

Human assets for Africa's development

Globalization places a high premium on scientific and technological capacity to innovate and adapt and to increase productivity and competitiveness. Growth in the knowledge-driven economy is predicated on a labour force that is healthy and well endowed with knowledge and skills. And despite the progress in education and health in Africa over the past half century, both the volume and quality of human capital are widely acknowledged as grossly insufficient to meet the challenges of the 21st century.

Poor health perpetuates poverty

Most African countries confront serious public health challenges, such as malaria, the HIV/AIDS pandemic, and the resurgence of tuberculosis. And much remains to be done to eradicate preventable diseases and chronic protein and micronutrient malnutrition. The health disadvantages of African countries reduce wages and productivity (Strauss and Thomas 1998). Improving the health of the African people may be one of the most effective contributions to economic growth.

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- HIV/AIDS has grown from epidemic to pandemic in Africa with serious economic consequences (box 4.1). UNAIDS (1999) estimates that 34 million people worldwide have HIV/AIDS, and more than 23 million of them are in Sub-Saharan Africa (figure 4.1).
- Malaria, long recognized as one of the most serious health threats in the region, kills close to 1 million people a year in Sub-Saharan Africa (WHO 1999). In contrast to other regions, Africa entered the 21st century with rising death rates from malaria.
- The World Health Organization reports that tuberculosis is the leading cause of death of people with HIV, accounting for more than a third of AIDS deaths worldwide. In 1999 Africa had an estimated 864,000 new tuberculosis cases (WHO 2001).
- Protein-energy malnutrition is common in Africa, as are deficiencies in iodine, vitamin A, and iron. Chronic protein and micronutrient malnutrition is associated with stunting and wasting and with many diseases, some of them deadly: blindness, chronic diarrhea, acute respiratory infections, goiter, anemia, and more.

Traditionally, poor health conditions in Africa have been attributed to budget constraints, deteriorating and antiquated health care systems, civil conflicts, large-scale human migrations, climatic and environmental changes, and increasing resistance to insecticides and drugs. A more recent reinterpretation also acknowledges the environmental determinism of geography. According to Sachs (1999) if it "were true that the poor were just like the rich but

◀ Box 4.1

The economic implications of HIV/AIDS

A deadly threat with global economic and health implications, HIV/AIDS is particularly devastating in Africa. The statistics are worse than ever anticipated (UNAIDS 1998, 1999):

- More than 13 million Africans have already died.
- Ninety percent of the 8 million children orphaned by AIDS are in Africa.
- Fifty-five percent of infected adults in Sub-Saharan Africa are women.
- African girls ages 15–19 are five times more likely to be HIV-positive than boys the same age.

HIV/AIDS is jeopardizing economic growth in Africa. One study estimates that AIDS will reduce the economies of Sub-Saharan Africa by 25% over the next 20 years (Clinton 1999). *The Economist* (2 January 1999) reported that AIDS in Namibia cost the country an estimated 8% of GNP in 1996 and that Kenya's GNP will be 14.5% lower by 2005 than it would have been without AIDS.

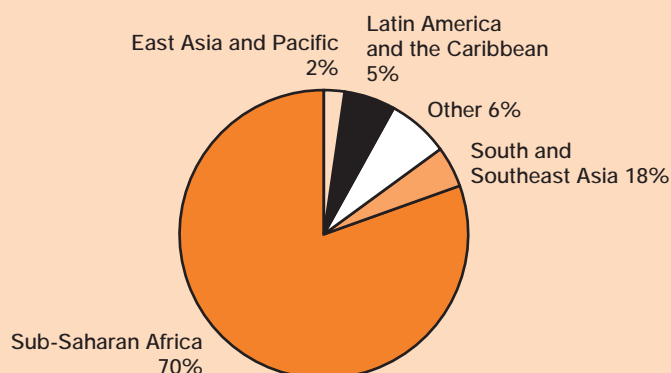
AIDS is threatening not only Africa's future but also its achievements in development. In many African countries AIDS is reducing life expectancy by more than 20 years (World Bank 1999). Infant mortality rates are rising, reversing gains in infant and child survival. In East and Southern Africa infant mortality rates are nearly 70% higher than they would have been without AIDS. In Botswana AIDS is projected to account for 64% of deaths among children younger than five within the next five years (UNICEF 1999).

In the agricultural sector the loss of workers, particularly during planting and harvesting periods, has been shown to reduce harvest sizes significantly. The loss of agricultural labour will likely cause farmers to grow less labour-intensive crops. Therefore, AIDS could affect the production of cash crops as well as food crops.

AIDS is also having a significant impact on firms by increasing expenditures and reducing revenues. Firm expenditures are increased by health care costs, burial fees, and the need to replace employees, while revenue is decreased by absenteeism due to illness, caring for the ill, attending funerals, and by time spent on training to replace employees.

Families suffer most from AIDS-related illnesses and death (Piot 1999). Average family income falls by more than half when a family member dies of AIDS. Such losses are catastrophic for those already on the brink of survival.

◀ Figure 4.1
People living with HIV/AIDS, 1999



Source: UNAIDS 1999.

with less money, the global situation would be vastly easier than it is. As it happens, the poor live in different ecological zones, face different health conditions, and must overcome agronomic limitations that are very different from those of rich countries. These differences, indeed, are often a fundamental cause of persisting poverty.”

Scientific and technological capacity is key to modern development

Africa has yet to produce a critical mass of skilled and highly trained workers

Africa has yet to produce a critical mass of skilled and highly trained workers capable of initiating and sustaining a dynamic development path. Africa’s capacity to generate knowledge and participate in the knowledge society has continued to decline. This has exacerbated the asymmetry between rich and poor and the imbalance in the structure of global governance, widening the gap between the “connected” world and “isolated” Africa (Economic Commission for Africa 1999b).

The scientific and technological capacity of nations is measured by such indicators as total expenditure on research and development and number of science and technology personnel, scientific publications, and registered patents (UNESCO 1998b). Africa’s research and development expenditure amounted at most to \$4.2 billion in 1994 (0.9% of the world total). The share of Sub-Saharan Africa, including South Africa, was only \$2.3 billion (0.5% of the world total). According to the latest information Africa’s share in total scientific publications was less than 1.5% in 1995, and Sub-Saharan Africa’s was 0.8%. Sub-Saharan Africa’s share was a mere 0.2% in European patents in 1995 and only 0.1% in U.S. patents (table 4.1).

Table 4.1 ►
Scientific and technological capacities by region, 1995 (percent)

| Region | Expenditure on research and development ^a | Scientific publications | European patents | U.S. patents |
|------------------------------------------------|------------------------------------------------------|-------------------------|------------------|--------------|
| Western Europe | 28.0 | 35.8 | 47.4 | 19.9 |
| North America | 37.9 | 38.4 | 33.4 | 51.1 |
| Latin America | 1.9 | 1.6 | 0.2 | 0.2 |
| Japan and newly industrialized Asian countries | 18.6 | 10.1 | 16.6 | 27.3 |
| China | 4.9 | 1.6 | 0.1 | 0.2 |
| India and Central Asia | 2.2 | 2.1 | 0.0 | 0.0 |
| Arab States | 0.4 | 0.7 | 0.0 | 0.0 |
| Sub-Saharan Africa | 0.5 | 0.8 | 0.2 | 0.1 |
| Other | 2.2 | 2.9 | 1.3 | 0.6 |
| Total | 100 | 100 | 100 | 100 |

a. Data are for 1994.

Source: UNESCO 1998b.

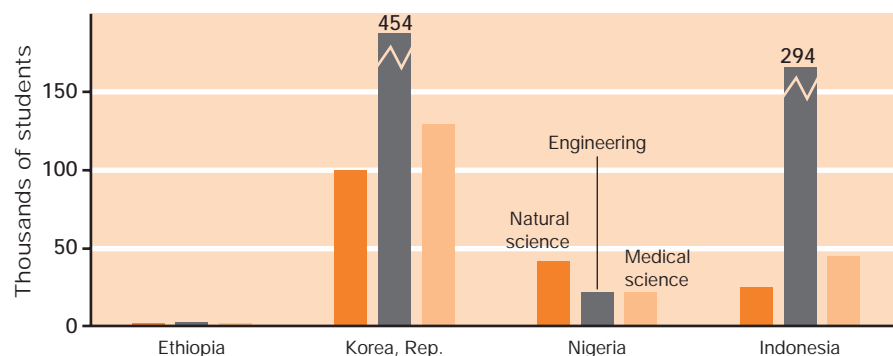
The benefits of higher education could be much greater

Scientific work generates demand for higher education and technical expertise. The crisis in Africa's human capacity is further compounded by the fact that fewer than 10% of high school graduates advance to institutions of higher learning.

According to UNESCO (1998a), only four countries in Africa had more than 1,000 university students per 100,000 people in 1996: Egypt (1,900), South Africa (1,664), Tunisia (1,330), and Algeria (1,236). Another way to look at this is to analyse the percentage of people in a country who attend university. In 1996 only 0.06% of Ethiopians and only 0.08% of people in Burkina Faso were enrolled in universities. Compare that with 6% of people in the Republic of Korea and 3% in Chile (figure 4.2).

Another useful statistic is the absolute number of students by field of study at universities, particularly in engineering and natural and medical sciences. The differences between Ethiopia and Korea, which had similar populations and resources in 1960, are stark—as are those between Nigeria and Indonesia (table 4.2).

Fewer than 10% of high school graduates advance to institutions of higher learning



Source: UNAIDS 1999.

◀ Figure 4.2
Number of university students in selected countries, 1996

Table 4.2 ▼
Number of university students in the sciences in countries with similar populations and resources

| | Natural sciences | | Engineering | | Medical sciences | |
|-------------|------------------|---------|-------------|---------|------------------|---------|
| | 1960 | 1996 | 1960 | 1996 | 1960 | 1996 |
| Ethiopia | 106 | 1,730 | 257 | 3,393 | 46 | 2,080 |
| Korea, Rep. | 8,802 | 100,120 | 7,838 | 454,033 | 6,712 | 128,619 |
| Nigeria | 488 | 41,504 | 28 | 22,080 | 78 | 22,121 |
| Indonesia | 1,351 | 25,124 | 3,245 | 293,946 | 4,560 | 44,678 |

Source: UNESCO 1970, 1998b.

*Africa's paucity
of employment
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Another problem is Africa's paucity of employment opportunities, which drives its few highly trained workers to choose work abroad. Recent data show that the number of unemployed university graduates is large and growing. For example, in 1995 Algeria had three times more unemployed university graduates than new graduates (ILO 1999; UNESCO 1998a). As a result 32,557 new graduates of the class of 1995 entered a labour market with a pool of 96,830 unemployed university graduates of earlier years. In 1980 Madagascar had about 1.5 times more unemployed university graduates than new graduates, and Ethiopia had more than 4 times as many.

The exodus of doctors has been even more striking in the past two decades. More than 21,000 Nigerian doctors are practising in the United States, and 60% of Ghanaian doctors have left their country. In 1978 Sudan lost 17% of its doctors, 20% of its university lecturers, 30% of its engineers, and 45% of its surveyors (UNDP 1998).