disbursements - non-ODA    | 5.9              | 2.8              | 5.2              |
| - ODA                                 | 4.3              | 5.5 <sup>a</sup> | 7.2              |
| Official transfers - ODA <sup>b</sup> | 5.5              | 7.6 <sup>a</sup> | 10.4             |
| Direct foreign investment             | 1.5              | 1.2              | 1.7              |
| Debt relief <sup>c</sup>              | 7.3 <sup>d</sup> | 9.4              | 0.5              |
| Other <sup>e</sup>                    | 2.0              | 0.9              | ..               |
| Residual gap                          | 0.0              | 2.4              | 3.2              |
| <b>IDA-only countries</b>             | <b>14.5</b>      | <b>20.1</b>      | <b>22.9</b>      |
| Gross loan disbursements - non-ODA    | 1.8              | 0.8              | 1.1              |
| - ODA                                 | 3.8              | 4.2              | 7.0              |
| Official transfers - ODA <sup>b</sup> | 5.3              | 7.4              | 10.5             |
| Direct foreign investment             | 0.1              | 0.2              | 0.3              |
| Debt relief <sup>d</sup>              | 2.6 <sup>d</sup> | 6.0              | 1.1              |
| Other <sup>e</sup>                    | 0.9              | ..               | ..               |
| Residual gap                          | 0.0              | 1.5              | 2.9              |
| <b>Other countries</b>                | <b>12.0</b>      | <b>9.7</b>       | <b>5.3</b>       |
| Gross loan disbursements - non-ODA    | 4.1              | 2.0              | 4.1              |
| - ODA                                 | 0.5              | 1.3              | 0.2              |
| Official transfers - ODA <sup>b</sup> | 0.2              | 0.2              | -0.1             |
| Direct foreign investment             | 1.4              | 1.0              | 1.4              |
| Debt relief <sup>d</sup>              | 4.7 <sup>d</sup> | 3.4              | -0.6             |
| Other <sup>e</sup>                    | 1.1              | ..               | ..               |
| Residual gap                          | 0.0              | 1.8              | 0.3              |
| <b>All Sub-Saharan Africa</b>         | <b>26.5</b>      | <b>29.8</b>      | <b>28.2</b>      |
| Direct foreign investment             | 1.5              | 1.2              | 1.7              |
| ODA grants <sup>b</sup>               | 5.5              | 7.6              | 10.4             |
| Debt relief <sup>c</sup>              | 7.3 <sup>d</sup> | 9.4              | 0.5              |
| IMF                                   | 0.9              | 0.9              | ..               |
| World Bank Group                      | 2.5              | 2.8              | 3.1              |
| Other multilateral                    | 1.3              | 1.5              | 1.9              |
| Bilateral                             | 2.3              | 2.5              | 3.2              |
| Commercial banks                      | 1.9              | 0.8              | 1.5              |
| Other private                         | 1.3              | 0.7              | 2.7              |
| Other <sup>e</sup>                    | 2.0              | ..               | ..               |
| Residual gap                          | 0.0              | 2.4              | 3.2 <sup>f</sup> |

Note: The projections in this table for 1991-93 and 1994-2000 reflect a "mean" between high and low estimates of external financial flows.

a. These projected ODA increases from \$9.8 billion in 1987-89 to \$13.1 billion in 1991-93 assume additional countries will undertake adjustment programs.

b. Figures exclude technical cooperation grants, which, for all Sub-Saharan Africa, amounted to \$3.5 billion in 1987-89.

c. Preliminary.

d. Net of moratorium debt service on rescheduled debt; assumes continuation of Paris Club terms in effect in 1990.

e. Additional short-term loans, use of reserves, and accumulation of arrears.

f. Includes IMF disbursements.

Source: 1987-89: World Bank files; 1991-2000: World Bank estimates and Jorge Cuiagovski, Victor Gabor, Maria Cristina Germany, and Charles P. Humphreys, "African Financing Needs in the 1990s: A World Bank Symposium" (forthcoming).

**Figure 1: Proportions of married women desiring no more children by age group**

