Harvesting the Future:
The Case for Tertiary Education in Sub-Saharan Africa

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Executive Summary

Overview: To assess the case for USAID support of tertiary education in Sub-Saharan Africa (SSA), we reviewed the literature on higher education and development as well as the common challenges facing institutions of higher learning. By focusing our attention on eight country case studies[1], we find that USAID should increase its support for higher education in SSA. USAID funding of higher education should focus on four broad areas: improving the administrative capacity of these institutions, developing successful accreditation and monitoring systems, increasing support for research and development (R&D) activities, and bridging the gap between academic programs and labor markets.

The case for tertiary education: USAID commits very few resources to tertiary education in SSA and funding is scheduled to decrease in FY 2008. Analyses of the rates of return in the 1980s and 1990s led many donors to shift education funding toward primary and secondary schooling at the expense of tertiary education. More recent analyses for some SSA countries, such as Ghana and Nigeria, have shown the rates of return to education actually increase with the level of education. While the private returns to higher education exceed social returns, social rates of returns in the countries studied range from 9.7% to 17%. Increasing support for higher education is a sound investment, given that the benchmark for investment decisions generally ranges from 10% to 12%.

Due to the limited data and the methodological problems that arise when calculating rates of return, we find a more cogent argument is based on higher education as a driver of economic growth and development. The potential impact of tertiary education on the strengthening of institutions, governance, social development, scientific innovation, and technological advancement is clear. An assessment of emerging economies, such as India and those of East Asia finds that institutions of higher learning, along with good governance and sound infrastructure have been critical to these countries' success. Africa faces development challenges on many fronts, but providing support to improve tertiary education is a critical component for development that cannot continue to be ignored by USAID, especially as other international donors, such as the World Bank, have expressed renewed interest in supporting tertiary education projects.

Challenges facing tertiary education: Based on our country case studies, we identify the main challenges facing tertiary education in SSA. At the root of most challenges is the lack of adequate financing for the tertiary education system. This is due to the generally poor economic conditions in SSA, competing expenditure priorities, and weak support by the international donor community. As a result, institutions of higher learning are unable to absorb the increasing demand for tertiary education. Demand pressure has been mostly attributed to the rapid population growth in SSA as well as the increased number of students completing primary and secondary education. This trend in the demand for higher education has not been identical among all groups of students; gender, socioeconomic, geographic, and ethnic inequities in enrollment remain. The increased enrollment at all levels of schooling coupled with the lack of

[1] The case studies of higher education focused on the following countries: Botswana, Cameroon, Ethiopia, Ghana Nigeria, South Africa, Tanzania, and Uganda. These countries were selected based on the availability of information about them, while ensuring a broad geographic mix.

funding has led to a decline in the quality of education. At the tertiary level, quality is exacerbated by the problems in management practices and by the meager investment in research and development. Due to the poor quality of higher education and the severe mismatch between programs of study and labor market requirements, youth unemployment in SSA is rampant. In order to address these challenges we make the following recommendations.

Reaping the benefits of tertiary education: In order to reap the full benefits of tertiary education, we believe that USAID should provide technical assistance to African universities in the following areas:

Administrative capacity

By providing training seminars or building on existing partnerships between American and African universities, USAID can help African institutions to build their administrative capacity. In particular, trained personnel are needed in the areas of academic programming, budgeting, and grants management. Improvements in these areas result in access to additional financial resources and in better quality of education.

Accreditation and monitoring

Existing mechanisms for accreditation and monitoring of universities in SSA differ by country and are often poorly implemented. A standardized process for SSA is needed and could potentially be introduced through the Association of African Universities. USAID can again provide the technical support and the expertise needed to implement such programs, which affect the quality of education and of university graduates.

Research and development

Low levels of investment in R&D in SSA can be attributed to the lack of adequate resources and necessary expertise; USAID assistance is needed to enhance this sector. Assistance can consist of providing laboratory equipment, training in grant writing/management, and encouraging American researchers to partner with their African counterparts. R&D is particularly important for increasing agricultural productivity, building knowledge economies, and bridging the gap between the academic and professional worlds. Increased R&D funding may also stem some of the "brain drain" among African academics.

Labor market linkages

Technical assistance can play an important role in eliminating the mismatch between universities and labor markets. African universities need the skills to design curricula that prepare students for the professional world. They also need expertise in partnering with the private sector in order to incorporate internships or apprenticeships in their academic programs. By facilitating such partnerships, USAID can contribute to improving the quality and outcomes of tertiary education in SSA.

I. Introduction

In the current knowledge-based global economy, institutions of higher education play a crucial role in economic development. For countries in Sub-Saharan Africa to have the capabilities to participate in this information age, a well-educated labor force is vital. Africa lacks a constant economic growth pattern and the low proportion of skilled people only exacerbates poverty. This report identifies the challenges facing African tertiary institutions and proposes modest recommendations on how to enhance higher learning.

The purpose of this study is to examine two primary research questions:

1.) Is there a case for funding tertiary education[2] in Sub-Saharan Africa?

2.) What common challenges affect the ability for tertiary systems to be drivers of economic development?

In order to answer these questions, eight countries were examined as case studies (Botswana, Cameroon, Ethiopia, Ghana, Nigeria, South Africa, Tanzania, and Uganda). This sample was stratified based on providing equal representation to the three main regions of Sub-Saharan Africa (west, east, and south) and on the availability of information pertaining to the tertiary education system in each country. A detailed literature review based on information obtained from academic publications, national governments and bilateral and multilateral institutions was conducted for each country and for general trends pertaining to tertiary education in Sub-Saharan Africa and in other developing countries.

[2] The World Bank (2007b) refers to tertiary education as "all post-secondary education, including but not limited to universities. Universities are clearly a key part of all tertiary systems, but the diverse and growing set of public and private tertiary institutions in every country—colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, distance learning centers, and many more—forms a network of institutions that support the production of the higher-order capacity necessary for development." It is our view that the terms tertiary and higher education may be used interchangeably with the understanding that neither exclude institutions dissimilar from traditional universities and colleges.

Six common trends and concerns about the state of higher education were identified across the case studies: excess demand for tertiary education, the questionable quality of education, inequity and uneven access to higher education, a lack of linkages between higher education and the labor market, and insufficient finances. In order to assist African states in alleviating these challenges facing tertiary education, this study suggests four strategies that can feasibly be undertaken by USAID: (1) enhance administrative capacity, (2) strengthen accreditation and monitoring, (3) develop better labor market linkages and (4) invest in R&D.

The paper is divided into six sections: Section I evaluates the case for investing in tertiary education in Sub-Saharan Africa; Section II focuses on the role of higher education institutions in promoting agricultural research and development; Section III looks at the role of donors in enhancing tertiary education in Africa; Section IV analyzes the trends that appeared in examination of the case studies; Section V explores our recommendations; and Section VI contains a concluding overview.

I. The Case for Supporting Tertiary Education in Sub-Saharan Africa

Returns on Education

In the first three decades after World War II, bilateral donors and development agencies placed high priority on tertiary education in developing countries. This support for tertiary education declined considerably at the end of the 20th century due to several factors, of which studies on returns on education played a considerable role. The most widely cited review of returns to schooling is George Psacharopoulos's "Returns to Investment in Education: A Global Update," published in 1994. Psacharopoulos calculates rates of return on primary, secondary, and tertiary schooling based on the "full" method[3]. He finds that both private and social returns to education are highest for primary schooling and lowest for tertiary education. In addition, social returns to tertiary education were found to be quite low, which did not justify considerable public spending on this level of schooling. As a result, international donor agencies decreased their support for higher education to almost nil. However, a closer look at Psacharopoulos's (1994) data for six of the eight African countries covered by our study reveals various patterns of returns on education[4]. Private rates of return are higher for tertiary education than for primary and secondary education in both Ghana and Nigeria. Private returns on higher education in the eight countries range from 17% to 38% and social returns range from 9.7% to 17%. While it is true that in general, primary education has the highest returns, this does not mean that returns on tertiary education are not significant. Considering that a return of 10% to 12% is usually the threshold for investment decisions, the figures for returns on education seem to justify investment in higher education (Gittinger, 1982).

[3] This refers to finding the discount rate that equates the present value of the stream of income benefits for a certain level of education to the stream of education-related costs. In the case of private returns, benefits represent post-tax wages and costs are mainly opportunity costs. In the case of social returns, benefits are pre-tax wages and costs are the same as for private returns, augmented by the costs of resources invested in education.

[4] See Appendix A.

More recently, some authors have challenged traditional analyses of rates of return based on methodological concerns. Bennel (1996) argues that rates of return are measured based on formal sector wages, whereas African economies rely mostly on the informal sector; since the informal sector has a different wage structure than the formal sector, return on education estimates tend to be biased. Bennel also points out biases in calculating benefits of education, which are often understated due to the difficulty of measurement. This particularly restricts social returns on education since the benefits to society are often those benefits that are more difficult to measure. Bloom, Canning, and Chan (2006) enumerate some of the social benefits of higher education: increased entrepreneurship, job creation, good economic and political governance, and research, among others. Since many of these factors are not easily measured, they tend to be neglected when calculating social rates of return on higher education.

Recent studies on returns to schooling in Africa have attempted to obtain better quality data through household surveys and have tried to take into account the positive spillovers of higher education. A study of rates of return on human and physical capital in the manufacturing sector of five African countries (including Cameroon and Ghana) finds that the private returns on education increase with the level of education (Bigsten et al., 2000). Bigsten et al (2000) argue that increasing returns are due to the scarcity of university graduates in the manufacturing sector and to the ability of these graduates to positively affect the quality of production (which makes them more attractive to employers). More recent country-specific studies have revealed that in Ethiopia, for instance, private rates of return on education are in fact highest for tertiary education (World Bank, 2003). In Nigeria, Okuwa (1995) shows that the earnings of holders of the National Certificate of Education and of polytechnic and university graduates are

respectively 18%, 63%, and 178% higher than earnings of secondary school graduates on average.

Caution should be taken when interpreting rates of return on education in Africa as these rates have been distorted by the outbreak of HIV/AIDS. On the one hand, HIV/AIDS exerts upward pressure on returns on education by lowering life expectancy and increasing the opportunity cost of higher education. As a result, the supply of teachers and university graduates decreases and their wages increase so that higher earnings are now attributed to tertiary education. On the other hand, HIV/AIDS lowers firms' incentives to train workers who now have a lower life expectancy; consequently, workers' earning potential becomes limited and returns on education are lowered (Schultz, 2003). Therefore, we believe that the case for supporting tertiary education may be better made by highlighting its importance for African development.

Higher Education improves the political context

Improving countries' political context is particularly relevant in the case of Africa, where most countries are considered to be undemocratic and to be lacking political freedom. Moreover, most countries have poor governance and corruption indices and suffer from conflict and forced migration. A healthy political context is important for the development of Africa in three dimensions: it improves the functioning of institutions that define "the rules of the game," which in turn affect the reform process in all areas of development; credit ratings and foreign direct investment decisions are in large part based on a country's political context; and lending practices by international financial institutions are increasingly based on countries' performance in terms of governance and public administration.

Higher education enhances the political context by contributing to democracy, civil service, and peace. First, it helps build and maintain democracy through two mechanisms: the social sciences and humanities help promote research and interpretation of different forms of government, offering the public the opportunity to debate and agree on a model that best suits the national context. Moreover, liberal education in general instills in students "the norms and attitudes crucial to democracy." By later becoming professionals in their societies, students can in turn promote enlightened citizenship across the nation. These norms and attitudes include open debate and argumentative reasoning, autonomy and self-reliance, and equal opportunity. Students instilled with such values are all the more needed in developing countries "where the numbers of highly educated [are] often barely sufficient to provide the capacity necessary for democratic governance and a functioning civil service, let alone to enhance development" (World Bank, 2002, p. 10). The need for providing human capacity is of great importance in Africa, where large numbers of skilled and knowledgeable people are being lost to HIV/AIDS in all sectors of the economy, including in institutions of higher learning. Building such capacity is particularly important among civil servants who are managing institutions and making policy decisions. Juma and Bell (2006, p. 15) illustrate the importance of having skilled civil servants in the area of science and innovation; the authors believe that "successful implementation of science and innovation policy requires civil servants to have policy analysis capacity…[through] training in technology management, science policy, and modeling foresight techniques." Such skills can only be obtained through training programs offered by institutions of higher education. The authors suggest that "schools of governance" ought to be established in universities and that attendance of these schools should be made a pre-requisite for civil service practice.

Higher education also contributes to peace, as mentioned in a recent paper published by the United Nations Educational, Scientific, and Cultural Organization (Mohamedbhai, 2003). This is achieved through four channels: teacher training, women's education, peace-related courses and research, and student exchange programs. Mohamedbhai (2003, p. 2) argues that "values, skills and knowledge imparted by teachers largely determine the quality of education and influence the attitudes of the pupils." Therefore, encouraging peace through teacher training can have positive spillovers on society as a whole. The author suggests that teacher education at the university level should focus on values that promote tolerance and respect, and should include courses on culture, ethics, and human rights. Similarly, women, particularly in the developing world, play an important role in the socialization of children; efforts to reach gender equality in higher education should therefore be strengthened as highly educated women are able to make more enlightened decisions and can also transfer the values and norms acquired through university training to their children, who represent the future of Africa.

Peace-related courses can also be included in the curricula of various academic programs and can be designed to address problems facing Africa today such as refugee studies or conflict resolution and management. With regard to refugee studies, Mohadmedbhai (2003, p. 3) remarks that "Africa is facing a serious problem of refugees and is in dire need of young people who have been specifically trained to handle their complex situation and who, unlike expatriates, are culturally attuned to their requirements." Moi University in Kenya illustrates the importance of such courses; in 1990, the university established a Centre for Refugee Studies, which has contributed important research on "the politics of refugee policy in Kenya and the administration and coordination of humanitarian intervention and assistance in Kenya, Uganda, and Tanzania" (Mohadmedbhai, 2003, p. 5). Finally, peace can be promoted through student exchange

programs since these encourage respect and understanding among different cultures and ethnic or religious groups. The Southern African Development Community has initiated such programs by signing a Protocol on Education and Training. Member countries have agreed on the free movement of students and faculty and on the equal treatment of national and international students in terms of fees and admission (SADC, 2007).

Tertiary Education Contributes to Scientific and Technological Advancement

The increasing importance of technology, access to information, and innovation in the global economy and its impact on economic growth has been well documented. As the recent World Bank report "Constructing Knowledge Societies: New Challenges for Tertiary Education" (2002, p. xvii) recognizes, technology and access to information are critical to economic development; for "knowledge accumulation and application….are increasingly at the core of a country's competitive advantage in the global economy." A country's education system is the critical link that enables the development of human capital to adapt existing science and technology and to develop new solutions for local development challenges.

Recent efforts by the international community have increased primary and secondary enrollment rates; however, enrollments in tertiary education in Africa are considerably lower than other regions. For the continent of Africa, enrollment in postsecondary education is "less than 3% of the eligible age group" (Teferra, 2004, p. 26). The state of tertiary education, in terms of both quality and enrollments, is an important factor that differentiates income levels between developed and developing nations. In addition, the difference is also attributed to disparities in technological abilities (Economic Commission of Africa, 1998). Supporting efforts to improve higher education and expand research activities in Africa has the potential to

tremendously impact economic growth and development, especially given the many constraints facing these institutions of higher learning.

Universities have traditionally been a source of innovation in most societies and the research conducted by these institutions is critical to technological and scientific advancement, growth, and development (Ramphele, 2004). Historically, attempts to improve capacity by USAID involved educating Africans in the United States. This model did not prove particularly effective due to the applicability and feasibility of utilizing the methodologies and technologies of developed countries in developing ones. In addition, many Africans remained in the United States following their course of study, which limited the program's success.

Expanding higher education and increasing the activities of local research institutions to incorporate local expertise is critical to the development of Africa; "it is necessary for African countries to have their own scientists, working in their own countries, to adapt and innovate to meet local conditions" (Doss, 2003, p. ix). At present, research conducted in sub-Saharan Africa has made significant contributions to improving the livelihoods of many. For example, the Kigali Institute of Science, Technology, and Management in Rwanda, which was established roughly ten years ago with funding provided by the United Nations Development Programme and technical assistance provided by the German Agency for Technical Cooperation, has improved the ability of many to prepare food through the invention by the Institute of an energy efficient oven (Juma, 2006). In addition, through adaptation and innovation of agricultural products, disease and pest resistant crops; crops with enhanced nutritional yields; and crops not indigenous to the continent, such as wheat and barley, have been successfully introduced. Research focusing on "agriculture, transport and communication, energy, human and animal health, education and the environment" has had the most impact on African development

although the actual calculation of the contribution is difficult to quantify (Economic Commission for Africa, 1998). Efforts today should focus on HIV/AIDS, improving agricultural production, and expanding infrastructure, given the challenges they pose to African development.

Public financing of research activities is warranted due to the positive externalities that accrue to society (Doss, 2003, p. ix). Public benefits include "generating economic growth through increasing productivity and technological capacity enhancement, creating space for public dialogue, and creating an intellectual infrastructure of people who can be involved in solving development problems" (Doss, 2003, p. ix). Due to the limited resources available to African governments and the incentive structure for the private sector that limits its investment, the international donor community should support science and technological advancement in sub-Saharan Africa.

Analyses of the rates of return to higher education have led many to conclude that public education funds should be directed towards primary and secondary levels. More recent analyses for some Sub-Saharan African countries, such as Ghana and Nigeria, have shown that rates of return actually increase with the level of education. However, due to the availability of data and the methodological problems that arise when calculating rates of return, we find a more persuasive argument is based on higher education as a driver of economic growth and development. The potential impact of tertiary education on the strengthening of institutions, governance, social development, scientific innovation, and technological advancement is clear and warrants international donor support.

II. The Impact of Tertiary Education on Agriculture

Agriculture in Africa provides 60% of all labor employment and composes the backbone of Sub-Saharan countries; it is the largest source of foreign exchange, and contributes for around 40% of the continent's hard currency earnings. Consequently, the agricultural sector remains vital for economic growth across Africa. Despite being a continent inhabited by farmers, around 200 million people—or 28% of Africa's population—were defined as being chronically hungry in 2000. Moreover, the share of imports of agricultural products has exceeded the share of exports. Since the 1960s agriculture exports have decreased from 50% to 20% of total exports from Africa (NEPAD, 2002).

Agriculture is also the main source of income in rural areas, where 70-80% of the total population reside. Enhancing agricultural productivity has the potential to augment rural incomes and can extensively promote economic growth. Most of the developed countries in the world that have grown quickly in the past 50 years have also undergone a big increase in agricultural productivity per worker (NEPAD, 2002). According to various studies carried out in Sub-Saharan Africa, adding $1 of new farm income has been shown to increase household income by $2-3[5]. Agricultural research and development is warranted by its high payoff: a study conducted by the New Partnership for Africa's Development (NEPAD) shows that spending on agricultural research generated high payoffs in many countries in Africa, with each dollar spent generating a median internal rate of return of 37%. Research on pearl millet, maize, sorghum and other grains has generated returns ranging from 16% to 135% (NEPAD, 2002).

Colonial governments created the original structure of the African national agricultural research systems (NARS). As a result, the focus was more on the production of export crops for use as raw materials in European manufacturing industries. When African countries gained

[5] A $2-3 increase is relatively high given that more than half of Africans live below $1 a day.

independence in the 1960s, the system was changed to include small and subsistence farmers into commercial agriculture. This twofold focus remained a significant characteristic of African NARS (Nienke & Stads, 2004). Consequently, Africa's agricultural research and development (R&D) system continued to be fragmented. The remainder of this section will provide a brief background on other contemporary challenges in the agricultural R&D sector, with an emphasis on the role of tertiary institutions to promote agricultural development.

Challenge: Weak Linkages

One challenge is the weak linkages between farmers, extensionists, and research systems in Africa. Researchers tend to have little formal contact with extension services and farmers, which has led to a lack of farmers' priorities being reflected in the research agenda. Moreover, sometimes donors dictate the national research program, which might not be related to national objectives or farmers' needs. The lack of linkages has resulted in farmers adopting less than 10% of the crop varieties that they were offered. In addition, many times farmers do not have the opportunity to learn about new technologies developed in research institutes because of the lack of an adequate system to transfer innovations from research to the extension systems. Consequently, extension services often overlook farmers who would benefit the most from technologies developed, especially women, who are the main laborers providing agricultural output in most African countries. Even when farmers know that innovative technologies will raise productivity, they are often hesitant to bear the risks associated with new advances (NEPAD, 2002).

Another weak linkage is between agricultural education and training institutions and agricultural research services. Agricultural schools have considerable potential to contribute to agricultural productivity. For instance in Ethiopia, genetically modified and hybrid crops were

created and circulated to farmers by agricultural universities, resulting in increased maize yields of 70-80 quintals per hectare and barley from 10 to 23-25 quintals per hectare per year (EIAR, 2007). In addition, in many countries, there has been an intentional separation of research and education. Universities and colleges of agriculture developed separate from the research system such that research was restrained to station experiment and structured along disciplinary lines. Little effort has traditionally existed to link university research and agricultural research institutes, extension services, and the private sector (Mbabu & Ochieng, 2006).

Research activities are often conducted as part of postgraduate programs in agricultural tertiary institutions despite limited resources. However, these activities are often not directly linked to national research programs as the selection of research priorities depends more on the interests of the faculty. Professional prestige and tenure are often seen as more vital than assisting local agriculture (Lindley, Crowder & Doron, 1996). Furthermore, the amount of teaching and managerial responsibilities often does not leave the faculty enough time for research; it is estimated that faculty spend as little as 10–30% of their time on research (Mbabu & Ochieng, 2006). Another concern is the obsolete curriculum in agricultural schools. The type of knowledge and skills required from agricultural graduates changes over time, and institutions of higher education have thus far been unable to review and update their curricula frequently (Lindley et al, 1996).

Another weak linkage is within the agriculture ministries, which fund most agricultural R&D. Internally, there have often been competing divisions to develop niche capacities rather than following a demand-driven research agenda and letting that agenda direct growth (Mbabu & Ochieng, 2006). For these reasons, the resulting national agricultural research systems do not encourage "demand-driven, impact-oriented innovation" (Nienke & Stads, 2004).

Challenge: Lack of Postgraduate Training in Africa

A study conducted by the International Food Policy Research Institute (IFPRI) in 1996 showed that 74% of Sub-Saharan African countries offered some tertiary training in the agricultural sciences. However, 50% of the agriculture faculties were located in just three countries (Nigeria, Sudan, and South Africa). In the same year, a total of 84 faculties of agriculture existed in Africa, and only 3.5% of students enrolled in these institutions were seeking a post-graduate degree, while 61% were pursuing an undergraduate degree. The same research shows that higher-education enrollments in the agricultural sciences decreased from 6 % in the 1980s to 4% in the 1990s (Beitema, Pardey & Roseboom, 1998).

A survey conducted by Davis (1998) provides data on the enrollment of African students in the United States higher education institutions. He found that more than three quarters of the African students enrolled in the agricultural sciences in 1996 were pursuing postgraduate degrees. The bar chart in Appendix B, from the Association of Commonwealth Universities (ACU), shows the country-of-origin of degrees held by university staff working in 34 agricultural science and related faculties in ten countries in Africa. At least 85% of country-nationals with a doctorate earned their degree overseas, and around two thirds of faculty with doctoral degrees also received their masters degrees abroad (Beitema et al, 1998). These figures reflect the limited opportunities for agriculture post-graduate training in Africa.

Lack of funding and Low Capacity

Spending on Agricultural R&D in Africa has remained stagnant over several decades[6] (NEPAD, 2002). Reductions in government support for agricultural research and extension is in part due to scarce resources of African governments. However, spending on agricultural research has also decreased in proportion to total government spending. The agricultural research

[6] See Appendix B.

intensity ratio, which is the ratio of total public spending as a percentage of agricultural output has been low—0.7% in Africa—compared with the World Bank's recommendation of 2.0% (Nienke & Stads, 2004). Moreover, unlike in other regions, the private sector is not increasing its research efforts in Africa as government spending is decreasing. With a share of about 2% of total spending, the private sector plays an exceptionally small role in funding agricultural research in Africa while in industrial countries, private enterprises fund over 50% of agricultural research (Nienke & Stads, 2004). In addition, more than half of the countries in Africa employ fewer than 100 full-time researchers. Even though the number of agriculture schools has significantly increased over this decade, the individual capacity of many institutions is limited. For instance, more than 40% of the 86 tertiary agricultural schools in Nigeria and Sudan employed fewer than five full time researchers in 2000 (Nienke & Stads, 2004).

With limited resources dedicated to agricultural research and little incentive for students and the private sector to become involved, the significant potential of agriculture to promote economic development, end hunger, and reduce poverty remains unrealized. Increasing agricultural productivity through R&D in the African agrarian societies is crucial for development. Subsequent sections will explore the trends and challenges facing tertiary education and affecting its capacity to act as conduit between research and practical application in agricultural adaptation. One recommendation that arises out of the limited capacity of agricultural R&D, as will be discussed later, is significant investment in partnerships between U.S. and African universities in research and technology, which can promote technology transfer and more effective research and application practices.

III. Donor Funding for African Tertiary Education

USAID, other bilateral donors, and the World Bank traditionally have focused their attention on funding primary and secondary education, rather than on higher education. However, as primary enrollment has increased, some attention is shifting to the need to fund higher education. Currently, USAID is distributing funds to Sub-Saharan African nations based on these nations' goals for development, need for relief and recovery from humanitarian events, and role in advancing U.S. national security. The allocation of bilateral funding is based on rewarding low-income countries that show effort in improving governance by giving them funding priority and recognizing that some countries will need help to overcome instability and weak governance in order to grow and prosper.

USAID has two broad education objectives: (1) to promote equitable access to quality basic education and (2) to enhance knowledge and skills for productivity, which includes workforce development and higher education. In fiscal year 2004, USAID invested $55.4 million in grants for higher education worldwide and $330 million for children's basic education. Thus, funding tertiary was less than one-fifth of funding for basic education (USAID, 2005). Between 2000 and 2004, U.S. funding for higher education in Africa totaled $42 million, or an annual average of just $10.5 million for the entire continent (Roberts, 2005).

One large USAID program in the education sector is the African Education Initiative (AEI), a $600 million multi-year program focused on improving basic education. This program was started in 2002 and will run until 2010; it aims to benefit 80 million African students. The program's goal is to build capacity through education and training, providing scholarships and textbooks, and by improving access to quality education (USAID, 2007a).

USAID funding for African higher education is heavily focused on sponsoring university partnerships between American and African institutions, primarily through Higher Education for Development (HED). USAID has recently carried out higher education projects in Angola, Ethiopia, Malawi, Nigeria, Rwanda, Senegal, South Africa and Sudan[7]. Through USAID's work with HED, there are university partnerships with universities in many African countries, including Botswana, Ethiopia, Ghana, Nigeria, South Africa, Tanzania, and Uganda. In 2006, HED established 20 new partnerships, with a total grant value of $4,250,000; 21% of the active partnerships were in Africa (HED, 2006). Generally these grants are intended to strengthen or develop particular departments or faculties in individual universities; the aid is not intended for general institutional support. For example, in 1998 a consortium of Mississippi universities worked with the Agostinho Neto University in Angola to create that country's first social sciences faculty. One partnership goal was to train public administrators to fill the bureaucratic vacuum left by the country's two-decade civil war using newly founded academic capacities (HED, 2006). While HED's partnership program has assisted African tertiary institutions to develop research and teaching capacity, the current level of funding limits the number of cooperative relationships. In comparison to the HED program, USAID contributed $8,366,000 alone to South Africa for general education programs in 2006 (USAID, 2006).

The World Bank demonstrates a significantly greater commitment to higher education than USAID, providing an average annual loan package for tertiary education of $53 million to Sub-Saharan Africa (World Bank, 2007a). Given the influence of The World Bank, its growing interest in tertiary education sends an important signal to international actors that the expansion of a tertiary education system has great potential to advance economic development in African states. More tangibly, the Bank has the institutional capacity to conduct comparative analyses of

[7] See Appendix C for details about these projects.

higher education and labor market trends, linking higher education to economic development and monitoring and diffusing best practices and lessons learned. The Bank has fostered international dialogue by sponsoring events such as the "Improving Tertiary Education in Sub-Saharan Africa" conference held in Ghana in 2003.[8]

World Bank Education Lending (FY90-FY06)

	World	Sub-Saharan Africa Region
Total for all education projects	$28,745 million	$4,948 million
Average annual for all education projects	$1,691 million	$291 million
Total tertiary education	$6,674 million	$906 million
Average annual tertiary education	$392 million	$53 million

Source: World Bank. (2007)

Between 1990 and 2006, World Bank global lending for all education projects[9] totaled almost $29 billion; in the sub-Saharan Africa region the total was $4.9 billion, an average annual disbursement of $291 million for all education projects in the region. The sub-Saharan Africa region represented 17.2% of the global total. In the same period, the World Bank distributed $6.674 billion specifically for tertiary education, $906 million (13.6%) of which went to sub-Saharan Africa.[10, 11] Of all education loans for Africa during that time period, just 18.3% were earmarked for tertiary education in the region (World Bank, 2007a).

The World Bank has arguably done a better job of recognizing the challenges of the "knowledge economy." The World Bank has focused attention not just on increasing enrollment

[9] In its reporting, the World Bank divides education projects into pre-primary, primary, secondary, tertiary, vocational, adult/non-formal education, and general education sector (World Bank 2007a).
[10] It is worth noting that while the annual average of tertiary education loans to Africa (fiscal years 1990-2006) was $53 million, there is a significant deviation between years. There were no loans in fiscal year 2003 and just $12 million in loans in fiscal year 1997. In fiscal year 1992 there were $164 million in tertiary education loans to Sub-Saharan Africa.
[11] In comparison, the East Asia and Pacific region received $2.221 billion in tertiary education loans, 33.3% of the world total for tertiary lending (World Bank, 2007a).

in higher education, but also in advocating the reform of education systems and encouraging the design of more pragmatic educational programs that make countries more competitive in the global economy. The World Bank has assisted knowledge building by producing research and making loans for technology and "knowledge society" projects, among others approaches. The World Bank has also advocated for and distributed "innovation funds," also called competitive funds or quality improvement grants. These funds reward universities and other institutions that are attempting to improve the quality and relevance of tertiary education systems to the globalized economy. Funds are awarded based on a competitive process that includes proposal submission, peer review and project selection. Currently the Bank has distributed innovation funds ranging from $500,000 to more than $200 million to 28 countries, including a total of $81.6 million to institutions in six African countries (Saint, 2006).

The Bank partners with academic institutions and international organizations in order to study higher education and to share data and develop research initiatives (Tertiary Education Bank, 2007). Collaborators have included Organization for Economic Cooperation and Development, the Association for the Development of Education in Africa, and the United Nations Educational, Scientific, and Cultural Organization. University-based partners have included Boston College's Center for International Higher Education, the State University of New York at Albany and at Buffalo, and the Center for Higher Education Policy Studies at the University of Twente in the Netherlands.

Total U.S. funding for higher education in Africa totaled $42 million between 2000 and 2004. Other bilateral and multilateral donors have been more generous: the commitment to higher education by Sweden and Norway between 2000 and 2004 has totaled more than $90 million. Japan's commitment during that same time period was $86 million, the highest per

project funding of all G8 countries; Canada's was $75 million. Support from the United Kingdom has totaled $22 million, followed by the Benelux countries at $14 million. Other donors include Germany and France (Roberts, 2005).

Donors' priorities vary; the U.S. focuses heavily on HIV/AIDS research and education, as well as science and technology projects, yet per project funding is the lowest of all G8 countries, after Russia. Meanwhile, the Scandinavian countries concentrate on research collaboration, providing practical benefits to African communities, with a focus on East Africa and the Horn of Africa. Japan, Canada and the Benelux countries focus on human resources development. The Benelux countries, in addition to human resources development, sponsor academic program development; they place less emphasis on research collaboration and more on communications and technology. Several partnerships exist between Canadian and African universities, with a primary emphasis on West Africa, and particularly on Francophone countries. German aid focuses on enhancement of academic quality, while French aid places some importance on research collaboration projects (Roberts, 2005).

Compared to the international community, the United States gives comparatively little to promote the development of tertiary education in Sub-Saharan Africa. As was discussed in the first section of this study, embracing the transformative power of higher education can result in societies with political stability and economic growth. With such global interests as promoting democracy and freedom, reducing the impact and prevalence of HIV/AIDS, and ensuring strategic security, a small investment of resources by the United States could result in benefits for Africans and Americans alike. However, as the next section will discuss, significant challenges exist in tertiary education in Sub-Saharan Africa. Providing assistance to states and

institutions to overcome these challenges will be necessary for the benefits of tertiary education to be realized.

IV. Trends in Tertiary Education in Sub-Saharan Africa

Excess Demand

A majority of tertiary institutions in Africa are increasingly unable to absorb student demand. Population growth, an increase in enrollments, economic downturns, and structural adjustment have led to strained capacities in many countries. Many institutions have therefore made little or no infrastructure improvements to their tertiary institutions. This, in turn, has resulted in crowded classrooms, limited student-access to computers and a dearth of basic equipment and supplies.

As has already been noted, several studies have claimed that the returns of tertiary education are lower than those at the primary and secondary levels. Many governments and international donors have reacted by focusing the majority of funding on the latter, in spite of the fact that these same studies indicate that returns to tertiary education are indeed significant, albeit lower. As intended, one consequence of this policy is that the number of students who complete secondary school has increased. A residual consequence that has not been adequately planned for is the increase in the number of students seeking entrance to tertiary institutions as a result of higher enrollment at the primary and secondary levels. Although some institutions, such as the World Bank, have begun to shift their perspective on the topic in the past few years and now favor a greater level of support for tertiary education, funding remains much lower than that for primary and secondary education. After years of neglect, however, many of these universities lack sufficient infrastructure and capacity to absorb this demand surge. The result is that many students who qualify to enter tertiary institutions are unable to do so. For example, in 2001, 35,000 students qualified for admission to universities in Uganda, while only 12,000 new students were admitted (Banya, 2001). Ironically, these funding priorities may hamper the vital

preparation of future teachers at the primary and secondary level, where the demand for university-educated teachers rises as school enrollment continues to increase.

Responses to the challenges posed by excess demand have taken several forms. In some cases, efforts have been introduced to improve or expand infrastructure. Due to the scarcity of government funding, external donors provide a large proportion of assistance in this area. For example, the primary focus of British funding projects to tertiary education in Africa has been to library development (Roberts, 2005). Another response that several countries have undertaken in order to reduce capacity pressures at tertiary institutions is to establish new universities or institutes. For example, the Ethiopian Ministry of Education plans to create five new national universities in order to expand the total enrollment capacity to more than 155,000-160,000 students in universities and colleges by the 2010-2011 academic year (Ministry, 2005). Similarly, Cameroon increased the total number of private universities from one (University of Yaoundé) to six since 1993 (Njeuma et al, 1999). The case of Cameroon, however, is instructive in demonstrating that establishing new universities alone is unlikely to solve these problems sufficiently. Although the creation of new universities did reduce the pressure on the original campus in the short-run, many of the new institutions faced similar capacity challenges after a few years. The shortcomings in many universities' infrastructures remain overwhelming, however, and clearly more support is needed to address these challenges effectively.

Many countries are looking to the private sector to absorb some of the excess demand. The number and importance of private institutions in Africa varies greatly from country to country. Initially, in the 1990s, the growth in the sector was highest in East Africa, first in Kenya, then followed by Tanzania and Uganda (Banya, 2001). All of the countries included in this study, however, employ this strategy to different degrees. For example, many have passed

laws allowing the establishment of private universities. In addition, some government bodies, such as Botswana's Department of Student Placement and Welfare (MOE) take an active role by placing students in private institutions to ease the burden on their public universities (SARPN, 2007).

Although private institutions show potential in meeting increasing demand for tertiary education, they also face several challenges. First, tuition and student fees tend to be higher than those at public universities. As a result, many private institutions currently serve students from families with a relatively high income. For example, annual tuition at private institutions in Nigeria ranges from $769 to $3,285 per student (Obasi, 2006) while the country's GDP PPP is only $1,400 per capita (CIA, 2007). The cost of private education, therefore, limits equitable access to all students who might have the necessary skills to undertake tertiary studies, but who lack the financial resources to attend (Banya, 2001). Second, in many countries there is a general perception that private institutions are of lower quality than their public counterparts. There are several possible reasons for this impression. For example, some students who are unsuccessful in passing their qualifying examinations for public universities enroll in private institutions as their second choice. This impression may also have roots in the relatively poor quality of many private secondary private schools, particularly in West Africa (Banya, 2001). Finally, like public universities, many private institutions face funding difficulties. Although these challenges may hamper the development of private universities, their numbers in many countries continue to increase rapidly. Also, many of them tend to focus their programs on areas that are currently underserved by the public institutions (Banya, 2001). It is therefore likely that they will become an increasingly important part of tertiary education.

Questionable Quality

Current aid efforts have centered on increasing access to education as one of the major means of promoting growth and development in Sub-Saharan Africa. However, according to recent studies, it is the levels of quality in the education received, not merely enrollment rates or years of schooling, which are strong predictors of long-term economic growth. The value of education lies in its ability to enhance cognitive and professional skills, and without it, an increase in the enrollment rate is an empty achievement which does little to increase human capacity (Betts, 1999; World Bank, 2007c). While educational attainment levels in Sub-Saharan Africa are rising on average, not enough attention is being paid to quality and performance, in particular at tertiary institutions. The observed declines in the quality of tertiary institutions, although at times country specific, are generally attributed to decreasing quality at the primary and secondary levels, declining budget allocations for tertiary education, problematic management and administrative practices, and low levels of investment in research and development.

Decreasing quality at the primary and secondary level

One target of the Millennium Development Goals is that by 2015 all children, boys and girls, will have access to universal primary education. Although a hefty goal considering the starting levels of the least developed nations, significant progress has been made in this regard given that net enrollment ratios in Sub-Saharan Africa are up from 53% in 1990/91 to 64% in 2003/04 (World Bank, 2007c). However, increases in primary and secondary enrollments have not been met with sufficient increases in trained teachers, textbooks, and other necessary school supplies. Thus, the rapid growth of basic education enrollment levels has actually contributed to the deterioration of quality. In Ghana, 60% of secondary level students are functionally illiterate;

in Botswana this number rises to 63% (World Bank, 2007c). The decline in quality at the primary and secondary levels results in university entrants less prepared for the rigor of tertiary level education who are more likely to fail classes or drop out all together (Polgreen, 2007).

Decreasing budget allocations for tertiary education

Sub-Saharan Africa is on the verge of experiencing a unique demographic transition, with an estimated 258 million Africans expected to reach prime working age (15 -24 years) by 2025. This transition is expected to produce a "demographic bonus" in which a large influx in the workforce of young able workers coincides with stabilizing fertility rates and thus fewer births. As India and China before it, with large investments in human capacity, this boost in labor has the potential to produce huge productivity dividends for Sub-Saharan Africa (UNECA, 2000). In the short run however, Sub-Saharan Africa's young and rapidly growing population is placing greater pressure on an already strapped education system. Past cuts and current stagnant levels in government expenditures on education are undermining the ability of tertiary institutions to absorb the increasing demand without forsaking quality and performance.

Many universities have responded to the surge in demand by gradually increasing the size of the entering class, but have not increased funding for investments in infrastructure. The result has been severe overcrowding. In universities across Sub-Saharan Africa, overcrowding has led to violent student protests and dramatically lower performance levels. For instance, the University of Science and Technology (UST) in Ghana has been closed numerous times in response to growing student unrest over insufficient housing and debilitated academic facilities (Domatob, 1996; Peil, 1996). Furthermore, academic journals, books, and lab supplies critical for tertiary learning are simply unavailable or outdated in many of the universities of Sub-Saharan Africa (Domatob, 1996; Peil, 1996; Afolayan, 2007; Polgreen, 2007). For example, the

University of Legon in Ghana, once renowned as one of the best in Africa, is almost entirely void of contemporary textbooks, journals, and technology critical for postgraduate students (Domatob, 1996).

The decline of funding, and reduction in quality associated with it, are also large factors in Sub-Saharan Africa's inability to retain qualified professors and research scholars at public universities. Faced with stagnant salaries, unmanageable class sizes, and dwindling funding for research it comes as no surprise that university professors across the continent are leaving academia in droves, opting instead for more profitable opportunities in the private sector or work abroad. In Ethiopia for example, academic lecturers with doctoral degrees or equivalent terminal training decreased from 28% in the 1995-1996 to 17% in 1999, and to 9% in the 2002-2003 academic year (Saint, 2004; World Bank, 2003). Moreover, the University of Botswana had a total of four hundred and sixty five vacancies in the academic year 2006/2007 (University of Botswana , 2007).

Problematic management and administrative practices

Funding related constraints however are not the only reason Sub-Saharan universities continue to lose the cadre of intellectuals needed to provide quality education in institutions of higher learning. In Ethiopia, a lack of academic freedom has been cited as the primary reason why as many as one-half of all academics emigrated in the 1990s and why the trend continues today (Aredo & Zelalem, 1998 as cited in World Bank, 2003; Getahun, 2002; Wondimu, 2003). In Sub-Saharan Africa the state is typically the primary source of public university funding. Financial dependence on public funds translates to significant government control in the management and administration of national universities. Many universities experience limitations in the autonomy of decision-making processes. For example, at the University of

Botswana and at public universities in Ghana, the president of the country is also the Chancellor of the university (Peil, 1996; University of Botswana, 2007).

Private sector institutions are popping up across Sub-Saharan Africa to meet the excess demand currently unsatisfied by the public sector (Sosale, 2000). Proponents of the private sector contend that greater participation from the private sector reduces the control of governments by diversifying funding sources and promotes competition between tertiary education institutions. Greater competition in turn breeds the perfect environment for increases in innovation, efficiency, and effectiveness of the tertiary system. Thus, with added resources and greater competition the quality of tertiary and primary level education is enhanced (Sosale, 2000). However, while private institutions and other public university alternatives such as the TVET have grown exponentially, the ability of government regulatory bodies to monitor and evaluate performance of these institutions has been limited. In Ghana for example, a fragmented system under various ministries and agencies has led to meager oversight and poor regulation of TVETs, with government officials unable to keep apace of the number of new privately run institutions. Ghanaian officials support increases in the enrollment capacity of TVETs as a cost efficient way of providing professional skills, but poor management and administration have diminished the reputation of these institutions. The public perception is that TVETs are not suitable alternatives for tertiary level education. They are seen as second-tier tertiary institutions meant for students who fail to gain entrance to traditional universities (Bainden-Amissah, 2006). In Tanzania, the same holds true; problems with management and program design of TVET have actually resulted in budget cuts (Wedgwood, 2005).

4. Research and Development

Institutions of higher learning are entrusted to perform two critical functions. The first is to provide, through quality instruction and cutting edge curricula, the training necessary to produce high skilled localized manpower. The second charge is to perform groundbreaking research for the enhancement and development of the knowledge, innovation, and technology necessary to increase productivity and maintain competitiveness in world markets. While the first function produces greater return to the individual than to society, it is the second function that has the potential to push developing countries out of poverty and on the fast track towards growth and development (Doss, Evenson, & Ruther, 2003).

The availability of research opportunities is also instrumental for attracting academics and retaining them in academia. Academics are typically interested in advancing their careers through the publication of original research in peer-reviewed journals and presentations of findings at international conferences. The support of academic institutions for these activities is fundamental, especially when considering the attractiveness of work prospects in the private sector and abroad. Yet, it is research and development that has suffered the brunt of continued budget cuts (Hoffman, 1996). In South Africa and Uganda research spending for 2000-2003 as a percentage of GDP is estimated at 0.8%, significantly below the OECD average of 2.5% (HDI, 2006). However, the experience of such institutions within these nations such as the University of Botswana, which has also managed to maintain six research institutions and eleven journals, is relatively unique (University of Botswana, 2007). The African Academy of Science estimates that African countries contribute less than 0.2% of total outlays to research and development, thus spending a mere 1% of gross national product on research and development. The West on

the other hand spends on average 20% or more (Hoffman, 1996). This lack of investment has dire consequences for institutions to attract talent and produce growth-promoting research.

Contrary to the stark picture presented thus far, Sub-Saharan countries realize the importance of quality in the provision of education at all levels. For example, seven out of the eight case study examples have implemented reforms requiring that university applicants pass national qualification exams in order to qualify for tertiary education. For example, in Ethiopia upon graduating from a secondary school, students seeking entrance to a tertiary education institution must pass the Ethiopian Secondary Leaving Certificate Exam (ESLCE) (Wondimu, 2002). In Ghana similar measures have been taken to increase quality. The government, for instance, has created the Untrained Teacher Training program (UTT) to educate the estimated 10% of current teachers practicing in rural areas (Bainden-Amissah, 2006). Efforts to increase autonomy and reform the management and administration of tertiary education are also under way in a number of countries. An example of this is Ethiopia's effort to expand the ability of tertiary institutions to select leadership and through the provision of block grants, which increase budget flexibility (World Bank, 2003).

Inequity and Uneven Access

Issues of equity and access play a significant role in how tertiary education has evolved in Sub-Saharan Africa. Types of inequity within higher education in Sub-Saharan Africa include gender, socioeconomic status, geography, language and ethnicity. Creating more just, peaceful, and evenly developed societies requires educational access to be provided to all who seek it. Moreover, given the prevalence of gender and rural/urban enrollment disparities, Africa's tertiary system today is not adequately providing the necessary human capital with which, as was noted in the first section, to socialize children to important social values and is missing an

adequate link with which to translate advances in agriculture to the rural regions where agriculture is dominant. However, based on the case studies compiled for this project, it is evident that efforts have been made to reform educational practices to address issues of inequity and access. Some major initiatives include increases in the number of institutions of higher education, especially in underserved areas, and the implementation of distance learning programs.

Gender

Historically, women in Africa have not had equal access to education, especially at the tertiary level. According to the Ministry of Higher Education for the Republic of Tanzania (2005), a number of the institutes of higher education have instituted policies in order to increase the participation of women, bringing the population level from 23.7% to 32.7% in 2004. Additionally, women have traditionally not composed a significant portion of enrollment in the sciences. The government of Tanzania has attempted to correct this by creating a special pre-entry program that has helped lead to an increase in women's enrollment from 7.5% in 2003 to 23% in 2006 (Msolla, 2006). In Uganda, around 40% of students enrolled in tertiary institutions are women. Ugandan women only account for 4% of the students at technical colleges, 16% at agricultural schools, and 30% in medical programs. Between 1989 and 2000, the undergraduate female enrollment increased from 12% to around 40%. This increase is mainly due to the government's mandate of affirmative action beginning in 1989 (Liang, 2004, p.34).

However, in some areas of Sub-Saharan Africa, women account for a larger portion of the student population than men. In Botswana, girls outnumber boys in primary and junior secondary school but the opposite is true at the level of senior secondary and higher education. While men represent the majority of students at vocational training centers, at the University of

Botswana, there are 7,416 men and 8,294 women enrolled (University of Botswana, 2007). In South Africa, women account for 54% of the student population at the tertiary level.

Socioeconomic Status

In South Africa, education is crucial to the creation of sustainable socioeconomic development, but the legacy of apartheid has posed a tremendous challenge in overcoming the disparities. The apartheid system created a level of poverty that excluded blacks in South Africa from receiving quality education in areas such as math and science that provide the skills needed for higher paying jobs. Those students in the poorer, and frequently more rural areas, have access to lower quality primary and secondary education, making it impossible for them to compete with wealthier students once they reach the tertiary level. Despite significant gains in the last ten years, many rural schools still do not have qualified math, science, and technology teachers (USAID, 2006).

Geography

The division in equal education between rural and urban areas is quite significant. In Tanzania most students come from only two regions with "two-thirds of students (coming) from only 6 of Tanzania's 22 regions" (Cooksey, Levey et al. 2003, p. 4). In the past, financial resources were poured into capital cities given their importance as the colonial hub, thus also becoming the center of the educational system. In Ethiopia, the government has recognized the need to increase rural enrollment and has implemented a positive discrimination policy for students from the "relatively underserved" regions of Afar, Benishangul and Gumuz, Somali, and Gambella; is actively planning for improving rural education through pedagogical reforms and improved teacher training; and is attempting to move education out of the capital city and into the ethnically-based regions (Yizengaw, 2003; Ministry, 2005).

Ethnicity/Nationality

Considering the various colonial, tribal, and ethnic composition of Sub-Saharan Africa, it is unsurprising to note that ethnic and national disparities exist. In 1993, nearly half of all South African students were white, while 40% were African. By 2002, the portion of white students only made up 27% and the African share had grown to 60%, with the proportion of colored and Indian students remaining static. Currently, black students account for almost 75% of the student body. These numbers are close to reflecting the country's racial demographics and indicate the dedication of the government to improving the education system in the post-apartheid era. In Botswana, the challenge lies with the nationality of the faculty. Bjarnason and Lund (1999) suggest that recruitment is most problematic at senior levels in the fields of economics, mathematics, and some natural sciences because of high international demand and higher wages offered abroad for academics in these fields. At the University of Botswana, Botswanan citizens represent 65% of the academic staff, but only 16% of professorships (INHEA, 2007). While "brain drain" is clearly a problem in this case, there is also a substantial amount of circulation amongst African academics. For example, the majority of the economics faculty of the University of Botswana are Ghanaians and Nigerians (University of Botswana, 2007).

Language

In Cameroon, the most pressing equity problem is access to education for members of the English-speaking minority. The University of Youndé, Cameroon's largest university was founded as a bilingual institution; yet, in practice almost all of the instruction is in French and the teaching approach and curriculum are based on the French model. In addition to language difficulties, most English-speaking students are educated under an Anglo-Saxon model throughout primary and secondary levels, putting them at a significant disadvantage compared to

French-speaking students. Establishment of the University of Buea in 1993 has increased access to students who previously had to leave the country (primarily going to Nigeria, the United Kingdom and North America) to obtain instruction in English. As this university is located in the region where Anglophone communities are concentrated, it has led to increased access to the English-speaking population. In addition, Nigeria has very strong local identities and there are at least 250 languages spoken in the country, making teaching in native languages difficult. However, after the first three years of primary school, all education is conducted in English, the national language, as to enable education in all areas and nullify existing regional linguistic disparities (Jibril, 2003).

One common approach to promoting broader equity and access includes building new institutions. In Cameroon, reforms of 1993 established four full universities at pre-existing specialized institutes, thus increasing their capacity and program availability. Located in rural areas, these universities have increased access for students from those regions and has made them more convenient and less expensive in terms of travel costs. In 1991-1992, only 4% of the students at University of Yaoundé, the major national university, were from the Northern provinces. In 1995-1996, while these students only accounted for 3% of the students at Youndé, they made up 50% of the student population at the new University of Ngaoundéré (located in the Northern Adamawa province) (Njeuma, D. et al., 1999). An additional example is Nigeria, which in 2001 had 45 universities and in 2003 an enrollment of more than 1 million students in more than 200 institutions, including universities, colleges of education, polytechnics, schools of nursing, and other professional training centers (Jibril, 2003). Supporting the public tertiary system are 14 registered private institutions. The presence of a relatively large number of

tertiary institutions spread throughout the nation has resulted in educating populations that otherwise may have never been served.

Distance learning is also being used in limited applications in Sub-Saharan Africa to increase access to underserved populations. In Ethiopian secondary schools, where English is the primary language of instruction, the government has instituted a distance learning program by satellite from South Africa to its 491 schools (Negash, 2006). Lectures are displayed on plasma screens in such subjects as chemistry, physics, mathematics, English, biology and civics at an estimated cost of $50 million. Frequent complaints by students and teachers are that lessons are only displayed once, power outages reduce the system's usability, and the level of English instruction as a medium of education is beyond the capabilities of the students (Negash, 2006). Given that distance education requires a significant initial investment in the development of curricula and the training of teachers to both provide lessons and leverage the distance learning technologies, plans to expand distance learning education in the direction of 'plasma education' are not currently being discussed (World Bank, 2003; Ministry, 2005). Using less technological methods, The Botswana College of Distance and Open Learning offers three programs in a variety of study areas, including learning through radio programs, print material with audiocassettes, handbooks, and study guides. Meanwhile, at the University of Botswana in 2003, more than four thousand students conducted a portion of their learning activities online; its Center for Continuing Education has an eLearning Support Center and an eLearning Certificate has been offered since 2003 (Uys, 2003).

While there is no single answer to resolving the problems of equity and access to higher education in Sub-Saharan Africa, efforts are being made by several governments to reform current programs and provide educational benefits to a larger portion of the population.

Continued efforts in these areas will require increased funding by both the national governments and outside donors if the benefits of a diverse and educated population are to be realized.

Lack of Linkages to the Labor Market

In a 2002 report, The International Labour Organisation characterized Africa by its dire labor market characteristics: high labor force growth and low employment growth, and thus high unemployment and underemployment rates. African governments, as discussed previously, have scrambled to accommodate growing populations. In the past, in response to labor supply growth, countries such as Tanzania and Zambia expanded public education and training systems and absorbed graduates into the public sector. However, in many states large-scale public sector employment is no longer feasible and the private sector is sluggish (ILO, 2002). Yet population growth and stagnating economies make it even more important for African governments to effectively and strategically channel new labor force entrants.

Having an education does not ensure graduates will find jobs. Indeed, across Africa there is high unemployment among tertiary education graduates. Based on surveys of the Nigerian labor market, Dabalen, Oni and Adekola (2001) found that 22% of university graduates were unemployed and that their prospects for employment had worsened over time. It is unsurprising then that anecdotal evidence strongly suggests that African educational institutions are ineffective at preparing students with applicable skills and do not reflect the needs of the employment market. In Tanzania, for example, Wedgwood (2005) found that the labor market had the capacity to absorb more graduates, but that rising unemployment was due to the low quality of graduates' education. In Nigeria, employers have reported that university graduates are poorly trained and graduates' skills have steadily deteriorated over the previous decade (Dabalen et al., 2001). As a result of high unemployment and poor remuneration, many African

professionals have left their countries to seek work elsewhere, thus contributing to "brain drain." Perhaps 70,000 skilled Africans leave the continent each year for lack of appropriate domestic employment; more African scientists and engineers work in the U.S. than in the whole of Africa (Commission for Africa, 2005).[12]

However, because many African tertiary education institutions are owned or funded by central governments, those governments may have unusual latitude in pressuring academic programs to better match their curricula to the labor market. However, to the extent that educational institutions resist change, this approach may interfere with institutions' autonomy. Private educational institutions may be more responsive to the needs of employers. Some states have identified TVET[13] as an important tool for matching the labor supply to the labor market and are adjusting enrollment to reflect such emerging technical opportunities. Such programs may help develop skilled and semi-skilled labor, with TVET graduates, particularly at the tertiary level, filling labor shortages in such areas as information technology, agricultural sciences, education, and nursing.

Because of increasing demand for tertiary education, some countries limit admissions into universities and colleges, leaving vocational institutions to manage some of the overflow. The ILO (2002) notes that vocational education may be used by governments to redirect students from other forms of higher education. In Ethiopia, as in other states, expansion of TVET institutions is underway. Since 1994-1995 the number of TVET institutions in Ethiopia has increased from 17 to 158 and total enrollment has increased from 2,924 to 102,649, of which

[12] Some scholars argue that remittances from emigrants make up for their lost productivity and earnings when they leave their home countries. This paper does not debate that issue.

[13] The International Labour Organisation distinguishes between technical and vocational *education* and technical and vocational *training*. Education is usually at the secondary school level and is often overseen by the respective Ministry of Education. Training usually refers to job preparation at the post-secondary level. It may be overseen by the Ministry of Labor (ILO 2002). This report concentrates on post-secondary technical and vocational training.

51% were female students in 2005 (Ministry, 2005). South Africa's Department of Education supports the Joint Initiative for Priority Skills Development, launched in March 2006. This initiative involves universities, the "further education and training" (FET, comparable to TVET) sector, and several government departments in initiatives aimed at unblocking obstacles to skills acquisition and producing more scarce and priority skills in the shortest possible time (Study South Africa, 2007).

Funding for TVET depends on whether there is private provision of services and whether the government sees TVET as an integral part of its country development strategy. In some cases, donor agencies contribute. The Tanzanian government, with substantial donor support, has been primarily responsible for funding such programs in that country. In the mid-1990s, "funding for [TVET] comprised 60% of total donor assistance for education" (ILO, 1996: 3). However, donor support has decreased drastically since (Wedgwood, 2005: 46).

There are several obstacles to increasing TVET enrollment. Many technical institutions are private, and tuition fees may discourage potential students, especially when public institutions offer free or reduced tuition. In addition, TVET may be seen as a second best option. In Ghana TVET institutions are considered to be of poor quality, meant for students who fail to gain acceptance to traditional university institutions (Afolayan, 2007; Bainden-Amissah, 2006). As such, regulation and accreditation of TVET institutions is important, especially because the private sector often dominates these types of institutions and quality affects the future prospects of graduates. In order to assure quality learning, the Tanzanian government created regulatory bodies for TVET institutions in the mid-1990s, including the National Council for Technical Education. Likewise, the Ethiopian government has supported the creation of new accreditation institutions for private TVET institutions, the development of national curricula, trades testing

and certifications centers, and the development of ICT systems that allow for distance education (Ministry, 2005).

However, even with substantial investment, TVET may suffer from exaggerated expectations. Expanding training programs is sometimes held up as the solution to poor labor market-labor supply matching (ILO, 2002). A study of TVET globally found that many governments are promoting its use (ILO, 2002). Yet results are often disappointing and there is no guarantee that TVET institutions better match the labor market. Indeed, evidence from Ghana suggests that linkages with labor market are weak at best and that the curricula of current TVETs do not fit labor market demands (Bainden-Amissah, 2006). Perhaps most importantly, the outcomes associated with TVET are unclear. A review by the DANIDA concluded that TVET had little impact in terms of poverty reduction (Wedgwood, 2005). This finding is in-line with Dar, who in 2000 concluded that "there is little justification for public investment in [TVET] because of its low impact on poverty reduction…even though the private returns are high, the social rates of return are low" (Wedgwood, 2005, p. 45).

Insufficient Financial Resources

Creating world-class institutions of tertiary education requires commitments by governments and societies alike to provide considerable financial resources. However, projected funding gaps in Ethiopia of $167 million between 2001 and 2005 and a similar gap for Tanzania of $65.6 million for 2000 to 2005 represent almost all of Sub-Saharan Africa[14], unable to adapt to the significant rise in demand for tertiary education (World Bank, 2003; Mkude et al, 2003). The high per unit cost of educating at the post-secondary level, which results from the capital

[14] Even states with relatively high economic growth rates for the region are facing funding strain for tertiary education. Botswana, with its considerable mineral wealth, is funding tertiary education at rates exceeding its GDP per capita, which is unsustainable in the long-term (International Network, 2007). Moreover, oil-rich Nigeria has been unable to fund tertiary education due to rapid corruption and ineffective governance (International Crisis, 2007).

and labor intensive nature of tertiary education, combined with the impact of population growth and the growth of students participating and graduating from secondary institutions, has resulted in financial overstretch throughout Africa (Oketch, 2003; Johnstone, 2004). A significant rise in demand has exacerbated the particularly distressing macroeconomic performance of countries within the region. A lack of foreign direct investment and trade; oppressive debts; decreased taxation revenue from state-owned monopolies and multinational corporations; demands (both encouraged domestically and by international institutions such as the World Bank) to funnel public subsidies into sectors such as public health, infrastructure, and primary and secondary education; and considerable investment in internal security have significantly reduced possible financing for tertiary institutions (Johnstone, 2004). Moreover, the impacts of structural adjustment, inflation, currency devaluation, and what Teferra and Altbach (2004) call 'political turmoil' have further constrained resources throughout Sub-Saharan Africa to support the growing number of students enrolled in tertiary institutions.

During the early development of tertiary institutions, international donor support was critical to the development of institutions of higher learning, but funding has been scarce over the past two decades. Mutulia (2001) explains that "the donor community [has] put in place a wider global programme to bring about decreased government involvement in the financing" of higher education. The country cases examined for this study demonstrated that donor support today is often tied to specific research purposes[15], with little aid for infrastructure development (building classrooms, dormitories and other facilities) and even less dedicated to general budgetary

[15] Teferra and Altbach (2004, p. 27) find that externally funded research "has implications for the nature of the research and its impact on African higher education," including limiting the applicability of research to the particular development needs and context of the nation and region.

support[16]. Counterexamples to this trend include Tanzania, where in past years 50% of funding for the University of Dar es Salaam has come from international sources, Ghana, where nearly 25% of the tertiary system is funded by donors, and South Africa, a significant recipient of educational aid (World Bank, 2005; Wedgwood 2005; Teferra & Altbach, 2003). Sub-Saharan African states are responsible for funding, on average, more than 90 to 95% of all tertiary expenditures (Teferra & Altbach, 2004). Included within these expenditures are often full-scholarship for most, if not all, students, including covering tuition, fees, textbooks and materials, room and board, and subsistence allowances.

Increasing demand for tertiary education in an environment of decreasing resources has had deleterious effects on the quality of teaching and research as noted previously. With limited budgetary resources and a dearth of support from international donors, Sub-Saharan African states have turned to their students, researchers, and administrative structures to raise revenues with which to reinvest in public institutions and have looked to private actors to reduce the need for public provision of higher education services. Some form cost sharing and privatization of education has been implemented in all eight of the country cases examined for this study.

This trend toward cost sharing between public institutions and their students has included introducing fees for tuition and other services. In order to recover fees for room and board and other expenses not related to tuition, public institutions in Nigeria, Cameroon, South Africa, and Tanzania charge registration fees to students. Uganda's Makerere University provides full scholarship to qualified and needy students and allows other students to pay tuition expenses to attend. This approach has resulted in more than 70% of the student population paying tuition, with fees from paying students comprising 30% of the University's budget (Bloom, Canning, &

[16] The World Bank has recently financed sector-wide projects in tertiary education in Ethiopia and Mozambique via loans in the amounts of $40 and $60 million respectively (Bollag, 2003).

Chan, 2006). The rationale behind cost-sharing is that students should invest in their education in cooperation with government given that students will potentially realize an increased private return in future earnings. Cost-sharing initiatives have resulted in improved faculty retention (through increased wages, the provision of living space, and funding for research) and investment in technology and infrastructure, thus resulting in an improved educational product[17] (Ishengoma, 2004). However, implementing such programs has required considerable political deft given the long-standing tradition of free higher education in Africa and the willingness of students to riot and strike in protest, as has occurred in Nigeria and Togo (Bollag, 2003).

Graduate taxes and loans have also been implemented as cost-sharing measures in Ethiopia, Ghana, and Tanzania. Ethiopia has instituted a graduate tax, with graduates paying 10% of their annual salaries for 15 years as to help the government recover investments in room and board and a portion of tuition (World Bank, 2003). Ghana's loan system, which recoups loans through contributions to the national social security plan following graduation, has proved more successful in recovering funds from students than the Tanzanian effort due to its collection mechanism. Loan systems in developing states, including recent experience in Tanzania, often fail due as a result of the inability to track former students and enforce collection. Moreover, over-subsidization by national governments is commonplace, where interest rates are set too low and do not float according to the level of inflation, thus causing the present value of recovery to fall to zero. The result is that loans effectively become grants instead of recovered funds replenishing and expanding the pool of resources for future generations. Loan programs have also been implemented in Burkina Faso, South Africa, and Kenya (Johnstone, 2004).

[17] Cost-recovery assumes that national governments do not reduce income from fees or other commercial activities from annual appropriations. Both Zimbabwe and Rwanda have done so in the past, thus reducing the potential innovative and competitive incentive and any residual benefit to research and teaching (Bollag, 2003).

Tertiary institutions in Sub-Saharan Africa have also become increasingly creative in efforts to raise revenues via commercial activities. The Kigali Institute of Science and Technology in Rwanda expects to recover 50% of its expenses from commercial activities by 2008 through selling inventions that collect rainwater for farmers, create methane from crop biomass, and provide low-cost irrigation; opening its own internet service provider; and marketing its agricultural products to local restaurants (Bollag, 2003). Providing evening classes at Addis Ababa University in Ethiopia has contributed more than 30% of the institution's annual budget, while agricultural production at Ethiopia's Jimma and Awassa Universities have raised 20% of the yearly budget (World Bank, 2003 citing Kastbjerg, 1999**)**. The outsourcing of food services and the university hotel at the University of Dar es Salaam has not only made these services profitable, but has also improved quality, without increasing the costs for students (Bollag, 2003). Moreover, the University of Zambia and Eduardo Mondlane University in Mozambique have both added to their institutions' budgets through consulting in Internet technologies and providing Internet access networks to businesses (Mutulia, 2001). In creating practical applications for research and teaching, Sub-Saharan African universities are serving their communities while raising funds needed to improve their educational capacity.

Reducing costs while meeting demand for tertiary education has also included private sector participation in establishing colleges, universities, research institutes and TVET institutions. No less than 200 private institutions were identified in the country cases explored for this study, with at least one in each country, thus providing significant expansion of educational capacity and education in emerging areas at little cost to national governments. In order to encourage the participation of private entities, Ethiopia, for instance, provides land for buildings, allows duty-free importing of instructional materials, and has established a monitoring

body to accredit institutions (World Bank, 2003). Ensuring that private institutions are providing a quality educational experience is a significant challenge to tertiary systems given the lack of capacity in most of Sub-Saharan Africa and the prevalence of diploma mills, thus requiring investment in oversight mechanisms. With private institutions enrolling more than 20% of students in several countries examined for this study, governments are better positioned to provide tertiary education to far more students than if public institutions alone were attempting to satisfy demand.

VI. Recommendations

The potential for tertiary education to have a positive impact on economic development and poverty alleviation in Sub-Saharan Africa is substantial. This study set out to determine whether or not a case existed for USAID to invest in tertiary education in Africa and to determine what challenges affect tertiary education from reaching its potential as a transformative mechanism. We found that there is a case for higher education, but that the challenges will continue to hamper tertiary systems, preventing research from being translated into new, highly productive crops, life-saving inventions, and marketable products for international trade. With the five challenges introduced in the previous section in mind, we recommend four approaches to better position tertiary institutions in Sub-Saharan Africa to be drivers of economic development.

Improve universities' administrative capacity

Our research suggests that African educational institutions have weak administrative capacity. USAID can help by providing funding and technical assistance designed to train staff at tertiary education institutions in areas such as program management, grant management, and budgeting. Training staff will enable educational institutions to perform more effectively and to more efficiently manage their resources, thus contributing to overall institutional quality. Moreover through continued partnerships between U.S. and African universities in such areas as establishing donor relations offices and budgeting and accounting systems, these tertiary systems will be better positioned to compete for grants, manage their internal resources more effectively, and demonstrate to donors that funds are being used on targeted purposes.

Develop accreditation and monitoring systems

In order to ensure that educational institutions are providing quality education to their students, it is imperative that a unified system of accreditation and rigorous monitoring be established to maintain institutional excellence. USAID can contribute by facilitating a partnership with the Association of African Universities or a similar association in order to build a crosscutting accreditation system that would apply specifically to the context and condition of African universities. Additionally, through their current partnership with Higher Education for Development, USAID has the ability to help foster relationships between U.S. universities and African universities for the purpose of evaluating and improving programs.

Strengthen African research and development capacity

African universities have limited capacity to conduct development-driven research. USAID can assist African universities by contributing to joint research projects between American and African researchers with the goal of developing locale-appropriate technologies aimed at increasing labor productivity and market competitiveness. This would include funding mentorship programs that match senior researchers from American universities with junior African researchers. USAID currently funds similar programs. The expansion of USAID funding for research and development, and in particular joint American-African partnerships, would further strengthen the linkages between American researchers and rising African scholars. Simultaneously, this type of collaborative effort can enhance Africa's ability to generate the knowledge, innovations and technological advances that are critical for long-term growth and development.

Strengthen linkages between education and the labor market

Our research suggests that African tertiary graduates do not have skills that match the needs of the labor market, which contributes to high unemployment rates. One goal should be to update academic curricula. One method would be to help develop on-going partnerships within Africa between the private sector and educational institutions. These advisory partnerships would work to reshape academic curricula to better reflect the needs of potential employers. Private sector representatives would identify the relevant skills and knowledge they find graduates to be lacking. In addition, the private sector could sponsor internships, apprenticeships, capstone/consulting projects and other work-study arrangements that prepare students for the labor market. USAID could fund technical assistance that advises African institutions and governments on curriculum redevelopment and helps examine the labor market to identify applicable skills and knowledge that tertiary students could better build. In addition, such technical assistance may best be carried out by American universities or discipline-specific NGOs who may already have existing relationships with African universities. Likewise, technical assistance could assist African universities in setting up internship programs by examining current models.

VII. Conclusion

Ample evidence demonstrates that returns to tertiary education yield significant results. Past policies of many governments and international donors have led to disproportionate levels of funding and support for primary and secondary-level schools in sub-Saharan Africa, thus ignoring a vital area of the continent's educational system. The results of these policies have been detrimental to the overall development of Africa's human capital. Meanwhile, the challenges faced by the tertiary education systems in Africa are as diverse as the countries' realities. Nonetheless, most share a number of difficulties, including excess demand, quality issues, inequality, a lack of linkages with the labor markets, and insufficient financing. The confluence of these significant challenges and little funding with which to reform has resulted in a continent-wide tertiary education system not living up to its full potential.

USAID can make significant contributions in assisting African nations in addressing these challenges. The most pressing needs should be addressed first. Administrative capacity should be strengthened through staff training so that tertiary institutions perform effectively and manage their resources more efficiently. Likewise, it is imperative that a unified system of accreditation and monitoring be established to maintain a level of excellence in the educational institutions. Finally, African universities have limited capacity to conduct development driven research; existing partnership programs with US universities should be expanded to provide support for African researchers. Although much attention is needed, such steps could prove to be significant factors in changing the direction of the current trend of deterioration in Africa's tertiary education system.

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Appendix A:
Rates of Return to Education

Private rates of return on education (in percentage)

	Primary	Secondary	Tertiary
Botswana	99	76	38
Ethiopia	35	22.8	27.4
Ghana	24.5	17	37
Nigeria	30	14	34
South Africa	28*	29*	17*
Uganda	--	--	24**

Source: Psacharopoulos, 1994

* denotes numbers from: "Study South Africa: The guide to higher education in South Africa" http://www.studysa.co.za/contentpage.aspx?pageid=3335
** denotes numbers from "Uganda Tertiary Report" a World Bank (2004) report

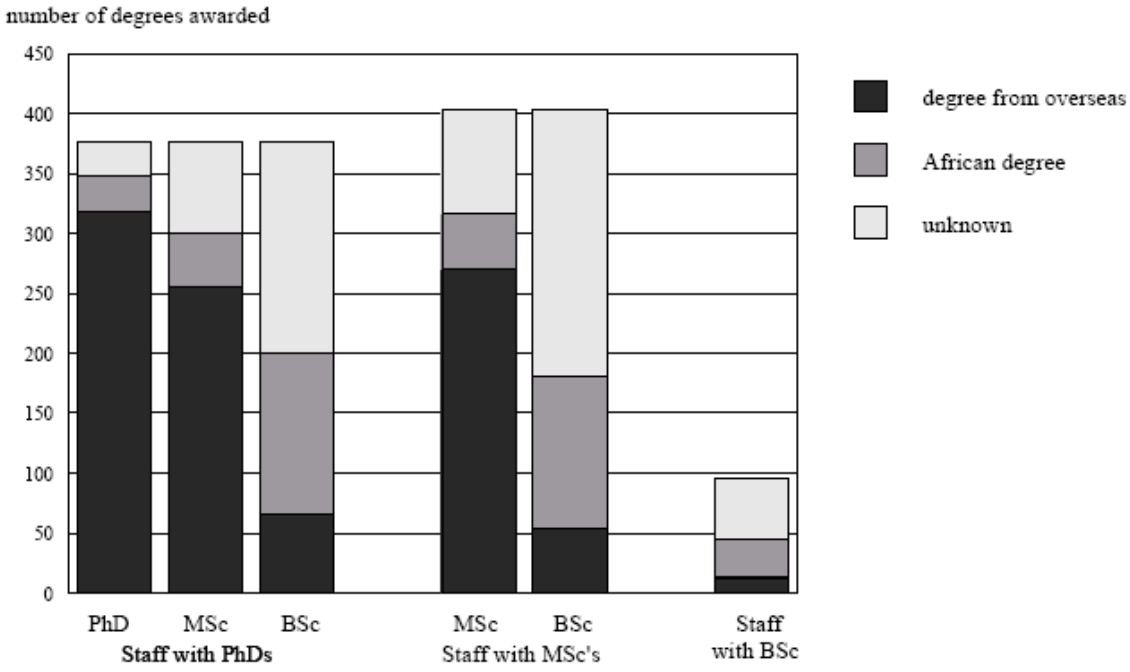
Social rates of return on education (in percentage)

	Primary	Secondary	Tertiary
Botswana	43	41	15
Ethiopia	20.3	18.7	9.7
Ghana	18	13	16.5
Nigeria	23	12.8	17
South Africa	22.1	17.7	11.8
Uganda	66	28.6	12

Source: Psacharopoulos, 1994

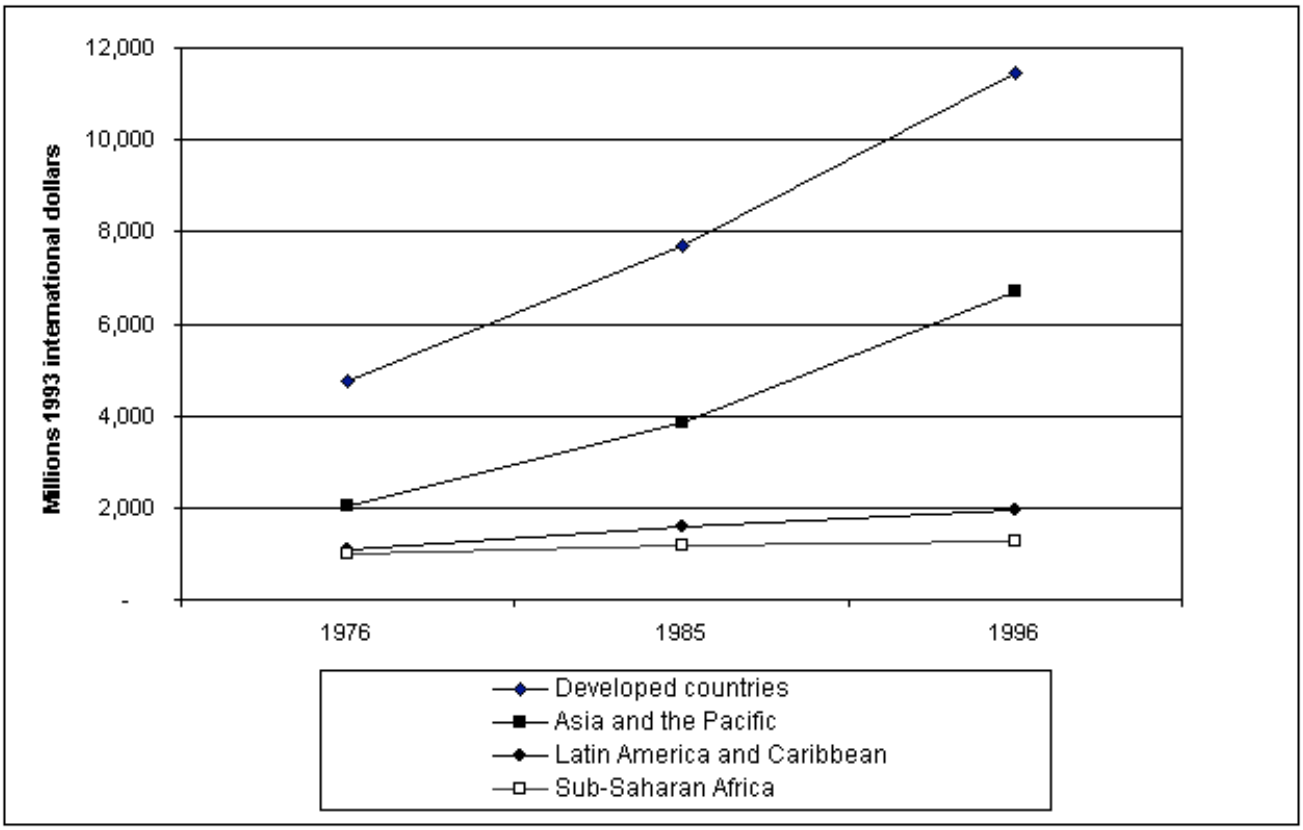
Appendix B:
Figures on Tertiary Education and Agriculture

Country of Origin of degrees obtained by national faculty staff in agricultural R&D



Source: International Policy Food Research Institute, 2004

Public Agricultural Research Expenditures, 1976-1996



Source: NEPAD, 2002

Appendix C:
USAID Project Details

Angola: The association Liaison Office for University Cooperation in Development is assisting Agostinho Neto University in developing a political science and public administration degree program. Under USAID's activity to strengthen civil society, USAID/Angola provides training, technical assistance, and subgrants to support female adult literacy and civic education programs to promote women's knowledge of their rights and increase their participation in the political process.

Ethiopia: Through partnerships between U.S. universities, Addis Ababa University, and Ethiopian teacher training colleges and institutes, USAID enhances English teaching by providing training to primary school teachers and volunteer teacher trainers.

Malawi: USAID supports the training of Malawian post-graduate students in critical areas of primary education through the University Partners in Institutional Capacity (UPIC) project. This partnership between U.S. universities and four Malawian Institutions is creating the next generation of professors in education leadership, in testing and measurement, in primary methods, and in instructional technology. In addition, the partnership between USAID and Lakeland College is also supporting Malawian education students at Lakeland College.

Nigeria: USAID implements youth workforce development activities, focusing in particular on the upgrading of technical courses to make them more market-driven and on job placement for trainees. Continued sensitization on HIV/AIDS and conflict mitigation are an integral part of the training. The basic education program also is collaborating with the economic growth program to develop strategies to assist youth in making the school-to-work transition.

Rwanda: USAID partners have worked in close collaboration with the National University of Rwanda to increase the numbers of students studying subjects related to law, public health, agriculture and education and provide Rwandan students with the opportunity to study abroad. USAID also funds the National University of Rwanda/University of Quebec's Anglophone Faculty of Law Program (NUR/UGUAM), which teaches Rwandan civil law to Anglophone students through a series of lectures. Over 170 Anglophone lawyers have graduated and found employment in the nonprofit, public and private sectors.

Senegal: The Education for Development and Democracy Initiative (EEDI) program in Senegal seeks to increase girls' participation in primary and vocational schools by mobilizing the community and strengthening the capacities of School Management Committees (SMCs) and reinforcing the education system's capacity to accommodate girls by improving infrastructure.

South Africa: USAID supports training in critical fields such as accounting, business management and fiscal planning, to which the black population was previously denied access. Youth and adults are being trained in prevention techniques to reduce the spread of HIV/AIDS, to earn incomes and to care for affected family members. USAID is helping South Africa minimize duplication and costs by merging universities and technikons into several institutions. USAID is providing technical assistance to review current programs, identify new institutional

niches, and ensure that these institutions implement curricula of internationally accepted standards. USAID provides technical assistance to integrate information technology and school curricula in urban and remote rural areas, and provides technology to enhance administrative systems and quality and content of school subjects.

Sudan: USAID/Sudan is fostering partnerships between Sudanese teacher training institutes and their East African and U.S. counterparts.

APPENDIX D:
PUBLIC EXPENDITURE ON TERITARY EDUCATION

Public Expenditure on Tertiary Education

	Public expenditure on education (as a % of GDP)	Current public expenditure on tertiary education (% of all level)
	Year: see notes below	Year: 2002-04
Ethiopia	4.6	18.0
Botswana	6.2	32.0
Cameroon	3.8	10.9
Ghana	5.4	18.0
Nigeria	2.3	35.0*
South Africa	5.4	13.9
Tanzania	2.8	12.7*
Uganda	5.2	12.1

Source: HDI, 2006; UNESCO, 2007; World Bank, 2002; 2007.

Notes:

Public expenditure on educaiton as a % of GDP for Botswana and Tanzania are based on 1991 estimates. For Ethiopia, Cameroon, South Africa, and Uganda the numbers reflect 2002-04 estimates.

Public expenditure on education for Nigeria is based on 1998 estimates. Data on Ghana is based on 2005 estimates.

*Current public expenditure on tertiary education as a % of all levels is based on 1985 estimates for Tanzania and 1998 estimates for Nigeria.

It is important to note that all estimates for Nigeria are considered highly problematic due to poor data quality.

BOTSWANA

Introduction

Botswana is one of few sub-Saharan African countries that were a British protectorate rather than a colony; it witnessed impressive economic growth for three decades after independence and has enjoyed political stability until this day. This unique environment has allowed Botswana to develop its educational system, under the theme of "social harmony", at first focusing on primary and secondary education and later establishing a national university – the University of Botswana. Tertiary enrollment rates have been historically low, but have been recently increasing. This trend is exerting pressure on Botswana's tertiary system and its limited resources. This situation, as well as problems such as the high prevalence of HIV/AIDS and others has triggered new interest in higher education and academic research. As more and more resources go to the treatment and prevention of HIV/AIDS, the international community is coming to realize the importance of strengthening the country's internal capacity to deal with the disease, by investing in the necessary human capital. This case study aims at dissecting Botswana's tertiary education system and at identifying the main challenges it faces today; evidence is found on the links between tertiary education and gender equality, economic growth, health care, etc. This evidence may be used to make an argument for increased funding of higher education in Botswana.

I. Context

Botswana, formerly known as Bechuanaland, is a small landlocked country in Southern Africa, bordering Namibia, Zimbabwe, and South Africa. It was a British protectorate from 1885 until 1966 when it gained independence and changed its name. Botswana is a

parliamentary republic with a sixty three-member National Assembly that elects the President for a concurrent term of office (five years). The country's first President was the founder of the Botswana Democratic Party which continues to dominate Botswana's political landscape (World Bank, 2007a). In addition to the National Assembly, the House of Chiefs serves as an advisory body to parliament and the government. It is composed of representatives of the country's eight majority tribes that speak the national language (Setswana); other tribes are marginalized from the political process (Freedom House, 2006).

Freedom House (2006) characterizes Botswana as a free country, scoring two points on both political rights and civil liberties; the score is on a scale of one to seven, one being the highest level of freedom and seven being the lowest. In general, all freedoms are respected and Non-Governmental Organizations operate openly without government harassment. However, Freedom House (2006) cites a few examples of government repression of freedom; for instance, in 2005, an Australian-born academic was deported from Botswana because he had criticized the presidential elections process. Other indices that relate to governance and the rule of law include Transparency International's Corruption Perceptions Index (CPI) and the Management Index of the Bertelsmann Transformation Index (BTI). Botswana's CPI in 2006 was 5.6 on a scale of one to ten, with ten representing the absence of corruption. It was ranked thirty seven out of the one hundred and nineteen countries that were surveyed by Transparency International (Transparency International, 2007). The BTI "illustrates the correlation between progress in development and sound political management" (BTI, 2006, p.2); in 2006, Botswana was ranked number three on the Management Index, meaning that the government was successful at "formulating long-term strategies, establishing a consensus by integrating civil society and opposition groups, making

efficient use of available resources and cooperating with regional partners and international actors." (BTI, 2006, p. 2).

For thirty years after independence, Botswana was the fastest-growing economy in the world, with an average growth rate of more than 10% annually. In the past six years, average annual growth rate has been 5% and today, Botswana has a per capita Gross National Income of $5,580. The country has had a good fiscal record and several years of budget surplus that limited its public debt to 10% of Gross Domestic Product (GDP) – the debt is mostly comprised of domestic debt issued to develop a domestic bond market (World Bank, 2007a). The main sectors of the economy are industry and services which contributed to 53.3% and 44.4% of GDP respectively in 2005. Mining, and diamond extraction in particular, contributes to two-thirds of the industrial output and to 80% of total exports earnings. The services sector is dominated by the growing financial services and tourism sectors – tourism being driven by the country's natural reserves. Agriculture, however, contributed to a mere 2.3% of GDP in 2005 and consists mostly of subsistence farming and cattle-raising (World Bank, 2007b). This is not surprising as Botswana's climate is characterized as semi-arid and only ten squared kilometers of its land is irrigated; today it suffers from limited fresh water, overgrazing, and desertification. The main industries in Botswana today are diamonds, copper, nickel, salt, soda ash, potash, livestock processing, and textiles. The main agricultural products are livestock, sorghum, maize, millet, beans, sunflowers, and groundnuts (CIA, 2007).

Employment in Botswana does not seem to follow the GDP's sectoral decomposition since in 2004, 22.6% of total employment was in agriculture, 22% was in industry, and almost half of total employment was in services. Total unemployment was 18.6% in 2001 and youth unemployment was 39.7% (World Development Indicators, 2007). In 2003, 23.5% of the

population still lived on under $1 per day and income inequality was still considerable since the country's Gini Index was only sixty three (BTI, 2007).

The biggest problem facing Botswana's population of 1.8 million today is the high prevalence of HIV/AIDS as it is estimated that 24% of the adult population is infected (World Bank, 2007a). It is mainly the HIV/AIDS phenomenon that has depressed life expectancy in Botswana to thirty five years on average and that has made its Human Development Index of 0.565 rank one hundred and thirty one out of one hundred and seventy seven countries (Human Development Report, 2006). This explains why almost 75% of the Official Development Assistance to Botswana goes to the category health and population and why the Merck Company Foundation and the Gates Foundation have each committed $56.5 million to help Botswana strengthen its health infrastructure. Other problems facing Botswana's society today are the increasing xenophobia towards illegal immigrants from Zimbabwe and the discrimination against ethnic minorities; Botswana's ethnic landscape is mostly made up of Tswana, followed by Kalanga, Basarwa, and other ethnic groups.

Women in Botswana have the same constitutional rights as men; however, they have limited property rights and are treated as minors if they are married under traditional laws. Domestic violence and trafficking in women for purposes of prostitution and labor are not uncommon (Freedom House, 2006). Youth unemployment among females was 46.1% in 2001 compared to 33.9% male youth unemployment (World Development Indicators, 2007). In terms of political participation, only 11.1% of the members of parliament in 2003 were women (BTI, 2007).

II. Profile of the Education Sector

Education in Botswana is governed by the Ministry of Education which implements the Revised National Policy on Education (Ministry of Education, 2007a) put together by a National Commission on Education – the Policy is part of Botswana's National Development Plan that is renewed every few years. Botswana has a 7-3-2 public pre-higher education system, with a total of twelve years of compulsory education. Primary school is seven years, followed by three years of Junior Secondary School and two years of Senior Secondary School. Students enter school at age seven and exit at age nineteen (UNESCO, 2007). Ongoing reforms in pre-higher education were formulated in the ninth National Development Plan of the government of Botswana, effective from April 1st, 2003 until March 31st, 2009. At the primary level, these reforms include the provision of resource units in some primary schools to meet the needs of disabled learners, the upgrading of Primary Teachers Training Colleges from certificate training to Colleges of Education, and the upgrading of certificate holders to diplomas through distance education. These reforms enabled the production of teachers trained at a higher level and contributed to improving the quality of primary education. At the secondary level, reforms include improving the quality of education by providing additional facilities and equipment and diversifying the curriculum by offering computer and business programs and more practical subjects. As a result, a 100% transition rate from primary school to junior secondary school has been achieved; however, secondary schools still suffer from a lack of sufficient teacher supply and adequate facilities (SARPN, 2007).

The government of Botswana spent 22% of its total expenditures (or 11% of GDP) on education in 2005. Total expenditures per student were estimated at 17% of per capita GDP for primary schooling and 44% of per capita GDP for secondary schooling in 2005. Botswana has

not yet achieved the second Millennium Development Goal of universal primary education as the net primary enrollment rate in 2005 was 83% (it is the same for males and females). In 2004, not all primary school teachers were trained as the percentage of trained teachers was 92%. Although the primary completion rate was 92% in 2004 (94% for females and 90% for males) and 100% transition from primary school to junior secondary school was achieved in the early 2000's, total secondary enrollment rate was still at 55% in 2005 (58% for females and 51% for males). The ratios of female to male primary and secondary enrollments were ninety nine and one hundred and five respectively in 2005, an indicator that there has been progress towards the third Millennium Development Goal of promoting gender equality. In 2001, 63.8% of the unemployed had only primary education whereas 23.8% had secondary education (World Development Indicators, 2007).

III. Tertiary Education

Prior to independence, Botswana had no institutions of higher or post-secondary education. In order to meet the demand for higher education, the Central Bursaries Committee set up in 1961 a universal scheme to fund study in the United Kingdom and elsewhere. The transformation of the scheme into a means-tested scholarship based on parents' income met strong opposition from both students and parents. They argued that parents' income is a bad measure of students' means as most students are adults and do not depend financially on their parents. Furthermore, education was seen as the government's responsibility since it is the government that needs educated manpower. In 1964, the University of Basutoland, Bechuanaland, and Swaziland was established and had one hundred and eighty eight students. Its facilities were purchased with the help of the Ford Foundation and the British government.

After independence, the University of Botswana, Lesotho and Swaziland (UBLS) was established and funded by the governments of the three countries.

In 1973, the bursaries system became once again an outright grant given to all students, studying in Botswana or abroad, and it covered fees, room and board, books and supplies, and an allowance for personal expenses. Beneficiaries were expected to accept a government, private or parastatal assignment upon graduation for a period equaling the length of their program of study plus one year. Over the period of service, a 5% tax is levied on beneficiaries, in addition to their income tax, in order to reimburse the government. In 1975, the government of Lesotho nationalized its share of the UBLS campus and students from Botswana and Swaziland were sent home. As a result, the University of Botswana and Swaziland emerged, but in 1982, two separate universities were created and the University of Botswana (UB) was established under the University of Botswana Act (Mokgwathi, 1992).

Higher education in Botswana today is overseen by the Tertiary Education Council (TEC); the Council was established by an Act of Parliament in 1999 and was mandated to "[coordinate] the development of tertiary education and… [determine] and [maintain] standards of teaching, examinations, and research at [the tertiary] level" (SARPN, 2007, p. 278). In addition, the Ministry of Education is in charge of the departments of Vocational Education and Training, Teacher Training and Development, and of the Botswana College of Distance & Open Learning (BOCODOL). The main institution of higher education in Botswana today is the UB, which is a national university[1]. UB has eight faculties which include education, science, humanities, social sciences, engineering and technology, business, medical education, the school of graduate studies, and the Botswana College of Agriculture, which is an autonomous faculty (INHEA,

[1] There was talk about building a second national university, which spurred much controversy due to different reasons. Until today, the idea has not been put into practice.

2007). The TEC has a large register of public and less known private institutions; the public institutions include the University of Botswana, Botswana College of Agriculture, six Colleges of Education, eight Institutes of Health Sciences, Institute of Development Management, Botswana Wildlife Training Institute, and Botswana College of Distance and Open Learning (BOCODOL). The private institutions are NIIT Education and Training Centre, Gaborone Institute of Professional Studies, BA ISAGO University College, ABM University College, and Limkokwing University College of Creative Technology. University level degrees include a number of Bachelor degrees, postgraduate diplomas, Master's degrees, and PhD's (UNESCO, 2007).

In 2005, the gross tertiary school enrollment rate was only 5% (4% for females and 5% for males) (World Development Indicators, 2007). In the academic year 2005-2006, fifteen thousand seven hundred and ten students were enrolled at UB, which means that the bulk of university students attend the national university. In that same year, the majority (64.5%) of full-time students were enrolled in the education, humanities, and social sciences faculties. The number of academic staff was seven hundred and ninety six and there were five hundred and seventy three full-time staff vacancies. UB's revenues in 2006/2007 were Pula 575,684,000[2], of which Pula 441,915,000 came from government subventions; these subvention have increased by 28% over the previous academic year. UB's expenditures for the same academic year were Pula 567,484,000, leaving the university with a budget surplus of Pula 8,200,000 (University of Botswana, 2007a). The estimated average cost per student per year at UB is $6,000, and the cost doubles for international students (INHEA, 2007). These rates result in higher per student public expenditure on tertiary education than on primary and secondary education; per student

[2] Pula is the national currency in Botswana. One Pula was worth almost $4.55 in April 2005 (x-rates.com)

expenditure on tertiary education amounted to 480% of per capita GDP in 2005 (World Development Indicators, 2007).

The governing body of the UB is the University Council consisting of twenty one members; the Senate "formulates and carries out the academic policy, regulates courses and examinations, admits students and supervises research" (UNESCO, 2007). However, the university is closely tied to the government and is not fully autonomous; UB is headed by the President of Botswana as its Chancellor and the government is strongly represented on the University Council. Moreover, the Ministry of Finance and Development Planning is responsible for manpower planning and has overseen the growth of UB's faculties to make sure that it coincides with the national manpower requirements. UB reports directly to the Ministry of Education which has the authority to close the university in times of political unrest. Bjarnason and Lund (1999, p. 18) describe UB's relationship with the government as follows:

> The strong control exercised by the Government in university governance includes determination of the overall structure of the University (determination of faculties, departments and associated units), determination of curricula offerings, and determination of projected staff and student numbers. University implementation in these areas takes place within the constraints of the development plans provided by the State. Strong control is exercised over and through funding, which has traditionally been provided in full by the State. Historically, the University has not been free to invest its funds or to carry over funds not used in one financial year to the next.

The tertiary education system in Botswana still faces many challenges as several projects on quality improvement and upgrading of teaching facilities in colleges could not be implemented during the eighth National Development Plan due to a shortage of financial resources. For the ninth National Development Plan, UB has identified five main priority areas to tackle: access and participation, quality academic programs, scholarships, research, and graduate studies, engagement, and capability enhancement. The biggest challenge today is the increasing demand pressure on tertiary education and the lack of adequate resources to meet this demand. Excess

demand is attributed to many factors: Botswana had a voluntary civilian national service called "Tirelo Setshaba" which placed individuals after secondary school in rural areas to serve in the local primary schools, courts, and health clinics. Individuals lived with host families in the communities to which they were assigned; however, the service was terminated in 2000, which led to an influx of secondary school leavers applying to universities (Teferra & Altbach, 2003). Another factor contributing to increased pressure on universities is the government's progress towards achieving the Millennium Development Goals and ensuring universal primary schooling and 100% transition to junior secondary school; with more and more students leaving secondary school, demand for tertiary education has increased. This increased demand has been biased towards academic degrees programs rather than technician level training program, creating a shortage of manpower at technician/technologist levels. The Department of Student Placement and Welfare of the Ministry of Education, is trying to place more students in technical colleges and even private institutions to try to ease the pressure off of the national university. Furthermore, this new trend puts pressure on the limited resources for student sponsorship; as a result, cost-recovery measures are being intensified (SARPN, 2007).

Another challenge facing UB today is the large number of vacancies associated with the lack of funding; for instance in the academic year 2006/2007, UB had a total of four hundred and sixty five vacancies (University of Botswana, 2007a). Bjarnason and Lund (1999) suggest that recruitment is most problematic at senior levels in the fields of economics, mathematics, and some natural sciences because of high international demand and higher wages offered abroad for academics in these fields. As a result, these positions are usually filled by expatriates rather than Botswana nationals. Other challenges mentioned by the same authors and highlighted in the Revised National Policy on Education of 1994 are the lack of coordination with secondary

education and of a comprehensive policy to guide the development, co-ordination, funding, and administration of tertiary education; Bjarnason and Lund (1999, p. 21) suggest that "courses at the University are not adequately synchronized with, and do not adequately articulate with, senior secondary courses."

IV. The State of Higher Education

Financing

Tertiary education in Botswana is mainly funded by the government and in the past twenty years, the Ministry of Education's share of the budget has been consistently over 20%. Government financial aid to students in tertiary institutions increased from 85% of the total number of students in the academic year 1985/86 to 97.5% in the academic year 1990/91 (Bjarnason & Lund, 1999). In the late 1980's/early 1990's, the bursaries system was gradually eliminated and replaced by a grant/loan program aiming at meeting the needs of the economy; grants are given to students who are in fields of critical manpower shortages and loans are given to those who are in less critical fields or fields where the supply of labor is already adequate. Bjarnason and Lund (1999, p. 26) describe the current bursaries system as follows;

> The principle of cost recovery is thus based on objectives of social justice and sustainability. Whilst no student is denied the opportunity to develop their potential through study at tertiary level, they are encouraged to develop in areas that contribute most to the nation's objectives.

In order to achieve this, the Ministry of Education has divided study areas into five categories ranging from critical human resource shortage areas, where students receive grants on both tuition and maintenance, (these are mainly science and technical-based courses), to programs benefiting individuals or a small section of the economy, where loans on both tuition and maintenance costs are available. As a result of this scheme, the Department of Student

Placement and Welfare has expanded to take on the new functions of student loans and career guidance in addition to its student placement, monitoring, and administrative functions.

As mentioned earlier, UB benefits from government subventions and most of its expenditures are funded by the rolling national development plans and the annual budget. Still, 20% of UB's budget comes from tuition fees and other revenues and recently, the UB Foundation has been established to raise funds from the private sector (INHEA, 2007). Today, the major private donors are Damelin (a university in South Africa) and NIIT (an Indian Information Technology firm) and they finance business and computer studies (INHEA, 2007). Among international donors to education in Botswana are the OECD countries – headed by the United States which contributed $31.4 million to Botswana in 2004/05 - which consecrated 3% of their total Official Development Assistance to Botswana to education in 2004/05. Also, many American foundations have given grants to institutes of higher education in Botswana over the years; the Carnegie Corporation of New York has granted Botswana $1.05 million between 1989 and 2002 for different projects under the categories science and technology, women's health, revitalizing public libraries, and special opportunities fund (which included a grant to disseminate Encarta Africana Encyclopedia and a grant for a memoir on the contributions of Sir Ketumile Pasire to nation-building in Africa); the Rockefeller Foundation granted UB $15,000 in 2005 toward to costs of participation of African scientists in a conference in the United States.

International Participation

As the demand for tertiary education increases, the Department of Student Placement and Welfare is trying to place some students abroad in such countries as Australia, Norway and the Republic of South Africa, particularly for medical programs. For example, the number of students studying in South Africa increased from four hundred in 2000 to five thousand three

hundred and six in 2001. At the same time, the Department tried to reduce the number of students placed in costly countries such as the United States and the United Kingdom, except for a few science programs that are not offered in the Southern African Development Community (SADC) region. Botswana is a member of SADC which agreed on a Protocol on Education and Training that includes clauses on cooperation in higher education and training, in research and development, and in life-long and open learning. In particular, clauses one, five, and six of Article seven, part A state the following (SADC, 2007);

1. Member States agree to recommend to universities and other tertiary institutions in their countries to reserve at least 5% of admission, for students from SADC nations, other than their own.

5. Member States agree that within ten years from the date of entry into force of this Protocol, they shall treat students from SADC countries as home students for purposes of fees and accommodation.

6. Member States agree to facilitate movement of students and staff from the Region for purposes of study, research, teaching and any other pursuits relating to education and training. To this end, Member States agree to work towards the gradual relaxation and eventual elimination of immigration formalities that hinder free student and staff mobility.

At home, the Ministry of Education has increased the quotas for several training areas in order to support sustainable and diversified development. These areas are: Hotel, Tourism and Entertainment Management, Art and Music, Media Studies, Computer and Information Technology, and Finance (SARPN, 2007).

Botswana also has partnerships with American universities; UB has collaborated with Oregon State University to build the capacity of one of its main research centers in the areas of wildlife conservation and cooperation with civil society in this dimension. Another example was a program with Washington State University (WSU); WSU and UB faculty designed a joint degree program in environmental science, an e-learning internship at WSU, and Ph.D. training programs in biological systems engineering and plant pathology as well as animal

science/veterinary medicine. The partners integrated UB's distance education courses with the new School of Environment and Natural Resource Sciences program at WSU, and developed a collaborative graduate course on natural resource use policies in electronic format. UB has also a strong staff development program, which in 2000 supported more than one hundred and thirty fellows in their studies for higher degrees around the world (Higher Education for Development, 2007). The United States Embassy also has a Fulbright Junior Staff Development Program in Botswana which "provides financial assistance for a maximum of two years of study toward a graduate degree in a U.S. university or for participation in a non-degree research or nonacademic professional program. It is designed primarily to strengthen African universities through higher degree training for faculty members." (Embassy of the United States in Botswana, 2007). The Fulbright Program also grants awards to American scholars to conduct research or give lectures in Botswana in various fields, particularly in HIV/AIDS, Indigenous Knowledge, Peace Studies, and Tourism.

Role of Technical and Vocational Training

The Department of Vocational Education and Training is under the Ministry of Education and is responsible for Technical and Vocational Education (TVET) in Botswana. The department is primarily responsible for the institutional training provided through seven technical colleges. The department also provides professional and financial support to forty-one community vocational schools, referred to as the Botswana brigades as well as pre-service training of lecturers and instructors for vocational training institutions through a College of Technical and Vocational Education.

Among the technical and vocational courses offered in Botswana are the Botswana Technical Education Programmes that have to go through a rigorous process of ensuring that the units

adhere to the aspirations of the employers and meet the high quality standards during the development stages. These programs aim at developing four key skills – communications, numeracy, entrepreneurship, personal and interpersonal skills – through nine areas of study which are Business, Hairdressing and Beauty Therapy, Building Construction, Hospitality and Tourism, Clothing, Design and Textiles, Information and Communications Technology, Electrical and Mechanical Engineering, Multimedia, and Agriculture (Ministry of Education, 2007b). A study of the rates of return on TVET in Botswana found that technical education has the same returns as general schooling, and that is 20% (Hinchliffe, 1990). Today, the main challenge facing TVET is the need to broaden its access to all out-of-school youth and adults so that they can make a proper living (SARPN, 2007).

Rates of Return to Education

Returns on education (both social and private) are highest for primary schooling and they decrease with the level of education. Social rates of return on tertiary education average 15% and privates rates of return on the same level of schooling average 38%. Given that a return of 10%-12% is usually the benchmark for investment decisions, returns on university education and other types of tertiary schooling (e.g. TVET) can then be considered to be high. Additionally, according to some estimates, TVET has higher social returns than university education does[3].

Role of ICT and Distance Learning Programs

In the 1960's almost half of primary school teachers were untrained. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) launched the first distance education program to train teachers without removing them from schools, which was called the Francistown teacher training project. In 1973, the Botswana Extension College was established

[3] See Appendix.

with the help of the Ford Foundation. It utilized correspondence courses, radio programs and face-to-face methods. Around the same time, the government also launched a five-week radio learning campaign. In 1978, the Distance Education Unit was established at the Ministry of Education and today, this unit is known as the Botswana College of Distance and Open Learning (BOCODOL). It offers three programs in a variety of study areas; Botswana General Certificate of Secondary Education (BGCSE), Junior Certificate (JC), and Vocational Courses - for which learners do not obtain any diploma (Dodds & Youngman, 1994). BOCODOL mainly relies on traditional tools of distance education; it offers a wide range of leaner services such as radio programs, print material with audio cassettes, a leaner handbook, and a study guide.

More modern ways of offering distance learning can be found at the UB. Distance learning through the use of ICT is available in Botswana since it has more internet users and personal computer owners per one thousand people than the rest of sub-Saharan Africa. In a study of email and internet access within universities in developing Commonwealth universities, Lund (1998) finds that UB has the fastest internet connectivity of all African universities because it uses a leased line provided by the Botswana Telecommunications Corporation. At UB, 91% of departments have internet access and heads of department and senior staff all have their own terminals; all other staff and most students share common facilities in the computer laboratories. Access to the internet has allowed UB to develop extensive online courses that have given way to open learning; in 2003, more than four thousand learners, enrolled in over seventy courses, were conducting a portion of their learning activities online. UB's Center for Continuing Education has an eLearning Support Center and an eLearning Certificate has been offered since 2003 (Uys, 2003).

Access

In terms of ethnicity differences, these arise mostly among faculty members. Overall, Botswana citizens occupy 85% of positions at universities, but occupy only 53% of the lecturer and senior lecturer positions and only 16% of professorships. At UB, Botswana citizens represent 96% of the industrial and support staff, but only 65% of the academic staff. This is a source of frustration to staff from Botswana who feel that foreigners are keeping them in the lower ranks (INHEA, 2007).

As for gender differences in education, it seems that girls outnumber boys at all levels of schooling. Currently at the UB, there are seven thousand four hundred and sixteen men enrolled and eight thousand two hundred and ninety four women. However, men represent an overwhelming majority in vocational training centers, in engineering and technology, and in the sciences (University of Botswana, 2007a).

Research and Development

In 1975, the National Institute for Development Research and Documentation was established and it focused on land and environment, education and society, health and nutrition, issues of migration and settlement, and rural development. In the late 1990's, it was changed to the Directorate of Research and Development, and in 2001 it was again changed to the Department of Research and Development (INHEA, 2007).

At UB, there are currently six research institutions: The Harry Oppenheimer Okavango Research Centre, the International Tourism Research Centre, the Centre for Strategic Studies, the Centre for Culture and Peace Studies, the Centre for the Study of HIV and AIDS, and the Centre

for Scientific Research, Indigenous Knowledge and Innovation. UB currently publishes eleven journals, one of which is the African Journal of Library, Archives, and Information Sciences (University of Botswana, 2007b).

At the BCA, human and physical resources for research are viewed as being adequate and are distributed in the Departments of Agricultural Economics, Education and Extension, Agricultural Engineering and Land Planning, Animal Science and Production, Basic Sciences, and Crop Science and Production. The College Farm also has facilities that support staff research - the center pivot irrigation system, various farm implements, animals, etc. BCA describes the research process as follows; "Each department has developed research thrusts or themes under which research project proposals are developed. Funding of research is through the Research and Publications Committee of the College and international research funding organizations. Members of staff are encouraged to conduct collaborative research within and among departments, and with national and international institutions" (BCA, 2007).

Other agricultural research is conducted by the Department of Agricultural Research (DAR) whose mission is to "generate, through research, improved crop and livestock production technologies to promote the development of a productive and environment friendly agricultural sector" (DAR, 2007). The Department has three main divisions, which are the Animal Production and Range Research Division (APRRD), the Arable Research Division, and the Support Services Division. APRRD is meant to contribute to the improvement of Botswana's livestock industry by focusing on several areas: beef, dairy, small stock, feeds, and range and pasture. This division has developed a new composite breed of cows that weighs more and has lower calve mortality. The Arable Research Division addresses Botswana's environmental challenges by designing innovative ways to overcome the scarcity of irrigated land and fresh

water resources. The challenge facing DAR today is the low quality of the staff relative to other private institutions conducting agricultural research. For instance, the number of researchers with doctoral degrees at DAR decreased from seven in 1991 to four in 2001, which represented 10% of the total number of employees (DAR, 2007). At BCA however, 35% of the total number of researchers had doctoral degrees in 2001 (DAR, 2007). This is due to the lower wages offered in the public sector; as a result, only fifty four out of the seventy five professional positions available at DAR in 2003 were filled. Efforts by the government to train agricultural researchers are limited by the facts that graduate degrees in agriculture are not offered in Botswana and donor support for funding study abroad programs has decreased considerably. More generally, donor support for DAR decreased to a mere 2% of total funding in the 1990's, including donations by United Nations organizations such as the Food and Agricultural Organization (ASTI, 2007).

Quality

The Ministry of Education tries to control the quality of education by having in place high standards for admission and for passing examinations; the Division of Examinations, Research and Testing relies on the University of Cambridge Local Examinations Syndicate for preparing examination questions and for processing the results. UB has also its own quality control mechanisms: it monitors admissions policies so that only students who are capable of benefiting from particular programs are enrolled, it regularly assesses students through external examiners whose reports are then used by departments as feedback, it has in place guidelines for recruitment and annual faculty reviews, it reviews all new courses and programs before their introduction to ensure their quality and relevance, and it conducts regular audits of affiliated institutions to ensure that their awards are of an acceptable quality (Bjarnason & Lund, 1999).

However, an evaluation of tertiary-level teaching in Botswana by a professor at UB and another at BCA reveals unethical behavior among professors that limits the quality of higher education in Botswana. The two professors describe teaching evaluations as based on a few unreliable criteria that are used inconsistently, which makes abuses easy to hide. Lecturers only need to maintain the appearance of a high teaching load and to ensure a high pass rate. As a result, professors tend to fake having big teaching loads by creating many small classes, as the number of students per class does not matter for teaching evaluations. Running laboratories and marking assignments is left to teaching assistants, often with no supervision. Course content is often neglected and syllabi are sometimes plagiarized from the Internet. Professors and students alike are fixated on grades and there is mention of professors leaking review hints to students and overlooking cheating practices. Obviously, such behavior deteriorates the quality of instruction and learning and puts downward pressure on the returns to higher education (Riddoch & Riddoch, 2004).

Conclusion

Despite Botswana's large spending on education, its comprehensive education policies formulated in the Revised National Policy on Education, and its consistent economic growth and political stability, tertiary education still suffers from many challenges. Twenty five years after its establishment, the University of Botswana remains the sole national university and the preferred choice of most students. The University's traditional reliance on government subventions as well as government sponsorship of all students does not seem to be sustainable in the long-run; the termination of the National Service, the government's progress towards achieving universal schooling and other factors all contributed to increasing the demand for

tertiary education, putting pressure on scarce resources. The Ministry of Education's efforts to specify enrollment levels per faculty and to encourage students to enroll in fields that are critical to the economy have not yet achieved their full results; enrollment remains highly concentrated in humanities and social sciences, fields that are not considered critical by the Ministry. Furthermore, females remain under-represented in the fields of engineering and technology and in the natural sciences. Another big challenge facing Botswana today is the Brain Drain phenomenon among professionals, particularly among health care professionals such as doctors, nurses, pharmacists, etc. In an address he gave at the White House in 2003, Festus Mogae, the President of Botswana said that "nonprofit groups, foreign governments and international organizations that have come to help Botswana cope with its HIV/AIDS crisis have hired many skilled professionals away from the public health system with offers of better pay and benefits. Doctors and nurses leaving for other countries […] compounded the internal brain drain. The shortage of people and a slower-than-expected pace at building clinics, laboratories and drug warehouses have impeded the expansion of Botswana's AIDS program" (New York Times, 2003). More needs to be done in Botswana today to link tertiary education with the needs of the economy, namely, with the fight against HIV/AIDS, the growing tourism sector, the scarce natural resources, etc. It is clear that more resources need to be invested in research and development as well as in jobs for the increasing numbers of university graduates.

APPENDIX

Appendix: Rates of Return on Education

Table 1: Private and social rates of return on education, by level (Psacharopoulos, 1994)

Level of education	Primary	Secondary	Tertiary
Type of rates of return			
Private rates of return	99*	76	38
Social rates of return	42	41	15

* denotes reporting error

Table 2: Private and social rates of return on education, by level (Bennel, 1996)

Level of education	Primary	Junior Secondary	Senior Secondary	University	Other Tertiary
Type of rates of return					
Private rates of return	528*	76	80	38	26
Social rates of return	42	41	62	15	26

* denotes reporting error

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CAMEROON

Similar to many African nations, Cameroon established its first institution of higher education in 1961, the year following independence with financial backing of one of one of its two former colonial governments, France, with the primary goal of training future civil servants. By the next year, it became a full university and would remain the only public university in the country until the sweeping educational reforms of 1993. Since its beginnings, the tertiary education system in Cameroon has grown to include additional specialized institutes, expanded university campus across different regions and private institutions. It has also faced many of the challenges as its neighbors, including an excess demand, poor quality, problems of equal access, poor linkages with labor markets and low financing. In addition, the country's wider corruption and governance issues have had a significant impact on the university system.

Country Context

Cameroon is a constitutional republic, with a highly centralized government and with power concentrated in the popularly-elected president who, according to a 1996 constitutional amendment, may serve up to two consecutive seven-year terms. The president appoints the prime minister, (who serves as the head of the government) and other. (US Department of State, 2006; World Bank, 2007).

Present-day Cameroon was a German colony until the end of World War I, when the territory was partitioned between France and Britain my mandate of the League of Nations in 1919. The French-administered region (the largest area) was granted full independence in 1960. British Southern Cameroon joined the Republic of Cameroon in 1961 to form the Federal Republic of Cameroon. Initially, the formerly French and British regions maintained substantial

autonomy. In 1972, however, after the drafting of a new constitution, a more centralized state was established (US Department of State, 2006).

Cameroon has significant problems with governance and, at as of 2006, demonstrated one of the lowest levels of democratic progress in Africa (BTI, 2006). The current president, Paul Biya, has been in power since 1982, when he succeeded President Ahmadou Ahidjo, who had held office since independence. Since 1990, no election has been held as scheduled and all electoral processes have been characterized by irregularities (BTI, 2006). The National Assembly is popularly elected and the 1996 amendment to the constitution also called for the establishment of a senate. No action, however, has been taken formally and the senate has yet to be established (World Bank, 2007). In addition, the judicial branch falls under the executive's authority within the Ministry of Justice and its decisions are influenced heavily by political pressures (World Bank, 2007).

Cameroon is ranked 144th out of 177 countries on the 2004 Human Development Index (HDI), with a 0.506 rating and qualifies as a country with "medium human development" (*verify that current, BTI 9)*. GDP per capita is $2400 (CIA, 2006). Income, however, is unevenly distributed; the country's gini-index in 2001 was 44.6 (BTI, 2006). Cameroon is not expected to meet the Millennium Development Goal of eradicating extreme hunger and poverty by 2015 (BTI, 2006; UN, 2007)[4]. In addition, Cameroon is 61st out of 95 countries on the Human Poverty Index for developing countries (BTI, 2006). Economic growth in 2003-2005 was above 4% (BTI, 2006). However, it is estimated that a growth rate of at least 7% for a minimum of two years would be required to achieve any significant reductions in poverty (BTI, 2006).

[4] According to BTI (2006), Cameroon is not expected to meet any of the Millennium Development Goals (MDGs), expect, perhaps, that of ensuring improved access to water sources.

Agriculture plays and important role in Cameroon's economy and remains its primary sector. Approximately 49% of the workforce is employed in agriculture, which was responsible for about 28% of GDP in 2003 (BTI, 2006). The primary agricultural products are timber, coffee, tea, bananas, cocoa, rubber, palm oil, pineapples, and cotton (US Department of State, 2006). Due to the high importance of agriculture, the drop in commodity prices for its principal exports (oil, cocoa, coffee and cotton) in the mid 1980's had a devastating effect on the country's overall economy; it was one of the principle factors (along with an overvalued currency and economic mismanagement) that led to a recession that lasted approximately ten years (US Department of State, 2006).

Cameroon also has access to oil. The government has developed this industry since the 1970s after discovering offshore oil deposits in the Gulf of Guinea. It has not spurned significant economic growth, however. Rather, the elite has sought to increase its rents and the discovery of oil has led to an increased the level of corruption in the country (BTI, 2006).

The government of Cameroon did not find it necessary to seek assistance from the international finance institutions (IFIs), including the World Bank (Bank) and the International Monetary Fund (IMF) for many years. Finally, three years after the beginning of the economic crisis that began in 1985, Cameroon submitted a letter of intent for support from the IMF (BTI, 2006) and accepted the first structural adjustment loan from the World Bank in 1994 (World Bank, 2007). However, due to a perceived low lack of commitment from the government, which was slow to implement reforms, the only two of the three loan tranches were disbursed (World Bank, 2007). In 2000, Cameroon qualified for the Heavily Indebted Poor Countries (HIPC) Initiative and bi-lateral donors forgave significant amounts of debt (BTI, 2006). At the current time, Cameroon does not receive funding from USAID (USAID, 2002).

Cameroon's population of 18,060,382 (CIA, 2007) is composed of roughly 250 ethnic groups that form five larger regional groups. Those living in the southwest and northwest provinces comprise the Anglophone population; these areas correspond to the portion of Cameroon that was a British protectorate before independence. The remainder of the country is Francophone (US Department of State, 2006).

Profile of Education Sector: Primary and Secondary Schools

Education in Cameroon is compulsory between the ages of six and fourteen (US Department of State, 2006). Cameroon's education system at the primary and secondary levels is comprised of both public and private schools. According to estimates, roughly 50% of all primary and secondary schools are privately owned and approximately one third of the total number of students at this level are in private institutions. The rate of literacy is 77% for men and nearly 60% for women. The combined gross enrollment ratio according to gender at all institutions (primary through tertiary) was estimated at 61% for men and 51% for women in 2002 (BTI, 2006). These figures demonstrate that gender equality issues are of concern. Public expenditure on education overall was 5.4% in 1999-2001 (BTI, 2006).

The primary and secondary school levels in Cameroon are face challenges in maintaining an acceptable level of quality (BTI, 2006). This is in large part due to poorly trained teachers (Pecku, 1998). Quality has also been affected by disruptive teacher strikes (BTI, 2006). There has been an increase in the number of private primary and secondary schools (Boyle, 1996) due to the creation of parent associations (*Associations des parents d'élèves*). Boyle notes, however, that many of these associations increase equity problems as they tend to be comprised of parents from the elite. As a result, he notes, elites exert less pressure to improve quality at public

schools. As noted earlier, there is little hope that Cameroon will meet any (expect one) of the MDGs; it is unlikely to meet that concerning education at the primary level (BTI, 2006): "Ensure that all boys and girls complete a full course of primary schooling" is not expected to be met (UN, 2007).

Profile of Education Sector: Tertiary Education

Prior to independence in 1960, the majority individuals who obtained tertiary-level education did so abroad. At the time of independence, Cameroon's leaders identified the need to equip the developing civil service and quickly established an tertiary institute in 1961, the *Institut National d'Études Universitaires* (National Institute for University Studies), with the financial backing of the French government. The institute offered degrees in four areas: education, law, economics and the liberal arts). The following year, the institute was expanded into a full university, the Federal University of Cameroon, and added programs in the sciences and technology (Njeuma et al, 1999).

In 1967, the name of the university was changed to the University of Youndé (after the capital city where it was located). In addition, this year marked the beginning of a trend over the next several years to establish additional institutes of specialized learning that were attached to the university. These included the University Center for Health Sciences, an institute of management, a journalism school and a school of engineering. The establishment of these institutes is and example of the effort made to complement for university's initial goal of preparing future civil servants with technical and professional experts.

When these technical institutes were established, a distinct enrollment process was instituted. Admission was guaranteed to all students to general studies at the university,

contingent upon passing the qualifying exams. This was not the case, however, for applicants to the technical institutes, which had selective admissions procedures and admitted a limited number of students. As a result, the size of the student body in the general studies faculties ballooned over the years, which the numbers of technical experts remained proportionally lower. As Njeuma et al observe (1999) this led to a large number of students who were unable to find employment in the private sector in later years.

By 1974, the university faced significant challenges. First, the university's finances were strained. This was in part due to the high enrollments that resulted from the open admission procedures for most faculties. The student numbers had boomed while the numbers of faculty did not keep pace. As a result, the student-teacher ratios worsened a signal of a lowering in quality of education. In 1962, there were 539 students and 22 faculty; in 1970, there were 2,500 students and 200 faculty members. By 1973, the numbers of students had reached 6,000 (Njeuma et al, 1999). At the same time, little development in infrastructure had been made, resulting in severe overcrowding (Ngwana, 2003). The moral of the faculty suffered, both due to over-crowding as well as arbitrary conditions of promotion (Njeuma et al, 1999).

To respond to these problems, the government established a Council of Higher Education and Scientific Research in 1974 to institute reforms. The reforms addressed primarily the condition of faculty promotion and recommended the establishment of a full University of Technology in order to increase the number of technicians to support the development of the nation (Njeuma et al, 1999). These reforms, however, were limited in scope. Some clarification of promotion procedures were passed (Njeuma et al, 1999), though clear and fair procedures governing promotions continued to be elusive, especially due to strong political influence and high levels of corruption, as will be discussed later (Konigs, 2002). In addition, no full-fledged

university for technology was established, thus limiting the possibility of increasing the numbers of future technicians (Njeuma et al, 1999).

Following the reforms of the 1970s, the government attempted to address the problems of over-crowding which continued to increase in severity. They responded with a strategy that would be employed later: that of creating new institutions to absorb the demand surge. In 1977, the government established four institutions in different regions across the country. They were not full universities; rather, these University Centers were institutes that offered studies in focused areas. They included:

- Buea University Center, offering programs in languages, translation, interpretation;
- Douala University Center for Business Studies, offering programs in business and in teacher training;
- Dschang University Center for Agricultural Sciences; and
- Ngaaoundere University Center for Food Science and Food Technology.

As was the case of the reforms earlier in the decade, the results of the establishment of these centers were limited. One positive effect was the reduction of the number of technical institutes at the university in the capital. However, the government's primary goal, that of ameliorating the strained capacity at the university, was not met in the long-term. This was in large part due to the limited number of students enrolled at the centers while 45,000 students were enrolled at the university (which had the capacity to handle only 5,000 students). This was

in start contrast to the Buea University center, where only 60 students were enrolled (and where the capacity to house students was at 2,000) (Njeuma et al, 1999).

1993 Reforms

By the early 1990s, the pressures on the public university system had become overwhelming. The student teacher ratios during the academic year 1990-1991 were generally low, although there was a wide variance between faculties. They ranged from 1:58 in the arts faculty to 1:252 in the science faculty (Njeuma et al, 1999), and had severe consequences on the quality of instruction (Ngwana, 2003). Unemployment among graduates was high, as was the number of students who failed to complete their studies (approximately 30% of the total student body) (Njema et al, 1999).

These conditions were exacerbated by the sharp decline in the macroeconomic conditions in the mid-1980s. As already noted, this decline was due in part to the fall in commodity prices in many of Cameroons' export crops, including coffee, cocoa, as well as oil. As a result of this decline, Cameroon experienced a 60% decline in its external terms of trade (World Bank, 2007). Added to these factors, Cameroon suffered from a over-valued exchange rate, and rapidly accumulated debt (World Bank, 2007). The economic crisis forced the government to institute structural adjustment programs in the early 1990s and made further cuts to the university's budget.

By the beginning of the decade, in 1991, the university's budget was overwhelmingly skewed towards covering staff salaries (46%) and student bursaries, food and lodging (43%). A mere 9% of its total budget went to cover costs of teaching and of research. At the same time, previous problems, including a lack of clarity and transparency in faculty promotions, low availability of office space, lack of research facilities, and teaching overloads, contributed to low

morale among faculty. Finally, student protests were threatening the stability of the university (Konigs, 2002). The government was left with little choice but to implement another series of reforms in 1993, which have had a significant impact on the current state of affairs.

As was the case with the previous reforms in the 1970s, the primary goals of the 1993 reforms were to (1) reduce the over-capacity at the University of Youndé and (2) to improve the labor linkages between the curriculum and the labor market (Ngwana, 2003). The reforms were extensive; several of the most important elements included (Njeuma et al, 1999):

- Create new universities;
- Realignment of current programs to ensure that they were more in line with the labor market;
- End to student subsidies;
- Increase registration fees;
- Grant universities a greater level of autonomy over their finances and development of their infrastructure; and
- Clarify faculty promotion mechanisms.

The first item on the reform agenda, that of creating new universities, presented challenges in implantation due to the difficult economic climate. The government was able to follow through by making use of the pre-existing technical institutes (or University Centers) that already existed. As already noted, many of these had under-utilized capacity. The centers were expanded into full fledged universities that offered a wider array of programs and faculty were encouraged to transfer (Ngwana, 2003). In addition, a second university in the capital was established. In the short-run, the creation of new universities did take some of the pressure off of the primary

university (now called University of Younde I). However, after several years, the new universities began to feel experience the same pressures on their capacities (Njeuma, 1999), indicating that this strategy in isolation will not be enough to deal with this issue.

One of the new universities, the University of Buea, in the Southwestern region of the country (in a primarily Anglophone region) was established as the country's first institution with instruction in English as well as on the followed an Anglo system, in contrast to the country's other universities. Although the University of Younde was officially bilingual, few classes were offered in English. Also, Anglophone students were normally educated under a British-style system, which put them at a disadvantage in the French system (Ngwana, 2003). Finally, the tension between the local Francophone students and the "outsiders" from the English-speaking region had been engaged in escalating conflict. Violent student protests at the main university campus in the capital took place almost continuously between 1990 and 1996. The conflict was set in the context of language and regional differences, as well as political differences, with the English-language students supporting the opposition political party (Konigs, 2003). The establishment of the University of Buea was intended to address these concerns and to calm the conflict.

Cost-cutting measures were also implemented, such as putting a complete end to the student subsidies that had been created originally to attract students. As noted, student matriculation fees were increased from approximately $6 to approximately $80 per student (from 3,300 CFA to 50,000 CFA). Although relatively low, the increase was significant from what it had been. This fee is still below that aid by students who attend private primary and secondary schools. University registration fees became in short order one of the primary sources of income for the universities: approximately 30% of the university's budget (on average) is derived from these

fees. The remainder, approximately 70%, is provided for by the government (Njeuma et al, 1999).

The impact of outside funds is relatively low, although the World Bank has begun to increase its support to tertiary education in Cameroon. This includes an Education Development Capacity Building Project, which includes loans to develop the primary and secondary levels of education. However, it also includes a component to "raise the overall quality and relevance of teaching, research and professional development by improving the system's ability to internally general a critical mass of high quality academics, researchers and professionals, particularly in disciplines critical to the country's development," (World Bank, 2007). As already noted, USAID currently has no project in Cameroon.

Partnerships with foreign universities and academics do exist. For example, the US Fulbright program has awarded 61 grants to Cameroon since 1970. The majority of American academics who have traveled to Cameroon as Fulbright Scholars have gone to the University at Younde I, however, an increasing number have also traveled to the Universities of Buea and Dschang. Nantang has noted (2002) that due to low levels of autonomy and political interference at Cameroon's universities, several Fulbright and other similar grants have not been approved by the administration.

The government has begun to look toward the private sector to help absorb some of the excess student demand and to reduce capacity pressures at the country's public universities. It authorized the establishment of private institutions as part of the reforms in 1993 (Njeuma, 1999). At the present time, there are two private universities in Cameroon (both located in the capital) as well as a growing number of tertiary institutes. The Ministry of Education estimates that approximately 15,000 students are enrolled at the 18 private tertiary institutions in

Cameroon (Ngwana, 2003). Compared to many of its neighbors, therefore, the private offerings at the tertiary level are still relatively low.

Distance learning programs been run by the Ministry of Education in Cameroon since 1967 and have had a varied level of success (Pecku, 1998). One of its primary areas of focus is on the training of teachers, due to their insufficient numbers in the workforce. For example, the *École National Supérieure* (ENS), the institution of higher leaning dedicated to training teachers, has a distance education program to improve teacher competence in teaching French as a second language. However, many such programs have proven to be unsuccessful due to low levels of funding and lack of materials. Other sources of failure include lack of training and capacity of individuals running the programs. One exception to this general trend of unsuccessful programs has been distance learning programs for agriculture. These have been operated by the University of Dschang (which has a strong focus on agricultural studies) (Pecku, 1998).

In addition to the primary challenge of an overburdened capacity, Cameroon's tertiary education system has had to deal with issues of equality of access, particularly as a result of language and gender. As has already been noted, Anglophone students suffer from a significant disadvantage in access to education compared to the majority Francophone students (Konigs, 2002). Although the primary goal of the creation of new universities in 1993 was to reduce strain on the infrastructure of the primary university, inequality was a secondary goal. The University of Buea, with English-language instruction according to the Anglo education model was established. This opened up significant opportunities to Anglo-Cameroonians, who had previously had no options to study in English under a British model without traveling abroad for their studies (Njeuma et al, 1999). Because the option of traveling abroad is not an affordable option to the majority of students, it also increased access for less wealthy students.

Opening universities in several regions also had the perhaps unintended positive consequence of expanding access to women. Njeuma et al notes that many parents are less willing to send their daughters (compared to their sons) to pursue university studies if doing so would require them to travel far from home. As a result, the authors noted that access to women increased. For example, the proportion of female students at the University of Buea was 47% in 1999 (Njeuma et al, 1999). Likewise, the establishment of universities in several regions opened up access to other regional groups, for whom it education became less expensive. Before, such students were less represented when compared with the native groups predominant in the capital. For example, prior to the reforms, during the academic year 1990-1991, only 4% of students at the University of Younde were from the Northern Provinces; by 1995-1996, they formed 3% of the student-body at Younde, but 50% of the student body in the University of Ngaoundere.

Issues of quality, which are closely associated with over-capacity problems, are also of concern in Cameroon's universities. According to Pecku (1998), one of the major issues of quality facing Cameroon's institutions is the reduction in education standards due to two factors: an insufficient number of teachers and a lack of access to education at various levels. Access and quality of facilities worsens as one progresses to higher levels of education. One of the greatest needs, therefore, is to train teachers (a function of tertiary education). Attempts have been made to address this issue of training teachers. This included advanced training for "professional teachers" as well as to provide "non-professional" or "unqualified" teachers with basic professional training. Some attempts have been made to provide this training through distance leaning, with relatively low levels of success, however (Pecku, 1998).

Conclusion

The tertiary education system in Cameroon grew from a small institute funded by the former colonial government to a public system that includes six universities in different regions, two private universities and a number of other types of private tertiary institutions. Like many of its neighbors, Cameroon has faced difficult challenges, both in building and in maintaining its tertiary education system. The strongest challenges include extreme pressure on the capacity to handle students, due to soaring student enrollments and little development of infrastructure. These factors, in turn, contribute to problems of quality and are exacerbated by poor financing. As many countries in Africa, the tertiary education system has tended to favor men over women, the rich over the poor, and certain linguistic and regional groups over others. Finally, a curriculum that matches poorly with the labor market creates difficulties for graduates when they attempt to find employment.

The country has seen some successes. The reforms of 1993 were successful in increasing access to university for the marginalized Anglophone community, as well as increasing access for women and regional groups. Some short-term improvements in capacity were also achieved. In the long-term, however, low financing has prevented the universities from making significant improvements in infrastructure, a necessary precursor to quality improvements. Finally, Cameroon's governance problems extend to academia, which has low levels of autonomy from political interference. This has had negative impacts on the research and development, as in fostering partnerships with external academics. Although some success has been noted, overall, much more is left to be done.

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ETHIOPIA

With an educational history nearly as old as the nation itself, Ethiopia has continually embraced learning, even in times of disparate political ideologies and trends. Tertiary education in Ethiopia has expanded throughout the 20th century and is poised to realize dramatically increased enrollments of up to 160,000 students by the 2010-2011 academic year in a national university system supported by the significant participation of private institutions. However, with virtually no financial support from international donors, providing the necessary facilities, knowledgeable teachers, and relevant curricula and pedagogies with the goal of spurring development has and will continue to require significant public investment, additional reform, and cost-sharing between the government and students. The study that follows explores the atmosphere in which tertiary education in Ethiopia has developed, its history and how such history impacts it today, and current trends that affect it.

Context

For nearly 2,000 years Ethiopia has resisted foreign rule, remaining one of the longest continuously independent nations. Unlike most of Sub-Saharan Africa, Ethiopia has never been colonized by a European power. This is not to say, however, that European states did not desire to control Ethiopia and its ports on the Red Sea. Beginning with the Battle of Adwa in 1896 through the invasion of in 1936 and until Italy's defeat in World War II in 1941, Ethiopians violently resisted Italian attempts at colonization (Wagaw, 1990). Emperor Haille Selasie I ruled, *de jure*, from 1941 to 1974, a period known for broad cooperation with the United States in education, agriculture, and military affairs (Wagaw, 1990; Negash, 2006). A BBC documentary on the starvation of an estimated 100,000 peasants in North Ethiopia combined with a faltering economy and public disgust over the excesses of the emperor and his nobility

peaked with a popular uprising led by the military in 1974 ("Background", 2007). Power was divided amongst a committee ("dergue") of military officials headed by Mengistu Marian, a lieutenant colonel in the Ethiopian army, and national policies were adjusted to reflect Marxist-Leninist ideology. Known for his totalitarian and repressive leadership, Mengistu (who would later be convicted of genocide *in absentia* for political executions during the so-called "Red Terror") was overthrown by a union of ethnicity-based militias in 1991 (Negash, 2006; "Background", 2007).

A provisional government, with the support of the United States, approved the secession of Eritrea, a northern province, in 1993. A peaceable transition to Eriterean independence resulted, but a two-year war that took more than 100,000 lives followed in 1998 ("Background", 2007). The adoption of a constitution in 1994 created the Federal Democratic Republic of Ethiopia as a federal republic with nine states and two self-governing administrations ("Background", 2007; Central, 2007). The current government, led by Prime Minister Meles Zenawi, has begun devolving power through the federal system via a policy of ethnic federalism (Ministry, 2003; "Background", 2007). According to the World Bank's World Governance Indicators for 2005, Ethiopia's performance on all standards of governance (voice and accountability, political stability and the lack of violence, government effectiveness, regulatory quality, the rule of law, and control of corruption) has declined since 1998 relative to all other nation-states (Kaufmann, Kraay, & Mastruzzi, 2006). The 2007 Freedom House Annual Survey of Political Rights and Civil Liberties ranks Ethiopia as partly free, while the 2006 Bertelsmann Transformation Index (BTI), which measures development progress in democracy and market economics, ranks 92nd of 113 nation-states, an improvement since 2003.

The Ethiopian economy continues to be primarily agrarian with over 90% of the population employed in rain-fed agriculture or related support sectors (Wondimu, 2002). Accounting for 52% of total gross domestic production, growth in this sector is driven almost exclusively by population growth as opposed to increased productivity through new knowledge or productivity (Ministry, 2005; World Bank, 2007). While the economy as a whole grew by 5.5% in 2002-2003, agriculture grew at just 2.9% in this period (World Bank, 2007). According to the World Bank (2003, p. 5), the current government's focus in agriculture-led development "emphasizes rural roads, technology transfers to improve crop and animal production, rural extension and credit programs, irrigation development, and fertilizers" (Saint, 2004). Ethiopia's agricultural productivity is limited by frequent droughts, "soil degradation caused by inappropriate agricultural practices and overgrazing, deforestation, undeveloped water resources, and poor transport infrastructure" ("Background", 2007). Crops such as coffee (the nation's main export), khat, and sugar are the major mainstays of the 85% of Ethiopians who live in rural areas.

With a GDP per capita of less than $100 per person and a poverty rate of over 44% (defined as having income of less than $1 per day per person), Ethiopia is one of the poorest nations. Ranking 170th of 177 nations on UNDP's Human Development Index (HDI) and 98th of 102 developing countries on the Human Poverty Index, with a index value below the average for all Sub-Saharan African nations, Ethiopia is almost completely reliant on foreign aid ("Human", 2006). The World Food Program estimated in 2004 that 5-6 million families are chronically food insecure, thus requiring constant food support in order to survive. While the International Monetary Fund forgave Ethiopia's debt in 2005, public debt as a percentage of total GDP was

estimated at 80.3% in 2006. Official development aid to Ethiopia in 2005 was more than $1.8 billion, roughly 23% of GDP (Tjeldvoll, Welle-Strand, & Bento , 2005).

While unemployment rates are unavailable, anecdotal evidence suggests that employment has not kept pace with growing education at all levels, resulting in mass unemployment (Wondimu, 2003). The International Organization for Migration (2007) estimates the net migration rate at -0.4 per 1,000 Ethiopians, a figure that is skewed due to the continued return of refugees from Sudan as a result of the war between Ethiopia and Eritrea. Dejene and Yohannes (1998, as cited in Getahun [2002]) estimate that 50% of all skilled workers migrate internationally, while Getahun (2002) cites data from the IOM that suggests more than one-third of Ethiopians who travel outside of Ethiopia for further education have not returned. Some reasons cited for such "brain drain" include "political conditions, lack of freedom and poor working conditions" (Wondimu, 2003). In addition to a poor economic situation, the World Health Organization estimates that roughly 3.5% of all adults (ages 15-49) have HIV or AIDS, thus placing additional pressure on the nascent healthcare infrastructure and potential for development (World Bank, 2005)

According to the Department of State, prior to the overthrow of Haille Selasie I in 1974, the United States provided $282 million in military and $366 in economic assistance, including programs in education. USAID provided significant financial and technical support to the education sector beginning in July 1994 via the Basic Education System Overhaul (BESO) project. With goals including improving the quality and equity of primary education, BESO funding in 1994 was projected at over $80 million over the project's span of seven years. Negash (1996, p. 51) notes, "There is no doubt that this is by far the most ambitious and comprehensive programme to be initiated by any single donor" in the education sector. Total

United States Government (USG) official development aid for Ethiopia from 1991 to 2003 was $2.3 billion, of which a large portion was dedicated to humanitarian assistance during the drought of 2003 ("Background", 2007). Total expenditures on projects related to development and capacity-building within the Government of Ethiopia (GOE) total $184 million in fiscal years 2004 through 2006 ("USAID", 2006).

Given Ethiopia's reliance on agriculture-led growth to spur economic development, tertiary education, especially education and research in the sciences, is critical to increasing productivity. Everson (2004) notes that while technology transfer can provide needed technologies to less-advanced economies, such economies require technical mastery over the technologies in order to adapt them to the unique circumstances present in the local environment. Such mastery has been necessary in Ethiopia's semi-arid agricultural environment, one that remains primarily rain-fed, to create improved crops, including chickpea, malt barley, pyrethrum, linseed, lentil, durum wheat, soybean, highland maize, faba bean, bread wheat, and varieties of potatoes (EIAR, 2007).[5] These genetically modified and hybrid crops were created and circulated to farmers by the 11 agricultural research institutes within Ethiopia's universities and colleges in collaboration with the Ethiopian Institute of Agricultural Research (EIAR) (International Center, 1999). News publications by EIAR note that crop improvements have helped farmers "go out of the poverty regime" of food aid, "fundamentally chang[ed] the lives and livelihood of malt barley farmers," and provided for sustainable crop rotation in several areas (EIAR, 2007). Through research that has increased crop diversity, protected the rainforest habitat of wild coffee (Ethiopia's largest export) from over-pruning, and the extension of

[5] The Ethiopian Institute of Agricultural Research (2007) notes that improved varieties of highland maize have increased yields by 70-80 quintals per hectare and barley from 10 to 23-25 quintals per hectare per year. Research has also enabled farmers to plant environmental condition-specific lentils and durum wheat, which were previously non-existent, on 7,300 hectares held by 7,000 farmers.

livestock breeding programs, the agricultural economy of Ethiopia has expanded its production possibilities and enabled greater economic growth (Senbeta & Denich, 2006; Association, 2004; Center, 2007).

Profile of the Education Sector

Ethiopia's first institution of higher learning, the Metashift Bet (or School of the Holy Books), an institute dedicated to theological training for educated elites, was founded in the 12th century A.D. Long before European colonizers introduced what would become the Western pedagogical approach to education, Wagaw (1990) notes that the Ethiopian "approach to learning, including the qualification of teachers, methods of teaching and learning, and the popular attitude toward the leadership of the community of scholars…reflected maturity of the mind" (as quoted in Lulat, 2003 p. 22). Traditional education for Christians, Muslims, Jews, and pagans, focusing on literacy and theological teaching, prospered through the early 19th century (Wagaw, 1990). Modern education was instituted by Swedish missionaries in the late 19th and early 20th century, with a half-dozen primary schools built and 100 students educated by 1905 (Wagaw, 1990). Students seeking higher education increasingly traveled to Sweden, Switzerland, France, Italy, Germany and Sudan (where a university was established by the British) after 1860 until the occupation by Italy in 1936 (Wagaw, 1990). While primary education was previously established in Ethiopia at the time of the Italian occupation, a system of education for Eritrea was first instituted during this period, and by 1935 there were 26 primary schools (Wagaw, 1990). No modern schools of secondary or higher education were established by the Italians or Ethiopians in either Ethiopia or Eritrea until after World War II (Wagaw, 1990).

The first modern tertiary education institution in Ethiopia was founded in 1949 as Trinity College, a liberal arts institution that instructed using the English language (Lulat, 2003. First serving 21 students, Trinity had no formal linkages with Western institutions of higher education and thus staffed its faculty with expatriate professors via bilateral and multilateral assistance agreements (Lulat, 2003; Lulat 2005). Capital funding and assistance from the USG allowed for Trinity College to expand and become Haile Selassie I University, whose students were provided full government scholarship (including tuition, room and board, and clothing/subsistence allowances), thus beginning a long tradition of state-financed higher education (Lulat, 2005). In return for full scholarships, students agreed to spend the year after their graduation from a degree program in community service programs in rural parts of their country. Wagaw (1990) notes that "there was no doubt that the year the students spent away from the university was, in many ways, the most educational aspect of their entire university experience," especially given that a large number of urban residents had and continue to have access to tertiary institutions (as quoted in Lulat, 2005, p. 271). During the 1950s, five colleges were created, including the College of Agriculture, which was founded with USG assistance (Lulat, 2005).

Following the takeover by the Dergue in 1974, Haile Selassie I University was renamed Addis Ababa University, and was quickly accompanied by seven additional national colleges, all formed between 1976 and 1986 (Lulat, 2005). The approach of the Marxist-Leninist regime was to expand education to as many people as possible and to develop practical vocational training, thus resulting in the building of educational institutions at all levels throughout Ethiopia and the implementation of classes in agriculture (Negash, 2006). However, with the expansion of the entire system of education, quality declined in the face of a lack of teachers, especially those educated in the English language medium used in post-primary education (Negash, 2006).

Moreover, the Dergue eliminated academic freedom, thus resulting in a mass exodus of researchers, lecturers, teachers, and students to Western institutions (Lulat, 2005).

The end of the Dergue in 1991 did not accompany the end of a half-century old focus on education by Ethiopia's leaders; rather, the transitional then permanent governments that followed during the 1990s pushed an expansive educational reform agenda that included creating six additional colleges in the rural states (Lulat, 2005). Moreover, at the urging of the World Bank, Ethiopia began allowing the creation of private institutions of higher education in order to provide additional capacity for an increasing number of applicants to the two national universities and 17 colleges that were in place in 2000 (Lulat, 2005; Wondimu, 2003). Wondimu (2003), notes that four private universities alone educated more than 9,000 students in a tertiary education system of 27,345 in 1998-1999. With the establishment of masters and doctoral programs at Addis Ababa University and Alemaya Agricultural University (of which the original College of Agriculture is a constituent part), little additional financial resources were provided for the relatively higher per unit cost of educating at advanced levels, thus negatively affecting the provision of undergraduate education (Wondimu, 2003). In addition, since 1999, universities and colleges run by the Ethiopian state have introduced a program of community-oriented practical education/training (COPE), which has pushed education out into practical development applications to benefit Ethiopian society (Yizengaw, 2003).

Given that the Government of Ethiopia has committed to achieve universal primary education by 2015, per the Millennium Development Goals, the quantity of students educated by primary and secondary institutions and the quality of education is critical to understanding the future outlook for tertiary education. According to the Ethiopian Ministry of Education (MOE) (2005), out of a total population 14.3 million primary school age children, 11.4 million were

enrolled in primary schools on average, a gross enrollment rate (GER) of 79.2%. However, the disparity in enrollment between urban and rural areas is extensive: metropolitan areas such as Addis Ababa (the nation's capital) and Gambella have achieved rates of over 125% while rural pastoral areas such as Afar and Somali fall below 20% (Ministry, 2005). The national GER for secondary schools is 12.7%, with roughly 943,000 students participating in education beyond the first eight years of primary schooling. While the government does not provide GER data for 2005 for secondary schooling, data from 2000 show a similar trend of GER disparity between rural and urban areas. For the 1999-2000 academic year, three metropolitan areas, Addis Ababa, Harari, and Dire Dawa, recorded GERs of 46.6%, 40.1%, and 25.2% respectively while three rural regions, Somali, Afar, and Benshangul, recorded GERs of 0.7%, 2.3% and 8.7% respectively (Tekleselassie, 2002). Gaps in gender participation in primary and secondary schooling have narrowed since the mid-1990s, but the GER for females is roughly 17% less than males in primary and 14% less than males in secondary schooling (Ministry, 2005). The GOE's biannual Education Sector Development Plans have consistently showed trends to narrow the urban-rural and gender gaps, including expanding school construction in rural areas and funding programs to encourage higher enrollment rates among female students (Ministry, 1999; Ministry, 2002; Ministry, 2005). Negash (2006) notes that completions rates for primary schooling is 30% and 20% for secondary schooling.

Along with the equity of access, the quality of education provided to primary and secondary student also impacts tertiary institutions. In secondary schools, where English in the primary language of instruction in all public schools, GOE has instituted a distance learning program beamed by satellite from South Africa to its 491 schools (Negash, 2006). Lectures are displayed on plasma screens (thus being called "plasma education") in such subjects as

chemistry, physics, mathematics, English, biology and civics at an estimated cost to GOE of $50 million (Negash, 2006). Frequent complaints by students and teachers are that lessons are only displayed once, power outages (which according to Negash "are so common that entire lectures are lost forever") reduce the system's usability, and the level of English instruction as a medium of education is beyond the capabilities of the students (Negash, 2006). Other challenges to the efficacy of primary and secondary education include recruiting enough tertiary-educated to teachers to both staff new schools and to cover the teacher attrition of roughly 16% annually related to HIV/AIDS (Saint, 2004). While no systematic study on the quality of primary and secondary education has been conducted, Saint (2004) notes that students from urban areas are far more likely to gain entry into tertiary institutions than rural students and Negash (2006), in an unscientific survey of English comprehension by students graduating from secondary institutions who were accepted to tertiary institutions, found that "virtually none" could translate a simple paragraph from Amharic to English, the language of secondary and tertiary instruction.

As a feeder system for future students in tertiary education, a system of primary and secondary education that is expanding rapidly and whose quality is in question has begun to impact the quality of education and equity of access at the tertiary level. A recent reform at the tertiary level to reduce the time required to complete an undergraduate degree from four years to three has resulted in pushing the entire "freshman" year of university learning into the secondary education program, thus further placing resource demands on the expanding system (Negash, 2006). Thus, the current and future state of tertiary education within Ethiopia is closely tied to the expansion of primary and secondary education in light of the Millennium Development Goals.

Tertiary Education

In the 2004-2005 academic year, the tertiary education system in Ethiopia served 172,111 students in both public and private colleges and universities, an increase of over 309% since 1994-1995 (Ministry, 2005). Gross enrollment at the tertiary level was 1.5% in 2005, which is below the Sub-Saharan Africa average of 3% (Ministry, 2005). Degrees offered by universities and colleges in Ethiopia include diplomas (2 years to complete), undergraduate degrees (3 years), master degrees (2 years), and doctorates (in specialized fields, including medicine). According to Wondimu (2003), 50 diploma, 60 undergraduate, and 50 graduate programs were offered in 2001. Roughly 7% of all students are enrolled in degrees related to agriculture in 2003 as compared to 19% in 1999, with a large majority in this field enrolled in public undergraduate degree and part-time programs (World Bank, 2003).

Currently, there are eight national universities (Addis Ababa, Alemaya Agricultural, Mekelle, Jimma, Bahir, Dar, Debub, Gonder, and Arbaminich), nine technical colleges, five teacher training colleges, and 37 private tertiary institutions (World Bank, 2003; Negash, 2006). The national universities are located in the individual ethnic states, and are responsible for governance over other public institutions of tertiary education within their individual states. A program of decentralization of governance over the control of educational institutions at all levels was implemented in 2003 (Saint, 2004). The current education program of the MOE projects the creation of an additional five national universities and an expansion of total enrollment capacity to more 155,000-160,000 in its universities and colleges alone by the 2010-2011 academic year (Ministry, 2005).

The public tertiary system, which educates roughly 76% of all tertiary education students, is administered by the Ministry of Education. Upon graduating from a secondary school, students seeking entrance to a tertiary education institution must pass the Ethiopian Secondary

Leaving Certificate Exam (ESLCE) and applications are handled directly by the Ministry (Wondimu, 2003). Recent reforms at the national level, resulting from a 2003 proclamation on higher education, have included the creation of three oversight bodies: the Higher Education Strategy Institute, Quality and Relevance and Assurance Agency, and the National Pedagogical Resources Centers (World Bank, 2003). At the institutional level, reforms include providing broader autonomy to individual institutions in selecting leadership, budgeting (through block grants), strategic planning, and cost recuperation (World Bank, 2003). At the level of academic programs, reforms have included realigning programs to the needs of the labor market (i.e., agriculture, teacher education, engineering, ICT), expanding graduate enrollment in order to develop a new cadre of educated lecturers and teachers, and the creation of national pedagogical centers to improve teaching quality (World Bank, 2003; Saint, 2004; Ministry, 2005).

Reforms allowing for more autonomy at the institutional level were enacted in response to an April 2001 student strike at Addis Ababa University demanding more academic freedom. At the outset of the strike, government forces killed 40 students and closed the university for one year (Amnesty, 2003). Tjeldvoll, Welle-Strand, and Bento (2005, p. 66) remark the government has:

> harshly repressed educators through extrajudicial killings, arbitrary arrests, and widespread denial of freedom of opinion and expression. Today, a climate of self-censorship seems to reign….Professors say they refrain from independent political speech and activity because they are government employees who can be fired at will.

A lack of academic freedom has been cited as a primary reason why it is estimated that as many as one-half of all academics were lost to emigration during the 1990s, a trend which continues today (Getahun, 2002; Aredo & Zelalem, 1998 as cited in World Bank, 2003; Wondimu, 2003).

Private tertiary institutions play a considerable role in Ethiopia, educating nearly 40,000 students in diploma and undergraduate education programs, or roughly 23% of all tertiary students (Ministry, 2005). In 2005, 71 private institutions offered diploma programs while 34 offered undergraduate degrees (Ministry, 2005). According to the World Bank (2003), GOE has encouraged the development of private institutions to provide additional capacity to the tertiary system through duty-free importing of educational materials, land exchange programs, the reduction of bureaucratic processes for beginning new educational institutions, accrediting institutions, and no statutory limit on tuition fees. Private institutions receive no direct funding from GOE, but the faculty and administrators from these schools are invited to attend government sponsored training sessions and workshops at no cost (World Bank, 2003). Private institutions offer a diverse platform of degree programs in areas not covered by public institutions, including business administration and computer science and attract up to 50% female students in their diploma programs, a higher proportion than in public institutions (World Bank, 2003). At a cost to students of between $300 and $450 per year, private institutions, according to the World Bank (2003, p. 11), have "enable[d] a significant expansion of tertiary enrollment at very little additional cost to the government."

The State of Education

Financing

The education sector comprised 4.5% of Ethiopian GDP in 2002, which is higher than the 3.9% average for Sub-Saharan Africa, and 16.8% of the state budget (World Bank, 2003). Education as a share of the state budget has nearly doubled since 2000, largely with the assistance of international donors (World Bank, 2003). Total outside donor funding for standard budgetary support of the Ethiopian education sector totals roughly 27% of the government's $1.8

billion total education budget in 2002 (Tjeldvoll et al, 2005). However, the state funds virtually all of its commitments to tertiary education at a rate of roughly $860 per student per year, which is far below the Sub-Saharan African average of $1,500 (World Bank, 2003). While the per unit costs of tertiary education are rather low, they represent almost the complete picture of public tertiary provision given that the government continues to provide students with full scholarship, including payment of tuition, fees, room, boarding costs, and subsistence money (roughly $14.50 per month) (Tjeldvoll et al, 2005). GOE does not commit funding for the payment of fees and tuition for part-time, evening, and private students (World Bank, 2003).

According to the World Bank (2003), the funding gap between the 5 billion Birr cost associated with reaching the goals for EDSP II and the budgeted amount was 1.5 billion Birr. To cover this and future gaps, the GOE instituted a university graduate tax to recover the costs of room and board and some tuition (World Bank, 2003; Saint, 2004). This tax is levied on the salaries of graduates in the amount of 10% of income for up to 15 years, and some 35% of all graduates are exempt according to The World Bank (2003). The World Bank (2003) also estimates that by 2020, the share of tertiary education in the total education budget will be four to five percentage points lower given the revenues from the graduate tax, which equates to a savings of about 20% of state expenditures on tertiary education. Tekleselassie (2002) notes that while it is often argued that cost-sharing will limit access to Ethiopia's most vulnerable groups, it is more likely that the lack of resources which have minimized the capacity of tertiary education has had a more deleterious effect. As such, expanding the pool of resources for tertiary education through cost sharing will enable expanded access, especially given GOE's commitment towards moving tertiary institutions into rural areas.

Prior to 2003, budgetary allocations were made at the institution level, often resulting in some institutions receiving per student allocations up to three times larger than other institutions (World Bank, 2003). Recent reforms to the funding system have included instituting a funding formula that focuses on the per student basis, the performance of the institutions using several indicators, how much service the institution provides within the community, and the number of women and minority students are enrolled (World Bank, 2003). This new formula has been combined with incentives for institutions to engage in commercial activities through a provision that allows those institutions to keep all additional revenue as opposed to subtracting those funds from yearly allocations. Engaging in such commercial activities as contracted short courses and providing evening courses to non-traditional students has contributed one-third of Addis Ababa College of Commerce's yearly budget and one-fifth of the yearly budget at the institutions at Jimma and Awassa through agricultural production (World Bank, 2003 citing Kastbjerg, 1999). These recent funding reforms have the potential to make the universities increasingly more competitive, performance-driven, and focused on how best to serve the public good and private needs within their communities.

International Participation

Historically, given Ethiopia's lack of a colonial past, its students seeking advanced education have traveled to the United States (Getahun, 2002). Getahun (2002) notes that two Ethiopians first attended medical school in the United States in the 1920s, and that this number climbed to more than 1,000 students in the 1970s, thus making Ethiopia the third largest African contributor to the foreign student population in the United States. Since 1994, more than 550 students have been sent to India by the MOE to obtain advanced degrees, most of which have returned (Yizengaw, 2003). However, citing a study conducted by the International

Organization for Migration, Yizengaw (2003) notes that one-third of all Ethiopians sent abroad have not returned, demonstrating a trend of brain drain that has affected other developing states. No comprehensive figures are available on the total number of Ethiopian students who travel abroad for post-secondary education.

Since the staffing of Trinity College (now Addis Ababa University) with expatriate professors in the 1950s through the employment 380 academics from India during the 2002-2003 academic year to staff the rapidly expanding system, international cooperation has been a cornerstone of the Ethiopian tertiary education (Lulat, 2003 Bollag, 2003). A 2005 report by USAID reports that eight American universities have partnered with Ethiopian institutions in projects ranging from developing new master degree and legal education programs to agriculture (Association, 2004; Association, 2005). Several of the programs are directly tied to economic development, including partnerships between Cornell University and Bahir Dar University on watershed management and Oklahoma State, Langston University, and Alemaya Agricultural University to create Ph.D. programs in animal genetics, animal breeding, and the formation of a goat-rising program for rural women (Association, 2004). The goat-raising program gave two goats each to 300 women and provided training for agriculture extensionists in livestock management and surgical procedures to assist the development of goat breeding (Association, 2004). In addition, 23 Fulbright grantees are among the hundreds of American academics who have traveled to Ethiopia to lecture at its universities and colleges and provide technical advice and support since U.S. participation in the creation of Haile Selassie I University (Lulat, 2005; Fulbright, 2007).

International support for tertiary education, especially in the realm of technical assistance and limited loans, is significant. Beginning in 1998, the Ethiopian government joined a

partnership with 15 international donors to prepare and implement the Education Sector Development Programme and its subsequent updates. Technical assistance through this partnership was provided by UNESCO, UNDP, UNICEF, DFID, Irish Aid, SIDA, USAID, JICA, the Ministry of Foreign Affairs of Finland, Italian Cooperation, the German Agency for Technical Co-operation, the Norwegian Development Agency, the European Commission, ADB, and the World Bank (Tjeldvoll et al, 2005). Recently, the governments of Netherlands and United Kingdom have provided technical expertise in the development of the Quality and Relevance Assurance Agency, while China and Italy have provided targeted support for technical colleges (World Bank, 2007). In addition, Ethiopia has received assistance in the form of grants, loans, and technical assistance from UNFPA, SAREC, and the British Council (ICHEFAR, 2001 quoting Habatmu, 2000).

Role of Technological and Vocational Training

Recent changes in the structure of tertiary education within Ethiopia have emphasized the importance of technical and vocational education/training (TVET) while distinctly separating it from other forms of higher education, especially undergraduate and graduate education. Two-year diploma programs, which often focus on developing middle-level skills in industry, agriculture, and services, have been moved from the larger national universities to the large number of peripheral colleges and training institutes (World Bank, 2003). Such an expansion is favorable given the demand for education in TVET in rural areas where agriculture sector dominates local economies. Moreover, secondary education programs, especially in grades 11 and 12, are increasingly incorporating TVET as a non-traditional post-secondary route through practical training and apprenticeships (Ministry, 2005). Since 1994-1995, the number of TVET

institutions has increased from 17 to 158 and total enrollment has increased from 2,924 to 102,649, of which 51% in 2005 were female students (Ministry, 2005).

Future projections for TVET include the building of 3,304 classrooms, the training of 4,561 qualified teachers (including the use of up to 2,000 expatriate teachers until enough domestic teachers can be properly trained), and the enrollment of more than 315,000 by the 2009-2010 academic year. These projections also include mass training in agriculture as to absorb 40% of all secondary school graduates, over 200,000 students, by 2012 (Ministry, 2002). This ambitious plan is being supported by the creation of new accreditation institutions for private TVET institutions, the development of national curricula, trade testing and certifications centers, and the development of ICT systems that allow for distance education (Ministry, 2005).

Rates of Return to Education

According to a 1998 study conducted by the World Bank, the private rates of return to education "rise with each school level, more or less doubling with each level achieved" within Ethiopia (World Bank, 2003).

Figure 1. Returns to Education in Ethiopia in 1995

Level of Education	Private Returns	Social Returns
Primary	25%	15%
Secondary	24%	14%
Tertiary	27%	12%

Source: World Bank (2003), citing World Bank (1998)

The rates of return noted in *Figure 1* are representative of graduates in both rural and urban areas, and are expected to be lower at the tertiary level than what would reflect the current rates of return given evidence from other case studies, including Colombia, where returns to tertiary education doubled between 1980 and 2000 (World Bank, 2003 citing Bloom and Hansen, 2002).

Schultz (2003) suggests that aggregate economic growth, which has occurred in Ethiopia in the decade since the household income surveys utilized by the World Bank were collected, results in higher demand for skilled workers, thus resulting in higher returns to education.

Role of ICT and Distance Learning Programs

Ethiopia both lacks the human capital and infrastructure with which to take advantage of the broad opportunities and scale of economies provided by the use of Internet technologies (World Bank, 2003). In 2004, fiber optic cabling was wired to the six existing national universities and the government has provided satellite connectivity to lessons to all secondary institutions within the country (as discussed above). However, government documents do not discuss the extension of internet technology to other tertiary institutions, including the colleges and institutes that provide technical training to those individuals who will be looked upon to develop the nation's technology infrastructure. A survey conducted by Saint (2000) found Ethiopia to be the last in 22 countries in Sub-Saharan Africa in having the capacity for utilizing distance learning (as cited in World Bank, 2003). Given that distance education requires a significant initial investment in the development of curricula and the training of teachers to both provide lessons and leverage the distance learning technologies, the lack of discussion within the planning documents of GOE demonstrate that plans to expand distance learning education in the direction of 'plasma education' are not currently being discussed (World Bank, 2003; Ministry, 2005). In addition, as Negash (2006) noted as limitations to distance learning in Ethiopia's secondary schools, the lack of reliable power sources and the inability to store lectures for repetition and review curtail the prospect of distance learning without additional investments in infrastructure and computing equipment.

Access

Access to tertiary education is limited to about one-fifth of the eligible candidates, a figure that is continually decreasing as a result of demand for tertiary education rising faster than the growth in capacity (ICHEFA, 2001). The urban-rural divide at the primary and secondary level, as discussed above, results in a similar level of inequity in tertiary education. Negash (2006, p. 25), notes that the rural-urban divide is "far more decisive for the educational destiny of children than gender and class." While the government does not release data on the regions from which students are accepted, it has recognized the need to increase rural enrollment and has implemented a positive discrimination policy for students from the "relatively underserved" regions of Afar, Benishangul and Gumuz, Somali, and Gambella, and has actively planned for improving rural education through pedagogical reforms and improved teacher training (Yizengaw, 2003; Ministry, 2005). Moreover, a national effort create a hub and spoke system of national universities and colleges in the ethnically-based states is aimed at providing education to rural populations who might otherwise be unable to access university education located in larger cities. Saint (2004), citing figures from the 1999 National Household Income, Consumption, and Expenditure Survey, also indicates that 71% of university students come from households in the highest quintile of income.

The disparity between male and female students is also considerable, with female students comprising 25.2% of all students in tertiary education in 2005 (Ministry, 2005). This rate of participation is slightly below the Sub-Saharan average of 30%. However, women are a majority of students (53%) at private institutions (Wondimu, 2003 World Bank, 2003). These figures are comparable to general literacy rates for adults, where the literacy rate among males is 56% compared to 25% for females in 2003 (World Bank, 2003). In order to increase female

enrollment, the MOE has implemented an affirmative action program that reduces the cutoff for a female applicants to tertiary education by 0.2 points on the ESLCE. However, Wondimu (2003, p. 320) notes that this "has improved women's admission rate[s] but has not resulted in significant changes…[and that] the attrition rate of this group is higher than average." Government planning documents mention the implementation of a gender support program and programs for assisting boys and girls from rural regions in achieving tertiary education, but no supporting documentation on those programs is available (Ministry, 2005).

Students unable to gain access to the nation's tertiary schools have the opportunity to attend part-time (at night) or apply directly to private institutions, but are responsible for all related tuition costs, fees, and room and board charges. Night schools, which are operated at both public and private universities and colleges, are the mainstay for civil servants seeking advancement and students who have been denied admission to public institutions, and students can earn an undergraduate degree in 5-6 years (ICHEFAR, 2001).

Quality

In a system of tertiary education that has undergone significant reform while quickly expanding its enrollment and presence throughout the nation, providing a quality education is challenging and requires well-trained teachers. Saint (2004) and the World Bank (2003) observe that the percentage of all academic lecturers with doctoral degrees or equivalent terminal training decreased from 28% in the 1995-1996 academic year, to 17% in 1999, and to 9% in the 2002-2003 academic year. This decrease in proportion can be best explained by the need for as many as 3,608 additional lecturers the World Bank (2003) projected to reach the interim plan to enroll as many as 160,000 students. To accommodate this increase in enrollment, GOE has planned to increase the number of domestic masters and doctoral students. However stop-gap measures

such as hiring an increased number of qualified expatriates remains decentralized to the institutional level and expatriates have not increased as a percentage of total teachers from the 1996-1997 to 2003-2004 academic years (Ministry, 2005; Saint, 2004). With a decreasing percentage of terminal degree-holding teachers, an expanding system, and a below Sub-Saharan average level of expenditures per student, the quality of education is questionable in the absence of standardized examinations of diploma and degree candidates to demonstrate otherwise (Saint, 2004).

The rapid expansion of the Ethiopian tertiary education system has the potential to produce the much needed scientists, technicians, and doctors who can improve agriculture and healthcare, and educate the thousands of teachers that will be required to support the Millennium Development Goal of universal primary education. Extending from the Metashift Bet in the 12th century to today's system of eight national universities, more than a dozen other institutions and academies, hundreds of vocational training schools, and 34 private colleges, the long history of education in Ethiopia has been increasingly strengthened and reformed. The extensive cost of continuing to improve the current system and the future realities of meeting universal primary education, which will certainly have great affect on the number of students seeking tertiary education, abut a system that embraces the systemic inequalities inherent in lower levels of education; a foreign donor community that traditionally has not invested in tertiary education; and questionable, if not declining, quality in a system that is overpopulated at present. However, the implementation of cost-sharing and revenue-developing processes; investment in new pedagogies, quality assurance, curriculum development, and internet technologies; and concerted efforts on the behalf of the government to decentralize authority to institutions while supporting

private providers and expanded service bode well for promoting economic growth and development. Realizing a way out of poverty will require continued investment, dedicated leadership, and the support of a global community willing to assist Ethiopia in its effort to make tertiary education just one part of a comprehensive solution.

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GHANA

With only about 2 percent of the population enrolled in university, African countries lag far behind other countries in the world in terms of higher education attainment (Hoffman, 1996). The Ghanaian case is no exception. World Bank figures for 1990 estimated that for every 100,000 inhabitants in Ghana only 126 were enrolled in tertiary education (World Bank, 2007). This is astonishing considering enrollment levels in other developing countries are typically above 500 for every 100,000 inhabitants (Hoffman, 1996). While the number of students enrolled is still much lower than the world average, in Ghana, as in many Sub-Saharan African countries, the demand for tertiary education is increasing.

The increase is due in large part to the push for universal primary education. Ghana, with its long history of education provision, is expected to meet close to 100 percent primary enrollment rates, for both boys and girls, by 2015. Enrollment rates at the primary level have already increased from 87.5 percent in 2002-03 to 89.4 percent in 2004-05, corresponding with an increase in enrollments at the tertiary level from 66,626 in 2001-02 to a total of 98,393 in 2004-05 (World Bank, 2005).

Greater investment in education is critical to ensure that this surge in demand does not harm the quality of the education provided and adequately accommodates the demand. The following analysis of Ghana's tertiary education system makes the case for increasing the total donor amount given to Ghana for education. In particular, the findings suggest that greater USAID funding can contribute significantly to positive education outcomes. A greater commitment to tertiary education in Ghana ensures that advances at the primary level translate to real opportunities for professional advancement, not to mention the gains to society from increases in the number of high skilled workers.

Country Context

Ghana, a former British colony, was the first Sub-Saharan country to receive its independence in 1957. Under the leadership of Dr. Kwame Nkrumah, the country made significant strides in the provision of education. However, Dr. Nkrumah was eventually overthrown and by 1981 Flight Lieutenant Gerry Rawlings had risen to power. In the 1980s Ghana was not only experiencing political turmoil but was going through a severe economic recession with the fall of cocoa and gold prices which made it increasingly difficult for the country to continue its generous investments in higher education (Brock, 1996; Gocking, 2005).

In 1992 Flt. Ltnt. Rawlings was later elected president. Rawlings implemented structural adjustment programs in the mid-1990s in accordance with International Monetary Fund (IMF) and World Bank policy prescriptions in an effort to control spiraling inflation and improve economic outcomes. The adherence to severe orthodox policies further cut the governments expenditure on social spending, including education (Afolayan, 2007: 39; Teferra and Altbach, 2003).

Today, Ghana continues to work towards democratic consolidation and economic self-sufficiency. Ghana received a score of 8.0 on the 2006 Bertelsmann Transformation Index (BTI) for stability of democratic institutions on a scale of 1 to 10 (high). In terms of overall democratic status it scored 7.9, however with the BTI survey citing significant concerns about persistent corruption, weak civil society, and problematic budgetary system.

Economic indicators for Ghana are also promising. Ghana has an average rate of growth of about 5 percent for 2003 and 2004, and a BTI score of economic performance of 7.0 out of 10 (BTI, 2006). Ghana's high technology exports are about 4 percent of total manufactured exports, using 2003 estimates. This is consistent with 2004 average for Sub-Sahara (HDI, 2006).

Using 2004 estimates, Ghana's GDP per capita (PPP US$) is 2,240 and debt service is 2.7 percent of GDP, after debt relief program (HDI, 2006).

Ghana's gradual economic growth has had a moderate impact on well-being for its 21.2 million inhabitants. Adult literacy for example is 57.9 percent and life expectancy at birth is estimated to be 57 years. However, a Gini index of 40.8 indicates large disparities between the rich and the poor continue. Furthermore, Ghana's Human Development Index score for 2004 is .532, slightly lower than .555 in 2000, but nonetheless higher than the Sub-Saharan average of .472 (HDI, 2006).

In terms of improving the lives of women, the data suggests that Ghana continues to struggle to ensure equal opportunity of women at school, at the workplace, and at home. University enrollment of females was mere 33 percent in 2004-05 academic year, although female enrollment has been steadily increasing from 31.2 and 27.7 percent in 2001-02 and 2003-04 respectively (World Bank, 2005).

Profile of Education Sector: Primary and Secondary Schools

The first western-styled primary schools in Ghana date back to the sixteenth century. The "castle schools" as they were called, were classrooms created within European castles in Ghana by the Portuguese colonizers for European and Afro-European children. The schools were concentrated in Ghana's coastal areas, primarily in Elmina, Cape Coast, and Accra. Children were given bible study, reading, writing, and arithmetic lessons. It is important to note that commitments to education during this period centered on preserving the administrative structure of colonialism and not of course on moving African countries towards self-sufficiency (Afolayan, 2007: 40).

Christian missionaries were also influential in expanding basic education in the inlands primarily through the Basel Missions in Akuapem, Krobo, Akyem, and Anum, pre-colonial period 1873-74.[6] . The Basel Evangelical Missionary was among the first to arrive in the late 1820s, followed by the Wesleyan Missionary Society in 1835. However, it was the African agents of the missions which were influential in getting the commitment and participation of indigenous leadership for western-style education (Afolayan, 2007: 40). Secondary level education rose out of the demand of African communities. The Presbyterian Boys' Secondary School at Krobo Odumase for example came into existence in 1938 because of the push for higher level education from the Krobo community. The Universities of Ghana, namely, Achimota College (1927) and the University College of the Cold Coast (1948) were also created in part due to the efforts of the African intelligentsia and African community (Afolayan, 2007: 41).

Today, Ghana has made significant advancements in the provision of primary education with significant improvements in education outcomes. For instance, Ghana has 12, 571 public primary schools and 4,189 private primary schools. In junior secondary schools, Ghana estimates a total of 1,048,367 students were enrolled from 2004-05 (World Bank, 2005). In determining education outcomes, we find youth literacy is up 70.7 percent using 2004 estimates for 15-24 age group, net primary enrollment ratio for 2004 is 58 percent, and net enrollment in secondary level is 36 percent using 2004 estimates (HDI, 2006).

Profile of Education Sector: Tertiary Education

The Basel Mission not only contributed to the provision of primary education but it is also responsible for creating the first University in Ghana in 1848, called the Presbyterian Training College (PTC). The college located in the Akropong-Akuapem region was originally

[6] From Kimble, 1963, Simpson, 1969, Gocking, 2000, cited in Afolayan, 2007.

intended as an institution of higher learning for training primary teachers and pastors (Afolayan, 2007: 40).

The Prince of Wales School and College, Achimota, was created under the leadership of Governor Guggisberg, a Canadian. The school originally intended to focus on the value of local languages, cultural heritage, and would use Ghanaian teachers to instruct the students. In 1930 the school began to offer London University Matriculation and Intermediate courses. This decision produced a debate centered on whether to allow affiliations between the local institutions and British Universities. The principle of adaptation meant that local degrees would not be counted as equivalent to that of those obtained at British Universities, while affiliation status meant that they would be equivalent (Agbodeka, 1977 from Ajayi, Goma, and Johnson, 1996).

The University College of Ghana accepted its first class of 92 students in 1948. The expectation was that the university would eventually accept 5,000 students as education attainment levels (primary and secondary) increased. David Balme was first president of the College. He announced a 10 year plan, in which increases in student admissions would increase gradually to preserve the level of quality, while the nation increased its provision of primary and secondary education. A second University would later be created, the Kumasi College of Technology (Ajayi, Goma, and Johnson, 1996: 57).

The University College's affiliation with the former British colonialists was a source of contention. Critics felt the university was growing too slowly, its curriculum was too Eurocentric, and resented the insistence on a university entrance exam and its reluctance to accept the School Certificate or English language exam results. In 1961, the newly independent country of Ghana wanted a break in the relationship that existed between the University College

and London. A Commission on Higher Education was established to address this issue. The conclusion was the creation of a new fully-fledged University, the Kwame Nkrumah University of Science and Technology (UST). It soon became renowned for its Agriculture, Architecture and Building Technology, Pharmacy, and Pharmacology, School of Mining and Technology, and Consultancy Center (Ajayi, Goma, Johnson, 1996: 86-88).

While public universities, teacher training programs, and religious institutions are still a large part of the education system, the sector has grown considerably since then. Ghana currently has 5 public universities, 11 private universities, and 24 technical schools, plus a number of language professional studies institutes (Peil, 1996; Teferra and Altbach, 2003).

The State of Education

Financing

Ghana's first head of state, Dr. Kwame Nkrumah believed in the power of education. He initiated the Accelerated Development Plans for Education in 1951-1957 and the Second Seven Year Plan for Education, 1960-1966. Under his leadership education expenditure was the largest single item on the budget in 1951. A large portion, 26 percent, went to higher education expenditures such as scholarships for students studying at home and abroad.[7] Many students for instance studied in London at the FourahBay College and the United States (McCarthy, 1983 and Jenkins, 1985).

Therefore, from its inception, tertiary education was entirely funded by the government. Students were provided room and board under a residential University model popular in Britain. Yet, with growing concerns about the economy and the government's inability to maintain these generous provisions other mechanisms were experimented with to increase student contribution in education expenditures. In the late 1980s, Ghana implemented a loan system to cover student

[7] From George, 1976, cited in Afolayan, 2007.

expenditures on room and board while maintaining free tuition. Loan programs, however, have not been entirely successful due to a large number of defaults. However, Ghana's loan program has been more successful than those tried in other Sub-Saharan countries due to its unique collection mechanism whereby loans are repaid through contributions to the national social security plan after graduation (Johnstone, 2004; Peil, 1996).

Students have also rebelled against increases in fees and inadequate housing arrangements. While usually peaceful, student protests were violent during the PNDC regime, in which armed thugs were recruited to forcibility remove students from University facilities (Afolayan, 2007: 47). Faculty strikes are also popular due to increasing decline in real salaries (Akurang-Parry, 2002).

All public universities compete for public funds, although the University of Science and Technology (UST) and Legon have the most pull. UST garners political favor due to its image of being a practical institution, producing qualified professionals who are a successful force with Ghana's growing economy. Legon secures resources because it is well connected with the political machinery and well versed in government procurement policies (Peil, 1996). The University of Ghana has recently benefited from resources aimed at increasing revitalizing debilitated infrastructure. Yet, the main challenge at present is the poor economic performance that further limits any new investments in institutional capacity (Afolayan, 2007: 53).

Ghana has not only worked to increase funding for education through unpopular cost-sharing programs, but also by the enacting a law in 2000 for the Ghana Education Trust Fund (GETFund). The GETFund was created to increase the flow and reliability of funds for expenditure on education. The government of Ghana collects a 12 percent valued added tax

(VAT), part of which is then funneled into the education fund to increase public expenditure on education (Baiden-Amissah, 2006; Teferra and Altbach, 2003).

Ghana actually spends less on education than other countries in sub-Saharan Africa yet manages to train a larger number of students (Peil, 1996). From 2002-04 Ghana allocated 39.2 percent of expenditures on education to pre-primary and primary level education, 37.4 on secondary, and 18 percent on tertiary (HDI, 2006). In 2005, Ghana received 758,971 (in cedi) for education. Of this 24.7 percent went to tertiary education, teacher training specifically received 3.9 percent (World Bank, 2005). Ghana, however, continues to fall short in its ability to fund the various programs and administrative initiatives that are crucial for maintaining high performance levels and increased success in education outcomes.

The World Bank report on Education in Sub-Saharan Africa in 1988 reviewed the budget constraints in Africa and made the following recommendations 1.) diversify the financing of Universities and increase private funding, 2.) reduce or control unit cost by increasing efficiency and cutting redundancy. Ghana has worked to implement the first recommendation through the creation of the GETFund but continues to spend an extraordinary amount funding room and board for students. In order to improve conditions, Ajayi, Goma, and Johnson (1996) recommend small initial investments to improve conditions and the implementation of tuitions costs based on family ability to pay.

Donors

Although, Ghana was the fifth largest Sub-Saharans African recipient of Official Development Assistance (ODA) funds in 2004, for a total amount received of $1,362 million in ODA. Of this less than 5 percent was allocated to education expenditures (OECD, 2007). USAID programs in Ghana currently focus on increasing the quality of education and access to

primary education, particularly for girls. USAID's 2006-2010 strategic plan for Ghana also included mechanisms for increasing community participation and improving primary school management and administration. USAID is also currently working with teacher colleges on programs to train teachers on how to address HIV/AIDS issues in a class room (USAID, 2007).

International Partnerships

Ghana currently has partnerships with the following institutions:

Suffolk University/University of Cape Coast

University of Delaware/Institute of Local Government Studies/Erasmus University (The Netherlands)

University of Maryland Eastern Shore/University of Cape Coast

University of Northern Iowa/University of Cape Coast

University of South Florida/University of Cape Coast/University College of Education of Winneba

University System of Georgia – Kennesaw State University/University of Cape Coast (HED, 2007).

Labor Market and Role of Technical and Vocational Training

Ghanaian students have traditionally tended to prefer the humanities, although by the twentieth century many were also pursuing degrees in law, medicine, and physical sciences (Afolayan, 2007). The government is currently pushing hard to increase enrollments in science and technology tracks and is more and more reluctant to fund the humanities. Students however flock to the arts and social sciences because of the lack of qualified science teachers at the secondary level. Furthermore, degrees in science are seen as meant for students interested in academia and of little use in Ghana's limited labor market (Peil, 1996).

Business degrees, on the other hand, are seen as more practical and more suitable for careers in transnational firms. However, even the business programs are ill equipped to train students to cope with the conditions of the Ghanaian labor market (Peil, 1996). A growing challenge in Ghana is absorbing young professionals in a nascent labor market which is still heavily reliant on the informal sector.

Studies in technology and industry however, crucial to innovation and development, have consistently been either not available or insufficient. For example, of tertiary students enrolled in 1999-2004, only an estimated 26 percent were enrolled in science, engineering, manufacturing, and construction (HDI, 2006).

Another impediment to studies in science, engineering, medical and technology is the need for large investments in infrastructure, facilities, and equipment. These areas of studies require more than just quality staff to provide students with the tools they need to succeed. The University of Science and Technology has been gradually increasing its enrollment but it has also experienced violent student uprising due to insufficient housing and academic facilities (Domatob, 1996; Peil, 1996). University of Legon, once renowned as one of the best in Africa is void of contemporary textbooks, journals, and technology critical for postgraduate students (Domatob, 1996).

Technical and Vocational Education Training (TVET) are also suffering from insufficient funds necessary to remain competitive and relevant in an increasingly changing labor market. These types of polytechnic and technical secondary schools are also looked down as alternatives for students that were unable to enter University due to poor performance in nation-wide entrance exams. Currently eight regional polytechnics and technical schools exist in Ghana. The

University of Science and Technology is the most widely known and renowned (Afolayan, 2007: 49).

Rates of Return to Education

Ghana's returns to investment in education as measured in 1967, shows significant increases as education attainment levels rise. Social returns are 18, 13, and 16.5 percent for primary, secondary, and higher level education respectively. Private returns are 24.5 percent for primary, 17.0 percent at the secondary level, and a remarkable 37.0 percent for those with higher level education attainment (Psacharopoulos, 1985).

Access

Modeled after the British system, courses at Ghanaian universities have always been taught in English and used European based curricula. Ghana's reliance on the British system however further delineated the elite class from the masses, since the language of instruction was English, those that could not speak it were at a disadvantaged. Elite also traveled abroad and studies abroad. The degrees obtained abroad were usually valued more than local degrees, thus further increasing the divide and limiting mobility within society that education could potentially provide (Afolayan, 2007: 41-42).

In Ghana only 3 percent of 18-21 year olds are enrolled in tertiary education (Teferra and Altbach, 2003). Those opposed to free university education point out these small enrollment numbers and argue that the beneficiaries of free tertiary education in developing countries are primarily the elite. Furthermore, due to the inadequacies of the labor market many of those that benefit from state funded education leave the country in search of better economic opportunities abroad. Thus, while Ghanaian tax payers front the cost of education, the social benefits of a more educated and skilled populace is not accrued to the paying society. Those that received the

education leave for work abroad and positive externalities produced are thus not maximized (Peil, 1996; Teferra and Altbach, 2003).

Finally, while some interior residents benefited from expansions of higher education, institutions of higher learning continued to be concentrated primarily in the coastal areas. Cultural traditions of intermarriages within ethnic groups and narrow community ties also made it increasingly difficult for other ethnic groups and interior communities to reap the benefits from higher education provisions. For example, until fairly recent most of the lawyers and doctors in Ghana, educated in either the Ghana Law School or the Ghana Medical School entered these programs because of family or ethnic connections (Afolayan, 2007: 42-43).

The University of Development Studies at Tamale was created as a way to alleviate overcrowding. It is located in the Northern part of the country and was intended to bridge the gap in provision of higher level education between coastal areas and the interior regions of the country (Afolayan, 2007). Private institutions are also springing up all across the country with many setting up in the interior. However, many of these institutions are funded by the churches with particular interest in theological and biblical studies and not on development and technology crucial for Ghana (Afolayan, 2007: 53).

Gender issues

Inequalities in access to education for female children institutionalized by the provision of male-centered education during the colonial period continue to affect the education attainment of female students at all levels of education. Female education is also complicated with the real threat of sexual exploitation of female students by professors and teacher even at the secondary and primary level. In fact much of the truancy and drop out rates are attributed to abusive use of power and disciplinary measured implemented by the instructor, especially at the primary and

secondary levels (Afolayan, 2007:49). Thus, while great improvement has been made in access to education for girls, they continue to drop out at higher rates than boys.

From 2001-02 to 2004-05 female enrollments at tertiary institutions rose from 29.2 percent to 32.5 percent. At the polytechnic institutes, from 2001-02 to 2004-05, female enrollments increased by 22.2 percent. However, although increasing, women at tertiary institutions in Ghana are poorly represented, making up only 27 percent of student population (World Bank, 2005).

Finally, while women enrollment in tertiary education remains disproportionate, universities are leading the way for greater women's rights and access to education at all levels (Peil, 1996). Furthermore, Ghana has modified its admissions requirements for women in an effort to increase female enrollment rates at public universities (Teferra and Altbach, 2003).

Overcrowding

In Ghana, no significant infrastructure investments have been made since the mid-1960s. Yet, the decline in public expenditure on higher level education has actually corresponded with increase demand for institutions of higher learning. For instance, dormitory rooms intended for one student now service as many as five students at a time. However, with dwindling funds universities have been unable to accommodate the increase demand. Limited capacity leaves many qualified applicants unable to benefit for university level education. It is estimated that 60 percent of qualified applicants are turned away due to limited capacity in Ghana alone. These strenuous conditions are amplified by the perceived and real incidence of corruption and nepotism in the selection process. Lack of resources, capacity, and administration and management problems also contribute to resentment by students. The University of Ghana, for example, was closed numerous times due to violent protests demanding adequate housing

(Afolayan, 2007; Hoffman, 1996). The government of Ghana is currently looking and distance education, ICT, and other innovative teaching mechanisms to reduce cost and alleviate problems of overcrowding (Bainden-Amissah, 1996; World Bank, 2005).

Quality

Number two on the list of eight Millennium Development Goals set by the United Nations calls for increases in education attainment levels. Specifically, the goal is that by 2015 all children, boys and girls, will have access to universal primary education. Although a hefty goal considering the starting levels of the least developed nations, significant progress has been made in this regard, net enrollment ratios in Sub-Saharan Africa are up from 53 percent in 1990/91 to 64 percent in 2003/04 (World Bank, 2007). However, the increases in primary and secondary enrollments have not been met with sufficient increases in trained teachers, textbooks, and other necessary school supplies. Thus, the rapid growth of basic education enrollment levels has actually contributed to the deterioration of quality. In Ghana, 60 percent of secondary level students are functionally illiterate (World Bank, 2007). In Ghana this increase in demand has also led to greater number of untrained teachers, lower student/textbook ratios, and increases in grade repetition (World Bank, 2005). Reductions in quality at the primary level also affect quality at the tertiary level as more and more entrants come in without the basic skills to succeed.

The University College of Science Education was created to produce the increasing number of teachers needed to full the growing demand. However, it was built outside of the city limits, making it very difficult to allocate sufficient resources for room and board of the students, staff, and instructors. The University is also in the middle of tradition village communities making situation between the University and local community contentious (Ajayi, Goma, Johnson, 1996: 86-88). Ghana does have a few research organizations meant to bridge the gap

between the "ivory tower" and the surrounding communities below. Legon's Institute of Social and Economic Research (ISSER) works on addressing current development issues thought government and international funds. UST's Housing and Urban Development Associates (HUDA) relies on partnerships with international organizations such as UNDP/Habitat (Peil, 1996).

Institutions of higher learning also need qualified professors to maintain quality. The availability of research opportunities is instrumental for attracting academics and retaining them in *academia.* Academics are typically interested in advancing their careers through the publication of original research in peer-reviewed journals and presentations of findings at international conferences. The support of academic institutions for these activities is fundamental especially considering the attractiveness of work prospects in the private sector and abroad. Yet, it is research and development which has suffered the brunt of continued budget cuts (Hoffman, 1996).

The Ministry of Education has worked to address these constraints by using the Ghana Education Trust Fund (GET Fund) to fund research grants and provide support to students finishing up dissertations and other costs related to completion of their studies (Afolayan, 2007: 45). The government has also created the Untrained Teacher Training program (UTT) to educate the estimated 10 percent of current teachers practicing in rural areas (Bainden-Amissah, 2006).

Conclusion

Ghana has traditionally focused on investments in education as a means for promoting growth and has worked diligently to find innovative ways to keep education at the top of the priority list even in times of economic downturn. The GETFund, its investment in teacher training through distance learning mechanisms, enhancements of TVET capacity, and

experimentation with cost-sharing mechanisms, are only some of the many ways in which Ghana has continually shown its commitment to, not just education, but *quality* education.

The 2005 World Bank performance report (submitted by the Ministry of Education and Sports) addressed continued areas for improvement and outlined steps the Ministry of Education had in place to address them. The report however conceded that much of the work that is needed to be done required increases in funding allocations. It specifically called on the donor community to provide the additional funding to support performance enhancement initiatives.

This analysis of Ghana's education system seconds this call for increased donor funding. With more than a third of Ghanaians under the age of 15, if there was ever a time to invest in education, this is it. The international community has an opportunity to affect the lives of the next generation of Ghanaians in such a way as to promote long-term growth, development, and sustainability.

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NIGERIA

This case study attempts to demonstrate some of the challenges of higher education in Africa by looking at the case of Nigeria, the most populous and arguably the least governable state in the region. Although the educational system is expanding rapidly, with enrollment in higher education roughly doubling from 1990-2000, great challenges remain. The Nigerian tertiary system is undergoing consolidation and expansion at the same time, and the government is experiencing pressure to decentralize and deregulate educational institutions. Government commitments to increase funding are irregularly upheld. As elsewhere in Africa, poor quality education does not meet the needs of the weak labor market; opportunities abroad lure graduates. Meanwhile the government is distracted by the curse of plenty: petroleum profits have only exacerbated inter-ethnic and insurgent violence.

This case study includes a brief overview of the political, economic and societal context in which educational institutions operate. The current state of tertiary education, with a focus on agricultural education, is discussed, as are recommendations for improving the targeting of development aid to the country.

Context

Nigeria is a federation of 36 states and the Federal Capital Territory of Abuja. Nigeria lies to the north of the Gulf of Guinea and shares long borders with Benin, Niger and Cameroon. Nigeria is the most populous country in Africa, with approximately 135 million residents. Nigerian women have 5.45 children each, on average, contributing to a 2.38% annual population growth rate (CIA, 2007). Population growth will continue to be a major concern, as 42.2% of Nigerians are under age 15.

Life expectancy is just 47.44 years for the average Nigerian (CIA, 2007). Of the 135 million residents, 3.6 million or 5.4% were thought to have HIV or AIDS in 2003 (CIA, 2007). Polio, tuberculosis and malaria also pose serious challenges to health in Nigeria (Library of Congress, 2006). Almost one in ten Nigerian infants dies by the age of one (CIA, 2007). The under-5 mortality rate has actually risen since 1990, from 147 per 1,000 to almost 200 per 1,000 (Library of Congress, 2006).

It is difficult to overstate the importance of religion and ethnicity to Nigerian society and politics. Nigeria has more than 250 ethnic groups, the most powerful and politically influential being Hausa-Fulani (29%), Yoruba (21%) and Igbo (or Ibo, 18%). Muslims, at 50% of the population, dominate the northern regions of the country. Christians, the predominant religious group in the south, account for 40% of the population. Ten percent of Nigerians follow indigenous religions (CIA, 2007).

Nigeria is possibly one of the most ungovernable countries in the world. Before British colonization began in the mid-19th century, Nigeria did not exist as a single political unit. Nigeria won independence in 1960, followed by a civil war in the late 1960s and repeated military coups. Military governments have ruled on and off for decades. Students have sometimes participated in political contestation, thus politicizing the universities themselves. The military governments tightly controlled universities and limited expansion as a result (Fatunde, 2001).

In 1999, a peaceful transition to civilian government was completed, instituting the longest period of civilian rule since independence. Contested elections took place in April 2007, and the approaching inauguration should mark the first civilian-to-civilian transfer of power since independence (CIA, 2007).

Nigeria has a flawed federal system. At the time of independence, the colony was divided into four primary regions, which eventually gave way to 36 states meant to better represent the country's many ethnic groups. The Nigerian government has sought to apportion political power and jobs among the many ethnic groups, but is hamstrung by a commitment to the principle of indigeneity, which considers one's ancestral region when distributing benefits. Widespread conflict and discrimination have resulted between Nigerians indigenous to a particular region and settlers, adding yet more cleavages to Nigerian society (International Crisis Group, 2006).

Nigeria becomes ever more ungovernable. Ethnicity is highly politicized, dangerous in a country of 250 distinct groups. Political struggles have encouraged ethnically-based militias to form, and armed groups have fought the federal government and foreign oil companies in the Niger River delta. Petroleum output has dropped as violence ramps up (International Crisis Group, 2006).

Nigerian GDP is $83 billion, with a respectable real growth rate of 5.3% annually. Industry makes up 53.2% of GDP, services account for 29.5% and agriculture 17.3%. Sixty percent of Nigerians fall below the country's poverty line. The official unemployment rate is an impressive 5.8%, though this probably masks an extensive informal sector.

Nigeria is a predominantly agrarian society. Seventy percent of the labor force is engaged in agricultural production, usually at subsistence levels. Thirty-six percent of land is cultivated; 3.1% of total land is irrigated. The principle cash crop for export is cocoa. The agricultural sector has largely failed to keep up with population growth and Nigeria is now a net importer of food. Per capita GDP is $1400 in terms of purchasing power parity (CIA, 2007).

Nigeria has traditionally relied heavily on its capital-intensive fossil fuel industries, particularly petroleum and natural gas: petroleum provides 20% of GDP, 95% of foreign

exchange earnings and 65% of budgetary revenues (CIA, 2007). Poor resource sharing systems have caused "dangerous rivalries" between the federal government and the states (International Crisis Group, 2006).

Nigeria's economic efficiency is severely hindered by its famously endemic corruption. State capture and corruption are common (Transparency International, 2006; International Crisis Group, 2006). Transparency International ranks Nigeria 142nd of 163 countries in its Corruption Perceptions Index, with a score of 2.2 out of ten. Profits have been squandered through corruption and mismanagement. Corruption discourages foreign investment, and deters bilateral and multilateral lenders.

Profile of the Education Sector

Primary education is divided into at least three distinct types: more modern, formal schools, the traditional/indigenous system, and Koranic schools (Library of Congress, 2006). Traditional education includes the practical, hands-on vocational education learned in the fields, children working alongside their elders. More formal apprentice systems are common for many occupations, while some trades are passed down through families, including truck driving, building trades, and all traditional crafts and services from leather work to medicine (Library of Congress, 2006). In 1990, this informal system of vocational training included more than 50% of school-age children. The government does not regulate it.

Koranic schools serve the much of the large Muslim population, providing a few years – or more – of lessons on the Koran and the Arabic language. Additional subjects such as math are taught if children remain in the school, perhaps culminating in one of the religion's higher education institutions. Much of the training is informal, conducted by a local religious figure (Library of Congress, 2006).

The beginnings of modern, European-style education occurred with missionaries in the mid-nineteenth century. Churches, including Anglicans, Roman Catholics and Methodists, dominated primary and secondary education well into the 20th century. The churches were slow to found schools in what would become northern Nigeria. In 1914, when the north and south were united by the British into a single colony, there were approximately 1,100 primary school students in northern Nigeria, and 35,700 in the south. There were no secondary schools at all in the north. Privately-financed schools grew to meet excess demand and the wealthiest Nigerian families sent their sons abroad for schooling. Not until mid-century did Nigeria have a stratified system of primary, secondary and finally higher education (Library of Congress, 2006).

The federal government set a goal of universal primary education beginning in the 1970s. Although that has not been achieved, the participation of children in formal education continues to increase. Today, of Nigerians over age 15, 68% are literate (including 75.7% of men and 60.6% of women) (CIA, 2007).

Tertiary Education

The British instituted the beginning of the modern educational system in the 1930s, when the first university – a branch of the University of London – was established. Federal, regional and later state universities were founded beginning with independence in 1960. Enrollment in higher education grew rapidly once the first universities were founded. Between 1960 and 1990, enrollment doubled every four to five years. Between 1990 and 2000, the rate slowed slightly to a 12% average annual growth, effectively doubling enrollment in that decade (Jibril, 2003).

As of 2001, Nigeria had 45 universities, of which 25 were federal (including one defense academy), 16 were state and four were private universities. Today approximately 1 million students are enrolled in more than 200 post-secondary institutions in Nigeria, including

universities, colleges of education, polytechnics, monotechnics, schools of nursing and other professional training centers. There were approximately 14 registered private institutions (Jibril, 2003). Nigeria has at least three universities dedicated solely to agriculture and allied disciplines. (Oyewole and Lamptey, 2006).

The Nigerian higher education system is faced with serious challenges. Currently the system is highly centralized, though the government is exploring ways to increase institutions' autonomy (Saint, Hartnett & Strassner, 2003). Related to centralization is the overregulation of the tertiary education sector; the government mandates fees such as tuition and determines the curriculum (Jibril, 2003; ICHEFAP). Campuses are often very politicized, by the government, the staff and the students. Trade unions maintain the power to shut down campuses at will over pay and other disputes. Institutions are chronically understaffed and professors are poorly paid. Private institutions have been seen as a way to alleviate pressure on federal and state universities, but the commercialization of education remains controversial. There are fears that private and public institutions will continue to suffer crises of quality (Jibril, 2003; Saint, Hartnett & Strassner, 2003).

Financing

Underfunding remains a serious problem for Nigerian tertiary institutions. Because public institutions dominate, federal and state governments are the primary sources of funding for higher education (Jibril, 2003).

Undergraduate students in federal universities do not pay tuition (ICHEFAP). In 1977, the federal government abolished tuition payments by students in federal universities and severely restricted boarding fees. State universities do charge fees; some charge higher tuition to students from other states. Federal and state polytechnics charge tuition fees, but tuition is free at

all colleges of education, perhaps reflecting the different returns to education in the two types of institutions (Jibril, 2003). States generally fund their universities at a lower level than the federal government funds federal institutions.

The Nigerian federal government instituted some reforms beginning in 2000 to increase funding for tertiary institutions. Some increases are indirect: staff and faculty of federal universities benefited from an across-the-board increase in civil servants' wages. Federal per-student reimbursement to universities was as low as $300 in 1996. The federal government has proposed increasing per-student funding to $1300-$3,365. However, it is unclear how faithfully the government will follow through (Jibril, 2003). Professors are paid poorly and are given little incentive to research or publish, lack supplies including laboratory equipment, and use outdated teaching materials and texts (Library of Congress, 2006).

International Participation

The World Bank notes that "Africa will fail to meet the [Millennium Development Goals] if Nigeria fails, given that one in five Africans is Nigerian" (World Bank & DFID, 2005: 6). Nevertheless, there is relatively little external support for Nigeria's higher education system. The World Bank's Country Partnership Strategy for Nigeria notes the need to support to national initiatives for human development, including fostering the "knowledge economy." The Bank supports the Nigerian government as it promotes secondary and tertiary education in order to foster the country's science and technological progress for economic growth (World Bank & DFID, 2005). Yet the Bank does not identify the state of higher education, or even primary education, as one of the four primary reasons for the Nigerian economy's lack of competitiveness.

USAID's commitment to Nigerian higher education is in the form grants to fund capacity-building, development-driven partnerships between American and Nigerian institutions, organized by the organization Higher Education for Development. There have been just three recent grants: In 2003, USAID co-sponsored a partnership between the University of Delaware and Obafemi Awolowo University in Nigeria, with the aim of increasing food security and reducing poverty, especially among rural women. In 2002, USAID co-funded a partnership between Ohio University and the University of Maiduguri in Nigeria in order to increase institutional research and training capacity in northeastern Nigeria. Their focus was studying the role of girls in Muslim societies such as those found in northern Nigeria. In 2000, USAID co-funded a partnership between the University of Iowa and the Nigerian National Universities Commission to improve the ability of local computer technicians to develop, maintain and promote the use of computers at their universities. USAID offers no current support to Nigerian higher education (Higher Education for Development, 2007).

The U.K.'s Department for International Development provides support to Nigerian primary and girls' education, but does not support higher education in the country (World Bank & DFID, 2005).

Rates of Return to Education

There are few studies that focus specifically on returns to higher education in Nigeria. Although outdated, Okuwa (2004) gives us some idea of private returns to education in Nigeria based on the Nigerian Labour Market Survey, conducted in 1995. Okuwa demonstrates that the mean monthly earnings of workers increase with more years of schooling for all categories of workers considered (male or female, public or private sector employment). The mean monthly earnings of National Certificate of Education (NCE) (college of education) graduates was on

average 18% higher than secondary school graduates; polytechnic graduates earned an average of 63% more; and university graduate earned an average of 178% more than secondary school graduates.

Among tertiary degrees, the difference is especially marked for university graduates compared to those who graduate with an NCE. In some categories, workers actually earn less on average with NCE degree than with just a secondary diploma (Okuwa 2004).

Access

Access to education has steadily improved. As noted above, between 1960 and 1990, enrollment in higher education doubled every four to five years; it grew 12% annually during the 1990s. One million students are enrolled in post-secondary institutions of all types in Nigeria (Jibril, 2003). During university expansion in the 1970s and 1980s, there was a move to open universities in every state to serve local populations. Although this was never achieved, tertiary education institutions are widely dispersed throughout Nigeria, thus improving access.

Nigeria has a gender gap in tertiary enrollment of approximately 15%: women represent just 35% of university enrollment. Further, women are "critically underrepresented" in engineering and technology programs. Just 12.4% of university staff are women (Jibril, 2003: 498). The trend is even more pronounced in the agricultural field: in the 1990s, women accounted for just one-quarter of students studying agriculture in tertiary education institutions. Likewise, women account for a small proportion of professors of agriculture (Karl, 1998).

Access to higher education reflects issues of access and quality at the primary and secondary levels. After the first three years of primary school, all education is conducted in English, the country's official language (Jibril, 2003). This theoretically allows students to start from a similar point in terms of language.

Traditionally there are educational disparities between the poorer majority-Muslim north and the majority-Christian south. Many Muslims send their children to Koranic schools for religious studies (Library of Congress, 2006). This may fail to adequately prepare children for university studies, suppressing tertiary enrollment in some regions and possibly exacerbating the existing division between ethnic and religious groups.

Despite the large enrollment numbers for higher education, some are denied access, particularly to universities. Although outdated, the following numbers illustrate the issue of access to higher education: in 1997-1998, only 17% of applicants to universities were admitted, as were 20.5% of applicants to polytechnics and 33.7% to colleges of education (Jibril, 2003). The admissions rate had increased from 1995, however, when the average admission rate to universities was just 5% (Obasi, 2006).

The Nigerian educational system relies heavily on examination results for determining educational and professional mobility. Further, the Nigerian educational system follows British norms, sorting students into academic and vocational tracks in secondary schools (Library of Congress, 2006). These practices – relying on examinations and sorting students in secondary school – may serve to exclude students who hope to enter higher education.

The public supply of tertiary education does not meet demand in Nigeria, leading to the growing importance of private institutions (Obasi, 2005). "Given the crisis of access to universities, private higher education institutions could have a bright future in Nigeria, especially if they can replicate the reputation for quality that they have established at the lower levels of the education system" (Jibril, 2003: 497). In 1999, when the most recent military dictatorship ended and the government started to allow private institutions to open, Nigeria's National Universities Commission accepted over 100 applications to license private institutions and approved 24 of

them (Obasi, 2006). Private universities in Nigeria tend to be owned by religious organizations, including the Orthodox/Pentecostal Church, the Catholic Church and Muslim organizations.

However, there is de facto restricted access to private institutions, too, because of their high fees. Tuition fees for private universities range from US$769 to US$3,285 annually (Obasi, 2006). (GDP PPP is $1,400 per capita.) This limits the ability of private institutions to serve those students who have been unable to gain entry to public institutions.

Quality

Given the number of institutions, the rapid expansion of the higher education industry, and the limited funding, quality is an obvious concern in Nigeria. The government has responded by implementing some reforms to address the issue. Hoping to align Nigerian institutions more closely with international standards, the government has begun to promote more institutional autonomy, greater differentiation among institutions, strengthened governance, and mechanisms for quality assurance. The goals are to create more responsive institutions that will eventually contribute to national development plans (Saint, Hartnett & Strassner, 2003).

Other responses are more drastic. In 2001, the Nigerian government, concerned about poor quality, ordered the closure of all satellite campuses of major universities. The satellite campuses had been established to serve more students. The government hoped the students would enroll in traditional universities or in distance learning programs, where quality could more easily be monitored (Fatunde, 2001).

The Nigerian higher education system faces serious challenges, including quality and financing. Staff and professors are unable to maintain quality while serving ever increasing numbers of students. In addition, the politicization of universities and the highly regulated and

centralized nature of the sector ensure that institutions do not have the flexibility to respond to changing labor market conditions. This hobbles Nigeria's higher education institutions just as the country needs them to help drive economic development.

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SOUTH AFRICA

Since the end of Apartheid in the early 1990s, South Africa has been struggling to equalize its tertiary education system. As the largest economy in Sub-Saharan Africa, with a stock market ranked among the 10 largest in the world, there is a great deal of opportunity for success. The number of universities and technological schools within the country vastly out number those in the surrounding countries of southern Africa combined. The system is used to educate students from throughout the region and, as a result, to help advance those economies as well. It is impossible to look at the education system in South Africa, both primary and secondary, as well as tertiary, without taking into account the unique political, economic and cultural histories that have led up to the current situation.

Context

South Africa is a republic located at the southern-most tip of the African continent. It is bordered by Namibia, Botswana, Zimbabwe, Mozambique and Swaziland to the north, and surrounds the independent state of Lesotho. The official capital is Pretoria, where the President's office is located. Parliament is based in Cape Town, and the judicial branch is seated in Bloomfontein. The government consists of a central government and nine provincial governments. It has a bicameral parliament made up of the National Assembly, which has 400 seats, and the National Council of Provinces, with 90 seats. Elections are held every five years and the president is elected by the National Assembly.

The earliest settlers were the San and Khoikhoi people, followed by the Bantu groups. There was conflict among the tribes and eventually disease wiped out a large portion of the San and Khoikhoi population, leaving mostly Bantu tribes in the area. The first white settlement was established by the Dutch in 1652 at the Cape of Good Hope. In the nineteenth century the

British settled in the area and annexed the Cape Colony. The settlers became known as Afrikaners or Boers. As these two groups attempted to gain their independence, they moved away from the coast line and headed north into the country, a venture known as "The Great Trek." This led to battles between the settlers and the Bantu groups, most specifically the Zulus. The discovery of diamonds (1867) and gold (1886) caused a major increase in immigration and created more conflicts between the white settlers and the native tribes.

The Union of South Africa was established in 1910 following British victories in the Anglo-Boer wars of 1899-1902. In 1961, the Nationalist Party withdrew South Africa from the British Commonwealth and established the system of apartheid, marginalizing blacks by excluding them from participation in both the political and economic systems (World Bank, 2007). Following the implementation of these practices, the United Nations General Assembly called for international pressure in the form of sanctions against South Africa to try to end apartheid. Nelson Mandela, one of the leaders of the anti-apartheid movement was arrested in 1962, charged with incitement, and sentenced to three years in prison. Resistance to the new system continued and in 1964 Mandela and his former colleagues were charged with sabotage and sentenced to life in prison at Robben Island.

Following over thirty years of Apartheid, the first democratic elections were held in the Republic of South Africa in 1994. Nelson Mandela was elected president at the head of a multi-party government. Mandela served until 1999 and was credited with the negotiation of a new constitution, laying the foundation for a sustainable multi-racial democracy in South Africa, and the establishment of the Truth and Reconciliation Commission to investigate crimes that occurred during the period of apartheid. Current President Thabo Mbeki was elected in 1999 by

a narrow margin, and in 2004 was re-elected in a substantial victory for the African National Congress (South Africa, 2007).

South Africa is one of the few African countries to be considered upper middle income, with a per capita Gross National Income of $4,960. It has the largest economy in Sub-Saharan Africa. It accounts for 40% of the GDP for Sub-Saharan Africa at $576.4 billion purchasing power parity GDP (World Bank, 2007). The growth rate for the country is increasing at 4.5%, with a per capita GDP of $13,000. Public debt, however, is at almost 33% of GDP. In 2000, South Africa received $487.5 million in economic aid (Central, 2006).

South Africa is the world's largest producer of platinum, gold and chromium. The main agricultural products are: corn, wheat, sugarcane, fruits, and vegetables; and beef, poultry, mutton, wool, and dairy products. Despite the size of its economy and improvements in growth, South Africa faces widespread unemployment (25.5%) and half the population lives below the poverty line. There are over 16 million people in the labor force; 30% of them are agriculture, 25% in industry, and 45% in services (Central, 2006). For years it was the mineral and energy resources that provided the core of the country's economy, but now most of South Africa's economy is based on the service industry.

The population of the country is just under 44 million people.[8] The breakdown by ethnic group is as follows: 79% black African, 9.6% white, 8.9% colored, and 2.5% Indian/Asian. The life expectancy at birth is just above 42 years as a result of the prevalence of HIV/AIDS in the country. The median age is 24 years, with a growth rate of -.46%. It is estimated that there are over 5 million people living with HIV/AIDS in South Africa, including 21.5% of adults. The

[8] estimates for this country explicitly take into account the effects of excess mortality due to AIDS; this can result in lower life expectancy, higher infant mortality and death rates, lower population and growth rates, and changes in the distribution of population by age and sex than would otherwise be expected (Central, 2006).

literacy rate is 86%, defined as an individual who is at least 15 years of age and can read and write (Central, 2006). The distribution of family income, according to the GINI index, is 59.3.

Profile of the Education Sector

School life in South Africa spans 13 years, from grade 0 through grade 12, the year of matriculation. General Education and Training (primary education as well as Adult Basic Education and Training) is comprised of grades 0 through 9. Under the South African Schools Act of 1996, primary education is compulsory for all South African children. Further Education and Training (secondary education) spans grades 10 through 12, and also includes career-oriented education and training offered in other Further Education and Training (FET) institutions, such as technical colleges, community colleges and private colleges. Diplomas and certificates are qualifications recognized at this level. The matriculation rate, which was as low as 40% in the late 1990s, continues to improve each year, reaching 68.3% in 2005 (South Africa, 2007).

In the primary and secondary education sectors South Africa has 12.3 million students, over 385,000 teachers, and around 26,000 schools, including 1,098 registered independent or private schools. Of the total schools, roughly 6,000 are high schools (grades 7 to12) and the rest are primary (grades 0 to 6). In government-funded public schools, the average student-teacher ratio is 32:1, while private schools generally have one teacher for every 17.5 students (South Africa, 2007).

The national Department of Education is responsible for education across the country as a whole, while each of the nine provinces has its own smaller department, allowing for more direct oversight. The central government provides a national framework for school policy, but implementation takes place at the provincial level. Power is further dispersed at the ground level

through elected school governing bodies, which have significant say in the running of their schools. The national Department of Education is also responsible for higher education. Private schools and higher education institutions have some autonomy, but are expected to fall in line with certain government regulations.

Tertiary Education

The tertiary education system in South Africa was originally shaped by the underlying conflict between the British and Afrikaner conflicting nationalist ideals as well as the split between historically white and historically black universities (HWUs and HBUs). The British settlers followed the model of the University of London in establishing the University of the Cape of Good Hope in 1873. In 1910 the University of South Africa was created. This caused conflict between the British and Boers, as it was an expansion of the University of London. In 1916, after much negotiation, the English-speaking University of Cape Town and University of South Africa, and the Afrikaans-speaking Stellenbosch University were officially recognized as the three main universities. The South African School of Mines and Technology was granted university status in 1923 and became the University of Witwatersrand in Johannesburg. Industrialization developed the specific markets that are served through the current system, including mining and manufacturing. Post-World War II, an additional English speaking institution, Rhodes University, was established. In 1946, as a result of the collapse of the federal education system, the University of South Africa became a distance learning center (Subotzky, 2003).

In 1915, the first HBU was established as the South African Native College (the University of Fort Hare). It eventually became affiliated with Rhodes University when it gained university status in 1951. In 1959 the Extension of Universities Act was passed that restricted

the access of black students to white universities, exacerbating the problem of apartheid, and providing for the establishment of "tribal" colleges and eventually certified universities for each ethnic group within the country (Subotzky, 2003).

Prior to the mid-1990s, there was a 'binary' higher education system, with separately run sectors for academic universities and vocationally oriented "technikons" or polytechnic institutions. The legacy of apartheid was a divided higher education system plagued by uneven quality, race-based duplications and inefficiencies. This divide has been dismantled, with technikons becoming universities of technology.

The end of apartheid brought about a rapid growth in private higher education. There was an increase in domestic providers as well as the entry of international institutions, primarily from Europe and the U.S. This influx was in response to growing demand for higher education in South Africa and the perception that private and international universities offered higher quality, market oriented courses and qualifications. By 1995 it was estimated that 150,000 students were enrolled in private institutions. In 2000, one study calculated that there were some 323 private and transnational institutions in South Africa. Many local public institutions engaged in collaboration with them. By 2004 there were believed to be some 90 private higher education institutions offering nearly 400 programs to between 30,000 and 35,000 students, but only serving around 5% of the higher education students in South Africa. While the majority of the large institutions in South Africa are public, the government acknowledges the role of private institutions in expanding access to higher education. Therefore, they are working to create an environment for the private universities that does not over-regulate, but prevents the problem of sub-standard institutions.

In 2002 the Higher Education Quality Committee (HEQC) of the statutory Council on Higher Education launched a program focused on the reaccreditation of private institutions. The HEQC found that the range of courses offered by private higher education providers was too narrow. The committee was concerned about imbalances in location and the distortion of the value of degrees. It found that while many colleges offered high quality education, and some had excellent programs, many lacked qualified staff, offered poor academic infrastructure and support, and were without quality assurance processes (Study South Africa, 2007).

There are a quarter of a million students attending 23 South African public universities studying a full range of courses that are internationally recognized (Study South Africa, 2007). The number of public institutions has been cut from 36 to 23 through mergers and campus incorporations. In some cases formerly 'white' and 'black' institutions were combined, and in others, universities and former technikons were combined. The new system comprises three different kinds of universities: research focused universities, universities of technology, and universities that combine academic and more vocationally oriented training, which are aimed at enhancing student access and expanding opportunities. In the new landscape there are eleven research focused universities, including eight of the old universities and three new ones created through mergers; six universities of technology, including two of the old technikons and three new institutions born out of mergers; six comprehensive universities, comprised of two old universities and four new institutions created through mergers between universities and technikons; and two new institutes of higher education in provinces that previously had no provision. There are also two new institutes in provinces that previously offered no higher education, the Northern Cape National Institute for Higher Education which opened in 2003, and the Mpumalanga National Institute for Higher Education that is currently being built. There are

five universities with around 40,000 or more students. The largest university in the country is the University of South Africa, a distance education provider, with over 212,000 students (Study South Africa, 2007).

Improving educational opportunities was seen by the country's government as key to overcoming past inequities, while creating a stable democracy and society, and tapping into the pool of potential in order to increase internal economic growth and development. Student numbers have nearly doubled since the end of apartheid, from 473,000 in 1993 to 730,000 in 2005. Black students now account for nearly three-quarters of the student body. In 1993, nearly half of all students were white while 40% were African. By 2002 the portion of white students only made up 27% and the African share had grown to 60%, with the proportion of colored and Indian students remaining static (Study South Africa, 2007). These numbers are getting close to reflecting South Africa's racial demographics. Additionally, the gender gap that exists in many Sub-Saharan African countries does not exist here; women compromise some 54% of students (Study South Africa, 2007).

Public colleges are supported with funding to become more responsive to the needs of local and provincial communities and economies, to develop dynamic curricula and better workshops, and to form innovative partnerships with local businesses and communities that take study to where it is convenient to learners, on business premises and in community centers. Private colleges are required to have their programs assessed and accredited, and to register with the Department of Education to ensure that they provide students with sound learning support and recognized qualifications (Study South Africa).

The State of Education

Financing

In the early 1990s, the government created the National Student Financial Aid Scheme as a means of providing access to higher education for thousands of poor black students who would not have been able to afford this level of education. In order to accommodate the growing needs of the population, most universities have created alternative admission processes that select educationally disadvantaged students on the basis of their academic potential rather than their test scores. Many institutions have also introduced academic development programs that help students overcome poor primary and secondary education institutions and cope with learning in English, which to a number of them is a second language. It has been a challenge to find black scholars and managers among a limited pool of qualified candidates while competing with higher paying public and private sectors, within a 'western' oriented institutional and academic culture. Higher Education South Africa (HESA) is developing benchmark tests to help universities select students who are most likely to succeed at academic study.

South African higher education has three primary funding sources. Half of the money comes from the government, about a quarter from student fees, and the rest from donations and entrepreneurial activities. The government spends over R10 Billion (about $1.5 billion) a year on higher education. This accounts for 13% of the education budget and about 2.5% of total government spending, a considerable amount from the state in comparison to other developing countries (Study South Africa, 2007).

USAID has contributed, on average, $343 million from 1994 through 2004 ("Budget", 2006). The education program's youth, adult, and higher education and skills development initiatives target one of the most important constraints to increased employment and foreign

direct investment – a shortage of skilled labor. With all donor resources in South Africa totaling less than two percent of the government's overall budget, the USAID program focuses on strategic interventions that work as a medium to produce broader change ("Budget", 2006). At this point in time, USAID is the largest bilateral donor and second largest overall donor in South Africa after the EU. Other significant bilateral donors include the UK, the Netherlands (local government, youth, education, justice), and Germany (community development, public administration, education, business, and employment promotion) ("Budget", 2006).

International Participation

Currently, there are over 52,000 foreign students studying in South Africa. They comprise nearly 7% of the more than 730,000 students in public universities (Study South Africa, 2007). South Africa has also attracted a number of international post-graduate students and academics currently collaborating with reputable local scholars on relevant research in their fields. The country's unique history, diversity, and rich resources allow for wide ranging fields of study. The country's higher education system is the strongest and most diverse in Africa. These institutions produce the level of expertise that the continent's biggest economy urgently needs in order to sustain its level of development. Nearly one in five graduates of secondary school attends a public institute of higher education (Study South Africa, 2007). South Africa's total tertiary student population is well over a million students. There is cutting edge research being conducted in many areas of great importance to the local population, including health, biotechnology, and conservation.

USAID/South Africa, in consultation with our customers and partners, including the South African government, U.S. public and private stakeholders, and other and non-governmental entities, has the following six development objectives: democracy consolidation;

advanced, increased access to quality education and training; increased use of primary health services and HIV/AIDS prevention/mitigation practices; improved capacity to formulate, evaluate and implement economic policy; increased market-driven employment; increased access to shelter; and environmentally sound municipal services ("Strategy", 2007).

Improvements in the quality of basic education lay the foundation for a better skills profile in the next generation. The education program supports efforts to engender greater community involvement, responsibility and accountability in schools and is helping government to implement an effective, market-driven workforce development program. There have been shifts in USAID/South Africa's strategy in order to address the following four challenges: democracy and governance; education: a heightened emphasis on skills development to match the needs of the economy in order to address unemployment and improve the quality of the workforce; health and economic policy capacity; and housing and municipal services ("Strategy", 2007).

Role of Research and Development

Research in South Africa is limited to five major fields: agriculture, health, education, community and social services, and manufacturing. The bulk of research activities are concentrated in a few institutions (mainly HWUs). Over 65% of the publications and over 60% of the funding allocated goes to five white universities: Cape Town, Natal, Pretoria, Stellenbosch, and Witwatersrand. Just 10% of research is produced at HBUs. Overall research capacity as well as postgraduate enrollment is very unevenly distributed towards the HWUs. This is a result of 30 years of apartheid and the Department of Education is working, through mergers and cooperative programming, to balance out the research activities and funding across the institutions (Subotzky, 2003).

Research in South African is the strongest on the continent. Thousands of scholars are conducting research focusing on development the advancement of new products and technologies essential to a competitive economy. There are nearly 37,000 full-time and part-time researchers in South Africa, and about 38% of them are doctoral students and post-doctoral fellows, according to the 2004-05 research survey. This is equivalent to 1.6 researchers per 1,000 people. Annual R&D expenditure for the country has risen to R12 billion ($1.7 Billion), according to the 2004-05 National Survey of Research and Experimental Development of the Department of Science and Technology (DST). Research spending as a percentage of GDP is 0.87%, which is below the OECD average of 2.3% and the EU average of 1.82% but ahead of countries such as Greece and Argentina (Study South Africa, 2007).

Role of Technical and Vocational Training

South Africa's further education and training (FET) sector is being rebuilt in an effort to make up for the country's shortage of skilled labor, which is threatening economic growth. The government has committed R2 billion ($280 Million) to the development of the FET system in an effort to increase student numbers, currently around 350,000 full-time and part-time students. The Department of Education is supporting the Joint Initiative for Priority Skills Development (JIPSA), which was launched by Deputy President Phumzile Mlambo Ngcuka in March 2006 and will involve universities, the FET sector and several government departments in initiatives aimed at unblocking obstacles to skills acquisition and producing more scarce and priority skills in the shortest possible time (Study South Africa, 2007). Higher education is more expensive than vocational and technological training in South Africa, and so FET colleges offer a more affordable option for many students. Further education colleges are also open to mature students who missed out on training opportunities when they were younger and those who are looking for

a career change; it is crucial to government efforts to encourage lifelong learning among South Africans. Fifty multi-campus colleges across the country offer vocationally oriented training linked to community interests. Half of those who finish primary and secondary education in South Africa are unable to find a job. Many FET colleges work with employers to ensure that they provide skills that are in demand in the marketplace. Public FET colleges are spread throughout the country, in all provinces and in urban and rural areas, making them widely accessible.

USAID's Tertiary Education Linkages Project (TELP) was focused on overhauling the education system, a crucial priority for the new government who requested USAID's professional assistance to improve capacity, policies and practices at all education levels. TELP was developed specifically to increase access and quality for higher education for disadvantaged communities. This program contributed to an improved quality of higher education and training in the whole of South Africa by providing training in key areas for leadership, administration and teaching at the HDIs. It also provided support to the Department of Education (DOE) in the development and implementation of the higher education policy with the following national level programs: 1.) develop the National Plan for Higher Education; 2.) develop policy and "Guidelines for Mergers and Incorporations"; 3.) provide technical assistance to develop the National Institutes for Higher Education; 4.) provide assistance to develop the executive leadership of the higher education institutions (Higher Education leadership and Management (HELM) program held in conjunction with Higher Education South Africa (HESA); and 5.) developing a program exclusively for women higher education leaders – Women in Higher Education Executive leadership (WHEEL)

At and institutional level, TELP was involved in five broad areas: 1.) curriculum and program development, 2.) student academic development, 3.) research development, 4.) staff development, and 5.) management and administrative development. USAID was also able to achieve some of these goals through the promotion of institutional linkages between South African and United States universities. The activities addressed by the TELP program were mostly identified and driven by the South African government. As a result, most projects were institutionalized at the university level, organizational level (e.g., HESA) and even at the governmental level (TELP, 2006).

Rates of Return to Education

The rates of return on education in South Africa are increasing slightly from primary to secondary from 28% to 29%, with regards to private returns. For Tertiary education, the private rate of return is only 17% and the social rate of return is 12%. Overall, for students who complete the full education cycle, the private rate of return is 21%, the public rate of return is 11%, and the social rate of return is 13% (Curtin, 1993).

Access

The USAID program supports South Africa's efforts to address these social and economic constraints ("Budget",2006). Education is crucial in attaining sustainable socioeconomic development, but the legacy of apartheid poses challenges in South Africa. The apartheid system excluded blacks in South Africa from receiving quality education in areas such as math and science that provide the skills needed for higher paying jobs. Despite significant gains in the last ten years, many rural schools still do not have qualified math, science, and technology teachers ("Budget", 2006).[9] Working in 440 rural primary schools, the USAID

[9] USAID Budget for South Africa: Education: FY 2004 9,376,000 of 62,414,000; FY 2005 7,248,000 of 32,480,000; FY 2006 8,366,000 of 35,092,000.

program helped students increase their knowledge and skills. Results from a USAID-supported basic education program showed a 22% increase from 37% to 45% in literacy and mathematics from 2000 to 2003 in test scores for grade 3 students ("Annual Report", 2005).

Quality

In order to guarantee the quality of education, curricula are being transformed to make higher education programs more closely linked to the regional and national needs. In addition, students are being directed towards the skills that the economy needs, and student admission processes are being streamlined. A quality assurance system was introduced in 2004 by the Higher Education Quality Committee (HEQC) of the Council on Higher Education (Study South Africa, 2007). Regular audits of universities are being conducted, looking specifically the linking of teaching and learning to national and regional contexts, institutional missions and policy goals, for creative programming, and for improvements in student success. Curriculum transformation efforts have been directed at producing skills the economy needs, creating a National Qualifications Framework. This includes formulating curricula to enable flexible learning, more inter-disciplinary and relevant curricula, and an outcomes-based approach encouraging transferable skills. Higher education is now based on learning programs that drive the new funding formula. Between 1993 and 2002 humanities enrollments dropped from 57 to 44% of students, while enrollments in science, engineering and technology grew from 19% to 26%, and those in business and commerce increased from 24% to 30%. The current matriculation rate is 50%. While the number of graduates is growing, with South Africa producing over 100,000 graduates in a single year for the first time in 2002, graduation rates are only 15% of students per year – lower than the 25% benchmark set by the government (Study South Africa, 2007).

The quality of education remains a concern with black South African students still receiving poorer instruction and access to advanced courses and technology. USAID programs focus on education, economic growth and employment, HIV/AIDS and health, democracy and governance, and housing and municipal services. Programs in education and primary health care focus on the poorest provinces in South Africa including the Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape (education only), which have 56% of the total population ("Budget", 2006).

USAID's education program supports transforming the public school system into one that offers quality learning conditions and programs through activities that develop specific skills and address institutional change. USAID assistance has increased the third grade student pass rates in literacy in targeted schools by 8% since 2001 ("Strategy", 2007). This program concentrates on institutional and policy changes that promote sound governance, transparency, and accountability; improved quality of basic and higher education; enhanced capacity of the healthcare system to address HIV/AIDS and TB; economic policies and programs that reduce unemployment and poverty; and increased access to shelter and basic municipal services ("Budget", 2006).

Under apartheid, black South Africans were excluded from programs which built knowledge in math, science and technology at the secondary school level. Ensuring that black students have access to quality education in these areas which are essential for skilled employment is a key objective of USAID and the South African Government. USAID continued its commitment to this goal through specialized training for math, science and technology secondary school teachers, with 55 completing the program in FY 2004 ("Strategy", 2007). Disparities remain at the higher education level as well, and USAID continued to assist South

Africa's 17 historically disadvantaged higher education institutions in meeting international standards. These universities and technical institutes which served principally African, Colored (a South African racial classification) and Indian students under apartheid are in the process of merging. Some mergers will be between historically disadvantaged (black) and historically advantaged (white) institutions, while others will combine historically disadvantaged universities under one umbrella. USAID programs focus on helping the institutions prepare for these mergers, and in FY 2004 USAID assistance helped the merging universities and technical institutes harmonize curricula with the goal of continuing to offer quality instruction across the board.

The economic capacity building program implemented by USAID is succeeding in the training of a number of historically disadvantaged South African economists. Since the start of the program 64 South Africans have received masters and doctorates in economics at U.S. universities with an additional seven receiving economics degrees at South African universities. In FY 2004, 41 historically disadvantaged South Africans completed their training. Twenty-eight of those receiving degrees were parliamentarians from disadvantaged backgrounds who publicly acknowledged the USAID program for its impact on parliament's ability to review and analyze the national budget judiciously. USAID/South Africa responded to seven Presidential Initiatives in FY 2004, including the Africa Education Initiative - teacher training and a new regional program using satellite and television-based approaches to expand primary education ("Annual Report", 2005).

Challenges

South Africa's greatest challenges in the decade ahead are to ensure that the epic changes made in the first decade of freedom are consolidated and impact the lives of everyday South

Africans. With new policies and laws in place that provide a clear mandate and framework, South Africa can begin to make advances in reducing unemployment, fighting crime, stemming HIV/AIDS and providing basic services to all its citizens (USAID 2005 Annual Report). These challenges boiled down into three critical policy goals, according to the Council on Higher Education, a statutory advisory body—the need for increased efficiency, greater equity, and improved effectiveness including the quality and appropriateness of curricula.

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TANZANIA

Overview

The purpose of this case study is to provide an overview of the state of tertiary education in Tanzania. Today, education is the focal point for the country's development agenda: "ensuring equitable access to quality primary and secondary education for boys and girls, universal literacy among women and men; and the expansion of higher, technical and vocational education" are all current priorities (World Bank, 2007, p. 1). The education system in its entirety faces challenges on many fronts including low quality and limited financing, but increasing attention should be paid to higher education by the international donor community. To provide a clear picture of the state of tertiary education in Tanzania, this case study will begin with a brief overview of the political, economic, and cultural characteristics of Tanzania which precedes a discussion of both the education system in general and the characteristics of tertiary education today. An analysis of the present state of tertiary education with specific attention to the most prevalent challenges concludes the case analysis.

Context

The United Republic of Tanzania, a unitary state with 26 administrative divisions, gained independence from British Colonial rule on 26 April 1961. Tanzania includes the Island of Zanzibar which maintains its own executive and parliamentary institutions in addition to several autonomous ministries. Multiparty democracy was introduced with a constitutional amendment in 1992 and the country has been relatively more stable than many of its neighbors.

Tanzania is ranked number 93 (out of 163) on Transparency International's Corruption Index (2006), and the government is currently taking steps to improve accountability and reduce

corruption. As a result, the country has been designated a "threshold country" by the Millennium Challenge Corporation. USAID today plays an important role within the international donor community present in Tanzania. Last year, the country received $65 million in development assistance (USAID, 2007). "Of particular note, Tanzania is a priority country for such U.S. programs as the President's Emergency Plan for AIDS Relief (PEPFAR), the African Growth and Opportunity Act (AGOA), and the President's newly announced "Malaria Initiative" (USAID, 2007). Today, USAID's education activities in Tanzania are confined to a $4 million aid and technical assistance program to improve the quality of education provided in the pre-primary through secondary schools on the Island of Zanzibar.

Tanzania has a population of approximately 37 million with 24.2 % living in urban regions (CIA, 2005; World Development Indicators, 2007). The population growth rate is 1.8% and the prevalence of HIV/AIDS among adults is 8.8% (CIA, 2005). In particular, a large number of well-educated individuals have been infected with the disease (BTI, 2006). With respect to diversity, 99% of Tanzanians are native Africans with 95% belonging to one of the 130 tribes of the Bantu Group (BTI, 2006). The official languages are English and Kiswahili or Swahili.

Tanzania has maintained impressive growth rates ranging from 5% to 7% over the period 2000 and 2005, but it remains one of the poorest countries in the world; per capita GDP is $329.94 (in constant USD 2000) and roughly 58% of the population lived on less than one dollar a day in 2000 (World Development Indicators, 2007). In terms of social indicators, Tanzania also ranks quite low. In 2002, the country was ranked 162 out of 177 countries on the Human Development Index (BTI, 2006). Agriculture dominates the economy, accounting for 43.2% of GDP and 80% of the labor force in 2004; major products include coffee, tea, and livestock (CIA,

2005). Subsistence farming is common, particularly in rural areas and the informal sector is relatively large (BTI, 2006).

Profile of the Education Sector

Historical Overview of Tertiary Education

The first university in Tanzania, the University of Tanganyika, was established in 1961 as a satellite of the University of London. The founding principle of the university is to fight against "poverty, ignorance, and disease" (Mkude & Cooksey, 2003, p. 1). Like other African colleges established under colonial rule, the purpose of this University was to train administrators in law. In 1963, the University became a constituent college of the University of East Africa along with the University of Nairobi and Makerere University in Uganda. Eight years later, the University of East Africa was disbanded and the University of Dar es Salaam ("UDSM") was formed, which today is a prominent public institution.

Historically, the linkages between the UDSM and the government were strong with the autonomy of the University severely constrained. When UDSM was established, the President became its chancellor and the government in ensuing years sought to "integrate universities into its central planning process" (Mkude & Cooksey, 2003, p. 584). In recent years, UDSM has gained a limited amount of autonomy as signaled by the appointment of head positions to non-bureaucratic figures.

According to Mkude and Cooksey (2003, pp. 584-5), tertiary education in Tanzania may be characterized by four distinct development phases described below:

- 1964-1974: Expansion of Tertiary Education

    - Increase in the number of students and degree programs at UDSM; establishment of 6 non-university institutes (i.e. technical training institutes)
- 1974-1983: Reform of Admissions
    - Musoma Resolution of 1974 which required work experience prior to entering university which ultimately had a negative impact on the total enrollment, performance, and gender balances
- 1984-1993: Reversal of Previous Reforms and Expansion of Public Universities
    - Repeal of the Musoma Law in 1984
    - Establishment the Sokoine University of Agriculture (1984) and the Open University of Tanzania (1992)
    - Further expansions of the academic courses of study at UDSM
    - Establishment of the Ministry of Higher Education, Science, and Technology to improve coordination (1990)
- 1994-Present: Liberalization
    - Increased participation by the private sector
    - Implementation of UDSM's Institutional Transformation Program

Higher education is a key component of the nation's medium-term development strategy, especially as it pertains to agricultural education. While higher education has not been directly included in Tanzania's Poverty Reduction Strategy Paper, this point has been articulated by Peter Msolla (2007) of the Ministry of Higher Education, Science, and Technology. As such, the government has begun to address some of the many challenges that continue to impede the quality and access to tertiary education in Tanzania. Contemporary challenges and reforms will be discussed in subsequent sections.

Primary and Secondary Education: Current Trends and Statistics

Universal access to primary education by 2015 is a key component of the United Nations' Millennium Development Goals and Tanzania has been committed to this goal for quite sometime. In 1977, as part of the second wave of development in education, legislation requiring the provision of universal primary education was introduced; however, this goal was not achieved in the following decade.

The breakdown of years of schooling through the secondary level is as follows: 2 years of preschool education, 7 years of primary education, 4 years of Junior Secondary (ordinary Level) and 2 years of Senior Secondary (Advanced Level). Today, net primary enrollment is 91% (World Development Indicators, 2007); however, a report issued in 2001 indicated that it would be unlikely for universal coverage to be achieved by 2015 (Tanzanian Government, 2001). In 2004[10], approximately 56% of the relevant age group completed primary school and approximately 33% went on to pursue a secondary education (World Development Indicators, 2007).

Recent reforms of primary and secondary education have focused on improving equity and equality. "Over the past six years, the pass rate has improved significantly, going from 22% in 2000 to 61.8% in 2006, which represents a real improvement in learning outcomes" (World Bank, 2007, p. 1). In addition, the Tanzanian government began an initiative in 1998 to devolve power of primary and secondary schools to local governments. In terms of progress made to date, Tanzania has been ranked as having achieved a "moderate" degree of decentralization (World Bank, 2003, p. 3).

[10] 2004 is the most recent year with available data.

The quality of primary and secondary education has obvious implications for the quality of students in tertiary institutions. While progression to secondary school and the enrollment rate of tertiary institutions is increasing (World Development Indicators, 2007), the quality of the education provided is of continued concern (Wedgwood, 2005, p. 42). In addition, the communication skills of students, particularly in English, greatly inhibit learning outcomes (Wedgwood, 2005). Kiswahili is taught in primary schools and English is the primary language of instruction in secondary schools and this breakdown plays an important role in shaping student's ability to communicate in English. The impact of the poor quality of primary and secondary education more generally on tertiary education outcomes will be discussed in the section titled, The State of Higher Education in Tanzania.

Tertiary Education (Current Trends and Statistics)

A limited set of statistics are kept by the Tanzanian Ministry of Higher Education, Science and Technology which was formed in 1990 with the mandate to "coordinate and oversee policies" related to these fields of study (2007). Rare for sub-Saharan African universities, enrollment in institutions of higher education decreased throughout the 1980s, but has since recovered (Cooksey, Levey, & Mkude, 2003). The gross percentage enrollment in tertiary education has been increasing, from 0.67% in 2001 to 1.39% in 2005, which amounts to 52,831 students, 33% of whom are females (World Development Indicators, 2007; Msolla 2007). The increase in student enrollment has coincided with an increase in the number of institutions providing some type of tertiary education, be it university-level or technical training to over 200 by the end of 2006 (Msolla, 2007). By December 2006, there were 11 public universities or colleges and 19 private universities or colleges (Msolla, 2007).

The number of students studying abroad is low. Only 159 students in total spent the 2004-5 academic year abroad and Uganda, Algeria, China, and Russia were popular destinations. No students during the same year went to the United States. Medicine, law, electronics and computer science are the most common fields of study abroad. A few American universities have had partnerships with institutions of higher learning in Tanzania. At present, there is currently one active partnership which is between Ohio State University and the Sokoine University of Agriculture. The purpose of this partnership is to "support agribusiness training, enhancing linkages with the private agribusiness sector, and developing an Agribusiness Management Center at Sokoine" (Association Liaison Office, 2004, p. 28).

A comprehensive reform effort, titled the Institutional Transformation Programme, is underway at UDSM. This effort began in 1994 with the launch of the corporate strategic plan, which continues today as well as additional reforms that have focused on redesigning curricula offered in institutions of higher education. With respect to agriculture, it continues to be a priority given its import to the Tanzanian economy (Cooksey et al, 2003). Even though reforms efforts are underway, the state of higher education, similar to neighboring countries, faces many pressing challenges as outlined in the Higher Education Policy of 1999:

- Low total student enrollment;
- Low enrollments in the sciences;
- Gender inequities;
- Insufficient financing; and
- Unregulated tertiary training institutions (Cooksey et al, 2003)

In addition, the quality of the education provided remains an important concern. These challenges, amongst others, will be discussed in greater detail below.

The State of Higher Education

Financing

The source of financing largely depends on the type of institution. Private universities receive no government support and are financed by "student fees, donations, endowments, and self-generated income" (Mkude & Cooksey, 2003, p. 586). Public institutions, on the other hand, are largely financed by government grants. The expenditure per student has been relatively high even though data is not available regarding the expenditure per student as a percentage of GDP and this is primarily due to low staff-student ratios. Historically, the government not only provided tuition assistance, but also a living stipend that increased the cost per student by a considerable amount.

Reform efforts, beginning in the early 1990s, have been introduced to shift part of the burden, particularly with respect to living expenses onto students and their families, with the goal of increasing equity, decreasing government expenditures, and increasing participation at public institutions (Ishengoma, 2004). The cost-sharing reforms were to be rolled out in three phases and as of the end of 2004, the final phase, instituting tuition fees, health insurance fees, and text book fees had yet to be introduced. In order for students to be able to cover their fees, the Higher Education Students' Loan Board was established. However, reviewing enrollment rates at USDM, has led Ishengoma (2004, p.21) to conclude,

> "that generally, findings suggest that so far, the policy has had very insignificant impact on the improvement/expansion of access/participation in higher education mainly because of the very dismal enrolment in privately-sponsored students program and the University's inability to embark on full scale income-generating activities which would have enabled the University to expand its capacity to enrol more students."

Recent attempts to introduce cost sharing measures with students responsible for 60% of the fees at UDSM, and other public institutions, such as the Sokoine University of Agriculture, have been met with fierce student opposition (Lyimo, 2007; Kimaro, 2007). Moreover, the loan system today is facing many urgent technical problems and lending constraints (Kimaro, 2007). These problems will need to be addressed in order for Tanzania to fully implement its cost-sharing strategy.

USDM provides a snapshot of the grim financial picture facing public institutions in Tanzania. For the 1999-2000 academic year, USDM faced a $4.8 million funding gap[11]. Most capital-intensive investments and research are financed by foreign donors, with the Nordic agencies such as NORAD and SIDA playing a particularly active role (Mkude et al, 2003). Even with donor support, the recent external financing needs reached $65.6 million for the years 2000-5[12] (Mkude et al, 2003).

For 1998/1999 a little less than 50% of funding for USDM came from international donors; however, this funding has been decreasing in favor of primary education in recent years (Wedgwood, 2005). As Wedgwood acknowledges, a large source of funding is from foundations and northern universities who have historically strong links with USDM. It is important to note that as funding has increasingly gone to general budgetary support, it has become more difficult to quantify donor support for a particular sector (Wedgwood, 2005).

Role of Technical and Vocational Training

Technical and Vocational Training ("TVET") was historically linked to fostering a labor supply for public service in Tanzania. As the country began its efforts to liberalize the economy

[11] Refer to Table 1 in the Appendix for a breakdown of revenues and expenditures.
[12] Refer to Table 2 in the Appendix for a breakdown of external financing.

in the mid-1980s, the need to reform the TVET system became apparent. In addition, low returns and high costs associated with the provision of TVET training in secondary schools has led to a decrease in classroom time to TVET. The private sector and TVET institutions have been established in recent years to fill this void.

The state of TVET in Tanzania has been characterized by the International Labor Organization (1996, p.1) with the following problems: "inefficient use of resources, inequitable educational opportunities, poor labor market linkages and a lack of coordination between donors and the government." Efforts continue today to improve the alignment between TVET programs and labor-market demand. The government, with substantial donor support, has been the primary funder of TVET programs. In the mid-1990s, "funding for TVET comprised 60% of total donor assistance for education" (International Labor Organization, 1996, p. 3); however, donor support has decreased drastically since (Wedgwood, 2005). While the aforementioned management and program design issues can partly explain a loss in donor support, recent reform efforts implemented by the Tanzanian government should be recognized, such as the establishment of regulatory bodies in the mid-1990s that includes the National Council for Technical Education (established in 1997). However, a review by the Danish International Development Agency ("DANIDA") concluded that Vocational Education and Training Authority ("VETA") had little impact in terms of poverty reduction (Wedgwood, 2005). This finding is in-line with Dar, who in 2000, concluded that "there is little justification for public investment in TVET because of its low impact on poverty reduction…even though the private returns are high, the social rates of return are low" (Wedgwood, 2005, p.45). As such, it does not appear that USAID support for TVET is currently warranted.

Rates of Return to Education

There is limited data on the returns to education in Tanzania for recent years. A study completed by the World Bank in 2002, which utilized data from the early 1990's found that the private return to primary and secondary education was 7.9% and 8.8% respectively (measurements for the social rates of return were not included) (Wedgwood, 2005). A later study conducted by Dar utilizing the same data set as the World Bank paper, was able to calculate the social rates of return for primary, secondary and tertiary education. The social rates of return decrease as the level of schooling increase and he found that that there is virtually no social returns for university and vocational training even though the private rates of return increase with years of schooling, with the highest private rates of return accruing to those who complete vocational and educational training programs[13] (Wedgwood, 2005).

Rates of return provide evidence that investment should be targeted toward lower levels given the higher social return; however, this does not imply that tertiary education should be ignored. In 1991 (the study utilized data collected the year before), the gross enrollment ratio was 68% (World Development Indicators, 2007). Since 1990, gross primary enrollment has increased to roughly 106% (World Development Indicators, 2007).

> "Evidence from other countries (Mingat & Tan 1996; Appleton 2001) suggests that as primary enrollments rise and the requirements of the labor market change, the rate of return falls relative to the rate of return for secondary education" (Wedgwood, 2005, p. 20).

Primary education clearly is a priority amongst international donors given its prominent place on the Millennium Development agenda; however, a case may still be made to support higher education on the grounds that higher education has public externalities that are difficult to

[13] Refer to Table 2 in the Appendix for the rates of returns to education.

quantify. These include the impact of higher education on institutional strengthening, improved governance, and technological advancement.

Role of Distance Learning and Information and Communication Technology

Today, the state of information and communication technology ("ICT") is inadequate (Msolla, 2006). The sub-optimal level of ICT is due to the insufficient human capacity and to limitations with the infrastructure itself (Msolla, 2006). Improving the state of ICT in Tanzania is of great import and the argument to increase donor funding to further develop infrastructure and improve human capacity is warranted.

The Open University of Tanzania which was established in 1992 is the sole distance-learning public institution. Current faculties include: "the Faculty of Arts and Social Sciences, Faculty of Education, Faculty of Science, Technology and Environmental Studies, Faculty of Law, Faculty of Business Management, Institute of Continuing Education and the Institute of Educational Technology and the Directorate of Research and Postgraduate Studies and Regional Services" (Open University of Tanzania, 2007, p. 1). The university employs a variety of methods, such as ICT, broadcasts, and face-to-face meetings through its regional and study centers to administer its courses. Enrollment at the university has increased tremendously: for the 2000-1 academic year, total enrollment was 5,662 and by 2004-5 the number more the doubled to 12,945 (Ministry of Higher Education, 2007).

Clearly, improving ICT in Tanzania will lead to increased productivity, information-sharing and communication. Increasing access to ICT will also enable more students to complete their education through distance learning, which is attractive given the overcrowding

present in many institutions today and the living costs associated with traditional university programs.

Equity and Access

Equity has been a major concern for the Tanzanian government with respect to tertiary education. Given that government expenditure for higher education was in part allocated to support students by subsidizing their living expenses, improving equity was one of the rationales for instituting cost-sharing of higher education as students from higher socio-economic backgrounds are typically enrolled in universities. While the number of students enrolled in institutions of higher education has expanded in recent years, it is unclear whether or not this has had an impact on disadvantaged children (Cooksey et al, 2003).

Geographically speaking, enrolled students are extremely concentrated with most students coming from only two regions and "two-thirds of students (coming) from only 6 of Tanzania's 22 regions" (Cooksey et al, 2003, p. 4). With respect to gender equity, many institutions have instituted a number of policies to increase the participation of women, which has grown from 23.7% in 2000 to 32.7% in 2004 (Ministry of Higher Education, 2007). In addition, the historically low participation rates of women in the sciences prompted the creation of a special pre-entry program that has contributed to an increase in their enrollment to 23% in 2006, up from 7.5% in 2003 (Msolla, 2006).

Improving equity within tertiary education will begin with improving the quality and access at the primary and secondary levels for students from poor and rural areas. In addition, improving external sources of funding for disadvantaged groups such as females and the poor should lead to an increase in participation.

Quality

As previously mentioned, issues regarding the quality of education in general, and on higher education in particular is of great concern in Tanzania. Staff at UDSM believe that the quality of the national education system has declined in recent years (Cooksey et al, 2003), which has resulted in a decrease in the abilities of new entrants in the institutions of higher education. In particular, the staff has voiced concerns regarding the English skills of students (Cooksey et al., 2003). Within the Tanzanian education system, tension exists between English and Kiswahili. While both are official languages, the fact that Kiswahili is the primary language of instruction in primary, while English is the primary mode of communication in secondary and tertiary institutions most likely plays a role in the underdevelopment of English language skills (Mkude & Cooksey, 2003).

While this sends a clear signal that additional funding and a redesign of the curricula offered are needed to improve learning outcomes at the primary and secondary levels, there is still an argument to be made for increasing funding to institutions of higher education; "in attempting to aim for equality, the quality has fallen so low that there is little hope for individuals from poor households to improve their circumstances through education in the public system" (Wedgwood, 2005, p. 49).

The Tanzanian government has responded to the concern regarding the quality of education by establishing the National Accreditation Council for Technical education (1997) and the Tanzania commission for Universities for Coherent Management in 2005. Even though this demonstrates the government's commitment to improve monitoring and standards, only one

institution by 2003 had qualified for a Certificate of Accreditation by the board (Mkude & Cooksey, 2003).

The quality of post-secondary education also impacts the ability of recent graduates to work. Wedgwood (2005), in her analysis of post-primary education in Tanzania, found that it appeared that the labor market had the capacity to absorb more graduates; but that rising unemployment was due low quality (p. 4). While vocational and educational training as described previously, has facilitated the linkage between labor market demands and the skills of new graduates, more resources should be devoted to improving the quality of education provided.

Role of Research

Public support for research in Tanzania is .18% of GDP, well below the target of 1% (Msolla, 2007). While the government developed a Science and Technology Policy in 1985 well before many sub-Saharan African countries, little progress has been made in its implementation (Msolla, 2007). In-country research serves a vital role in a nation's development and the output in Tanzania is quite low. The number of scientific and technical journal articles published has decreased in recent years from 100 in 2000 to 86 in 2003 (World Development Indicators, 2007).

Given the scarce resources the Tanzanian government has available to allocate to research and development, there is a clear argument to be made for increased donor support. In fact, a large percentage of research is funded by donors, with the Nordic countries such as Norway and Sweden playing a particularly active role. The public university, Sokoine University of Agriculture, conducts research on agriculture, health, natural resources, and nutrition. At present, the Tanzanian government and Tanzanian NGO's provide roughly 2% of

the TAS 2.0 billion annual research budget (Sokoine University of Agriculture, 2007). Of the external donors, NORAD, provides approximately 50% of the funding for research.

While it has been indicated that past research efforts with respect to agriculture have not met expectations, a new protocol focusing on end-users and development has been adopted by the university. The renewed commitment to research for development provides a sound justification to supporting research in Tanzania.

Conclusion

The state of tertiary education in Tanzania faces numerous obstacles including low enrollment levels and poor quality. Even though enrollments have expanded in recent years, the quality of the education provided remains woefully inadequate. Access by the poor is severely limited and the system on the whole remains under-funded. The emphasis in recent years on improving access and the equality of primary education has been at the expense of the quality of tertiary education. While funding should continue to be provided to lower levels to improve the capabilities of new entrants into the institutions of higher learning, more resources should be directed towards higher education in Tanzania. The government and most prominent public university, UDSM, have embarked on an ambitious reform agenda and significant strides have been made with regard to improving gender equity. However, many pressing obstacles, such as the dearth of financing, low-level of domestic research initiatives, and underdeveloped ICT infrastructure and human capacity capable of effectively utilizing such infrastructure, remain. Given the government's commitment, USAID should support the tertiary education reform efforts in Tanzania.

Appendix

Table 1

Summary of Income and Expenditure for UDSM (1999-2000)	
	USD (Millions)
Expenditure	
Recurrent	24.0
Development	8.9
Research	7.8
Transformation	2.3
Total	43.0
Revenue	
Student Fees	
Government-sponsored	20.7
Privately-sponsored	1.5
UDSM internal generation	2.8
Government Subsidy	2.8
Donor Grants	10.4
Total	38.1
Financing Gap	**4.8**

(Source: Mkude et. al 2003: 31)

Table 2

Summary of UDSM External Funding Needs (2000-5)	
Priority Support Areas	*USD (in millions)*
Improved teaching and learning	13.2
Research and publications	4.7
Organizational culture and management	5.8
Infrastructure	36.5
Staff development	5.4
Total	**65.6**

(Source: Mkude et. al 2003: 34)

Table 3

Rates of Return to Education				
	Primary	*Secondary*	*University*	*Vocational*
Private	3.9	6.9	9.0	19.4
Social	3.6	1.5	0.0	0.0

Source: Wedgwood (citing Dar) 2005, 19

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UGANDA

Introduction

This report uses Uganda as a case study to look at the status of higher learning in Sub-Saharan Africa. In Uganda, higher education constitutes of the university and other tertiary institutions (post-A level non-university) sub sectors. In 2005, there were 157 institutions of higher learning and a total enrollment of 124,313 students (Republic of Uganda, 2005). Since the 1980s, there has been a dramatic demand for tertiary education which has had plenty of ramifications. This paper will analyze the consequences of the increasing demand for tertiary education in the modern knowledge-based economy. The first part provides background information on the economic, political and social contexts within Uganda. The second part looks at the profile of the education system and the third part focuses on tertiary education. The fourth section looks at the state of tertiary education, namely financing, the role of international partnerships, rates of returns, the role of information and communications technology and distance education, and access and quality issues.

I. Context

Political

Since the Republic of Uganda (also known as the "Pearl of Africa") won its independence from Great Britain in 1962, it has gone through several periods of conflict. As from 1971 to 1979, Uganda was governed by a dictatorial regime under Idi Amin, who was responsible for the deaths of approximately 300,000 people. Between 1980 and 1985, Milton Obote was in power and another 100,000 people died as a result of the revolutionary war and human rights abuses. Finally in 1986, Yoweri Museveni gained power with a coup d'état. He is still the current president and under his rule, Uganda has maintained moderate stability and

economic growth (CIA, 2007). When he came into power, Musevini argued that a multi-party system would aggravate religious and ethnic tensions in Uganda. Consequently, he mandated a "no party" system with only his political organization, the NRM, allowed to operate. In a referendum in 2005, Ugandans voted to have more than one political party. The Transparency International Corruption Perceptions Index has ranked Uganda 117 out of 159 countries surveyed in 2005 (Freedom House, 2006).

Economy

According to a World Bank (2004) report, Uganda has had tremendous economic development since its independence in 1962. Compared to the rest of Sub-Saharan Africa, its macroeconomy is stable with a mean growth of 6%, which is above the average in Africa. Uganda has also reduced poverty from a high of 56% to 38% between 1992 and 2003. In the United Nation's Human Development Index, Uganda was ranked 144 out of 177 countries, thus moving it from "low human development" status in the 1980s to the "medium human development" for the first time in the 2000s. Despite all the progress, Uganda is still plagued with multiple challenges, including an extremely low annual per capita income of $270, a low life expectancy of 43 years, and a high incidence of HIV/AIDS which averages around 6.5% (Liang, 2004).

A large part of Uganda's progress can be explained by President Musevini's strong political commitment and implementation of a series of reform. For example, government ministries have increased the efficiency of service delivery in rural areas through decentralization; various state monopolies and price controls have been halted, which, coupled with the freeing of the foreign exchange market, have led to small farmers earning more revenue.

Moreover, with the end of the civil war in Uganda, the stable investment climate has attracted more FDI to the country (Liang, 2004).

With the implementation of policies as mandated by the IMF, Uganda has been eligible to receive more debt relief through the Multi-lateral Debt Relief Initiative (MDRI) starting in March 2006. With the MDRI, Uganda's debt can be forgiven and the country will receive $3.7 billion in debt relief, leading to a saving of $138 million per year by 2022 (Liang, 2004).

The challenges that Uganda face are multifold. Poverty is exacerbated by the inequality between rural and urban areas as well as the high HIV rate. Other challenges are the insurgency in northern Uganda and the sometimes undemocratic governance of Musevini (Liang, 2004).

The Ugandan government's policy framework to eliminate poverty is known as the Poverty Eradication Action Plan (PEAP). It began in 1997 and provides guidelines to sectors on adopting programs to decrease poverty. PEAP's focus is on sound economic management, encouragement of privatization and modernization of the agricultural sector, management of the insurgency in northern Uganda including the rehabilitation of areas destroyed by the conflict, promotion of democracy and transparency, increasing human capital by achieving universal primary and secondary education, reduction of the HIV/AIDS rate and promotion of gender equity (Liang, 2004).

Agriculture Sector

Uganda is primarily an agrarian society with 85% of the labor force employed in the agricultural sector, accounting for 43% of the country's GDP (World Resources Institute, 2001). Coffee and cotton as the main cash crops. During the National Resistance Movement (NRM) period of government, the long-term goals of the agricultural sector have been to enhance agricultural productivity, and ensure food security. Uganda launched a diversification of

agricultural exports from its dependence on coffee to scale up the production of tea, cocoa and sugar as well as non-traditional export crops such as corn, beans, spices, flowers, and vegetables. Uganda's location and soil fertility give it an advantage in providing the east and central African markets with vegetables. Uganda is renowned for organic vegetables that they export to the western markets. One of the concerns with the expanding vegetable industry is that it is placing pressure on farmland, which is leading to clearing forests and increasing soil degradation (Government of Uganda, 1996).

Inequality

Income Inequality

While poverty is decreasing in Uganda, there is a large disparity between regions. The central region has prospered, the north has been affected by civil conflict, and with the east is still being quite poor. People in Northern Uganda have generally complained of neglect from the central government (Bigsten, 2000). Income inequality between rural and urban areas has increased by 23% between 1997 and 2002 (Appleton & Ssewanyana, 2003).

Gender Inequality

Women dominate the labor force in the agricultural sector while men work mostly in the services and industrial sectors. Most women are involved in subsistence farming and men concentrate on cash crops with women providing labour for both the subsistence and cash crop production. Legally women are entitled to own land, but de facto, they have little access to it with land usually registered in the man's name; land inheritance is patrilineal. Women usually remain at home and have few job opportunities; they are usually trained to work in culturally appropriate fields (Liang, 2004).

II. Profile of Education System

The education system in Uganda follows the British model. There are four stages: (1) primary, (2) junior secondary, (3) senior secondary (A Level), and (4) university. Alternative technical certificates also exist for students choosing the technical education track, including the Uganda Junior Technical Certificates, taken at the end of 3-year post-primary technical farm programs, and the Uganda Advanced Technical Certificate, taken at the end of post secondary technical programs. (Musisi & Muwanga, 2003).

History of Higher Education in Uganda

According to Musisi and Muwanga (2003), there are five distinct periods in the history of higher education in Uganda. In the 1920s, the first phase was influential in shaping Uganda's current educational system. Prior to that, Christian missionaries were in charge of education. As from the 1920s, the British colonial government took over the educational system. Consequently, Makerere Technical School was established in 1922. The motivation behind the establishment of this tertiary school after World War I was to prove to the world that Britain had good intentions towards its colonies. The university catered to the neighboring British colonies of Kenya and Tanganyika as well. At the end of the 1940s, the school established an affiliation with London University (Musisi & Muwanga, 2003).

In the second phase, beginning in the 1950s, the British colony concentrated on training Africanswork in the civil service as a way to promote development. In 1953, students from Makerere College were awarded London degrees through the affiliation. In 1956, a second higher education institute, the Royal Technical College in Nairobi was

established followed by the establishment of the University College of Dar es Salaam a few years later (Musisi & Muwanga, 2003).

In the third phase, in the1960s, the three colleges joined together to become the basic colleges of the University of East Africa. The undergraduate population at Makerere College increased from 1,331 in 1964-65 to 1,805 in 1967-68 with 2,638 Ugandans studying at the university by 1971. At the end of this third phase, the University of East Africa was disbanded into three separate universities at Makerere in Uganda, Nairobi in Kenya, and Dar es Salaam in Tanzania (Musisi & Muwanga, 2003).

During the fourth period in the 1970s and 1980s, due to the conflicts that gripped Uganda during that period, the education sector did not receive strong funding. Currently Uganda has two public universities, Makerere University in Kampala and Mbarara University of Science and Technology. Two new public universities were recently founded, the Northern Uganda University of Agriculture and Kyambogo University (Musisi & Muwanga, 2003).

Primary Education

In 1996, the government of Uganda removed any fees associated with primary schooling to achieve universal primary education (UPE). There was a dramatic expansion in enrollment. Between 1986 and 1996, primary school enrollment rose moderately from 2.2 million to 3.1 million. But with the introduction of UPE, in 1997, it jumped to 5.3 million, which is a spectacular increase of 70% within just one year of the program (Kirungi, 2000).

In reality, the UPE program is not universal. Under the policy, the government has the obligation to offer primary education for a maximum of 4 four children per

family. If a family has sons and daughters, two of the four children attending primary school must be girls. Moreover, a family that has a child with disability must be given the highest priority in enrolment under UPE. The government is obliged to pay the school fees for the children. While the UPE aimed to abolish all tuition fees (except for the Parent Teachers Association (PTA) fees associated with schooling), parents were still left to pay for transportation, books, materials and uniforms (Ndeezi, 2000).

As a result of the tremendous increase in demand for primary schooling, existing facilities were stretched. In many regions, both rural and urban areas, the demand was so high that classes were conducted under trees. The mean number of pupils per school increased dramatically from 363 to 616 between 1996 and 1997 while the number of teachers employed rose only from 81,564 to 89,247. The government was unable to keep pace with the rapid increase in pupils, and the pupil-to-teacher ratio increased from 38:1 to 60:1. The situation is even poorer in the lower primary classes, where the ratio of students to teachers is over a 100. It is a common for a teacher to have more than 100 pupils under a mango tree. Hence quality of education being provided has become an issue with questions being raised about academic standards. (Elwana, 2001).

Secondary Education

Secondary education consists of two levels: four years of lower secondary education leading to the Uganda Certificate in Education (UCE) and two years of upper secondary education leading to the Uganda Advanced Certificate in Education (UACE). Currently, there are 1,651 government-aided secondary schools and about 1898 private secondary schools. Many of the private schools been built by parents with the rest built by non-governmental organizations and individuals. Similar to primary schools, many

secondary schools lack some of the basic facilities such as textbooks and equipment (Ministry of Education and Sports, Uganda, 2004).

In 2006, only around 150,000 primary school students were able continue their secondary education. Many children wanted to continue learning after primary school but many times their families were unable to afford the average $130 per year fees. Uganda began offering free secondary education to 250,000 students in February 2007, which the government said would double the number of children continuing on in school. The program meant that all 380,000 of the pupils who passed their primary school exams this year (about 90 percent of them) would go on to attend secondary school. The government has solicited around 1,000 government and private secondary schools to absorb new students, free of charge. The aim of Universal Secondary Education (USE) is to double enrollment. The dropout rate was about 50% without USE. It is estimated that the program would cost $17.15 million for 2007 only (Cocks, 2007).

III. Current Tertiary Education

Makerere University, the main public tertiary institution in Uganda, offers degrees in the medical sciences, agriculture and forestry and social sciences, law, arts and information technology as well as continuing education for adults. In the past decade, there have been various changes to the curriculum to make graduates more marketable. In 2005, Makerere enrolled 22,000 students, around 20,000 of whom were undergraduates with the rest as graduate students. It is predicted that annual enrollment will go up till 50,000 in the coming years. Out of the 911 academic staff, 221 have PhDs and 175 are female (Republic of Uganda, 2005).

The Mbarara University of Science and Technology was founded in 1989 to provide training in scientific and technological training to help rural development. At the end 1999, more than 400 undergraduates were enrolled, a third of whom are females. It is predicted that enrollment will more than double in couple of years.

Private Universities

There are currently 12 private universities in Uganda that enroll around 4,000 undergraduate and graduate students in subjects ranging from journalism to hotel management. Many of these universities are based on religious teachings such as Islamic and Christian. Some of the government's burden in providing tertiary education has been relieved by the introduction of private universities. Higher education is now viewed as a private good with students being the consumers and universities the suppliers (Nakanyike, 2003).

Overall, the four public universities had the major share enrollment of 55,763 students (71.4%) as compared to only 22,344 (29%) in private universities. Next to the universities are Colleges of Commerce with 14,479 (11.6%) students, National Teachers Colleges had 12,096 (9.7%), Management Institutions 9,411 (8%), Health/Medical Colleges had 2,590 (2.1%), Technical Colleges 2,084 (2%), Theological Institutions 1,943 (1.5%) and Agriculture 1,301 (1%). Other institutions, including co-operatives, media, hotel/tourism, law and meteorology, had less than 1% of total student enrollment in Higher education sub-sector. Enrollment for Science and Technology increased from 17.9% (19,042) in 2004 to 23.3% (28,852) in 2005. This positive increase was mainly contributed by the high growth of enrollment in technical colleges, which grew by 23% (1,695 to 2,084). In Universities alone, the number of students taking science and

technology rose from 15.3% (9,771) in 2004 to 20.2% (15,527) in 2005. This implies that the sector's affirmative action to fund disciplines key to economic development is beginning to pay-off. (Ministry of Education & Sports, Uganda, 2006)

IV. State of Education in Uganda

Financing

Since the founding of Makerere in 1922, the central Ugandan government has assumed full responsibility for financing higher education entirely out of public funds. Historically, students in tertiary education institutions, both undergraduates and graduates, have had their tuition fees, all their food and other living expenses and transport funded by government, and they also received an allowance known as "Boom" for pocket money. (Kajubi, 1992). However, despite protests, this system of "Boom" was abolished in the mid 1990s (Ministry of Education & Sports, Uganda, 2006).

Public universities receive funds in two blocks: recurrent and development grants. The Ministry of Education and Sports gives subventions to the institutions. Most of these institutions receive government funding contingent upon inputs (staff, educational facilities) rather than on their outputs.

> "The amount of the subvention is calculated based on the number of government students and the unit cost which the Ministry thinks is reasonable for that particular institution. Often the government unit cost is very high, more than twice the amount of annual fees paid by a private fees paying student, as it usually includes a substantial proportion of welfare costs." (Liang, 2004).

Tuition fees in Uganda have been kept below market levels because of social and political ramifications. Students pay only around 30% of the annual cost (the unit cost) of their higher education expenses. Most of the institutions receive their income from fees, and especially fees of private universities fund 90% of total income. Public universities like Makerere earn as much as 30% of their income from privately sponsored students. However, for most of the programs, private students' fees are much lower than actual costs. For instance, a degree in medicine costs about $6000 per year but students only have to pay $1533; in dentistry the actual cost is about $6000 but students pay a quarter of the expenses and in basic sciences the expenses are $3000 with students paying $800 (Republic of Uganda, 2005).

University Loan Programs

In the past, Uganda had programs whereby students were asked to pay for university education by taking out a loan payable as soon as they were employed. Student loans increase access to higher education, increase the incentives of students to work hard, and provide a just means of expanding the university. However, this program has been abused extensively by the past recipients of the loans, who default in repaying the money they borrowed. Uganda still lacks a formal system of getting back the amounts borrowed by earlier students and university boards are examining ways of implementing a loans recovery program (Nyaigotti-Chacha, 2002)

International Collaboration

The Ugandan government international collaborations with China, Algeria, New Zealand, India, United Kingdom, Canada, Egypt, Cuba and Russia resulted in 82 university undergraduate and graduate students receiving a scholarship in 2005.

Another scholarship scheme is with the Carnegie sponsored Female Scholarship Initiative which has sponsored 417 female students since 2002. However, the number of recipients has decreased due to the condition that awardees be granted full scholarships rather than partial ones (Ministry of Education & Sports, Uganda, 2006). Other international donor agencies for tertiary education in Uganda include Ford and Rockefeller foundations

Role of Technical and Vocational Training

There are only 5 Technical and Vocational Training Institutes (TVET) in Uganda. These institutions are generally regarded as being inferior to universities and colleges. However, TVETs have great potential in helping students who did not the opportunity to go to university. Technical and Vocational Training Institutes can provide practical training to help young people secure employment. Technical and Vocational Education and Training is a comprehensive educational process that goes "beyond general education by helping participants acquire the technologies, practical skills, attitudes, and mental preparedness necessary for a variety of vocations and jobs"(Japan International Corporation Agency & Technical and Vocational Education and Training, 2004). In March 2007, the government of Uganda has started providing free education to students who have completed primary schooling and chose to join TVETs (Miti, 2007)

Rates of Return

A study conducted by the World Bank in on tertiary education in Uganda found that

"tertiary students are not only more likely to be employed by the formal sector, but once employed, the wage premium for every year of tertiary education is at 8%. Taking into account the costs of tertiary education, this can be translated into a social return of 13% and private return of 24%" (Liang 2004:88).

Having a high employment rate means a larger tax base for the government and educated people are more likely to understand and be involved in politics. Studies conducted in 16 emerging countries by UNESCO and OECD in 2002 has demonstrated the strong relationship between education and economic growth. Further, the report pointed out that besides primary education, secondary and tertiary education has high rates of return. It shows that once a threshold have been reached in education and economic growth, "high levels of upper-secondary and tertiary attainment are important for human capital to translate into steady growth (Liang, 2004).

Information and Communication Technology (ICT)

Realizing the importance of technology in the current knowledge-based world economy, the Government of Uganda has increased access to technology. Over 300 teachers have been trained in information and communication technology; Three generators and thirty computers have been provided to the New Partnership for Africans' Development (NEPAD) e-schools as well as software and upgrades for 6,000 computers. Institutions using E-mail addresses have increased from 79 (51%) in 2004 to 97 (68%) in 2005. Similarly, institutions with websites

increased from 34 (21.9%) in 2004 to 42 (26.8%) in 2005. The computer-student ratio in Makerere University has increased to 1:15 on average (Ministry of Education & Sports, Uganda, 2006).

Distance Education (DE)

Both public and private institutions in Uganda provide tertiary distance education (DE). The programs are locally sourced as well as internationally sourced. DE programs were introduced at Makerere University in 1991 and the total student enrollment at that time was about 7000. The number has increased to around 30,000 with about 30% of higher education students are distance learners. Uganda Management Institute (UMI) is a public foundation sponsored by the World Bank's Global Distance Learning Center (GDLC). The institute mainly runs short courses for working professionals using satellite technology and the UMI is planning to increase its services of the GDLC to towns and villages. The Nsamizi Training Institute for Social Development (NTI) is tertiary institution that offers a Diploma in Adult and Community Education through distance education (Ouma, 2003).

Most of the distance education programs in Uganda use print as the primary delivery medium which is supplemented by face-to-face tutorials, audiotapes and telephone contacts between tutors and learners. The use of digital information and communications technologies (ICTs) for distance education in Uganda is a moderately new development. Despite the remarkable growth in ICT applications in Uganda, the impact of these technologies in distance education has not been significant. (Ouma, 2003).

Equity: Gender

Around 40% of students enrolled in tertiary institutions are women. While this rate is equivalent to other developing countries in Asia and Sub-Saharan Africa, it is less than Botswana

(47 percent) and South Africa (48 percent). Ugandan women are not well represented in technical colleges with an enrollment of 4% and 16% in agricultural schools and 30% in medicine. Specifically between the ages of 17-27, female enrollment is lower than males with the gap climaxing at age 23 where male enrollment is 4.5% compared to a female enrollment of 2 % (Liang, 2004).

However, female enrollment has increased across the decades. To support equity, the Ugandan Government has implemented various policies. After affirmative action was implemented, 46% of current student enrollment in Makerere University and Mbarara University of Science and Technology is female compared to 42% for the previous year in 2004. Moreover, based on the District Quota System, 896 students gained admission universities in 2004. Every 56 districts were given a slot of 16 students to receive a scholarship (Ministry of Education & Sports, Uganda, 2006).

Socio-Economic Status

The survey shows that people from disadvantaged socioeconomic status is less likely to be enrolled din tertiary education. More than 50% of those who do not attend a tertiary institution live in houses with mud walls compared to 11% for the university enrollees. Moreover, the parents of those who are not enrolled have less years of schooling with father's education of 4.7 years compared to those who attend a university with father's education more than 13 years (Liang, 2004).

Quality

Research

Universities are the main place where research takes place. Research is a component of many of the graduate programs. Just like any university in a developed country, PhD students

are specifically mandated to conduct research for their dissertations. However, in many institutions, research is either limited or is tangential to academic programs partly because of a lack of funding. If Uganda adopts the Strategic Plan for Higher Education, all universities will need to dedicate a compulsory percentage of their budgets to research. Research program at student and academic staff level mainly depend on funding from development agencies such as DFID, NORAD, SIDA, USAID.

Qualification of Academic Staff

Table 6.1: Number of academic staff in higher education institutions by qualification

Qualification	PhD	Masters	PGD	Bachelors	Diploma	Prof. certificate	Total
Number 2005	558	2167	153	1694	611	75	5258
% of total	10.6	41.2	2.9	32.2	11.6	1.4	100
Number 2004	549	2221	***	1715	684	80	5249

Republic of Uganda. (2005). The State of Higher Education in Uganda.

Regulation

Uganda's higher education is regulated by the National Council for Higher Education (NCHE) whose primary aims are to: (a) regulate and provide guidance for the establishment of institutions of higher learning and Since the Republic of Uganda (also known as the "Pearl of Africa") won its independence from Great Britain in 1962, it has gone through several periods of conflict. As from 1971 to 1979, Uganda was governed by a dictatorial regime under Idi Amin, who was responsible for the deaths of approximately 300,000 people. Between 1980 and 1985, Milton Obote was in power and another 100,000 people died as a result of the revolutionary war and human rights abuses. Finally in 1986, Yoweri Museveni gained power with a coup d'état. He is still the current president and under his rule, Uganda has maintained moderate stability and economic growth (CIA, 2007). When he came into power, Musevini argued that a multi-party

system would aggravate religious and ethnic tensions in Uganda. Consequently, he mandated a "no party" system with only his political organization, the NRM, allowed to operate. In a referendum in 2005, Ugandans voted to have more than one political party. The Transparency International Corruption (b) guarantee the delivery of quality of higher education, standardize qualifications and counsel government on higher education issues

Universities and other tertiary institutions need to meet the minimum requirements as well as having well-defined control structures to deliver quality higher education for them to be recognized by the NCHE. It also advises the Minister of Education and Sports on the establishment of public universities. Universities in Uganda are generally autonomous and are free to run their programs as they deem fit, but must follow the framework of UOIA, 2001. Moreover, NCHE role is to ensure operational obedience with the law and to shield the public from the delivery of inferior education by maintaining quality assurance standards checks. For the most part, in the last three years, institutions have abided with the law and followed governance and administrative practices.

Admission to Universities

Admission to a public tertiary institution in Uganda is a two-stage process. Firstly, students must complete the Public Universities Joint Admissions Board (PUJAB) application form and name their top 6 choices of degree programs at public universities and 4 choices of diploma programs at other public institutions. Makerere University, the most prestigious university in Uganda asks for at least 2 principal passes on the UACE. But to be eligible for government funding, the student's records must be much above the minimum requirements. Most students will take exams in either three or four subjects in their area of study (arts or sciences) and their scores on the various subjects are then weighted based on the requisites of

individual programs within faculties, and the students who score the highest marks are admitted. Admission into a particular program is stopped when the lowest score of the last person is accepted into the program.(Ngolovoi & Marcucci, 2006).

Physical Infrastructure

In 2005, the physical facilities such as lecture rooms, libraries, laboratories, academic staff working spaces, recreation facilities for both staff and students, accommodation for students and office space for administration were insufficient. The ratio of students to these facilities has increased due to increase in enrollment unaccompanied by any expansion in facilities. In even the more prestigious public universities like Makerere and Kyambogo, the facilities are in a dilapidated state. While the perfect book ratio for universities is recommended to be around 1:40, the current student to book ratio is around 1:20. The computer to student ratio dropped from around 1:35 in 2004 to 1:47 in 2005, despite the fact that absolute number of computers increased from 4442 in 2004 to 5511 in 2005 which was offset by the increase in student enrollment (Republic of Uganda, 2005).

Linkages with Labor Market

Curriculum relevance

Most of the academic program being taught at the universities in Uganda is of practically no immediate relevance to the developing Ugandan job market. Memorization and parrot-like recitation instead of problem solving is the chosen and most widespread method of educating students. Institutions are still producing graduates to work in the civil service-driven as in the 1960s. There is a little case realignment of higher education to the fast shifting demands of the knowledge-based global and domestic markets, which are gradually more being driven by the private sector (Republic of Uganda, 2005).

A survey conducted in 2005 shows that there are limited forward and backward reciprocal linkages between the worlds of business and industry, and academia. Institutions have not carried out studies to see what skills that are being demanded by the current employers in the market (Republic of Uganda, 2005).

However, some Ugandan universities have tried to have more flexibility in their program given that institutions are attracting more and more working students. Universities have classes at night, weekends for working professionals who did not have an opportunity to attend a tertiary institution before. For instance, 56% of programs are being taught during the day, with 26% in the evening, 11% in the weekend and 7% through long distance by online or correspondences (Republic of Uganda, 2005).

Importance of Agriculture Training

Uganda's economy is mainly agrarian and therefore agriculture plays a key role in economic development. The Poverty Eradication Action Plan (PEAP) of 2000 which is the government's National planning framework acknowledges the vital role that the agriculture sector has to play alleviating poverty. To this effect, the Plan for Modernization of Agriculture (PMA) provides the strategic framework for the eradication of poverty in Uganda through the renovation of agricultural based livelihoods. For most rural households, improving livelihoods means transforming agriculture by increasing their natural, financial, human and social capital assets. Thus, illiteracy among the rural population is currently one of the major obstacles to accessing information and profiting from livelihood opportunities, thereby exacerbating poverty, especially for women who provide most of the agricultural labor (Republic of Uganda, 2003).

Several initiatives have been undertaken by the government in the formal and non-formal sectors such as the Universal Primary and Secondary Education program and the Functional

Adult Literacy program. However, even though the Universal Primary Education has enabled the majority children to gain access to primary education, most of these children will not continue on to secondary or tertiary institutions for various reasons. Consequently, other programs such as agricultural education and training are necessary to complement these initiatives. A large number of these youths who make up the next generation of farmers will benefit from the intervention (Republic of Uganda, 2003).

The challenges facing both the formal and non-formal agricultural education and training are the following:

• Lack of a consistent policy for agricultural education and training

• Insufficient funding for agricultural education and training

• Obsolete curricula and teaching methodologies in agricultural education and training (Republic of Uganda, 2003).

Conclusion

The tertiary system in Uganda is seen as being among the most effective structure across Sub-Saharan Africa. Major changes and improvements have been implemented since the foundation of the first institution in 1922. With Universal Primary and Secondary education, there will be a further increase in demand for tertiary education. The Ugandan government will need to find innovative ways to absorb these students and build a highly-skilled labor force.

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