BRIEFING PAPER

Economics of HIV/AIDS: Multisectoral Impacts and Programmatic Implications

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1. Introduction

HIV/AIDS is a global health calamity. It is also a profound human tragedy for the victims, their families, and their communities. At the end of 2003, the disease had already killed an estimated 30 million people, and 40 million more were living with the virus, principally in sub-Saharan Africa.[1] Last year alone, AIDS or AIDS-related illnesses killed 3 million people, and 5 million were newly infected. Most victims are adults in the prime of productivity and family life; over half are women. In addition, 2.5 million young children are presently infected with the virus, and more than 10 million have been orphaned by the disease.[2]

Responding to this crisis, President Bush announced in his 2003 State of the Union Address the President's Emergency Plan for AIDS Relief (PEPFAR) to provide $15 billion over five years "to turn the tide against AIDS in the most afflicted nations of Africa and the Caribbean."[3] PEPFAR focuses on *prevention* of HIV/AIDS, *treatment* of AIDS and related conditions (including procurement and delivery of anti-retroviral therapies), and *care* for those suffering from HIV/AIDS as well as orphans and vulnerable children.

Even with a successful campaign to slow the epidemic, extend the lifespan of AIDS victims, and provide care for those affected, HIV/AIDS will still have a serious and prolonged impact on economic development in high-prevalence countries. As Administrator Natsios has stated, "HIV/AIDS is one of the biggest challenges to development that we have ever faced."[4] The fight against the disease itself is unquestionably the top priority. But it should not be the only response. In high-prevalence countries, HIV/AIDS threatens to undermine the achievement of Agency goals for security, democracy, and prosperity. The fight against HIV/AIDS *as a development challenge* requires complementary programs to mitigate the most serious economic effects.

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[1] The figures on infections and deaths are from UNAIDS and WHO (2003). Approximately 95 percent of those living with the virus are in developing countries, including 70 percent in sub-Saharan Africa. Additional estimates are located in Appendix B.

[2] UNICEF, *Africa's Orphaned Generations* (2003), estimates that there are more than 11 million AIDS orphans in Africa alone.

[3] President Bush's State of the Union 2003 Address to Congress, January 28, 2003. Congress authorized funding for the full $15 billion through Public Law 108-25, May 27, 2003.

[4] STATE Cable 097109 (2001).

2. Basics of HIV/AIDS Epidemiology

The human immunodeficiency virus (HIV) attacks the immune system. If untreated, the virus leads to death from the acquired immunodeficiency syndrome (AIDS). The virus is contracted through heterosexual intercourse; sexual contact between men; childbirth and breastfeeding (mother to child transmission); sharing of needles or syringes; transfusions of infected blood products; medical accidents, and unsafe medical practices.[5] The disease is asymptomatic for several years. Once the immune system is sufficiently compromised, the victim begins to suffer co-infections or malignancies, such as tuberculosis, herpes, pneumonia, or Karposi's Sarcoma.[6] The last stage of progression—AIDS itself—is characterized by one or multiple co-infections with severe complications and physical wasting leading to death.

Chart 1 shows that 24 countries in sub-Saharan Africa and one country in the Caribbean face high-prevalence generalized epidemics, which are characterized by a prevalence rate of 5 percent or more among adults aged 15–49.[7] (Appendix A provides more detailed information on these 24 countries.) According to UNAIDS estimates for end-2001, nine African countries had a prevalence rate of 15 percent or higher. In four of them—Botswana, Lesotho, Swaziland and Zimbabwe—more than one in four adults have HIV/AIDS. Infection rates are especially high among commercial sex workers, mobile groups such as truckers, and workers who are separated for long periods of time from their families, such as miners, soldiers, and construction workers.

In Africa, most victims die within 8–10 years after contracting the virus, unless they receive anti-retroviral (ARV) combination drug therapy. With ARV therapy, the prognosis is 3–5 years of additional life. Besides adding extra quality years for work and in child-rearing, ARV

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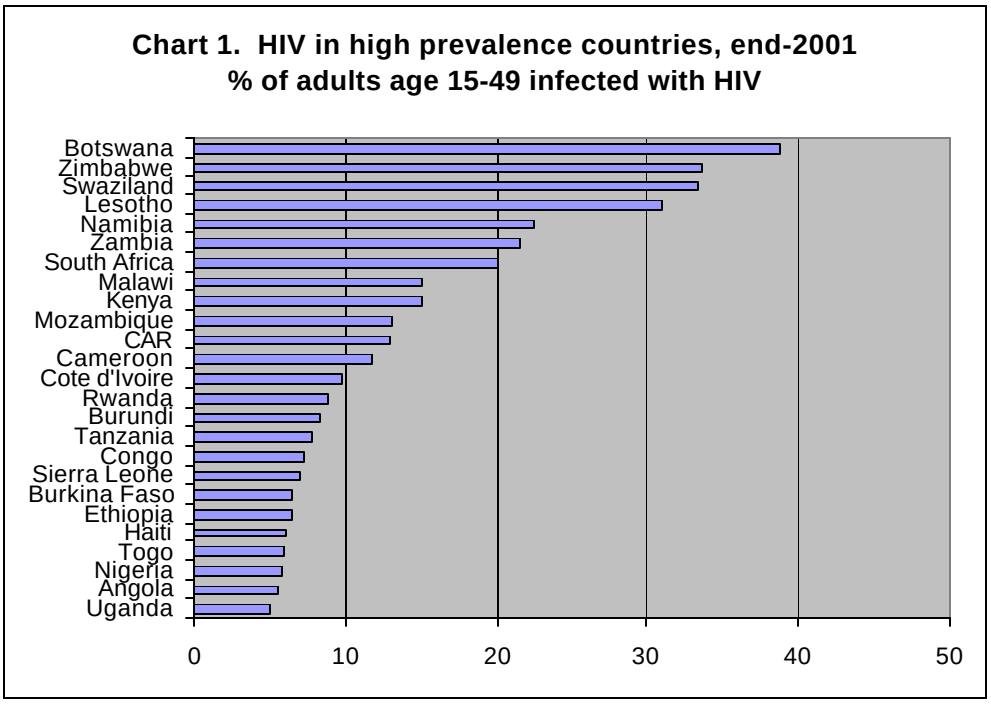
[5] A recent study in the *Lancet* (February 7, 2004) reports that 90 percent of HIV transmission in sub-Saharan Africa is through unsafe heterosexual sex.

[6] A sarcoma is a cancer that develops in connective tissues such as cartilage, bone, fat, muscle, blood vessels, or fibrous tissues (related to tendons or ligaments). Karposi's sarcoma exhibits disfiguring and painful tumors and lesions.

[7] Official UNAIDS epidemiological estimates for end-2001. The next revision of country estimates is due to be released in July, 2004.



treatment is widely viewed as a vehicle for HIV prevention because it creates an incentive for individuals to seek testing and counseling and reduces the social stigma of the disease.[8]

The cost of ARV medication has declined sharply to less than $300 per person per year for generic combination therapy. The total cost of providing treatment in a low-income country is about $500 per client per year.[9] This cost is a heavy burden in countries like Zambia, Malawi, Tanzania, or Mozambique, where per capita income is well below $300 per year, and government health expenditures are no more than $10 per person per year. Moreover, the cost per life-year saved by ARV therapy is far higher than the corresponding cost for HIV prevention programs, or other health programs such as tuberculosis treatment or child vaccination.

According to WHO (2003), only 2 percent of those in need in Africa had access to ARV therapy in 2003. This figure should rise rapidly due to the PEPFAR initiative, the WHO/UNAIDS Global 3 by 5 Initiative, programs of the Global Fund to fight AIDS, Tuberculosis and Malaria, and many other local and international efforts.[10]

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[8] There is concern, however, that the availability of ARV treatment can also lull individuals into being less careful about risky behavior such as unsafe sex.

[9] Source: Kombe and Smith (2003). A similar figure is reported for India by Over, *et al.* (2003). Over estimates that ARV therapy could have a net negative impact if it were to lead to even a 10 percentage point reduction in the use of condoms among commercial sex workers.

[10] The 3 by 5 program target is to provide ARV treatment to 3 million people by 2005. These figures are inclusive of PEPFAR and the efforts by other organizations. See WHO (2003).

3. Multisectoral Approaches to HIV/AIDS

The response of USAID and its development partners is focused on the health emergency through an integrated approach that includes prevention activities such as public education programs that reduce risk behaviors by promoting abstinence, fidelity, and condom use; the distribution of condoms; diagnosis, testing, and counseling services; palliative health care to treat AIDS-related illnesses; the provision of pharmaceuticals to prevent mother–to-child transmission; and (most recently) the provision of anti-retroviral drugs to slow the progression of AIDS and prolong the healthy life of victims. This set of inter-related activities can be called the Medical Model.

The Medical Model operates not only through the formal health care system, but also through organizations in other sectors of society. Thus, HIV/AIDS education programs are run by schools, community groups, work groups, NGOs, and even traditional healers, as well as by clinics and hospitals. Many organizations distribute condoms at truck stops, border crossings, and places of work. Some businesses offer their employees HIV testing, counseling, and ARV treatment. These are examples of a *multisectoral approach* within the Medical Model, as pioneered by the government of Uganda.[11]

To address the areas of direct concern to EGAT, it is desirable to pursue an *expanded multisectoral approach* that includes mitigation of the economic impacts of HIV/AIDS in high-prevalence countries. Targeting the adverse social and economic impacts is important not only in its own right, but also because it complements the Medical Model by ameliorating conditions that contribute to the spread of the disease, such as poverty, malnutrition, lack of education, gender inequality, and weak public organizations.

In adopting an expanded multisectoral approach, there is also a need to explore innovative mechanisms for *cross-sectoral* coordination (including private–public and public–public

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[11] See USAID, Bureau for Global Health, *Country Profile HIV/AIDS: Uganda* at www.usaid.gov. The widely cited cable 097109 (2001) from the Administrator emphasizes that "The HIV/AIDS pandemic is not just a health sector issue; it is the business of every officer in every sector of the Agency." However, the cable links this endorsement of a multisectoral approach specifically to "HIV-prevention programming in all sectors." This is what we term the Medical Model in the text.

partnerships), to facilitate the sharing of knowledge and experience across diverse program components.

The expanded multisectoral approach has been widely discussed within the Agency,[12] and some programs are already addressing economic aspects of the crisis, notably in South Africa, Zambia, and RCSA. (These are discussed later in the paper.) However, these cases are still the exception rather than the rule. On balance, USAID programs are not providing support for activities involving evaluation of the economic impact of HIV/AIDS, analysis of alternative economic policy options, and implementation of operations to ameliorate the most serious adverse effects of HIV/AIDS on economic development.[13]

[12] See the USAID website on Mulitsectoral Programs at www.usaid.gov/our_work/global_health/aids/. Also, USAID (June 2002), USAID (March 2002) and USAID (November 2002).

[13] As an example, the legislation authorizing PEPFAR cites the need for "multisector strategies that address the impact of HIV/AIDS on the individual family, community, and nation," yet there is no provision for funding programs to address the economic impacts. The appropriation is fully earmarked for treatment (55 percent); palliative care (15 percent); prevention (20 percent); and support for orphans and vulnerable children (10 percent).

4. The Economic Impact of HIV/AIDS

The economic effect of HIV/AIDS at all levels of society stems from three fundamental factors: mortality, morbidity, and uncertainty. First, the disease robs the nation of people in the prime of life. For example, recent demographic projections for South Africa indicate that without an effective ARV program more than 40 percent of the black population now at age 15 will die by age 35. More than 80 percent of the premature deaths would be due to AIDS-related causes.[14] Second, most victims face prolonged illness and disability prior to death; this period can last several years and create high demand for care and treatment. Third, in countries with high rates of premature death, individuals who are at risk face uncertainty about their survival, which diminishes incentives to save for the future or to invest in education and training. Where prevalence rates are high and resources are few, the pandemic poses enormous difficulties for households, businesses, NGOs, and government alike.

Based on existing research and knowledge, it is evident that high HIV prevalence in a developing country creates serious challenges for nearly every economic sector. Prevention and treatment programs will lessen the adverse impacts only gradually because the disease has a long gestation period. Poor countries and poor households cannot afford to wait.

Let us see how HIV/AIDS affects seven areas of special concern to the EGAT Bureau: trade and investment, growth, poverty, agriculture, education, economic opportunities for women, and the environment and natural resource management.[15]

The Impact on Investment and Trade

In a low-income country, a high rate of HIV/AIDS infection reduces the returns on investment by increasing costs and reducing revenues. Costs rise due to lower labor productivity, higher labor turnover, increased absenteeism, opportunistic theft, lower morale, and additional expenses for medical insurance, death benefits, and workplace programs for

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[14] Based on calculations from life tables compiled by the Actuarial Society of South Africa, furnished by Nathan Associates, SEGA Project office, Pretoria, December 2002.

[15] This section draws on numerous sources cited in the reference list.

HIV/AIDS prevention, treatment, and care. The disease also causes the premature death of experienced workers and managers whose skills are critical to business operations and sales, and who are expensive to replace. For small companies the loss of key employees can be devastating.[16]

In markets where prices depend on external conditions, higher costs lead to a loss of competitiveness and lower returns on investment. In sectors that serve the domestic market without competition from imports, a widespread cost shock leads to a price adjustment that cushions the impact on profits. But higher relative prices still reduce demand for the product, and therefore revenue. For some industries (such as furniture produced for the mass market), AIDS can also affect revenue through its impact on market demographics and incomes of afflicted households.

In high-prevalence countries, the risk of doing business increases because of the microeconomic uncertainties noted above and further uncertainty about how the disease will affect the investment climate more broadly. For example, increased government expenditure to cope with the health emergency may reduce spending on infrastructure and public services, or create pressure for higher taxes. The quality of market-supporting institutions may be impaired by high infection rates in the civil service and the judiciary. Where the disease greatly expands the number of homeless orphans and destitute adults who lack hope for the future, it can lead to higher crime rates and accentuate the risk of political instability.

Finally, HIV/AIDS reduces investment through its effect on domestic saving. In the household sector, the disease demonstrably causes families to reduce saving, sell off assets, and incur debt. Government saving[17] can also diminish as part of the fiscal response to the heightened demand for medical services.

Through its effects on investment, productivity, and competitiveness, HIV/AIDS acts as an impediment (equivalent to a tax) to the growth of trade. The adverse consequences are most pronounced for labor-intensive production activities, the very sectors that should be leading the expansion of exports in low-income countries. These include labor-intensive manufacturing, labor-intensive cash crops, and tourism.

HIV/AIDS can also have an adverse effect on trade through its impact on the quality of transportation, port, and border services. Transportation networks are major corridors for transmission of HIV. Consequently, transport workers are among the groups at highest risk for infection. In poor countries, a high incidence of the disease can also weaken the infrastructure supporting domestic and international trade by drawing government expenditure into health programs and away from directly productive public investment.

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[16] The added cost is mitigated, but not eliminated, by endogenous responses of the employers. For example, some companies adjust to higher labor costs by switching to less labor-intensive processes, or by using contract labor in place of regular employees (who qualify for benefits).

[17] Government saving is the extent to which current revenue exceeds current (that is, non-capital) expenditure.

The Impact on Growth

Estimates of the impact of HIV/AIDS on economic growth vary widely depending on the methodology, the assumptions, and the country context. Most studies find that the disease will have a large adverse effect on total GDP in the medium-term, and a substantial effect on per capita income (after taking into account the impact on population growth). A fairly typical result is that of Arndt and Lewis (2000), who calculate that by 2010, HIV/AIDS in South Africa will reduce GDP by nearly 20 percent, and per capita income by 8 percent, relative to the levels that could have been achieved in the absence of the pandemic. The impact is likely to worsen as incidence rates rise. As stated by Bloom (2000), "the full fury of the epidemic has yet to be felt." [18]

Even if the magnitude of the growth impact is controversial, the direction is unambiguous. HIV/AIDS undermines economic growth by reducing the quantity and productivity of labor throughout the economy, impairing incentives for capital investment, reducing saving rates, devaluing education and training, and eroding the quality of market-supporting institutions, to list only the most obvious channels of impact.

To the extent that HIV/AIDS impairs economic growth, it also weakens the dynamics of trade. This is because trade and growth tend to be mutually reinforcing. The expansion of trade stimulates economic growth, and strong growth supports the expansion of trade. Economic growth directly increases the demand for imports. It also facilitates the expansion of exports by fostering investment, finance, entrepreneurship, and competition. Economic setbacks from the pandemic can disrupt this positive dynamic.

The Impact on Poverty

HIV/AIDS has a triply devastating effect on poverty reduction in heavily affected countries. First, at the national level, the adverse impact on economic growth short-circuits the most powerful engine for sustainable poverty reduction: rising national income. For example, in the model used for poverty projections in the Poverty Reduction Strategy Paper for Mozambique (2001) estimates showed that each 1 percentage point loss in the growth rate of per capita income leads to an increase of 5 percentage points in the poverty head count over a ten-year period.[19] For a population of 20 million, this means that 1 million additional people would be living in poverty at the end of the decade because of less favorable macroeconomic trends alone.

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[18] A widely cited recent study by Bell, Devarajan and Gersbach (2003) uses a stylized theoretical model to show that the long-term impact of HIV/AIDS in South Africa could be calamitous over a period of three generations because of a cumulative loss of access to education and parental guidance.

[19] Bolnick (2003). These projections are based on 1996-1997 household survey data.

Second, at the individual level, the poor are far more vulnerable to the disease than the rich. They also have far fewer mechanisms for coping with the AIDS-related loss of income and the added burden of first caring for and then burying the victims. For families living in or near poverty, the onset of AIDS and associated illness in even one parent can be tragic. The sequence of adjustments often includes reducing household saving, pulling children out of school or sending them to live with relatives, cutting back on the consumption of necessities (including health services for other family members), selling family assets, and, ultimately, incurring debt. Where the virus is widespread, traditional social networks cannot cope with the consequences.

Third, intensified poverty heightens the risk of further transmission of the disease as a result of malnutrition, lack of education, inability to afford condoms, and economic pressure on women to turn to transactional sex to augment family income.

The Impact on Agriculture and Food Security

In Africa, HIV/AIDS is causing prolonged illness and premature death for millions of small-scale farmers and agricultural workers. This directly affects production capacity by reducing the supply of labor, particularly among the most productive members of the rural economy. Agricultural households are also affected by the death of family members who have jobs in the city, the mines, or commercial farms, because of the loss of remittance income that is often used for the purchase of seeds, fertilizer, and pesticides. As a consequence, HIV/AIDS is now considered to be a major factor contributing to acute food insecurity in countries like Malawi, Zimbabwe, and Zambia.

The loss of productive family labor leads poor households to cultivate less land and take labor-saving shortcuts that reduce productivity, such as less careful mounding, weeding and mulching, and less use of fertilizer and pesticides. To avoid risk, many afflicted households reduce the cultivation of cash crops in favor of subsistence crops. The premature loss of parents and elders also diminishes the inter-generational transmission of knowledge about cultivation, animal husbandry, and risk management. In addition, recent evidence in the literature on "new variant famines" suggests that the disease also weakens the ability of poor households in Africa to recover from lean seasons caused by droughts or floods. Commercial farmers are also affected, though less dramatically, by lower productivity among their workers.

The impact of HIV/AIDS on agriculture and food security creates a vicious circle: hunger and malnutrition heighten the risk of contracting the disease and its associated illnesses, which in turn contribute to hunger and malnutrition. Programs to maintain food production and food supplies can complement direct health interventions in breaking the chain of disease transmission.

The Impact on Education

HIV/AIDS has a serious impact on the education system through both the demand and supply sides. On the demand side, the disease has a sharp demographic effect on the school-age population because so many women die before completing their reproductive years, and because children born with the infection usually die before going to school. Many children of parents with HIV/AIDS leave school because they must care for parents who are suffering from associated illnesses, because their families can no longer afford the fees, or because they have to work to compensate for the loss of family income. Similarly, many single-parent orphans drop out of school to work at home or join the labor force. Double-parent orphans from poor families are even less likely to continue their schooling because surrogate parents tend to favor their own children, and those who are left homeless face a daily struggle to survive in the village or on the streets.

The risk of HIV/AIDS affects incentives for children and young adults to stay in school. A 15-year-old who sees many others dying by age 30 may well conclude that there is not much point in pursuing further education. This shortening of time horizons due to the decline in life expectancy—more specifically the period of productive work—eliminates much of the expected payoff from such an investment.[20]

On the supply side, the most direct effect is that HIV/AIDS kills teachers. The numbers can be startling. For example, a 1998 World Bank study estimated that the disease will kill one quarter to one half of the teachers in Malawi by 2005.[21] The impact goes well beyond the supply of teachers to include those who train teachers and those who administer the education system. Also (as a recurring theme), the additional demand for health programs threatens to cut funding for education, which is generally one of the largest components of the government budget. Finally, widespread HIV/AIDS can also disrupt the quality of the learning environment for those who remain in school because teachers are frequently absent, and it is hard for anyone to concentrate on lessons when parents, teachers, kin, and friends are falling ill and dying.

The Impact on Opportunities for Women

Women comprise a majority of AIDS victims in Africa—even though evidence suggests that women engage in casual sex far less frequently than do men.[22] Women are disproportionately

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[20] In Botswana, the most extreme case, the US Census Bureau estimates that HIV/AIDS has reduced the average life expectancy to 39 years, when it would have reached 72 years by now in the absence of HIV/AIDS. By 2010, the figure could be below 30 years, unless effective programs for prevention and treatment are implemented and sustained. Source: Stanecki (2002).

[21] Cited in Bollinger *et al* (July 2000), p.9.

[22] UNAIDS (2002), Annex on "HIV/AIDS country specific estimates for end-2001." The estimate is that 58 percent of those living with HIV/AIDS in Africa are women, and 42 percent are men. Also, the data on

vulnerable to infection for biological reasons. Moreover, the lack of social and economic empowerment for women and the high incidence of violence against women in many countries make it more difficult for women and girls to reject unwanted advances or to insist on safe sex practices.[23] This includes a high incidence of sexual predation in school and in the workplace.

In addition to being the main victims, women and girls also bear the main burden of providing home-based care for other family members with AIDS. Female family members are most likely to drop out of school or forego opportunities to earn income. If a wife is suspected of being HIV positive after her husband dies, she faces powerful emotional abuse in many traditional societies from social stigma and discrimination. Accentuating these burdens, inheritance laws and traditional practices in many African countries deny women the right to family assets when the male head of household dies. As a result, women are often left destitute and without marketable skills. Recourse to transactional sex only increases their vulnerability.

Reflecting this problem, the Act authorizing the PEPFAR initiative specifically calls for the development of strategies "to increase women's access to employment opportunities, income, productive resources, and microfinance programs."[24]

The Impact on the Environment and Natural Resources

A major consequence of HIV/AIDS is to slow the rate of population growth, and possibly bring it to a halt.[25] Though one might infer that the impact on the environment and natural resources is therefore positive, demographic effects are just part of the story. Offsetting this is the effect of the pandemic on poverty and the quality of natural resource management.

The link between HIV/AIDS and poverty has already been discussed. Here the key point is that poverty is a principal cause of environmental degradation in low-income countries. As the disease intensifies poverty or holds more people to a subsistence livelihood, it can increase pressure on resources through charcoal burning, deforestation, poaching, over-fishing, and wildcat mining. Furthermore, poor rural households that lose primary workers may have less capacity to adhere to traditional soil-conservation practices, and to use fertilizers to restore soil quality.[26]

"reported higher risk sex" show far higher rates for men than for women in every reporting country. Data from www.unaids.org.

[23] Little attention has been devoted to sexual vulnerability of young boys, especially homeless orphans.

[24] Section 101(b)(3)(G) of Public Law 108-25—May 27, 2003. This mandate is not consistent with the funding earmarks listed in Section 402 of the legislation.

[25] Stanecki (2002) reported U.S. Census bureau estimates that the population growth rate could be negative by 2010 in Botswana, Mozambique, Lesotho, Swaziland, and South Africa, and close to zero in Zimbabwe and Namibia. These estimates do not necessarily accord with projections made by local experts.

[26] References: Mauambeta (2003), FAO (2003).

At the local level, community-based natural resource management is difficult enough in normal circumstances. The task is much harder when a pandemic leads to the premature death of village leaders, destitution for many households, large numbers of orphans, severe strains on the traditional social fabric of the community, and shortened decision horizons. At the national level, fiscal pressures from slower growth and demand for health services are likely to reduce funding for environment programs (which rarely have a top priority). In addition, the disease will cause the loss of experienced environmental managers, while reducing the supply of freshly trained professionals.

Regardless of the population growth rate, measures to offset the adverse effect of HIV / AIDS on the environment can improve sustainable natural resource management.

5. Programmatic Implications

These brief impact summaries demonstrate the importance of HIV/AIDS as an economic development crisis in high-prevalence countries. The list of AIDS-related problems can easily be extended to other areas of concern to EGAT. For example, HIV/AIDS can have a serious effect on microenterprise development and microfinance organizations. It poses difficulties for the design of social safety nets. It also impairs economic development by eroding the quality of governance, the strength of democratic institutions, the effectiveness of legal and judicial systems, the stability of the national security apparatus, and increasing the severity of crime and corruption.

The primary programmatic implication of this analysis is that a broad multi- and cross-sectoral approach is essential for effective use of foreign assistance resources. There are three reasons. First, promoting economic growth is a fundamental and long-standing strategic goal of the Agency. In view of the pervasive *economic* consequences of HIV/AIDS, virtually all of USAID's economic development assistance to high-prevalence countries need to take into account the effects of the pandemic. This linkage should be systematic and coordinated across sectors.

Second, many of the economic effects of HIV/AIDS are first-order problems for economic development that require resources and support now. These include the impacts on agriculture and food security, poverty, education, and opportunities for women. For trade, investment, and growth of the private sector, the impact of the pandemic may be less dramatic, but is still substantial. These areas of central concern to the Agency's economic growth strategy must also be covered in the expanded multisectoral strategy.

Third, our discussion of impacts highlighted multiple feedbacks between the health crisis and the economic crisis. Thus, programs to mitigate the economic effects will reinforce efforts through the Medical Model to "turn the tide against AIDS in the most afflicted nations."[27]

One problem in pursuing a broad multisectoral approach is that the scope and magnitude of the economic impacts are not well understood. This is not a justification for inaction. Instead, it is a strong reason to include careful studies of the impact of HIV/AIDS in every major

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[27] State of the Union Address.

program on Economic Growth and Trade. This will enable the Agency to identify critical areas for intervention and develop programs to make the best possible use of resources to deal with the economic implications of the disease.

This approach has been adopted by USAID missions in Zambia and South Africa, as well as the Regional Center for Southern Africa (RCSA). The Zambia mission's M*ultisectoral HIV/AIDS Strategy 2004-2010* includes sectoral impact studies to document the effects of HIV/AIDS, and activities to mitigate the effects in each major sector. These include measures dealing with food security and nutrition for vulnerable households, training in agriculture for female heads of household, and comprehensive plans to address the impact on the education sector, among other things. In South Africa, the mission has funded empirical studies on the economics of HIV/AIDS, including the effects on and responses of households, businesses, sectors, and macroeconomic performance.[28] The studies have been important in shaping the national debate on HIV/AIDS policy. As a deliberate by-product, the program also contributed to developing national capacity for research on the economics of HIV/AIDS. As for the RCSA, its *Regional Strategic Plan 2004-2010* states that all RFPs and RFAs should require bidders to propose effective approaches to mitigating the impacts of HIV/AIDS, and that the Performance Monitoring Plans should include indicators to track the results. The EGAT bureau should seriously be considering how best to build on these efforts.

[28] A collection of the research has been published as a special issue of the *South African Journal of Economics*, edited by Booysen and Dike (2002). See also the website for the Health Economics and AIDS Research Division, University of Natal (http://www.nu.ac.za/heard).

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Appendix A. Selected Indicators for High-prevalence Countries

Selected Indicators for High-prevalence Countries , end-2001
(prevalence rate of 5% or higher, adults age 15-49)

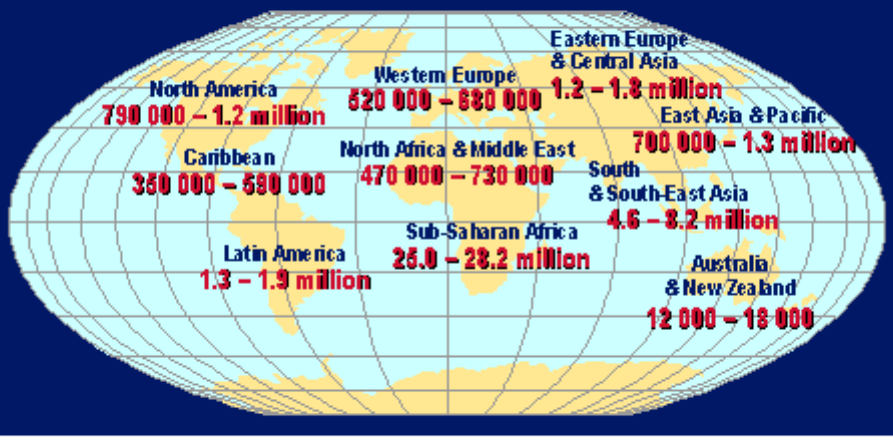
Country	A Prevalence rate adults (15-49) (%)	B People living with HIV/AIDS, end-2001 Total	C Adults (15-49)	D Adult women (15-49)	F Children (0-14)	G AIDS orphans (0-14)	H Life expectancy at birth (years)	I Per capita govt expenditure on health (US$)	J Per capita income (US$)
Sub-Saharan Africa									
Angola	6	350,000	320,000	190,000	37,000	100,000	40	19	660
Botswana	39	330,000	300,000	170,000	28,000	69,000	40	126	2,980
Burkina Faso	7	440,000	380,000	220,000	61,000	270,000	42	4	220
Burundi	8	390,000	330,000	19,000	55,000	240,000	41	2	100
Cameroon	12	920,000	860,000	500,000	69,000	210,000	48	8	560
Central African Republic	13	250,000	220,000	130,000	25,000	110,000	43	6	260
Congo	7	110,000	99,000	59,000	15,000	78,000	53	12	700
Cote d'Ivoire	10	770,000	690,000	400,000	84,000	420,000	45	7	610
Ethiopia	6	2,100,000	1,900,000	1,100,000	230,000	990,000	48	1	100
Kenya	15	250,000	230,000	140,000	220,000	890,000	51	6	360
Lesotho	31	360,000	330,000	180,000	27,000	73,000	36	18	470
Malawi	15	850,000	780,000	440,000	65,000	470,000	40	4	160
Mozambique	13	1,100,000	1,000,000	630,000	80,000	420,000	43	8	210
Namibia	23	230,000	200,000	110,000	30,000	47,000	49	76	1,780
Nigeria	6	3,500,000	3,200,000	1,700,000	270,000	1,000,000	49	3	290
Rwanda	9	500,000	430,000	250,000	6,500	260,000	44	6	230
Sierra Leone	7	170,000	150,000	90,000	16,000	42,000	34	4	140
South Africa	20	500,000	4,700,000	2,700,000	250,000	660,000	51	92	2,600
Swaziland	33	170,000	150,000	89,000	14,000	35,000	39	28	1,180
Tanzania	8	1,500,000	1,300,000	750,000	170,000	810,000	47	5	280
Togo	6	150,000	130,000	76,000	1,500	63,000	52	4	270
Uganda	5	600,000	510,000	280,000	110,000	880,000	49	8	250
Zambia	22	1,200,000	1,000,000	590,000	150,000	570,000	40	10	330
Zimbabwe	34	2,300,000	2,000,000	1,200,000	240,000	780,000	38	20	…
Caribbean									
Haiti	6.1	250,000	240,000	120,000	12,000	200,000	50	12	440

Sources: Columns A-G from UNAIDS, Report on the global HIV / AIDS epidemic, 2002*, Available at www.unaids.org. Updates to end-2003 are due to be posted in July 2004. Columns H-I are from WHO, World Health Report 2003. Column J is from World Bank, World Development Report 2004, Appendix Table 1. Columns I-J use exchange rate conversions to US$.*

Appendix B. Global HIV/AIDS Estimates

UNAIDS and WHO (2003), ***AIDS Epidemic Update: 2003***

Adults and children estimated to be living with HIV/AIDS as of end 2003

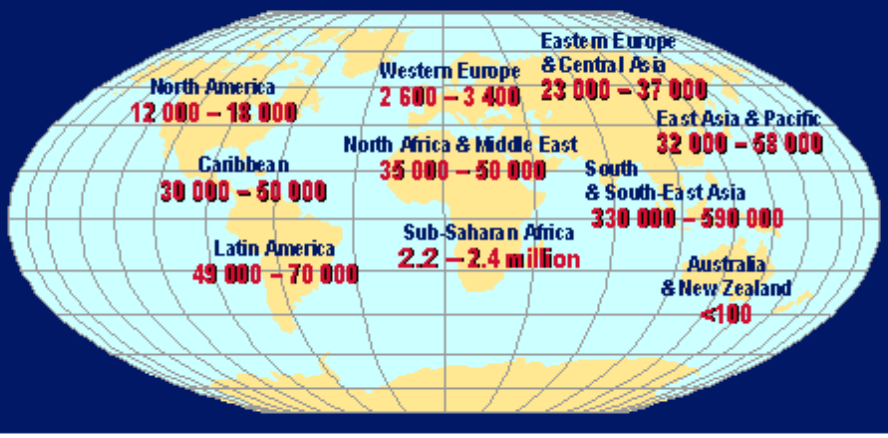


UNAIDS

Total: 34 – 46 million

World Health Organization

Estimated adult and child deaths from HIV/AIDS during 2003



UNAIDS

Total: 2.5 – 3.5 million

World Health Organization