bear for the current crisis in education and research, they cannot be expected to overcome the situation on their own. Lack of financial resources and skilled personnel will make such a scenario virtually impossible. That means Africa's governments will need help from national and international aid organizations.

Yet, when it comes to science and technology, Africa does have its own internal pockets of strength. For example, such national and regional centers of scientific excellence as the Immunology Biotechnology Laboratories in Cameroon, the African Centre for Meteorological Applications in Niger, and the African Centre for Technology in Senegal could be transformed into international centers of excellence capable of functioning even more effectively than they do now. Africa has also achieved success in the application of science and technology for development that too often has been drowned out by the din of dismal news concerning Africa. The development of genetic molecular markers to improve tea harvests in Kenya, ongoing efforts to examine alternative treatments for river blindness in Uganda, sickle-cell research in Ghana, and

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studies of the use of indigenous plants for the treatment of diabetes in Madagascar are examples of science-based initiatives in Africa that deserve greater public recognition. Africa's science academies must become more active in policy debates related to science-based development. Currently, Africa, a continent with 54 nations, has only nine merit-based science academies. The need to strengthen existing academies must be accompanied by strategies to launch such institutions where they do not exist. Several African nations (among them Nigeria, South Africa, and Tanzania) have recently invested in science and technology programs and displayed a commitment to democratic principles that bodes well for the future, regardless of how fragile their current promising situations may be. The key question is whether these nations will serve as models for others to follow or become part of a litany of examples of hope unsustained.

Southern hemisphere cooperation could prove to be a key element in the enhancement of science and technology. Advanced developing nations such as Brazil, China, and India should forge strategic alliances with African nations. Not only would such alliances among developing nations make them less beholden to the "benevolence" of the North, but the kinship of experience would also represent a more realistic and effective way of addressing sci-

ence-based development issues in Africa.

Major responsibility for the future of African science rests in the hands of Africa's governments.

Beyond the issue of South-South cooperation is the issue of North-South cooperation. Experts estimate that 30,000 Ph.D. holders of African descent, many with science degrees, live and work outside their home countries. That figure far exceeds the total number of African-born scientists with Ph.D.s working in Africa. That is why it is important for all scientists, and especially those of African origin living and working in the North, to assist efforts to rebuild the capacities of Africa's scientific communities. And that is why it is essential for the governments of Africa to nurture environments that not only provide sufficient financial resources but also allow scientists from Africa and elsewhere to interact freely and without constraints.

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Conspiracy of Silence: AIDS on African University Campuses: A Report

In Challenging the Challenger: Understanding and Expanding the Response of Universities in Africa to HIV/AIDS, M. J. Kelly, a professor at the University of Zambia, eloquently documents the failure of many African universities to speak out and confront the HIV/AIDS crisis head-on. This report is based on case studies of seven universities in Benin, Ghana, Kenya, Namibia, South Africa, and Zambia, commissioned by the World Bank–led ADEA Working Group on Higher Education. It seeks to understand how the disease is affecting African universities and to identify responses and coping mechanisms that might profitably be shared with sister institutions in similar circumstances.

A Disquieting Picture

The report's overriding message is that the institutions studied remain in the dark concerning the HIV/AIDS situation on their own campuses. The first part of the report puts this matter into the broader context of African development and examines some of the social and economic consequences of the epidemic. In 1999, over two million

AIDS-related deaths occurred in the 54 countries of Africa, with infection rates of 5 percent or more. According to some estimates, the number of AIDS orphans resulting from these deaths stands at close to or in excess of one million in each of the following countries: Ethiopia, Kenya, Malawi, Mozambique, Rwanda, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe. The disruptive effects of the disease on households, employment, health, education, and other systems are profound. The case studies reveal that HIV/AIDS is unraveling hard-won development gains, with the worst-affected countries experiencing major development reversals. Even in less affected countries, African universities are finding they must operate in a deteriorating socioeconomic environment. Future prospects are not bright.

> **Evidence suggests that the university in Africa is a high-risk institution for the transmission of HIV.**

Common Features

In spite of differences in the details, the studies show that HIV/AIDS is having a serious impact on the fiscal situation of universities in many of the same ways as it does on other institutions. The disease increases operating costs, reduces productivity (especially through high absenteeism), diverts resources, and threatens sources of income.

Evidence suggests that the university in Africa is a high-risk institution for the transmission of HIV. "Sexual experimentation, prostitution on campus, unprotected casual sex, gender violence, multiple partners, and similar high-risk activities are all manifested to a greater or lesser degree." Therefore, the report recommends, the entire university community—but in particular the university management—needs to face this threat squarely. "In the HIV/AIDS context of university life today, the university culture is in danger of affirming risk more than safety. It is in danger of affirming death more than life."

One unsettling finding that emerges from the report concerns the social life of students on campus and the extreme vulnerability of female students, workers, and those in precarious circumstances. Kelly says the case studies "are shot through with concern about the subordinate status of female students and, in particular, their inability to negotiate for either no sex or safer sexual practices." He speaks about "consensual rape," whereby, because of her lack of empowerment, the female partner consents under duress to intercourse in order to preserve a relationship, avoid a beating, ensure financial support, or repay favors. The case studies suggest the prevailing climate on university campuses may encourage such violence and thereby facilitate the spread of HIV/AIDS.

Institutional Responses

Describing university responses to the HIV/AIDS crisis, Kelly says the case studies point to an "awe-inspiring silence" at the institutional, academic, and personal levels. Consequently, universities do not translate an awareness that they should be concerned with HIV/AIDS into any meaningful action plan. Universities largely leave the responsibility for action to interested individuals and groups. They undertake no institutional response, such as framing policy guidelines, taking a proactive role, mounting workplace education programs for the protection of staff, or mainstreaming HIV/AIDS awareness into the university curriculum, financial planning, and management.

In the absence of university policies, the inclusion of HIV/AIDS in teaching programs depends mainly on individual or departmental initiatives. The results tend to be piecemeal, though the case studies concur in citing medical and health science programs as frequent exceptions to this rule. These departments generally require students to participate in courses that cover all aspects of the disease, even though the focus is mostly on its medical and clinical aspects. The studies also note that other departments occasionally try to integrate relevant aspects at appropriate points in the study of geography, administration, education, ethics, psychology, gender studies, or life sciences. But to achieve a meaningful impact on student and staff behavior, such initiatives should be extended to all aspects of university programs, including teaching content, research priorities, management, fieldwork arrangements, curriculum design, professional training, strategic planning, budgeting, and human resource development.

> **One unsettling finding that emerges from the report concerns the social life of students on campus and the extreme vulnerability of female students, workers, and those in precarious circumstances.**

University AIDS Research

One of the brighter findings of the case studies concerns research and the contribution of African universities to international understanding of HIV/AIDS. University research on HIV/AIDS covers all areas—scientific, medical, social, and communication—and frequently includes community outreach and advisory/consultancy activities as well. A steady output of research emanates from graduate degree programs. University staff draw upon this experience to help frame national policies, conduct workshops for gov-

ernment departments, and provide support for nongovernmental organizations. But although commendable research is being produced, the case studies make it clear that this information is not well shared within or among universities themselves.

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A Call for a Coordinated Strategy

The report describes how universities have begun to take steps in the right direction, bringing together the multidisciplinary knowledge and expertise to respond to the epidemic, aided by the commitment of those few individuals who are already involved. Yet it emphasizes that a coordinated strategy is conspicuously absent. Kelly suggests that universities can learn much from how African industry has responded to the HIV/AIDS crisis and cites the South African industrial group, Anglo-American, as a possible model.

The report closes by outlining a two-pronged strategy for African universities to consider in shaping their own responses to HIV/AIDS—reflecting the inward-looking and outward-looking dimensions of the traditional university mandate and mission. The inward-looking dimension addresses the concern that a university must sustain itself as a functioning institution and keep itself in good working order. The outward-looking dimension relates to the university's core functions of teaching, research, and community service. Its discussion focuses on what is needed to produce quality graduates who have the skills and flexibility to understand and man-

age the HIV/AIDS crisis in their country.

Conclusion

In conclusion, Kelly outlines the fundamental principles that must support such a two-pronged strategy. They are: (1) get the facts about HIV/AIDS out into the open and break every form of silence, secrecy, and shame that enshrouds the disease; (2) recognize the extent to which HIV/AIDS has been feminized and exploits the subordinate status and subjugation of women and, in response, act urgently to promote greater gender equity, to overcome the social and other constraints to enhanced female participation, and to lead by word and example in transferring power and responsibility to women; (3) ensure that the entire university culture is enlightened by human rights principles, use deliberate and conscientious adherence to these principles to reduce vulnerability to HIV/AIDS and to help those infected or affected by the disease to live in dignity, and allow no form of stigma or discrimination to find a haven within the institution; (4) recognize that persons living with HIV/AIDS are among the most important actors in any program to contain and control the disease, and without in any way using or manipulating them, draw upon their expertise and insights and fully involve them in every aspect of its HIV/AIDS campaign; and (5) coordinate university plans and programs with those at the national level so as to ensure greater synergy, unity of direction, complementarity of activities, access to resources, and more efficient use of resources.

The case studies insist that for these strategies to be effective, committed leadership among the university's top management is the foremost requirement. HIV/AIDS is a matter of life and death, for individuals and for institutions. Implementing an institutionwide HIV/AIDS prevention program requires commitment, people, skills, materials, and funds. But most of all, it requires leadership with a sense of urgency. ■

The Philippines: Current Trends

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Ten years ago a report characterized the Philippine system of higher education in a way that is still valid today. The college population was described as an unusually large one, larger than in most developed countries and comparable to that in the United States. Students were concentrated in a few programs: business and commerce, engineering, and teacher education. Few students were

enrolled in science and technology programs. About 85 percent of college students attended private schools. This might have represented a strength and large savings for the government, but it was made possible by low tuition, which in turn resulted in poor quality owing to low teacher salaries and poor facilities. Graduate education was concentrated in teacher education; there were few graduate programs in science and engineering. Moreover, the completion rate in graduate programs was very low.

The preuniversity preparation of Filipino students was inadequate. This was partly due to the inadequacies of resources at the elementary and secondary levels. Also, the typical college-bound student had only 10 years of preuniversity schooling, in contrast to the 12-year preparation in most countries.